

# INSTALLATION, OPERATION, SERVICE, AND PARTS MANUAL

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## 47 SERIES GAS FRYERS



 ***Frymaster***<sup>®</sup>

CE

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 **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 numerique n'emet pas de bruits radioelectriques depassany les limites de classe A et B prescrites dans la norme NMB-003 edictee par le Ministre des Communcations 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.**

# 47 SERIES GAS FRYERS

## CHAPTER 1: GENERAL INFORMATION

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### 1.1 Parts Ordering and Service Information

In order to assist you quickly, the Frymaster Factory Authorized Service Center (FASC) or Service Department representative requires certain information about your equipment. Most of this information is printed on a data plate affixed to the inside of the fryer door. Part numbers are found in the Installation, Operation, Service, and Parts Manual.

Parts orders may be placed directly with your local FASC or distributor. Included with fryers when shipped from the factory is a list of **Frymaster** FASCs. If you do not have access to this list, contact the **Frymaster** Service Department at 1-800-551-8633 or 1-318-865-1711.

When ordering parts, the following information is required:

Model Number: \_\_\_\_\_  
Serial Number: \_\_\_\_\_  
Type of Gas or Voltage: \_\_\_\_\_  
Item Part Number: \_\_\_\_\_  
Quantity Needed: \_\_\_\_\_

Service information may be obtained by contacting your local FASC/Distributor. Service may also be obtained by calling the **Frymaster** Service Department at 1-800-551-8633 or 1-318-865-1711.

When requesting service, please have the following information ready:

Model Number: \_\_\_\_\_  
Serial Number: \_\_\_\_\_  
Type of Gas: \_\_\_\_\_

In addition to the model number, serial number, and type of gas, please be prepared to

describe the nature of the problem and have ready any other information that you think may be helpful in solving your problem.

**RETAIN AND STORE THIS MANUAL IN A SAFE PLACE FOR FUTURE USE.**

### 1.2 Safety Information

Before attempting to operate your unit, read the instructions in this manual thoroughly.

Throughout this manual, you will find notations enclosed in double-bordered boxes similar to the one below.

**CAUTION** boxes contain information about actions or conditions that *may cause or result in a malfunction of your system.*



**WARNING** boxes contain information about actions or conditions that *may cause or result in damage to your system,* and which may cause your system to malfunction.



**DANGER** boxes contain information about actions or conditions that *may cause or result in injury to personnel,* and which may cause damage to your system and/or cause your system to malfunction.



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### CHAPTER 1: GENERAL INFORMATION

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Your fryer is equipped with automatic safety features:

1. High temperature detection shuts off gas to the burner assembly should the controlling thermostat fail.
2. An optional safety switch built into the drain valve prevents burner ignition with the drain valve even partially open.

#### 1.3 European Community (CE) Specific Information

The European Community (CE) has established certain specific standards regarding equipment of this type. Whenever a difference exists between CE and non-CE standards, the information or instructions concerned are identified by means of shadowed boxes similar to the one below.

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

#### 1.4 Equipment Description

Fryers in the 47 Series are of an open-pot design with no tubes and have a hand-sized opening into the deep cold zone, which makes cleaning the stainless frypot quick and easy. Units consisting of a battery of two or more fryers may also be equipped with a FootPrint

III built-in filtration system which prolongs the useful life of your oil or shortening.

Fryers equipped with FootPrint III built-in filtration systems are shipped completely assembled. Fryers without the FootPrint III require installation of legs or optional casters at point of use. All fryers are shipped with a package of standard accessories. Each fryer is adjusted, tested, and inspected at the factory before crating for shipment.

Frypots are constructed of welded, heavy-gauge stainless steel. Heating is supplied by a burner assembly having multiple gas jets that are focused on ceramic targets located around the lower side of the frypot. The burner assembly can be configured for natural gas, propane, or manufactured gas as required by the customer. A drain is tapped into the center of the frypot, with a front-controlled manual ball valve.

Each fryer is equipped with a thermostat probe for precise temperature control. The probe is located on the centerline of the frypot for rapid response to changes in loads and to provide the most accurate temperature measurement.

47 Series fryers may be equipped with an optional Melt Cycle feature which pulses the burner on and off at a controlled rate. The melt cycle feature is designed to prevent scorching and uneven heating of the frypot for customers who use solid shortening.

The controls on your fryer vary depending on the model and configuration purchased. Control options include one or more thermostat controls (standard), digital controllers, basket lift timers, or Computer Magic III computers. Each type is covered in detail in Chapter 3, Fryer Operating Instructions.

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### CHAPTER 1: GENERAL INFORMATION

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#### 1.5 Installation, Operating, and Service Personnel

Operating information for *Frymaster™* equipment has been prepared for use by qualified and/or authorized personnel only, as defined in Section 1.6.

**All installation and service on *Frymaster™* equipment must be performed by qualified, certified, licensed, and/or authorized installation or service personnel, as defined in Section 1.6.**

#### 1.6 Definitions

##### QUALIFIED AND/OR AUTHORIZED OPERATING PERSONNEL

Qualified/authorized operating personnel are those who have carefully read the information in this manual and have familiarized themselves with the equipment functions, or who have had previous experience with the operation of the equipment covered in this manual.

##### QUALIFIED INSTALLATION PERSONNEL

Qualified installation personnel are individuals, or firms, corporations, or companies which, either in person or through a representative, are engaged in and are responsible for the installation of gas-fired appliances. Qualified personnel must be experienced in such work, be familiar with all gas precautions involved, and have complied with all requirements of applicable national and local codes.

##### QUALIFIED SERVICE PERSONNEL

Qualified service personnel are those familiar with *Frymaster™* equipment and who have

been authorized by **Frymaster** Corporation to perform service on *Frymaster™* equipment. All authorized service personnel are required to be equipped with a complete set of service and parts manuals, and to stock a minimum amount of parts for *Frymaster™* equipment.

A list of **Frymaster** Factory Authorized Service Centers (FASC) was included with the fryer when shipped from the factory. ***Failure to use qualified service personnel will void the Frymaster Warranty on your equipment.***

#### 1.7 Shipping Damage Claim Procedure

Your *Frymaster™* equipment was carefully inspected and packed before leaving the factory. The transportation company assumes full responsibility for safe delivery upon its acceptance of the equipment for transport.

##### **What to do if your equipment arrives damaged:**

- 1. File a claim for damages immediately**, regardless of the extent of damages.
- 2. Inspect for and record all visible loss or damage**, and ensure that this information is noted on the freight bill or express receipt and is signed by the person making the delivery.
- 3. Concealed loss or damage** that was unnoticed until the equipment was unpacked should be recorded and reported to the freight company or carrier **immediately** upon discovery. A concealed damage claim must be submitted within 15 days of the date of delivery. Ensure that the shipping container is retained for inspection.

<b>FRYMASTER DOES NOT ASSUME RESPONSIBILITY FOR DAMAGE OR LOSS INCURRED IN TRANSIT.</b>
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# 47 SERIES GAS FRYERS

## CHAPTER 2: INSTALLATION INSTRUCTIONS

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### 2.1 General Installation Requirements

**PROPER INSTALLATION IS ESSENTIAL FOR EFFICIENT, TROUBLE-FREE OPERATION OF YOUR FRYER. ANY UNAUTHORIZED ALTERATIONS MADE TO THIS EQUIPMENT WILL VOID THE FRYMASTER WARRANTY.**

Upon arrival, inspect the fryer carefully for visible or concealed damage. (See **Shipping Damage Claim Procedure** in Chapter 1.)

#### CLEARANCE AND VENTILATION

The fryer(s) must be installed with a 6" (150 mm) clearance at both sides and back when installed adjacent to combustible construction; no clearance is required when installed adjacent to noncombustible construction. A minimum of 24" (600 mm) clearance should be provided at the front of the fryer.

One of the most important considerations of efficient fryer operation is ventilation. Make sure the fryer is installed so that products of combustion are removed efficiently, and that the kitchen ventilation system does not produce drafts that interfere with proper burner operation.

The fryer flue opening must not be placed close to the intake of the exhaust fan, and the fryer must never have its flue extended in a "chimney" fashion. An extended flue will change the combustion characteristics of the fryer, causing longer recovery time. It also frequently causes delayed ignition. To provide the airflow necessary for good combustion and burner operation, the areas surrounding the fryer front, sides, and rear must be kept clear and unobstructed.

Fryers must be installed in an area with an adequate air supply and adequate ventilation.

Adequate distances must be maintained from the flue outlet of the fryer to the lower edge of the ventilation filter bank. Filters should be installed at an angle of 45°. Place a drip tray beneath the lowest edge of the filter. For U.S. installation, NFPA standard No. 96 states, "A minimum distance of 18 in. (450 mm) should be maintained between the flue outlet and the lower edge of the grease filter." *Frymaster recommends that the minimum distance be 24 in. (600 mm) from the flue outlet to the bottom edge of the filter when the appliance consumes more than 120,000 BTU per hour.*

Information on construction and installation of ventilating hoods can be found in the NFPA standard cited above. A copy of the standard may be obtained from the National Fire Protection Association, Battery March Park, Quincy, MA 02269.

#### **DANGER**

**Do not attach an apron drainboard to a single fryer. The fryer may become unstable, tip over, and cause injury. The appliance area must be kept free and clear of combustible material at all times.**

#### NATIONAL CODE REQUIREMENTS

The type of gas for which the fryer is equipped is stamped on the data plate attached to the inside of the fryer door. Connect a fryer stamped "NAT" only to natural gas, those stamped "PRO" only to propane gas, and those stamped "MFG" only to manufactured gas.

