SERVICE AND PARTS MANUAL

Return to Cover

35 SERIES GAS FRYERS

(Including J2X Variant)

(Series Code AP and Later)

Frymaster

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35 SERIES GAS FRYERS
CHAPTER 1: SERVICE PROCEDURES

1.1 Functional Description

The 35 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 deflectors (targets).

The flames originate from orifices in a U-shaped burner manifold positioned beneath the frypot. The orifice diameters differ for natural and LP gas as indicated in the accompanying table (see P/N 819-5665 for complete list).

35 Series Orifice Sizes (0-1999 ft/609 m)		
Gas	**Inches**	**Millimeters**
Natural (G20/25)	0.0669	1.70mm
LP (G31)	0.0413	1.05mm

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

Pilot Ignition System

The pilot ignition system is made up of the pilot orifice, pilot hood, and a thermopile. The pilot serves two purposes: light the burner and 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

Control Options

35 Series fryers may be equipped with basket lift timers.

Thermostats

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. The Fenwal controlling thermostat used in the 35 Series fryers is sensitive to one-degree changes in temperature.

All 35 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 above 425ºF to 450ºF (218ºC to 232ºC). The high-limit thermostat is the same for CE and Non-CE applications, but the terminals for attaching it to the gas valve differ. When a replacement high-limit thermostat is ordered, the terminals for both applications are furnished in the kit

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 this manual before attempting to relocate a fryer for servicing.

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

1.3 Cleaning the Gas Valve Vent Tube

Refer to Semi-Annual Checks and Services in Chapter 5, Preventive Maintenance.

1.4 Checking the Burner Manifold Gas Pressure

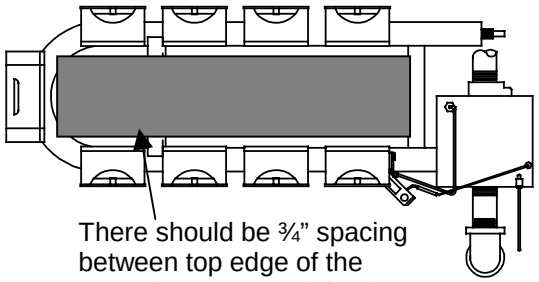
Refer to Semi-Annual Checks and Services in Chapter 5, Preventive Maintenance.

1.5 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 ¾ 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.)



1.6 Adjusting the Pilot Flame

Non-CE Gas Valves

1. For Non-CE Gas Valves, remove the screw from the pilot adjustment screw hole on the gas valve.

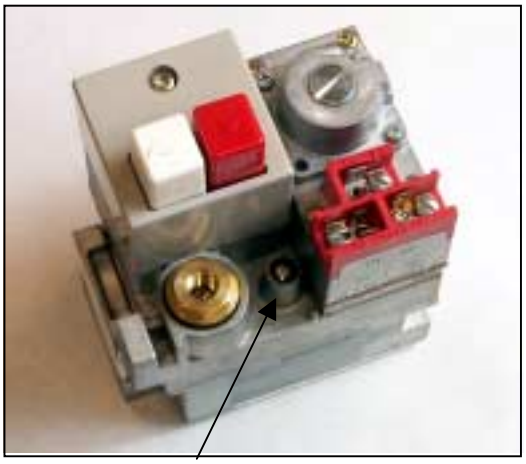
2. Using a small, flat-tipped screwdriver, turn the pilot adjustment screw counterclockwise to increase the length of the flame or clockwise to decrease the length of the flame. Adjust flame to a length of 1 to 1½ inches (25 to 38mm).

3. Reinstall the pilot adjustment screw cap.

The pilot adjustment on the Honeywell valve for US fryers is under this screw.

CE Gas Valves

Using a small, flat-tipped screwdriver, turn the pilot adjustment screw counterclockwise to increase the length of the flame or clockwise to decrease the length of the flame. Adjust flame to a length of 25 to 38mm.


The pilot adjustment on the CE valve is here.

1.7 Calibrating the Thermostat Control on MJ 35

1. Fill the frypot to the lower OIL-LEVEL line with cooking oil/shortening. If solid shortening is used, it must be tightly packed into the frypot before starting calibration procedure.

2. Light the pilot. (Refer to Chapter 3 for detailed lighting instructions.)

3. Insert a good grade thermometer or pyrometer into the frypot, about one inch from the thermostat.

4. Set the thermostat to 325^0F.

5. Let the burner cycle on and off three times.

6. Take a pyrometer reading when the burners extinguish for the third time.

7. Loosen the setscrews in the thermostat knob and turn knob to the temperature established by the pyrometer reading.

8. Allow burners to cycle on and off three more times and recheck pyrometer reading against thermostat setting. Temperature readings should be within 5^0F.

On the G-Series Model

1. Fill the frypot to the lower OIL-LEVEL line with cooking oil/shortening. If solid shortening is used, it must be tightly packed into the frypot.

2. Light the pilot. (Refer to Chapter 3 for detailed lighting instructions.)

3. Insert a good grade thermometer or pyrometer into the frypot, about one inch from the thermostat.

4. Set the thermostat to 335^0F.

5. Allow the burners to cycle on and off three times. Compare the reading of the pyrometer to the setting on the thermostat plate. The position of the knob on the thermostat and the reading from the pyrometer should be within 5^0F of each other.

6. If not, 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. Use a flatblade screwdriver to adjust the thermostat.

7. When the cooking oil/shortening temperature reaches 335ºF (162ºC), turn the flexible shaft slowly **clockwise** until the burner shuts off. (Turning the shaft counterclockwise causes the burner to light; turning it clockwise causes it to shut off.)

8. Allow the fryer to sit for a few minutes, then slowly turn the flexible shaft **counterclockwise** until the burner lights.

9. 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 if the burner lights as the cooking oil/shortening cools to 335ºF (162ºC)—not when the burner shuts off as the temperature rises.

10. Once the calibration point of 335ºF (162ºC) is determined, allow the burner to cycle on and off at least three times to be sure it will light at the calibrated temperature.

11. 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.

12. Close the fryer control panel and replace the screws the upper corners.

13. Reinstall the thermostat knob with its pointer aligned with the 335ºF (162ºC) index mark on the temperature dial.

14. Reconnect the fryer to the electrical supply.

1.8 Replacing Fryer Components

1.8.1 Replacing the Operating Thermostat

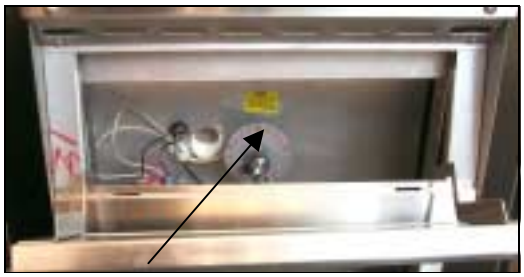
1. Drain fryer and turn gas off.

2. Use an allen wrench to loosen setscrew at the side of the thermostat knob. Remove the thermostat knob.

3. Remove the two setscrews on either side of the thermostat shaft and remove the dial plate.

4. Disconnect the thermostat wires from gas valve.

5. Use a slotted socket to unscrew the thermostat from the frypot.



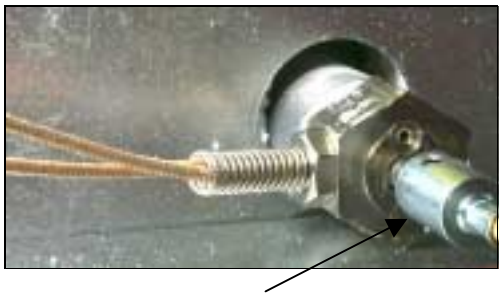
Setcrews hold the knob and the dial plate to the thermostat. Use an allen wrench to remove both.