Installation shall be made with a gas connector that complies with national and local codes, and, where applicable, CE codes. Quick-disconnect devices, if used, shall likewise

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### CHAPTER 2: INSTALLATION INSTRUCTIONS

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comply with national, local, and, if applicable, CE codes.

#### ELECTRICAL GROUNDING REQUIREMENTS

All electrically operated appliances must be grounded in accordance with all applicable national and local codes, and, where applicable, CE codes. A wiring diagram is located on the inside of the fryer door. Refer to the rating plate on the inside of the fryer door for proper voltages.

 **DANGER**

**If this appliance is equipped with a three-prong (grounding) plug, it must be plugged directly into a properly grounded receptacle.**

**Do not cut or remove the grounding prong from the plug.**

 **DANGER**

**This equipment requires electrical power for operation.**

**Place the gas control valve in the OFF position in case of a prolonged power outage.**

**Do not attempt to use the equipment during a power outage.**

#### FCC COMPLIANCE

The user is cautioned that any changes or modifications to Frymaster computers not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Frymaster computers have been tested and found to comply with the limits for a Class A

digital device, pursuant to Part 15 of the FCC rules. While these devices are verified as Class A devices, they have been shown to meet the Class B limits. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of the equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

If necessary, the user should consult the dealer or an experienced radio and television technician for additional suggestions.

The user may find the booklet "How to Identify and Resolve Radio-TV Interference Problems" helpful. It is prepared by the Federal Communications Commission and is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

#### 2.2 Caster/Leg Installation

Depending upon the specific configuration ordered your fryer may have been shipped without installed casters or legs. If casters or legs are installed, you may skip this section and proceed to section 2.3, Pre-Connection Preparations.

**If your fryer requires the installation of casters/legs, install them in accordance with the instructions included in your accessory package.**

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### CHAPTER 2: INSTALLATION INSTRUCTIONS

#### 2.3 Pre-Connection Preparations

**⚠ DANGER**  
**Do not connect fryer to gas supply before completing each step in this section.**

After the fryer has been positioned under the fry station exhaust hood, ensure the following has been accomplished:

1. Adequate means must be provided to limit the movement of fryers without depending upon the gas line connections. If a flexible gas hose is used, a restraining cable must be connected at all times when the fryer is in use. The restraining cable and installation instructions are packed with the flexible hose in the accessories box that was shipped with your unit.
2. **Single unit** fryers must be stabilized by installing restraining chains on fryers equipped with casters or anchor straps on fryers equipped with legs. Follow the instructions shipped with the casters/legs to properly install the chains or straps.
3. Level fryers equipped with legs by screwing out the legs approximately 1 inch then adjusting them so that the fryer is level and at the proper height in the exhaust hood. Frymaster recommends that the minimum distance from the flue outlet to the bottom edge of the filter be 24 in. (600 mm) when the appliance consumes more than 120,000 BTU per hour.

For fryers equipped with casters, there are no built-in leveling devices. The floor where the fryer is to be installed must be level.

4. Test the fryer electrical system:
  - a. Plug the fryer electrical cord(s) into a grounded electrical receptacle.
  - b. Place the power switch in the **ON** position.
    - For fryers equipped with thermostat controls, verify that the power and heat lights are lit.
    - For fryers having computer or digital displays, verify that the display indicates CYCL.
  - c. Place the fryer power switch in the **OFF** position. Verify that the power and heat lights are out, or that the display is blank.
5. Refer to the data plate on the inside of the fryer door to determine if the fryer burner is configured for the proper type of gas before connecting the fryer quick-disconnect device or piping from the gas supply line.
6. Verify the minimum and maximum gas supply pressures for the type of gas to be used in accordance with the accompanying tables.

<b>Non-CE Standard</b>		
<b>for Incoming Gas Pressures</b>		
<b>Gas</b>	<b>Minimum</b>	<b>Maximum</b>
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

## 47 SERIES GAS FRYERS CHAPTER 2: INSTALLATION INSTRUCTIONS

<b>CE Standard for Incoming Gas Pressures</b>					
<b>Gas</b>	<b>Pressure (mbar)<sup>(1)</sup></b>	<b>Orifice Diameter</b>		<b>Regulator Pressure</b>	<b>Consumption</b>
		<b>Single Vat</b>	<b>Dual Vat</b>		
G20	20	18 x 1,40 mm	18 x 1,30 mm	7,5 mbar	3 m <sup>3</sup> /h
G25	20 - 25	18 x 1,40 mm	18 x 1,30 mm	10 mbar	3,5 m <sup>3</sup> /h
G31	37 - 50	18 x 0,86 mm	18 x 0,80 mm	20,6 mbar	2,21 kg/h

(1) mbar = 10,2 mm CE

7. For fryers equipped with a FootPrint III system or basket lifts, plug the electrical cord(s) into a power receptacle behind the fryer.

### 2.4 Connection to Gas Line

The 47 Series fryer has received the CE mark for the countries and gas categories indicated in the accompanying table.

<b>CE Approved Gas Categories</b>			
<b>Country</b>	<b>Category</b>	<b>Gas</b>	<b>Pressure (mbar)</b>
BE	I2E+(S)	G20/G25	20/25
	I3P	G31	37
DE	I2 ELL	G20/G25	20
	I3P	G31	50
DK-GR-IT	I2 H	G20	20
FR	II2Esi3P	G20/G25	20/25
		G31	37 ET 50
LU	I2E	G20/G25	20/25
ES	II2H3P	G20	20
		G31	37 ET 50
NL	II2L3P	G25	25
		G31	50
IE-PT-GB	II2H3P	G20	20
		G31	37

The size of the gas line used for installation is very important. If the line is too small, the gas

pressure at the burner manifold will be low. This may cause slow recovery and delayed ignition. The incoming gas supply line should be a minimum of 1/2" (38 mm) in diameter. Refer to the chart below for the minimum sizes of connection piping.

<b>Gas Connection Pipe Sizes</b>			
(Minimum incoming pipe size should be 1 1/2" (38 mm))			
<b>Gas</b>	<b>Single Unit</b>	<b>2 - 3 Units</b>	<b>4 or more units*</b>
Natural	3/4" (19 mm)	1" (25 mm)	1 1/4" (33 mm)
Propane	1/2" (13 mm)	3/4" (19 mm)	1" (25 mm)
Manufactured	1" (25 mm)	1 1/4" (33 mm)	1 1/2" (38 mm)

\* For distances of more than 20 feet (6 m) and/or more than 4 fittings or elbows, increase the connection by one pipe size.

Before connecting new pipe to your unit, the pipe must be thoroughly blown out to remove any foreign particles. If these foreign particles get into the burner and controls, they will cause improper and sometimes dangerous operation.

**CE Standard**  
Ensure airflow required for air combustion supply is 2m<sup>3</sup>/h times kW.

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### CHAPTER 2: INSTALLATION INSTRUCTIONS

1. Connect the quick-disconnect hose to the fryer quick-disconnect fitting under the front of the fryer and to the building gas line.

**NOTE:** Some fryers are configured for a rigid connection to the gas supply line. These units are connected to the gas supply line at the rear of the unit.

When using thread compound, use very small amounts on male threads only. Use a pipe thread compound that is not affected by the chemical action of LP gases (Loctite™ PST56765 Sealant is one such compound). **DO NOT** apply compound to the first two threads. This will ensure that the burner orifices and control valve do not become clogged.

2. Open the gas supply to the fryer and check all piping, fittings, and gas connections for leaks. A soap solution should be used for this purpose.

**⚠ DANGER**

**Never use matches, candles, or any other ignition source to check for leaks.**

**If gas odors are detected, shut off the gas supply to the fryer at the main shut-off valve and contact the local gas company or an authorized service agency for service.**

3. Close the fryer drain valve and fill the frypot with water and boil-out solution to the bottom OIL-LEVEL line at the rear of the frypot. Light the fryer and perform the boil-out procedures that are described in the “Lighting Instructions” and “Boiling

Out the Frypot” topics found in Chapter 3 of this manual.

**⚠ WARNING**

**“Dry-firing” your unit will cause damage to the frypot. Always ensure that melted shortening, cooking oil, or water and boil-out solution is in the frypot before firing your unit for any extended period.**

4. It is suggested that the burner manifold pressure be checked at this time by the local gas company or an authorized service agent. Refer to “Check Burner Manifold Pressure” in Chapter 5 of this manual for the proper procedure.

<b>Non-CE Standard Burner Manifold Gas Pressures</b>	
<b>Gas</b>	<b>Pressure</b>
Natural	3.5" W.C. 0.8 kPa
LP	8.25" W.C. 2.5 kPa

<b>CE Standard Burner Manifold Gas Pressures</b>	
<b>Gas</b>	<b>Pressure (mbar)</b>
Natural Gas Lacq (G20) under 20 mbar	8
Natural Gas Gronique* (G25) under 25 mbar	10
Propane (G31) under 37 or 50 mbar	21

\* Belgian G25 = 7,0 mbar

5. Check the thermostat calibration or computer programmed temperature.

## 47 SERIES GAS FRYERS CHAPTER 2: INSTALLATION INSTRUCTIONS

- For units equipped with thermostat controls, refer to the Thermostat Calibration instructions in Chapter 7.
- For units equipped with other types of controllers, refer to the Set Point programming instructions in Chapter 3.

### 2.5 Converting to Another Gas Type

47 Series fryers are configured at the factory for either natural gas or Propane (LP) gas.

A gas conversion kit must be installed by a Factory Authorized Service Center technician when converting from one type of gas to another.



#### **DANGER**

**Switching to a different type of gas without installing the proper conversion kit may result in fire or explosion! NEVER attach a fryer to a gas supply for which it is not configured.**

#### **CE Gas Conversion Kits**

##### **Full Vat**

**NATURAL TO LP:** 826-1462 (INCLUDES .86MM ORIFICE, P/N 810-0340)

**LP TO NATURAL:** 826-1463 (INCLUDES 1.40MM ORIFICE, P/N 810-0330)

##### **Dual Vat**

**NATURAL TO LP:** 826-1464 (INCLUDES .80MM ORIFICE, P/N 810-1040)

**LP TO NATURAL:** 826-1465 (INCLUDES 1.30MM ORIFICE, P/N 810-0131)

#### **CE Gas Conversion Instructions**

1. Between G20- and G25-type Natural Gas, adjust the gas pressure at the regulator. (Refer to the CE Standard Burner Manifold Gas Pressure Chart.) Do not change the orifice.
2. Between a 2<sup>nd</sup> family gas (G20 or G25) and a 3<sup>rd</sup> family gas (G31 Propane):
  - a. Change the orifices.
  - b. Change the pilot.
  - c. Change the gas valve regulator.
  - d. Adjust the manifold pressure.
3. Remove the rating plate and install a new one. Call your local service agency or KES for a new rating plate.
4. If the destination language changes, replace the labels. Call your local service agency or KES for a label kit. The language of reference will be on the corner of the label.

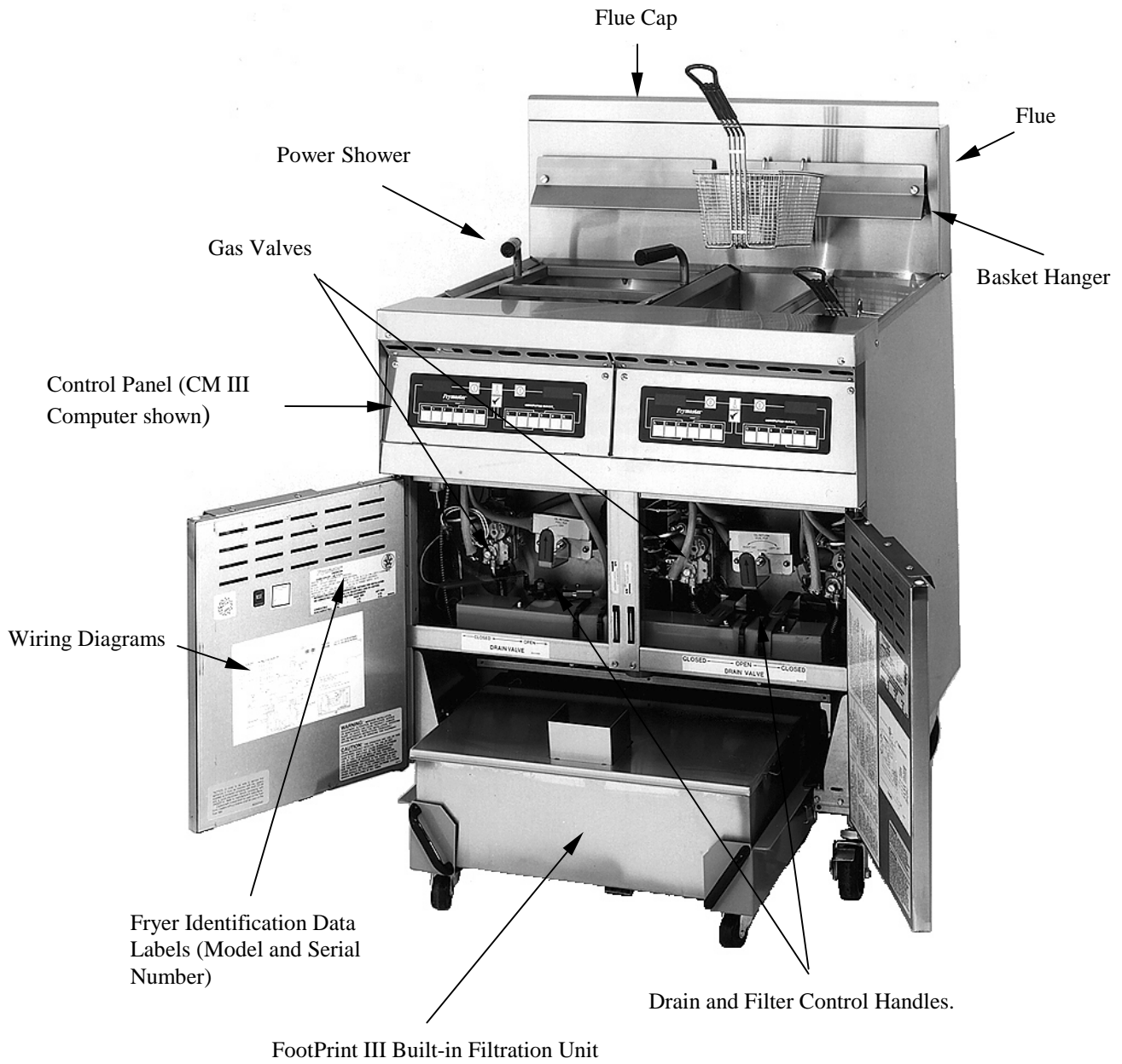
#### **NON-CE GAS CONVERSION KITS**

**CONTACT *Frymaster* at 1-800-551-8633 to determine the specific gas conversion components required for this equipment.**

# 47 SERIES GAS FRYERS

## CHAPTER 3: OPERATING INSTRUCTIONS

### FINDING YOUR WAY AROUND THE 47 SERIES FRYER



## 47 SERIES GAS FRYERS

### CHAPTER 3: OPERATING INSTRUCTIONS

#### 3.1 Start-Up Procedure

##### CAUTION

If this is the first time the fryer is being used after installation, refer to Section 3.2, Boil-Out Procedure.

##### CAUTION

The cooking oil/shortening capacity of the 47 Series fryer is 50 lbs (25 liters) at 70°F (21°C) for a full pot and 25 lbs (12.5 liters) at 70°F (21°C) for each half of a split pot.

Before lighting the fryer, make sure the fryer is OFF and the frypot drain valve(s) is/are closed. Remove the basket support rack(s), if installed, and fill the frypot to the bottom OIL-LEVEL line.

If solid shortening is being used, make sure it is packed down into the bottom of the frypot.

For units equipped with Pilot Systems, the pilot must be manually lit before the fryer can be placed into operation. The pilot on fryers with Electronic Ignition is automatically lit when the unit is turned on.

##### Non-CE Standard

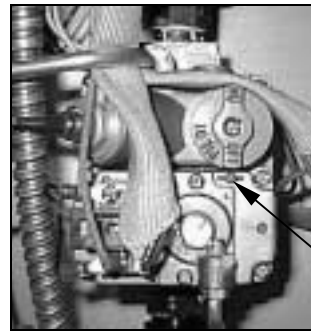
Units configured to Non-CE standards are equipped with Robertshaw valves.

##### CE Standard

Units configured to CE standards are equipped with Honeywell valves.

#### Lighting the Robertshaw Valve Pilot:

1. Ensure power to the unit is OFF.
2. Turn the gas valve knob to the OFF position. Wait 5 minutes, then turn the knob to the PILOT position.



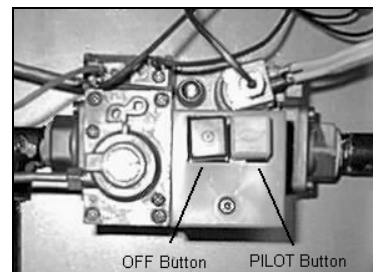
Knob is shown in OFF position.

Note index mark.

3. Place a flame near the pilot assembly, push and hold the knob in, light the pilot, and continue to depress the knob for at least 60 seconds after the pilot lights. Failure to hold the knob in long enough will cause the pilot to go out when the knob is released. If the pilot goes out when the knob is released, wait at least 5 minutes then repeat this step.
4. Turn the gas valve knob to the ON position.

#### Lighting the Honeywell Valve Pilot:

1. Ensure power to the unit is OFF.
2. Press the OFF (red) button. Wait 5 minutes.



OFF Button PILOT Button



## 47 SERIES GAS FRYERS

### CHAPTER 3: OPERATING INSTRUCTIONS

- Place a flame near the pilot assembly, push and hold the PILOT (white) button in, light the pilot, and continue to depress the button for at least 60 seconds after the pilot lights. Failure to hold the knob in long enough will cause the pilot to go out when the knob is released. If the pilot goes out when the knob is released, wait at least 5 minutes then repeat this step.

#### Placing the Fryer into Operation.

##### For units equipped with Thermostat Controls:

Place the Melt Cycle switch (if equipped) to the ON position and set the thermostat knob to the desired cooking temperature. The U-shaped burner should “light-off” and burn with a strong, blue flame.

 **CAUTION**  
The fryer will stay in the Melt Cycle mode until the Melt Cycle Switch is placed in the OFF position.


##### For units equipped with other than Thermostat Controls:

Place the computer/controller ON/OFF switch in the ON position and set the thermostat to—or program the controller for—the desired cooking temperature, referred to as the *setpoint*. The U-shaped burner should “light off” and burn with a strong, blue flame. The unit automatically enters the Melt Cycle mode if the frypot temperature is below 180°F (82°C). (NOTE: During the melt cycle, the burner will repeatedly fire for a few seconds, then go out for a longer period.) When the frypot temperature reaches 180°F (82°C), the

unit will automatically switch to the Heating mode. The burner will remain lit until the frypot temperature reaches the programmed cooking temperature (set-point).