6. Apply a small amount of Locitte PST56765 compound to the threads of the new thermostat. Install the thermostat.

7. Recalibrate (see Section 1.7).

1.8.2 Replacing Operating Thermostat in G-Model Fryers

1. Drain fryer and turn gas off.
2. For "G" models and basket-lift models, use an allen wrench to loosen setscrews on the side of the thermostat knob. Remove the knob and the control panel.
3. Loosen the setscrew attaching the flexible shaft to the thermostat shaft.
4. Remove the two setscrews that hold the flexible shaft bracket. Remove the bracket and the shaft.
5. Use a slotted socket to unscrew the thermostat from the frypot.



The shaft connecting the exterior thermostat knob to the frypot-mounted thermostat must be disconnected on the G series fryer.

6. Apply a small amount of Loctite PST56765 compound to the threads of the new thermostat.
7. Recalibrate (see Section 1.7).

1.8.3 Replacing the High-Limit Thermostat

1. Drain fryer and turn gas off.
2. Disconnect wires at the gas valve.
3. Use a slotted socket to unscrew the thermostat from the frypot.

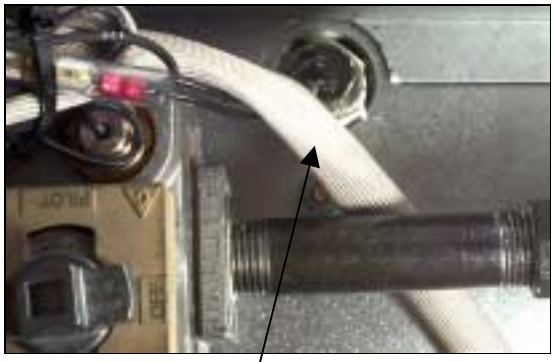
The high-limit thermostat is below the thermostat dial on the MJ35.

4. Apply a small amount of Loctite PST56765 compound to the threads of the new thermostat.
5. Install the new high-limit thermostat.

⚠ CAUTION
The operating thermostat must be calibrated after installation is complete. Refer to Section 1.7 for calibration instructions.

1.8.4 Replacing the High-Limit Thermostat in G Series Fryers

1. Drain fryer and turn gas off.
2. Disconnect basketlift or filter equipped-fryers from the electrical supply.
3. Drain the frypot.
4. Disconnect the thermostat wires from the gas valve.
5. Use a slotted socket to unscrew the thermostat from the frypot.
6. Apply a small amount of Loctite PST56765 compound to the threads of the new thermostat. Install the new thermostat.



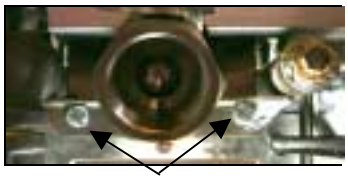
The high-limit thermostat in the G-series is accessible through the cabinet door.

1.8.5 Replacing Burner Ceramic Targets

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

1. Disconnect fryer from electrical and gas supplies.
2. On FM35 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 reconnections.
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.

The drain system will need to be partially dismantled to access the burner assembly.



These screws on either side of the drain valve must be removed to lower the burner from the frypot.

6. Remove the burner heat shield hanger screws at the front of the burner and remove the heat shield.

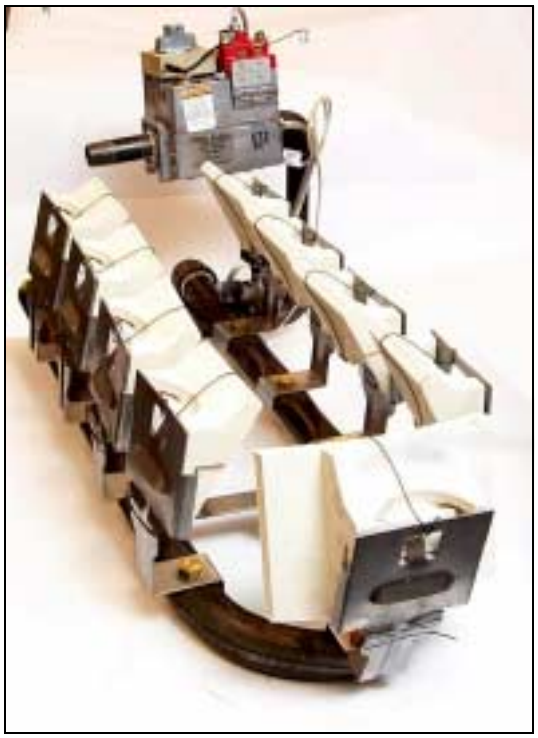
7. Remove the burner hanger screws and lower the front of the main burner. Pull it forward to clear the rear burner hanger, then lower the burner to the floor.

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 brass orifice that holds the assembly to the burner manifold. Position the new assembly and replace the orifices.

Wires connecting the valve to the thermocouple must be disconnected.



The complete burner assembly: Removing target assemblies requires removing the orifice that holds them in place.

⚠ WARNING
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.

1.8.6 Replacing the Gas Valve

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

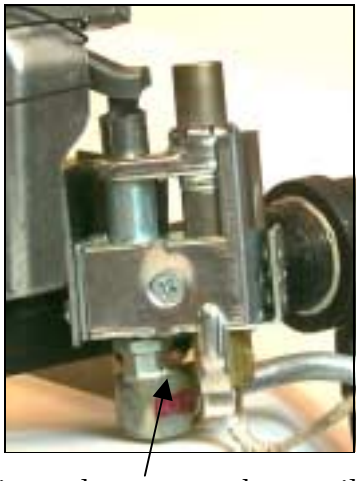
1. Disconnect fryer from electrical and gas supplies
2. Disconnect the wires from the gas valve terminal block, marking each wire to facilitate reconnections.
3. Remove the high-limit thermostat wire from the gas valve pilot coil.
4. Disconnect the pilot gas line fitting from the gas valve.
5. Disconnect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

Gas valve in the MJ35.

1.8.7 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 thermo-pile.



Clip used to remove 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.

Gas line for pilot.

4. Reinstall the burner assembly by reversing steps 1-8 of Section 6.8.4.

1.8.8 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).

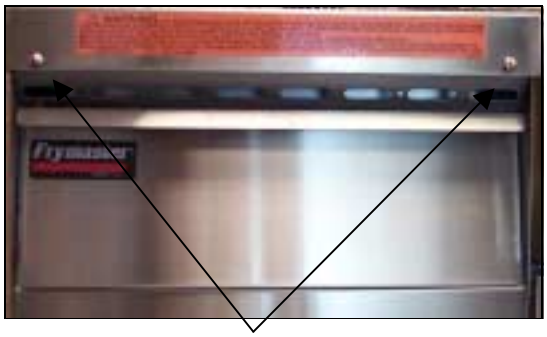
5. If fryer is a G series or equipped with basket lifts, remove the thermostat knob.

6. Remove the control panel.

7. Loosen the setscrew on the flexible shaft and separate from the thermostat shaft.

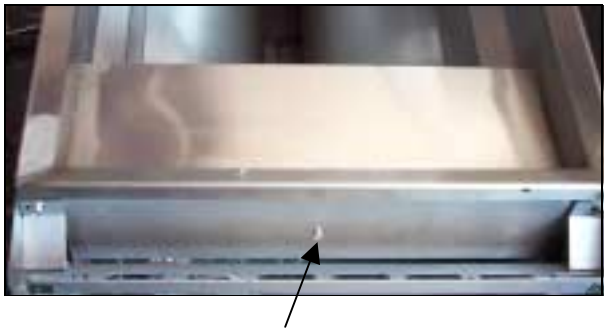
8. Remove the two screws holding the flexible shaft bracket and remove the flexible shaft and bracket.

9. Remove the control panel frame.


Four screws hold the top cap to the fryer. These two in front and one on each side of the cap.


The flexible shaft on the G series thermostat must be removed to access the operating thermostat.

10. Remove the screw from the frypot hold-down bracket.



When the topcap is removed, this screw is visible. It must be removed to free the frypot.

11. For fryers with a filter system, remove the square drain tubing from the drain valve.

12. Remove the screws from the sides and back of the flue cap and remove the flue cap.

13. Remove oil return lines or hoses from units equipped with filter systems.

14. Lift frypot complete with burner, gas valve, flue, drain valve and combustion chamber from the fryer cabinet. After lifting the frypot partially out of the cabinet, tilt the front downward to allow the drain valve to pas by the cabinet top and front crossbar.

These screws along the flue cap must be removed to access the frypot.

15. Remove the drain valve, hi-limit, and operating thermostat and transfer them to the replacement frypot. Before installing thermostats and drain valve on the replacement frypot, clean threads and apply Loctite PST56765 thread sealant to the threads.

16. Reverse the previous procedures to install the new frypot.

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

1.9 Troubleshooting and Problem Isolation

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 these broad categories:

1. Pilot failures
2. Improper burner functioning
3. Improper temperature control
4. Filtration problems
5. Leakage problems
6. Basket Lift malfunctions.

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

1.9.1 Pilot Failures

There are two categories: no pilot flame; unreliable flame

No flame

1. No gas or insufficient gas supply
2. Clogged pilot orifice
3. Air in gas lines (usually in new installations)

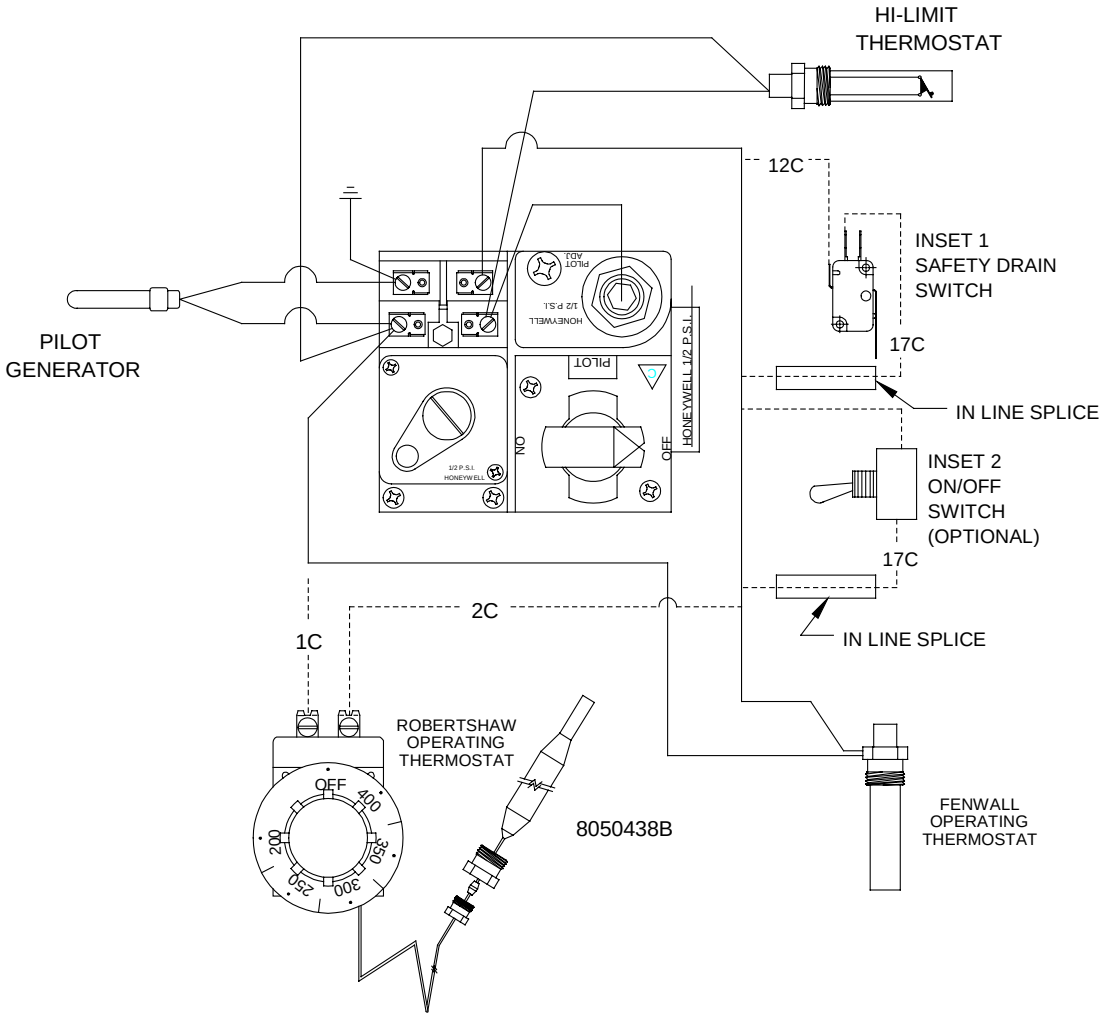
Unreliable flame

1. Open or grounded high limit
2. Loose/corroded wire connections
3. Low or no voltage out of thermopile
4. Bad gas valve

1.9.2 Problems Related to the Gas and/or Electrical Current

CONTROL CIRCUIT FOR

UGF-14, MJ35, AND FM35 MILLIVOLT SYSTEM



The main indicator of a gas or electrical circuit problem is an entire battery of fryers fails to light. Verify that the quick disconnect hose is properly connected, the fryer is plugged in, the main gas supply valve is open.

1.9.3 Problems Related to the Electrical Circuits

If gas is being supplied to the fryer, the next most likely cause of ignition failure is a problem in the millivolt 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

The drain linkage is attached to a microswitch, which prevents the fryer from operating if the drain valve is open.

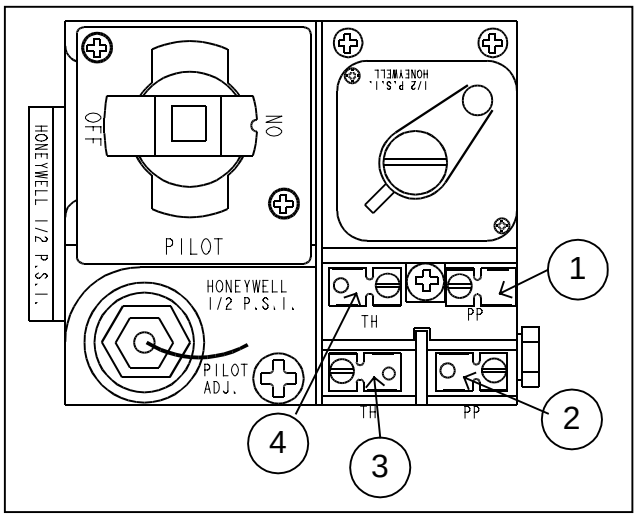
open.) If the valve is fully closed, or the fryer does not have a filtration system, refer to the trouble-shooting guides

1.9.4 Problems Related to the Gas Valve

If the problem is not in the millivolt circuit of the pilot system, it is most likely in the gas valve itself. Follow these steps to check a Honeywell valve:

1. **Complete System Check:** With thermostat contacts closed and gas cock dial "ON," main burner should ignite. If not measure across terminals 2 and 3 as indicated by the diagram. If the reading is more than 180MV, replace the gas valve.

2. **System Resistance Check:** With thermostat contacts closed and main burner "ON", measure the millivolts between terminals 1 and 3 as indicated by the diagram. Reading should not be greater than 220MV, If greater, re-check thermostat leads and connections. Replace with new or heavier gauge wires if necessary. If the reading is still greater than 220MV, replace the thermostat.