#### 3.2 Boiling-Out the Frypot

To ensure that the frypot is free of any contamination resulting from its manufacture, shipping, and handling during installation, the frypot must be boiled out before first use. **Frymaster** recommends boiling out the frypot each time the oil or shortening is changed.

 **DANGER**  
Never leave the fryer unattended during the boil-out process. If the boil-out solution boils over, turn off power to the fryer immediately and let the solution cool for a few minutes before resuming the process.

- Before lighting the burner, close the fryer drain valve(s) and fill the frypot to the bottom OIL-LEVEL line with a mixture of cold water and Frymaster™ FRYER ‘N’ GRIDDLE cleaner or detergent.
- For units equipped with other than Computer Magic III controllers or Solid-State Basket Lift Timers, set the thermostat to, or program the controller for, 200°F (93°C).

For units equipped with Computer Magic III controllers, select the Boil-Out feature in accordance with the procedure **Using the Boil-Out Feature** on page 3-7.


For units equipped with Solid-State Basket Lift Timers, press the Boil-Out Mode button  to begin the boil-out process.

## 47 SERIES GAS FRYERS


### CHAPTER 3: OPERATING INSTRUCTIONS

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3. Place the fryer into operation in accordance with Section 3.1.
4. Simmer the solution for 1 hour.
5. After the solution simmers for 1 hour, turn the fryer off, allow the solution to cool, then add 2 gallons (7.75 liters) of cold water and stir. Drain the solution into a suitable container and clean the frypot thoroughly.

 **WARNING**  
**Do not drain boil-out solution into the built-in filtration system. Doing so may cause damage to the filtration pump.**

6. Rinse the frypot at least twice by filling the frypot with clean water and draining. Dry the frypot thoroughly with a clean, dry towel.

 **DANGER**  
**Remove all drops of water from the frypot before filling with cooking oil/shortening. Failure to do so may cause spattering of hot liquid when the oil/shortening is heated to cooking temperature.**

### 3.3 Shutting the Fryer Down

For short-term shut down during the workday, place the fryer power switch in the OFF position and put the frypot covers in place (if the fryer is so equipped).

When shutting the fryers down at closing time, place the fryer power switch in the OFF position, place the gas valve in the OFF position, and put the frypot covers in place (if the fryer is so equipped).

### 3.4 Controller Operation and Programming

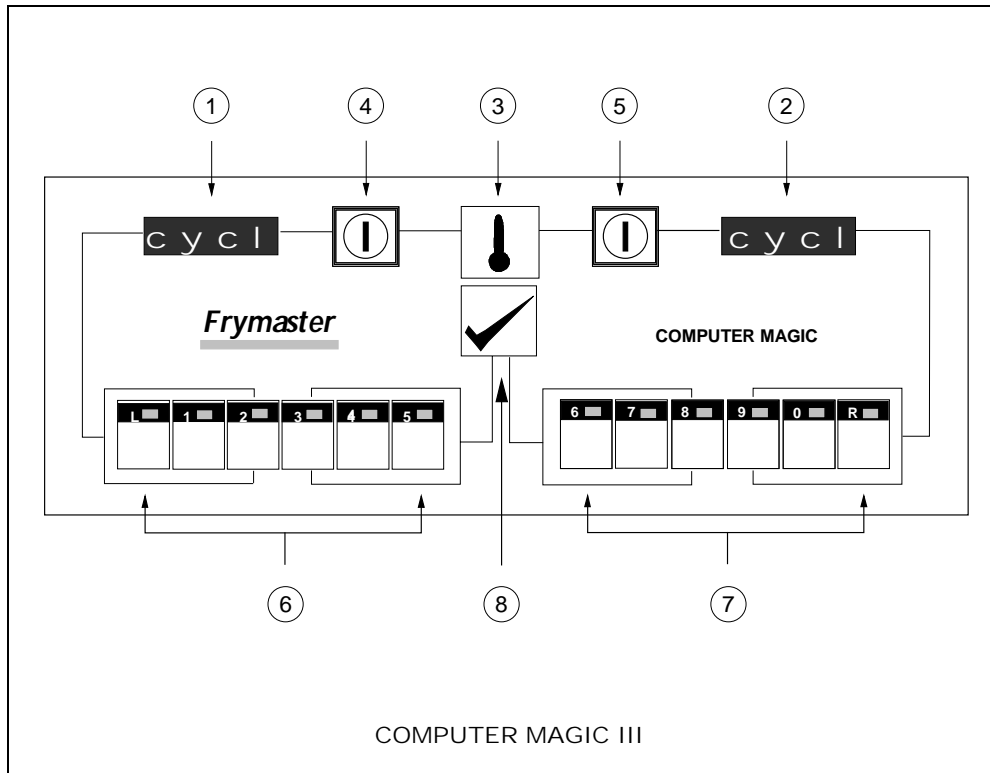
Fryers in the 47 Series can be equipped with any of the following types of controlling devices:

- Computer Magic III
- Thermostat Controller (with or without Manual Basket Lift Timers)
- Analog Controller (with or without Manual Basket Lift Timers)
- Digital Controller (with or without Manual Basket Lift Timers)
- Basket Lift Timer

Each type is discussed in detail in the following pages.

**47 SERIES GAS FRYERS**  
**CHAPTER 3: OPERATING INSTRUCTIONS**

NOTE:  
 Some computers may have this earlier style ON/OFF Switch:





**COMPUTER MAGIC III CONTROLLER**

The Computer Magic III control panel includes the following items:

- 1/2. Left and Right LED Displays
- 3. Temperature Check and Program Lock Switch
- 4/5. Left and Right Frypot Power Switches  
**NOTE:** On single vat units, either switch will turn the fryer on and off.
- 6/7. Left and Right Product Selection and Coding Keys
- 8. Program Mode Switch

**COMPUTER OPERATING INSTRUCTIONS**

Turn the computer on by pressing the Power Switch  (or ON/OFF Switch ). **NOTE:** A decimal between digits 1 and 2 in either LED Display indicates that the burner is on.

1. One of the following will be displayed:

- a. **cycl**, indicating that the fryer is operating in the melt cycle mode. The fryer will remain in the melt cycle mode until it reaches 180°F (82°C) or is canceled manually by pressing the **R** key.

 **CAUTION**


**Do not cancel the melt cycle mode until solid shortening is completely melted.**

- b. **hi**, indicating that the frypot temperature is 21°F (12°C) higher than the set-point.
- c. **L0**, indicating that the frypot temperature is 21°F (12°C) lower than the set-point.

**47 SERIES GAS FRYERS**  
**CHAPTER 3: OPERATING INSTRUCTIONS**

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- d. “- - -,” indicating that the frypot temperature is in the cooking range. **NOTE:** For best results, cooking should not be attempted unless the display indicates “- - -.”
  - e. **help**, indicating a heating problem.
  - f. **hot**, indicating the frypot temperature is in excess of 410°F (210°C).
  - g. **prob**, indicating that the computer has detected a problem in the temperature measuring and control circuits.
1. Press a product switch to initiate a cook cycle.
    - a. The basket lift (on fryers so equipped) will lower the product into the frypot.
    - b. The display will indicate the previously programmed cook time and begin countdown.
    - c. If shake time is programmed, the operator will be notified of the need to shake the product “X” seconds after the cook cycle has begun (X = amount of time programmed). An alarm will sound, and the display will read **SH#**, where “#” will be the switch number. If no shake time has been programmed, **sh#** will not appear during the cook cycle. The alarm is self-canceling.
    - d. At the end of the cooking cycle, an audible alarm will sound, **COOC** will be displayed, and the associated product switch indicator will flash. To cancel the cook alarm, press the appropriate switch.
    - e. At this time, the hold time will be displayed (if programmed greater than zero), and the countdown will begin. When the countdown reaches zero, **hD\_** will be displayed and an alarm will sound. The blank will be the switch number. The hold alarm is canceled by pressing the Programming Switch . **NOTE:** If the display is in use, the hold time countdown will not be displayed.
  2. To check the frypot temperature at any time, press the Temperature Check Switch  once. To check the setpoint, press the switch twice. If you suspect the temperature probe is defective, check the temperature of the frypot with a thermometer or pyrometer to verify that the computer readout is reasonably close to the measured reading.
  4. During idle periods when the fryer is on but not in use, “- - -” should appear in both displays. If not, check the actual temperature and setpoint.

 **CAUTION**  
**The electronic circuitry in your computer can be affected adversely by current fluctuations and electrical storms. Should it fail to function or program properly for no apparent reason, the computer should be reset by unplugging the computer and plugging it back in. This could prevent a service call.**

**COMPUTER PROGRAMMING INSTRUCTIONS**

1. Turn the computer on by pressing the Power  Switch (or ON/OFF  Switch).

## 47 SERIES GAS FRYERS

### CHAPTER 3: OPERATING INSTRUCTIONS

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2. Enter the programming mode by pressing the Program Mode Switch . **Code** will appear in the left display. If you enter the programming mode by mistake, press the switch again to exit the programming mode. **NOTE:** If you try to enter the programming mode while the computer is cooking, the display will flash **busy**.
3. Enter the number 1 6 5 0 by pressing the number keys. Unless this code is entered, programming will not be accepted. This is to prevent unauthorized persons from changing your current instructions.
4. **sp-r** (Setpoint) will appear in the left display. Any previously programmed temperature setpoint will appear in the right display. To change the setpoint, enter the desired setpoint temperature using the number keys. For CE units, the highest setpoint allowed is 370°F (188°C). For Non-CE units the number is 375°C (191°C). Press the Program Mode Switch  to lock in the new setpoint (or the old setpoint, if it was not changed). If the unit is a dual vat fryer, **sp-L** will appear, allowing the setpoint for the left vat to be adjusted or confirmed.
5. **selp** (Select Product) will appear in the left display. Press the product button to be programmed (or press  to return to the normal operating mode).
6. **sens** (Sensitivity) appears in the left display. Any previously programmed sensitivity setting will appear in the right display. To change the sensitivity setting, enter the new setting and press  to lock it in. If the setting was not changed, pressing  accepts the previous setting.