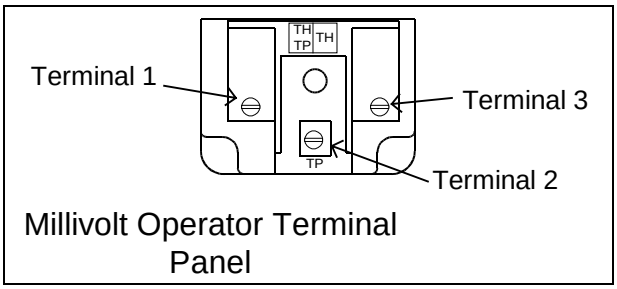
3. **Automatic Pilot Dropout Check:** With thermostat contacts open, depress gas cock knob with pilot lit until maximum millivolt output is observed between terminals 1 and 2. Extinguish the pilot and observe the meter. The sound of the pilot magnet dropping should be audible. The dropout should occur between 110 MV and 36MV. If the dropout occurs outside those limits, replace the gas valve.

Test	Meter Setting	Meter leads on terminals		Acceptable Results
1	MV	2	3	Less than 180MV
2	MV	1	3	Less than 220MV
3	MV	1	2	110-36 MV

Follow these steps to troubleshoot a Robertshaw Valve:

1. **Complete System check:** With thermostat contacts closed and gas cock dial "ON", main burner should ignite. If not, measure across TP and TH terminals. If the reading is more than 100 MV, replace the gas valve.

2. **System Resistance Check: With** thermostat contacts closed and main burner "ON", measure the millivolt reading between THTP and TH terminals. Reading should be less than 80MV. If not, recheck thermostat leads and connections. Replace with new or heavier gauge wires if necessary. If the reading is still greater than 80 MV, replace the thermostat.



Millivolt Operator Terminal Panel

3. **Automatic Pilot Dropout Check:** With thermostat contacts open, depress gas cock knob with pilot lit until maximum millivolt output is observed between terminals THTP and TP. Extinguish the pilot and observe the meter. The sound of the pilot magnet dropping should be audible. The dropout should occur between 120MV and 30MV. If outside these limits, change the gas valve.

Test	Meter Setting	Meter leads on terminals		Acceptable Results
1	MV	TP	TH	Less than 100MV
2	MV	THTP	TH	Less than 80MV
3	MV	THTP	TP	120-30 MV

1.9.5 Improper Burner Functioning

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 Chapter 5. 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 in unobstructed, the gas valve regulator is probably defective.

Occasionally a burner may apparently be operating correctly, but nevertheless the fryer has a ***slow recovery rate*** (the length of time required for the fryer to increase the oil temperature from 275ºF to 325ºF (135ºC to 163ºC). 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 the **Check Burner Manifold Pressure** procedure in the semi-annual checks and services section of Chapter 5.

1.9.6 Improper Temperature Control

Temperature control is a function of several interrelated components, each of which must operate correctly. The principle component is the thermostat.

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

Failure to Control at Setpoint

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.

1.9.7 Filtration Problems

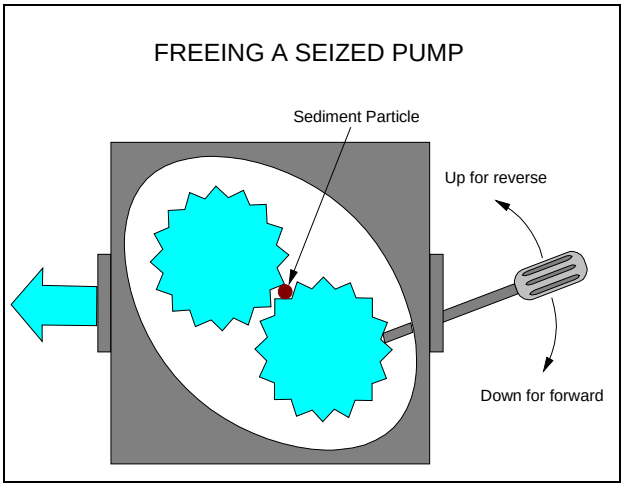
The majority of filtration problems arise from operator error. A common error is placing the filter paper on the bottom of the filter pan rather than over the filter screen.

When the complaint is "the pump is running, but no oil is being filtered," check the installation of the filter paper, including size. 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 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



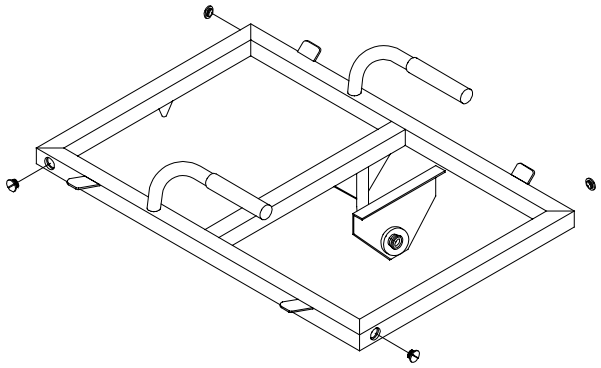
A pump seized by debris or hard shortening can usually be freed by manually moving the gears with a screwdriver or other instrument.

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.

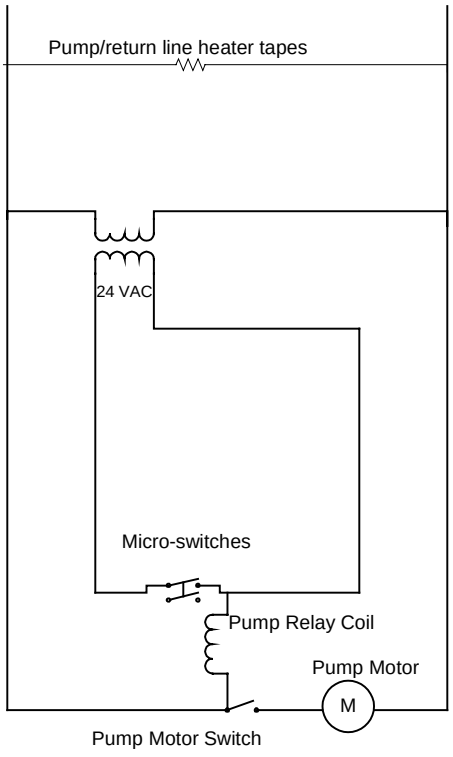
Possible problems with the Power Shower include clogged openings, shortening solidified in the tubes, missing clean-out plugs, and missing or worn O-rings. Cleaning the unit and replacing missing plugs and missing or worn O-rings will correct these problems.



Drain plugs on the corners of the power shower allow access to clear solidified shortening.

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 24 VAC source. They remain energized as long as the unit is plugged in.



Filter Magic Simplified Wiring Diagram

1.9.8 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 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, ensure that the drain tube runs downward from the drain along its whole length and has no low points where oil or shortening may accumulate.

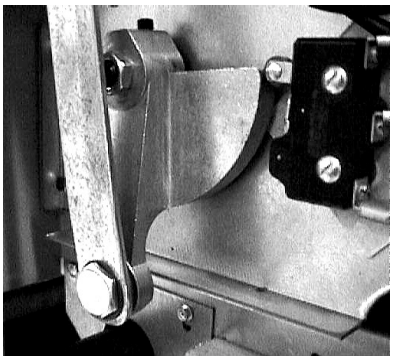
1.9.9 Basket Lift Malfunctions

35 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. 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 basket-lift timers, timing circuitry in the controller initiates and stops basket-lift operation based on variables set 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.

The basket lift consists of a cam and bell crank 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 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 down position. Note microswitch in upper right corner.

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

- Binding/jamming problems
- Motor 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.

Motor Problems

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.

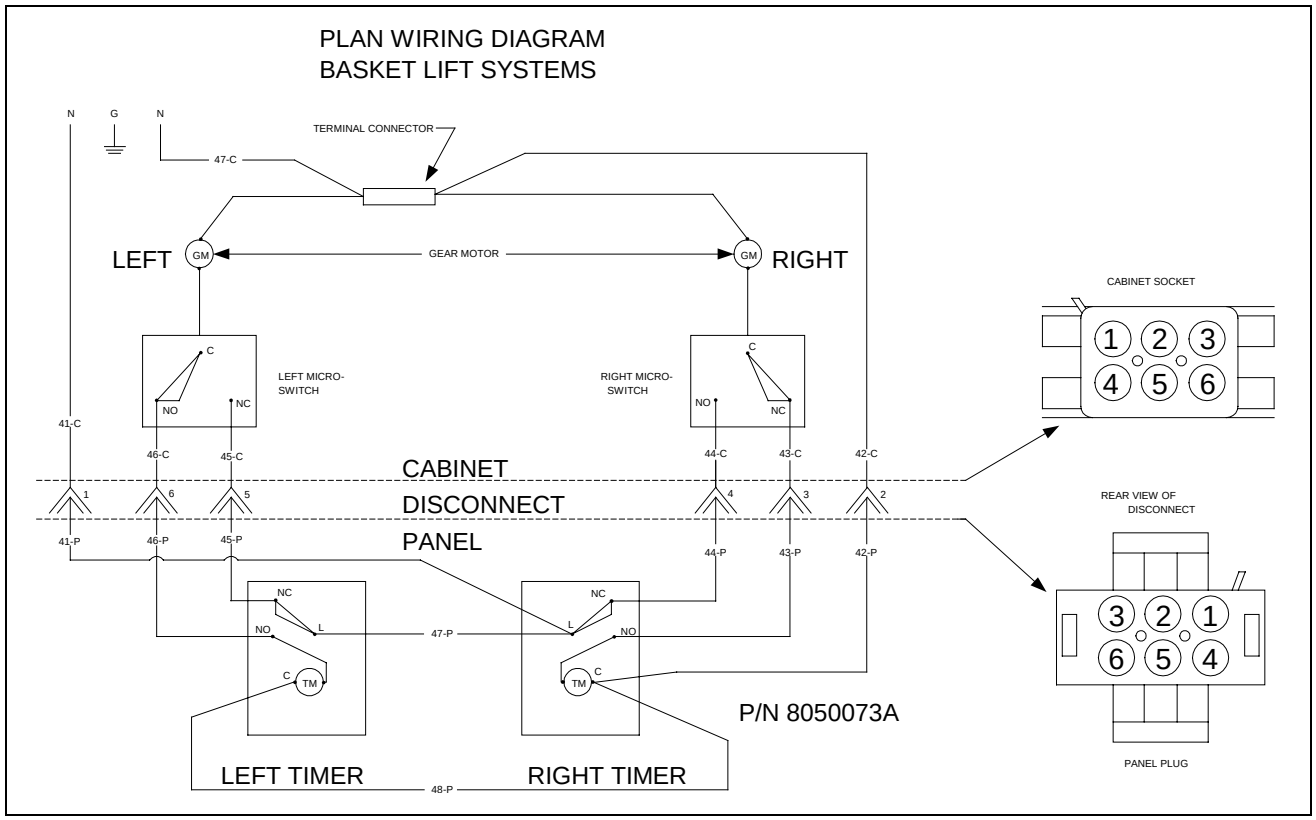
If power is reaching the motor but the motor fails to run, the motor is burned out and must be replaced.

Electrical Problems

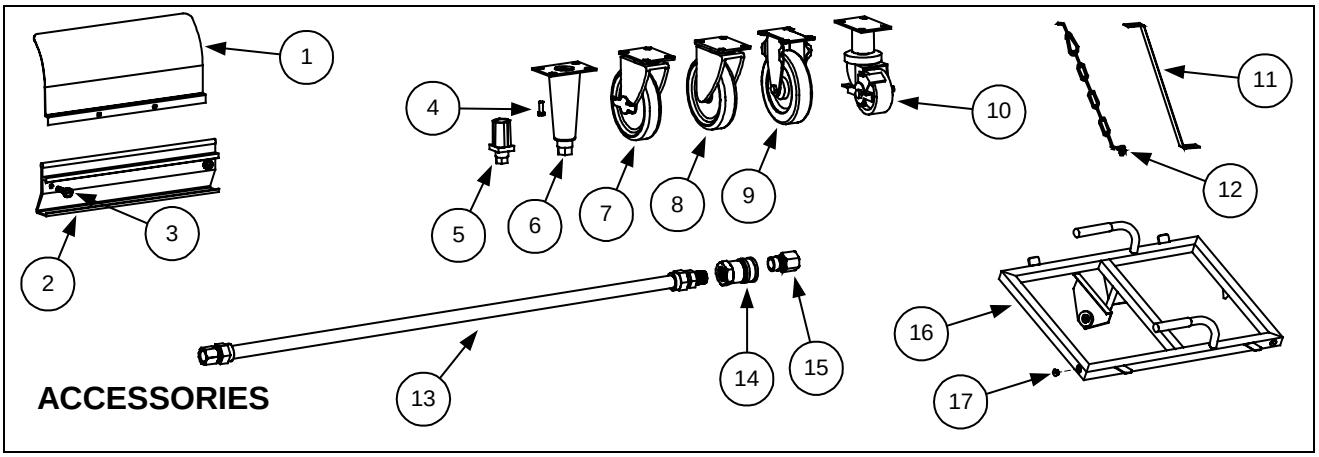
This category encompasses problems with the relays, microswitches, wiring, and controls. Troubleshooting the electronics of basket lifts is simply a process of verifying current flow through the individual components up to and including the motor. Using a multimeter set to the 250 VAC range, check the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

The wiring diagrams on the following pages identify the components and wiring connection points.

Bell Crank Basket Lift Wiring Diagram



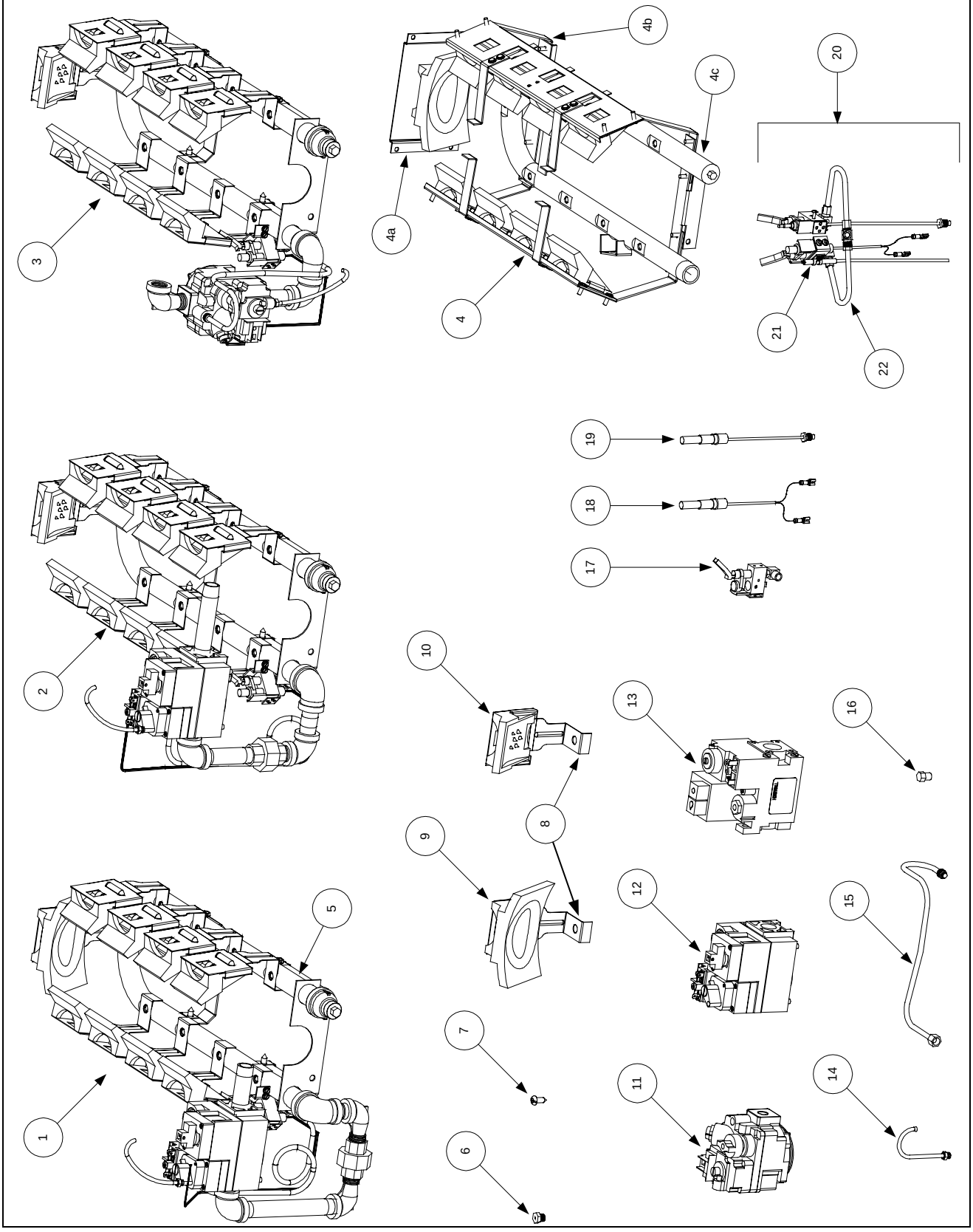
35 SERIES GAS FRYERS
CHAPTER 2: PARTS LIST