*Sensitivity is a built-in feature that adjusts cooking time to compensate for the drop in frypot temperature when a basket of product is placed into it. Different food products will vary in density, basket load size, and initial temperature. Food products will also vary in how well cooked a product is required to be. A proper sensitivity setting for each product will assure a high-quality product each time. For example: four ounces of fries can be programmed to be cooked to the same quality as two and one-half pounds. Some experimenting with the range of 0 - 9 (0 being least sensitive and 9 being most sensitive) may be required to obtain the desired quality to meet your specifications, but setting 5 is the recommended starting point.*

7. **COOC** (Cook Time) will now show in the left display. Any previously programmed cooking time will appear in the right display. Pressing  will accept the current cooking time. To change the cooking time, enter the new time using the Number keys. Press  to lock in the new time.
8. **sh\_** (Shake Time) appears in the left display. If your product requires shaking during the cooking process, set the number of minutes to cook before shaking using the number keys.

For example, entering “30” means the product needs to be shaken after it has been cooking for 30 seconds. At the end of one minute, an alarm will sound and the product switch will flash for 3 seconds. If your product does not require shaking, enter “0”. The number entered will appear in the right display. Press  to lock in the programmed time.

## 47 SERIES GAS FRYERS

### CHAPTER 3: OPERATING INSTRUCTIONS

9. **hd\_** (Hold Time) will appear in the left display. Set the time the product may be held before serving, anything from 13 seconds to 60 minutes. If you do not wish to use the hold time feature, enter 0. Press  to lock in the time.

*In the event the same product is being cooked in more than one basket, any product button can be programmed to use the hold timer normally used with a different product button. Example: Program button 3 for 7:00 minutes hold time. Then, when programming button R for hold time, press product button 4. Both product button 3 and product button R will then use the same hold time of 7:00 minutes. The button numbers and their assigned address numbers are:*

Button: L 1 2 3 4 5 6 7 8 9 0 R  
Address: 1 2 3 4 5 6 7 8 9 10 11 12

10. **selp** (Select Product) will again appear in the left display. If more products are to be programmed, return to Step 5 and follow all instructions to this point, repeating for each product.
11. When you complete your programming, lock in the whole program by pressing the Temperature Check/Program Lock Switch .

#### USING THE BOIL-OUT FEATURE



#### **CAUTION**

**Before using this feature, ensure the frypot is filled with a mixture of cold water and Frymaster™ FRYER 'N' GRIDDLE cleaner or detergent.**

1. To program the fryer for boil-out, press the Power Switch  (or ON/OFF  Switch) followed by the Program Mode Switch . **Code** will appear in the left display.
2. Enter the code number 1 6 5 3. The right display will read **boil**. The temperature is automatically set for 195°F (91°C). The fryer will attain this temperature and remain there until the Power  (or ON/OFF  Switch) is pressed, which cancels the boil-out mode. In high-altitude locations, the fryer must be monitored constantly for boil-over conditions. If boil-over occurs, turn off the fryer immediately, allow it to cool, then re-enter the boil-out mode to continue the boil-out process.

#### FRYER RECOVERY TIME CHECK FEATURE


1. The computer automatically checks the recovery time each time the frypot temperature drops below 250°F (121°C). To check recovery time, press the Program Mode Switch . **Code** will appear in the left display.
2. Enter the code number 1 6 5 2 on the number keypad. The recovery time will appear in both displays for 5 seconds.

#### SELECTING FAHRENHEIT– CELSIUS DISPLAY MODE


1. The computer can display temperatures in either Fahrenheit or Celsius. To change from one to the other, press the Program Mode Switch . **Code** will appear in the left display.
2. Enter the code number 1 6 5 8 on the number keypad. The computer will toggle the temperature display from Celsius to Fahrenheit or from Fahrenheit to Celsius.

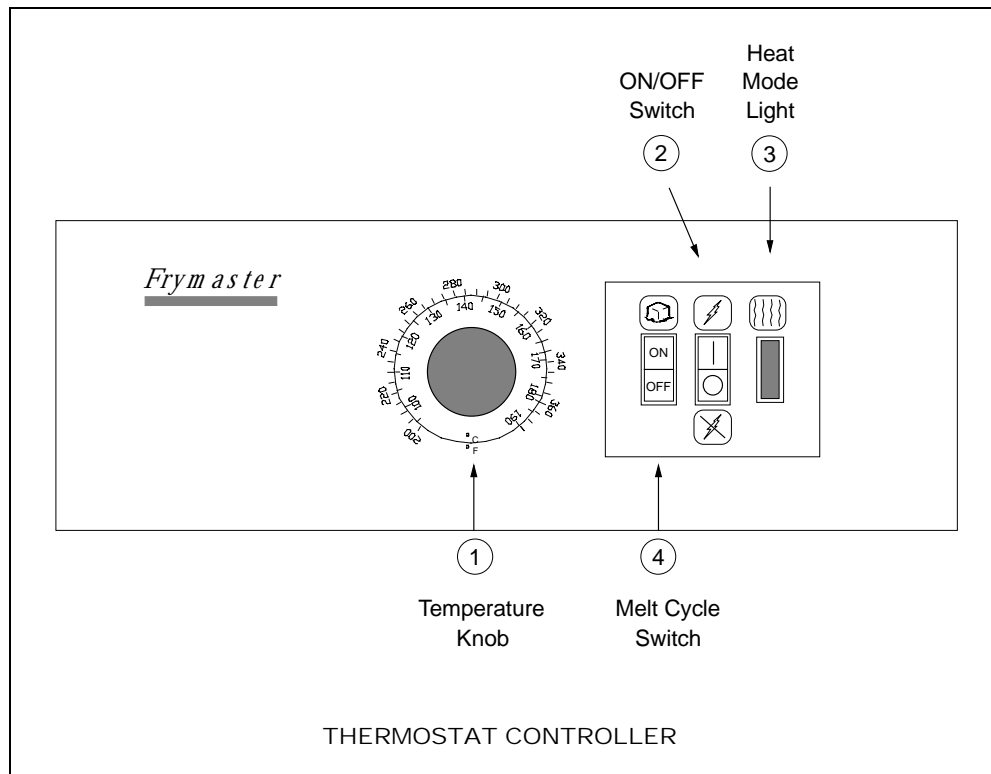
## 47 SERIES GAS FRYERS

### CHAPTER 3: OPERATING INSTRUCTIONS


3. Press the Temperature Check/Program Lock Switch  to display the temperature in the newly selected mode.



#### **SELECTING FRYPOT TEMPERATURE DISPLAY MODE**

1. To display the actual frypot temperature at all times, press the Program Mode Switch . Code will appear in the left display.
2. Enter code 1 6 5 L using the number keypads. The computer will display the actual frypot temperature. **NOTE:** During the product cooking process, the cooking time will not be displayed, but timing is taking place.
3. To return to setpoint display, repeat Steps 1 and 2.



#### **THERMOSTAT CONTROLLER**

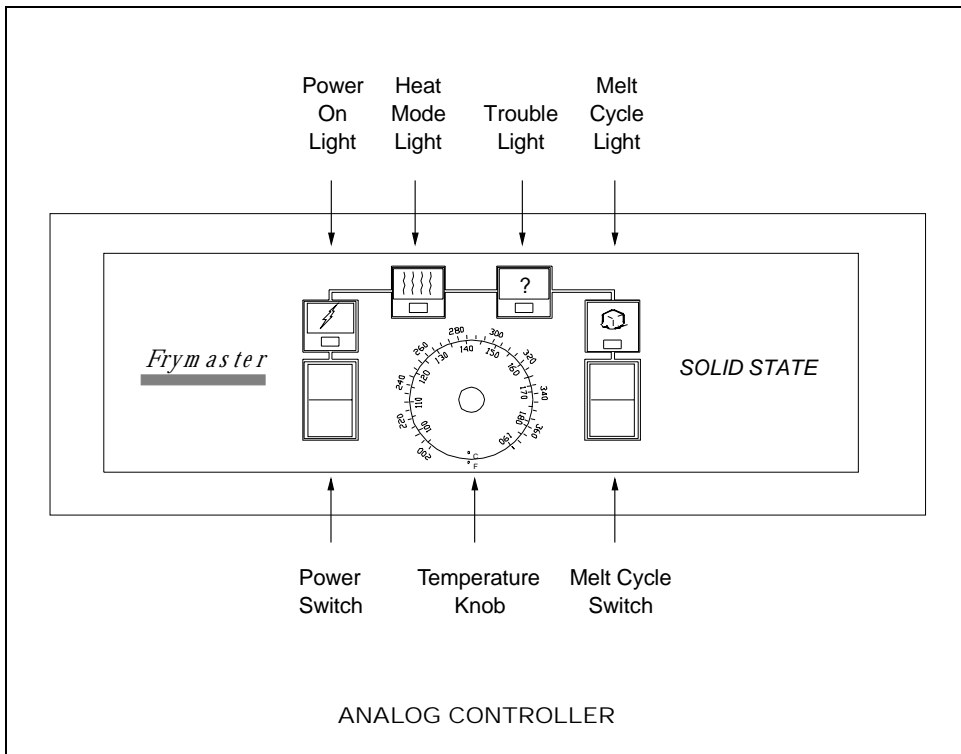
The Thermostat Controller utilizes a frypot thermostat that is directly connected to a temperature knob mounted on the control panel. Rotating the knob to the desired cooking temperature (setpoint) physically adjusts the thermostat control at that temperature. Placing the ON/OFF Switch in the ON  position supplies power to the fryer's components and

causes the switch to illuminate. Placing the Melt Cycle Switch  in the ON position causes the fryer burner to repeatedly cycle on for a few seconds and off for a longer period. The purpose is to gradually melt solid shortening to prevent scorching, and to prevent creation of "hot spots" on the frypot. This switch is also illuminated when in the ON position. The Heat Mode Indicator  illuminates when the frypot is below setpoint.