Item	Part #	Component
1	910-3557	Flue Heater Deflector
2	803-0028	Basket Hanger
3	809-0171	Basket Hanger Screw
4	809-0131	Screw, Leg Mounting
5	810-0007	Adjustable Leg, Filter Cabinet
6	806-3811	Legs (4 Per Set)
7	810-0357	Caster, 5” Swivel with Brake
8	810-0356	Caster, 5” Swivel without Brake
9	810-0378	Caster, 5” Rigid
10	810-0651	Caster, 3” with Brake, Filter Cabinet
11	826-1095	Anchor Strap Kit (for use on fryers equipped with legs only)
12	826-0900	Chain Restraint Kit (for use on fryers equipped with casters only)
13		Flexible Gas Line
	810-0085	1” X 48”
	810-0084	¾” X 48”
14		Quick Disconnect Fitting, Female
	810-0073	1”
	810-0072	¾”
15		Quick Disconnect Fitting, Male
	810-0074	1”
	810-0070	¾”
16	806-4542SP	Power Shower
17	809-0415	Screw, Power Shower Clean-out Port
*	816-0071	O-Ring, Power Shower
*	814-0001	Grip, Power Shower Handle
*	816-0025	Seal, Power Shower
*	803-0020	Twin Basket
*	803-0032	Basket Support Rack
*	803-0047	Frypot Clean-out Rod
*	812-1226	Drain Extension

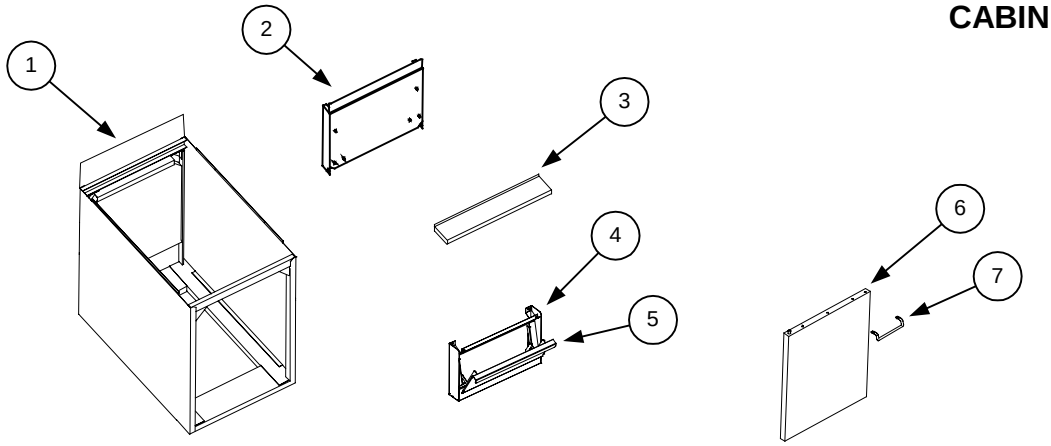
* Not illustrated.

BURNER COMPONENTS



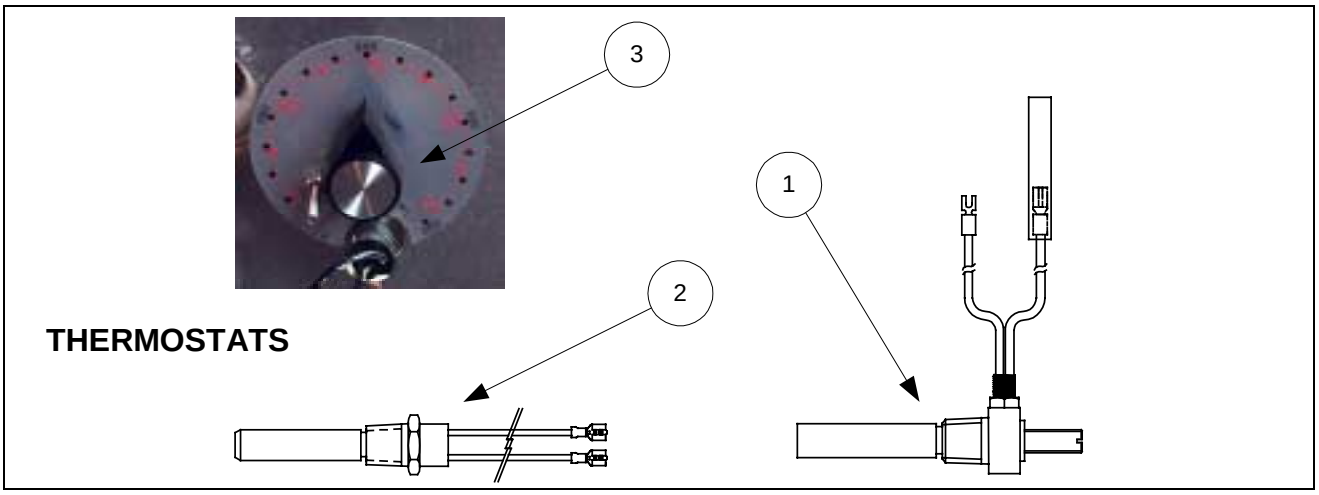
Item	Part #	Component
1		Burner Assembly, Non-CE MJ35, Complete with Gas Valve
	106-0132	Natural Gas (G20/G25)
	106-0235	Propane Gas (G31)
2		Burner Assembly, Non-CE FM35, Complete with Gas Valve
	106-0238	Natural Gas (G20/G25)
	106-0239	Propane Gas (G31)
3		Burner Assembly, Non-CE J2X, Complete with Gas Valve
	106-0237	Natural Gas (G20/G25)
	106-0236	Propane Gas (G31)
4	806-7222	Burner Assembly, CE MJ35, w/o Gas Valve or Piping
4a	910-2686	CE Rear Deflector (Target) Mounting Bracket
4b	806-7947	CE Deflector (Target) Assembly (Fits either side.)
4c	823-2319	Manifold, CE MJ35 Burner
5	810-1862	Manifold, Non-CE MJ/FM35 and J2X
6		Orifice
	810-0129	Natural Gas (G20/G25), 1.70mm
	810-0134	Propane Gas (G31), 1.05mm
7	809-0170	Screw, Deflector (Target) Mounting Bracket
8	910-1465	Bracket, Deflector (Target) Mounting
9	810-0424	Ceramic Deflector (Target), Large Rear
10	814-0034	Ceramic Deflector (Target), Side and Small Rear
11	Discontinued	Gas Valve, Robertshaw Millivolt (Use conversion kit 826-1579 for
		Natural Gas (G20/G25) or 826-1580 for Propane Gas (G31)
12		Gas Valve, Honeywell Millivolt, for use on Non-CE units
	807-1603	Natural Gas (G20/G25)
	807-1604	Propane Gas (G31)
13		Gas Valve, Honeywell Millivolt, for use on CE units
	806-7101	Natural Gas (G20/G25)
	806-7102	Propane Gas (G31)
14	810-0691	Vent Tube, Gas Valve
15	810-0703	Gas Line, 0.25-inch x 17.50-inch
16	813-0154	Plug, Gas Pressure Test Port
17		Pilot Assembly (Does not include thermopile.)
	812-1286	Natural Gas (G20/G25)
	812-1287	Propane Gas (G31)
18	810-1873	Thermopile, Double-Lead with Push-on Terminals
*	810-0159	Thermopile, Double-Lead with Forked Terminals
19	810-0617	Thermopile, Single Screw-in Lead with Standard-size Barrel
*	810-0162	Thermopile, Screw-in with Small Barrel (also requires adapter 810-0425)
20		Pilot and Thermopile Assembly, CE Dual
	106-0259	Natural Gas (G20/G25)
	106-0260	Propane Gas (G31)
21	807-1906	Element, Piezo Igniter (Trigger is Part Number 810-1001)
22	810-1173	Gas Line, 0.25-inch x 8.5-inch