## 47 SERIES GAS FRYERS CHAPTER 3: OPERATING INSTRUCTIONS

Other than setting the thermostat knob to the desired cooking temperature, the Thermostat Controller requires no programming. However, it does require calibration. Refer to Section 7.7, Calibrating the Thermostat Controller, for the procedure to be followed.


**⚠ CAUTION**  
The fryer will remain in the Melt Cycle mode until turned off by placing the Melt Cycle Switch in the OFF position.




### ANALOG CONTROLLER

In units equipped with analog controllers, the frypot thermostat has been replaced with a solid-state temperature probe and solid-state electronics mounted on the control panel, reducing the number of moving parts and eliminating the need to calibrate the thermostat. The temperature probe is connected to the control circuitry via an interface board behind the control panel.

The cooking temperature setpoint is set by rotating the Temperature Knob to the desired temperature.


When the Power Switch is placed in the ON position, electrical current is supplied to the fryer's components and the Power On Light  illuminates.


Placing the Melt Cycle Switch in the ON position causes the burner to cycle on for a few seconds and off for a longer period until the temperature in the frypot reaches 180°F (82°C). At that time the unit automatically enters the heat mode, causing the burner to remain lit until the setpoint is reached. When in the melt cycle, the Melt Cycle Light  will alternately illuminate and go out as the burner cycles on and off. When the unit enters the



## 47 SERIES GAS FRYERS

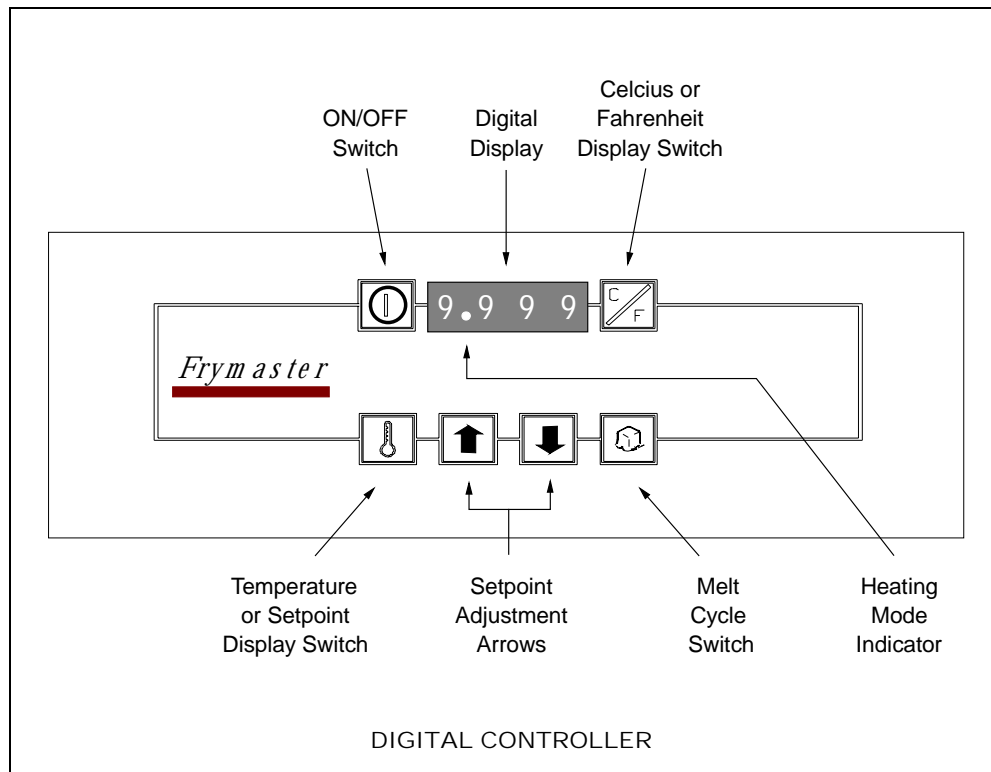
### CHAPTER 3: OPERATING INSTRUCTIONS

heat mode, the Heat Mode Light  will illuminate and remain on until the setpoint is reached.

For units equipped with electronic ignition, the Trouble Light  will illuminate if there is an ignition failure. To reset the controller after


an ignition failure, place the Power switch in the OFF position for 30 seconds, then place it back in the ON position.

For all units, the Trouble Light also indicates that there is a probe circuit or high limit circuit problem.




#### DIGITAL CONTROLLER

As with the analog controller, the frypot thermostat has been replaced with a solid-state temperature probe and solid-state electronics mounted on the control panel.

Pressing the ON/OFF Switch  supplies electrical power to the fryer, and causes the controller software version number to display for 4 seconds in the Digital Display.

Following the display of the software version number, the setpoint temperature will display constantly. Pressing the Temperature/Setpoint

Display Switch will display the actual frypot temperature.

The fryer will automatically enter the melt cycle mode and will continue to cycle on for a few seconds and off for a longer period until the temperature in the frypot reaches 180°F (82°C). At that time, it will enter the heat mode. The purpose of the melt cycle is to gradually melt solid shortening to prevent its scorching, and to prevent creation of “hot spots” on the frypot. To cancel the melt cycle, press the Melt Cycle Switch .

## 47 SERIES GAS FRYERS



### CHAPTER 3: OPERATING INSTRUCTIONS



#### CAUTION


**Do not cancel the Melt Cycle if solid shortening is being used.**

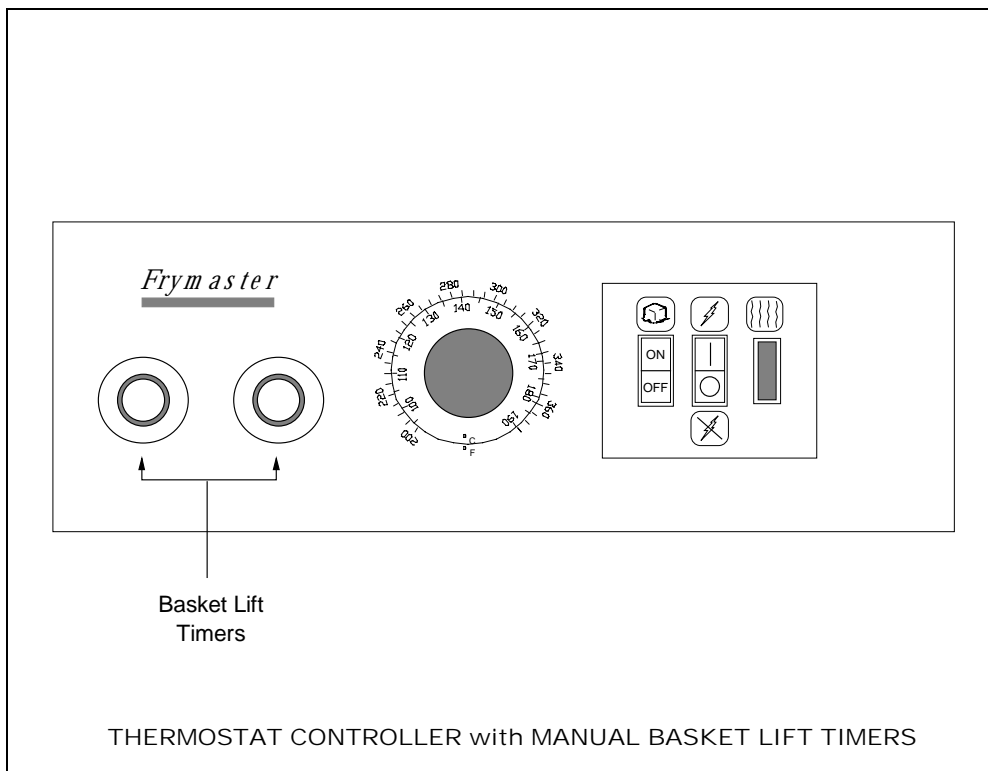
**NOTE:** If solid shortening is not being used, the controller can be programmed to bypass the Melt Cycle as follows:

1. With the controller in the OFF mode, press the Melt Cycle Switch . The display will show either a “0” (meaning that the melt cycle **can** be bypassed) or a “1” (meaning that the melt cycle **cannot** be bypassed).
2. To change the bypass option setting, press and hold the Melt Cycle Switch  for 5 to 6 seconds to toggle the “0” to “1” or vice versa. When the display shows the desired setting, release the switch.

The fryer will remain in the heat mode until the setpoint is reached. The Heat Mode Indicator is a decimal point that appears between the first two numbers of the digital display to indicate the unit is heating. When the setpoint is reached, the decimal will go out, indicating the fryer is ready for cooking.

To enter or change the setpoint temperature, press the Up Arrow or Down Arrow keys to raise or lower the temperature setting. The display will change at a rate of about 1 degree per second for approximately the first 12 degrees, then change to a faster rate if the arrow is continuously pressed.

The temperature can be displayed in either Fahrenheit or Celsius. To change from one to the other, press the C/F Switch .