CABINETRY



Item	Part #	Component
1		Cabinet Assembly
	806-4598-1SP	Stainless Steel
	806-4598SP	Cold Rolled Steel (Enameled)
2		Flue Cap
	910-5040	Single
	910-5041	Double
	910-5042	Triple
3		Top Cap
	824-0442	Single
	824-0443	Double
	824-0444	Triple
4		Control Panel Assembly with Thermostat Access Door
	806-5287	Single
	806-4733	Double
	806-4734	Triple
5	910-4480	Thermostat Access Door
6		Door Assembly
	806-6405	Short, Cold Rolled Steel (for use on G-Series units only)
	806-8320	Short, Stainless Steel for use on G-Series units only)
	806-3337	Long, Cold Rolled Steel (for use on all except G-Series units)
	806-3338	Long, Stainless Steel (for use on all except G-Series units)
7	910-3672	Handle, Door (wire form)
*	810-0275	Door Hinge Pin Spring Lock
*	806-4487	Door Pin Assembly
*	900-0734-1	Hinge, Door
*	810-0066	Magnet, Door
*	910-6039	Trough, Backsplash
*	910-6284	Cover, Frypot

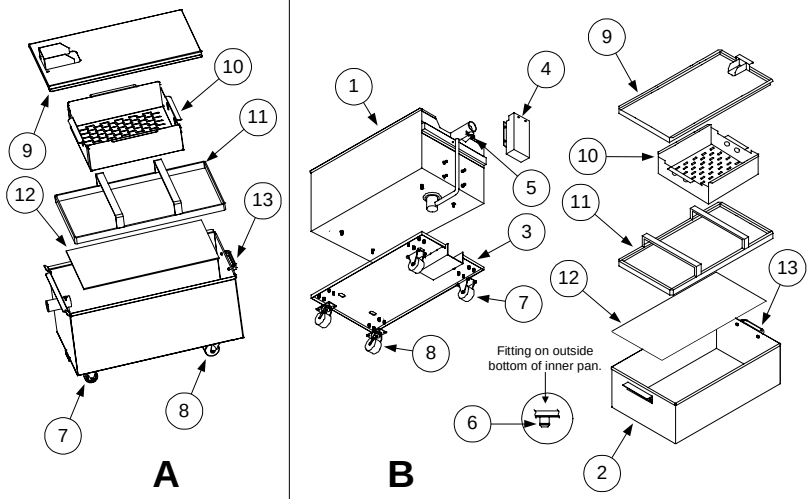
* Not Illustrated.



Item	Part #	Component
1	807-0099	Thermostat 3 Fenwal 17102
*	812-1284	Thermocouple Assy, Honeywell CE
*	810-1152	Thermocouple Assy, Honeywell CE
2	826-1177	Thermostat, 425 Degree Hi-Limit
*	806-7546	Thermostat Hi-L MJ35/GF14
*	806-5816	Thermostat Assy W/Inline Connector
*	806-7550	Thermostat Assy, CE 45 Hi-Limit
3	806-0087	Thermostat Dial Plate and Stop Assembly, MJ35
*	810-0334	Thermostat Knob for Fryers With Control Panel
*	900-0031	Plug Button
*	807-0123	Heyco Bushing
*	809-0089	Screw, Dial Plate
*	810-0345	Flexible Extension Shaft for Pre-AN Series
*	810-0009	Flexible Extension Shaft for Series AN and Later

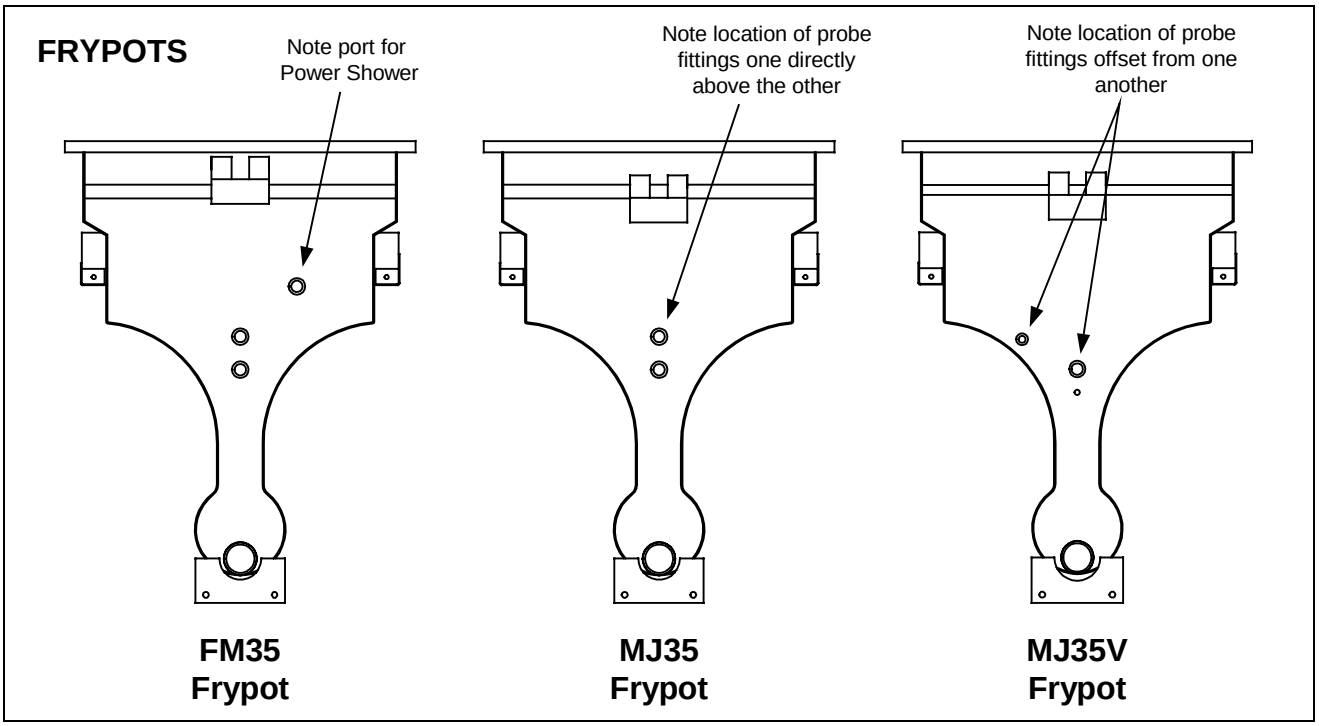
* Not Illustrated.