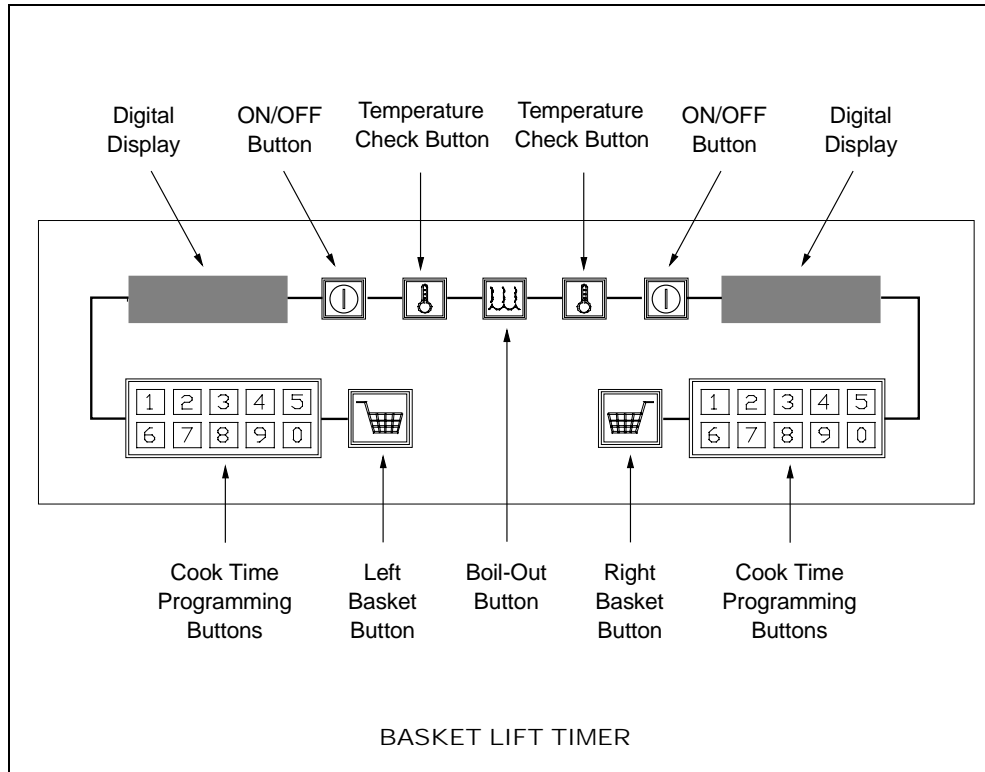


## 47 SERIES GAS FRYERS CHAPTER 3: OPERATING INSTRUCTIONS

### MANUAL BASKET LIFT TIMER


The Manual Basket Lift Timer (shown on the preceding page) is not a fryer controller. It only allows the operator to select a cooking time and initiate independent cooking cycles for each basket. It is available with the Thermostat Controllers, Analog Controllers, and Digital Controllers. Computer Magic III and the Basket Lift Timer control both the basket lifts and the fryer.


The cooking time for a basket is specified by rotating the corresponding timer knob to the desired time. Pressing the center of the knob initiates the cooking cycle. The basket will be automatically lowered into the frypot, and the timer will begin to count down. When the timer reaches zero, an alarm buzzer will sound briefly to alert the operator that the cooking cycle is completed, and the basket will then be automatically raised from the frypot. A new cycle is started by pressing the knob again.



### SOLID-STATE BASKET LIFT TIMER

The Basket Lift Timer allows the operator to specify individual cooking times for each vat and independently control the operation of each basket lift.


Pressing the ON/OFF  buttons supplies electrical power to the fryer components. The


fryer will automatically go into the melt cycle mode if the temperature in the frypot is below 180°F (82°C), cycling on for a few seconds and off for a longer period. The purpose of the melt cycle is to gradually melt solid shortening to prevent its scorching, and to prevent the creation of “hot spots” in the frypot. To cancel the melt cycle mode, press the Right Basket  button.


## 47 SERIES GAS FRYERS


### CHAPTER 3: OPERATING INSTRUCTIONS


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The cook time for each basket is always shown in the Digital Displays except when the Temperature Check buttons  are pressed. To change a cook time, enter the new time with the number keys.

To view the setpoint for a frypot, press the corresponding Temperature Check button . The setpoint for the frypot will be shown in the corresponding Digital Display. **NOTE: For full pot (single vat) units, the setpoint will be shown in the right display only.**

To change the setpoint, enter the new temperature using the number keys, then press the Temperature Check button  again to lock in the setpoint and return to the cook time mode.

Pressing a Basket button  initiates a cooking cycle. The basket is automatically lowered

into the frypot and the cook time in the Digital Display begins to count down. When the countdown reaches zero, the basket is raised from the frypot and a buzzer sounds to alert the operator that cooking is completed. Pressing the Basket button  silences the alarm.


The controller also displays the following trouble messages in the Digital Display of the vat functioning abnormally:

- **HELP** is displayed continuously if there is a heating failure.
- **hot** is displayed if the frypot temperature rises above 385°F (196°C).
- **PROB** indicates a problem with the temperature probe circuit.

# 47 SERIES GAS FRYERS

## CHAPTER 4: FILTRATION INSTRUCTIONS


### 4.1 Draining and Manual Filtering

 **DANGER**  
Allow oil/shortening to cool to 100°F (38°C) or lower before draining to an appropriate container for disposal.


If your fryer is not equipped with the built-in FootPrint III Filtration System, the cooking oil or shortening must be drained into another suitable container. FOR SAFE, CONVENIENT DRAINING AND DISPOSAL OF USED COOKING OIL OR SHORTENING, **Frymaster** RECOMMENDS USING THE *Frymaster™* SHORTENING DISPOSAL UNIT (SDU). THE SDU IS AVAILABLE THROUGH YOUR LOCAL DISTRIBUTOR.

1. Turn the fryer power switch to the OFF position. Screw the drainpipe (provided with your fryer) into the drain valve. Make sure the drainpipe is firmly screwed into the drain valve and that the opening is pointing down.
2. Position a metal container with a sealable cover under the drainpipe. The metal container must be able to withstand the heat of the cooking oil/shortening and hold hot liquids. If you intend to reuse the oil or shortening, **Frymaster** recommends that a *Frymaster™* filter cone holder and filter cone be used when a filter machine is not available. If you are using a Frymaster filter cone holder, be sure that the cone holder rests securely on the metal container.
3. Open the drain valve slowly to avoid splattering. If the drain valve becomes clogged with food particles, use the Fryer's Friend (poker-like tool) to clear the blockage.

 **DANGER**  
DO NOT insert anything into the drain from the front to unclog the valve. Hot oil/shortening will rush out, creating an extreme hazard.

 **WARNING**  
DO NOT hammer on the drain valve with the Fryer's Friend. This will damage the drain valve ball and prevent the valve from sealing securely, resulting in a leaky valve.

4. After draining the oil/shortening, clean all food particles and residual oil/shortening from the frypot. BE CAREFUL, this material may still cause severe burns if it comes in contact with bare skin.
5. Close the drain valve securely and fill the frypot with clean, filtered or fresh cooking oil or solid shortening to the bottom OIL-LEVEL line.

 **DANGER**  
When using solid shortening, pack the shortening down into the bottom of the frypot. DO NOT operate the fryer with a solid block of shortening sitting in the upper portion of the frypot. This will cause damage to the frypot and may cause a flash fire.

### 4.2 FootPrint III Filtration System Operation

The FootPrint III Filtration System allows the cooking oil or shortening in one frypot to be safely and efficiently filtered while the other frypots in a battery remain in operation.

## 47 SERIES GAS FRYERS CHAPTER 4: FILTRATION INSTRUCTIONS

The overwhelming majority of reported problems with the FootPrint III system have been found to be the result of improper operation. Careful attention to the step-by-step instructions that follow will ensure that your system operates as intended.

### PREPARING THE FILTER UNIT FOR USE

1. Slide the filter unit from the cabinet.



2. Open the cover and remove the crumb tray and the paper hold-down ring.



3. Ensure that the metal filter screen is in the bottom of the pan.



**⚠ CAUTION**  
Make sure the inside of the pan is free of all food and breading particles that could prevent the paper from sealing against the bottom of the pan.

4. Lay a sheet of filter paper over the top of the filter pan, overlapping on all sides.



5. Position the hold-down ring over the filter paper and lower the ring into the pan, allowing the paper to fold up around the ring as it is pushed to the bottom of the pan.

## 47 SERIES GAS FRYERS CHAPTER 4: FILTRATION INSTRUCTIONS

6. Sprinkle filter powder over the filter paper. For powder quantity, see the filter powder manufacturer's instructions.



7. Replace the crumb tray in the filter pan and close the cover.



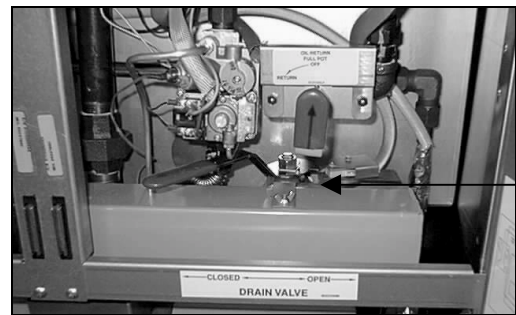
8. Roll the filter pan back into the fryer, positioning it all the way to the back of the cabinet.



### OPERATION OF THE FILTER UNIT

**⚠ CAUTION**  
Never operate the filter unit unless the cooking oil in the fryers has been brought up to cooking temperature.