FILTRATION



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)
*	807-0800	Transformer 120VAC/24VAC
*	807-0012	Pump Relay
*	807-1197-2	Pump and Gasket Kit
*	807-1197	Pump Motor, 120V
*	807-1266	Pump Motor, 240V

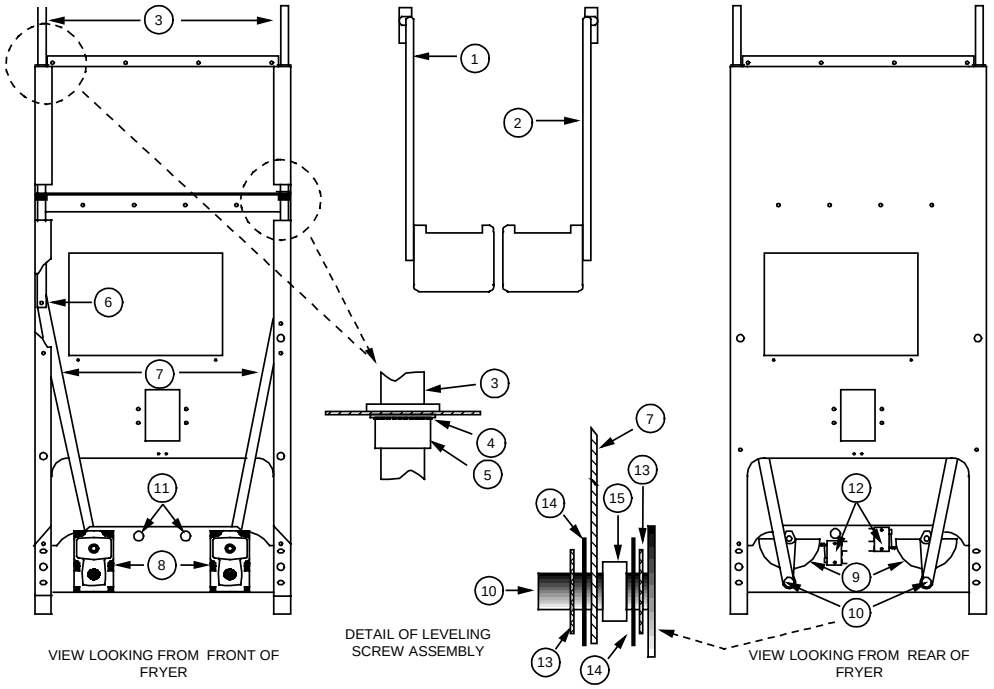
* Not Illustrated.



Item	Part #	Component
		Frypots without Insulation
	823-1111SP	Frypot without Insulation, Stainless Steel, FM35
	823-0981SP	Frypot without Insulation, Stainless Steel, MJ35
	823-2365SP	Frypot without Insulation, Stainless Steel, MJ35V
	823-1112	Frypot without Insulation, Cold Rolled Steel, FM35
	823-0980SP	Frypot without Insulation, Cold Rolled Steel, MJ35
	823-2364SP	Frypot without Insulation, Cold Rolled Steel, MJ35V
		Frypot with Flue and Insulation Installed
	806-4080SP	Frypot Assy, Stainless Steel, FM35
	806-4093SP	Frypot Assy, Stainless Steel, FM35 (Canadian units only)
	806-3942SP	Frypot Assy, Stainless Steel, MJ35
	806-7709SP	Frypot Assy, Stainless Steel, MJ35V
	806-4081SP	Frypot Assy, Cold Rolled Steel, FM35
	806-4092SP	Frypot Assy, Cold Rolled Steel, FM35 (Canadian units only)
	806-3943SP	Frypot Assy, Cold Rolled Steel, MJ35
	806-7708SP	Frypot Assy, Cold Rolled Steel, MJ35V
		Flue Assembly with Insulation
*	806-0094	MJ35 (Canadian units only)
*	806-0289SP	J2XLR (Canadian units only)
*	806-2490SP	MJ35 (has no Rear Deflector Box)
*	806-4082	FM35 (has Rear Deflector Box)
*	806-4094	FM35 (Canadian units only)

* Not Illustrated.

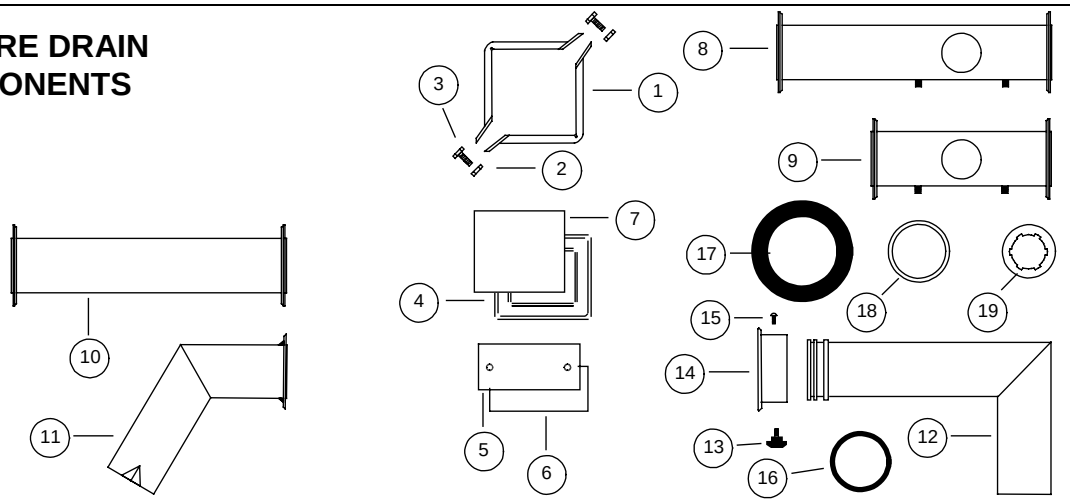
BASKET LIFT



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	Gear Motor, 120v Basket Lift
8	807-0108	Gear Motor, 240v Basket Lift
9	810-0052	Bellcrank
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
15	810-0220	Spacer, Tubular
*	900-3783	Panel, Access, Cold Rolled Steel
*	910-3783	Panel, Access, Stainless Steel
*	806-2079	Wiring Harness, Basket Lift Motor
*	806-7019	Wiring Harness, Non-Modular Basket Lift
*	809-0113	Screw, Gear Motor Mounting, Slot Head, 8-32 X 1 ½”
*	809-0503	Screw, Gear Motor Mounting, Hex Head, 8-32 X 1 ½”

* Not illustrated.

SQUARE DRAIN COMPONENTS



Item	Part #	Component
1	810-0396	Clamp Section (Requires 2 Per Connection)
2	809-0071	Nut, ¼–20
3	826-1375	Screw, 10–32 X ¾
4	816-0103	Seal (Connection Gasket)
5	900-0758	Cover, Clean-out
6	816-0021	Gasket, Clean-out
*	826-1382	Wing Nut, Clean-out Cover Retaining
7	900-0757	Cover, Drain End
		Drain Sections
8	823-0717	Full Vat, 15.5” Long
9	823-0718	End, Full Vat, 8.12” Long
10	823-0731	Extension, Spreader Cabinet, 15.5” Long
11	823-0719	Drain Outlet, Fixed
	806-4068	**Drain Outlet Assembly, Swivel, Complete**
12	823-1091	Drain Tube, Swivel
13	810-0388	Knob, Clamping
14	823-1092	Collar, Drain
15	809-0115	Screw, 10–32
16	816-0083	O-Ring, 2.5” Id
17	816-0092	Grommet, Drain Tube
18	826-1345	Washer, Drain Tube Retaining
19	809-0347	Nut, Drain Tube Retaining