1. To filter the cooking oil, turn the fryer power OFF, then open the drain valve on the fryer you have selected to be filtered. If necessary, use the *Fryer's Friend* steel rod to clear the drain from **inside** the frypot as necessary.



Valve shown in closed position.

**⚠ DANGER**  
Never drain more than one fryer at a time—the filter pan may overflow. When unclogging a valve, **DO NOT** insert anything into the drain from the front of the fryer. Hot oil/shortening will rush out, creating an extreme hazard.

**⚠ WARNING**  
**DO NOT** hammer on the drain valve with the *Fryer's Friend*. This will damage the drain valve ball and prevent the valve from sealing securely, resulting in a leaky valve.

2. When the frypot is empty, use a fryer scouring tool to remove sediment on the

## 47 SERIES GAS FRYERS CHAPTER 4: FILTRATION INSTRUCTIONS

sides of the frypot. When cleaning the inside of the frypot, avoid striking the high limit thermostat and temperature probe or operating thermostat.

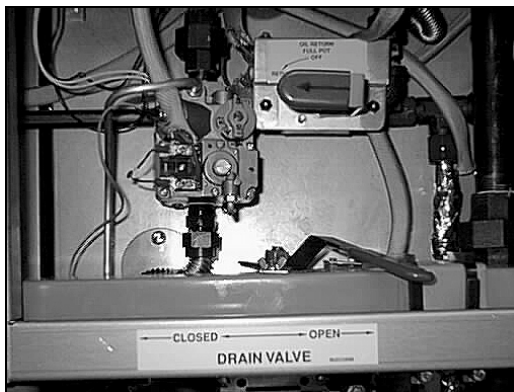
3. Snap the Power Shower into the frypot.

### DANGER

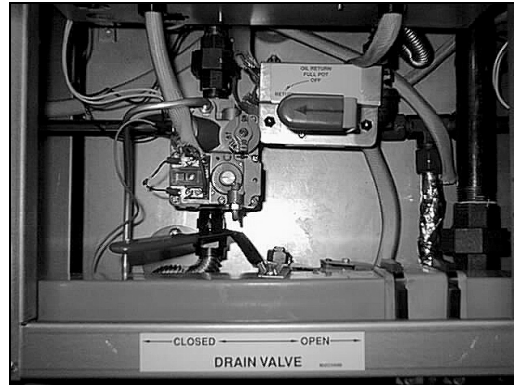
**DO NOT** operate the filter without the Power Shower in place. Hot oil will spray out of the fryer and may cause injury.



4. After all oil has drained from the pot, rotate the filter handle to the RETURN position to start the pump and begin the filtering process. There may be a slight delay before the pump activates.



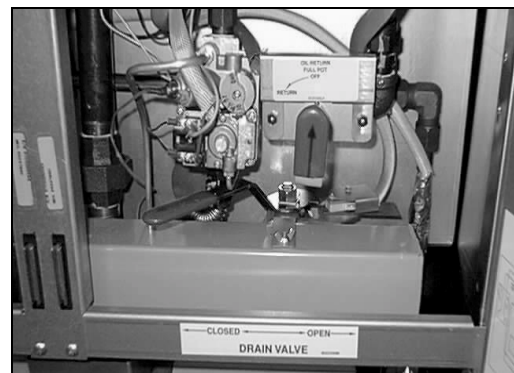
5. After the oil is completely filtered, close the drain valve and allow the fryer to refill. Allow the filter to run 10 to 12 seconds after bubbles appear in the oil to clear the lines and prevent hardening of shortening in the lines.



### WARNING

The filter pump is equipped with a manual reset switch in case the filter motor overheats or an electrical fault occurs. If this switch trips, turn off power to the filter system and allow the pump motor to cool 20 minutes before attempting to reset the switch.

6. When the fryer is full, move the filter handle to the OFF position. Remove the Power Shower and allow it to drain.





## 47 SERIES GAS FRYERS

### CHAPTER 4: FILTRATION INSTRUCTIONS

7. Make sure the drain valve is fully closed. Turn the fryer ON and allow the cooking oil/shortening to reach setpoint.

**NOTE:** Ensure the fryer drain valve is fully closed before turning the fryer on. If the drain valve is not fully closed, the controller will display an error message or a trouble light and fryer will not operate.

#### CHANGING THE FILTER PAPER

**⚠ DANGER**  
Allow the filter pan to cool completely before attempting to change the paper.

1. Slide the filter unit from the cabinet.



2. Remove and clean the crumb tray.



3. Remove the hold-down ring from the filter pan and clean.



4. Remove and discard the used filter paper.



5. Remove the metal filter screen and clean thoroughly using a solution of hot water and detergent. Allow the screen to dry completely before reinstalling.



## 47 SERIES GAS FRYERS CHAPTER 4: FILTRATION INSTRUCTIONS

6. Clean all breading and food particles from the filter pan.



### CAUTION

**Make sure the inside of the pan is free of all food and breading particles that could prevent the paper from sealing against the bottom of the pan.**

7. Replace the metal filter screen in the bottom of the pan.



8. Lay a sheet of filter paper over the top of the filter pan with the paper overlapping the pan on all sides.



9. Position the hold-down ring over the filter paper on top of the pan and lower the ring into the pan, allowing the filter paper to fold up around the ring as it is pushed to the bottom of the pan.

10. Sprinkle filter powder over the filter paper. For powder quantity and instructions, see the powder manufacturer's instructions.



11. Replace the crumb tray in the filter pan and close the cover.



12. Roll the filter pan back into the fryer cabinet, making sure that the pan is positioned all the way to the back of the cabinet.

# 47 SERIES GAS FRYERS

## CHAPTER 5: PREVENTIVE MAINTENANCE

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### 5.1 Fryer Preventive Maintenance Checks and Services

#### DAILY CHECKS AND SERVICES

##### Inspect Fryer and Accessories for Damage

Look for loose or frayed wires and cords, leaks, foreign material in frypot or inside cabinet, and any other indications that the fryer and accessories are not ready and safe for operation.

##### Clean Fryer Cabinet Inside and Out

Clean inside the fryer cabinet with dry, clean cloth. Wipe all accessible metal surfaces and components to remove accumulations of oil or shortening and dust.

Clean the outside of the fryer cabinet with a clean, damp cloth soaked with dishwashing detergent, removing oil/shortening, dust, and lint from the fryer cabinet.

 **DANGER**

**Never attempt to clean fryer during the cooking process or when the frypot is filled with hot oil/shortening. If water comes in contact with oil/shortening heated to cooking temperature, it can cause the oil/shortening to splatter and severely burn nearby personnel.**

#### WEEKLY CHECKS AND SERVICES

##### Check Recovery Time

“Recovery time” is the amount of time it takes the fryer to increase the frypot temperature from 275° F (135° C) to 325° F (163° C). It is a

measure of the fryer’s efficiency, and it should be no more than 2 minutes and 30 seconds. If the recovery time is greater than 2:30, call your Factory Authorized Service Center (FASC) or the *Frymaster* Service Hotline.

The recovery time on models having CM III computers is automatically measured by the computer. For fryers with any other type controller, the recovery time must be manually measured.

To view the recovery time on fryers equipped with CM III computers, press the Program Mode Switch . CODE will appear in the left display. Enter the code number 1652 using the number keys. The latest recovery time will appear in both displays for 5 seconds.

To check the recovery time on fryers equipped with other than CM III computers, a stopwatch (or a watch with a second hand) and a good grade thermometer or pyrometer is required.

Turn the fryer on and set the controller to cooking temperature. Place the thermometer or pyrometer in the frypot. When the frypot reaches 275° F (135° C), start the stopwatch or record the time. When the temperature reaches 325° F (163° C), stop the stopwatch or record the time.

#### QUARTERLY CHECKS AND SERVICES

##### Drain and Clean Frypot

During normal usage of your fryer, a deposit of carbonized cooking oil or shortening will gradually form on the inside of the frypot. This deposit must be periodically removed to maintain your fryer’s efficiency.

## 47 SERIES GAS FRYERS

### CHAPTER 5: PREVENTIVE MAINTENANCE

#### DANGER

Allow oil/shortening to cool to 100°F (38°C) or lower before draining to an appropriate container for disposal.

If your fryer is not equipped with a built-in filtration system, the cooking oil or shortening must be drained into another suitable container. FOR SAFE, CONVENIENT DRAINING AND DISPOSAL OF USED COOKING OIL OR SHORTENING, FRYMASTER RECOMMENDS USING OUR SHORTENING DISPOSAL UNIT (SDU). THE SDU IS AVAILABLE THROUGH YOUR LOCAL DISTRIBUTOR.

1. Place the fryer power switch in the OFF position. Screw the drainpipe (provided with your fryer) into the drain valve. Make sure the drainpipe is firmly screwed into the drain valve and that the opening is pointing down.
2. Position a metal container with a sealable cover under the drainpipe. The metal container must be able to withstand the heat of the cooking oil/shortening and hold hot liquids. If you intend to reuse the oil or shortening, **Frymaster** recommends that our filter cone holder and filter cone be used when a filter machine is not available. If you are using a *Frymaster*<sup>®</sup> filter cone holder, be sure that the cone holder rests securely on the metal container.
3. Open the drain valve slowly to avoid splattering. If the valve becomes clogged with food particles, use the Fryer's Friend (poker-like tool) to clear the blockage.

#### DANGER

DO NOT insert the tool into the drain from the front to unclog the valve. Hot oil/shortening will rush out, creating an extreme hazard.

#### WARNING

DO NOT hammer on the drain valve. This will damage the drain valve ball and prevent the valve from sealing securely, resulting in a leaky valve.

4. After draining the oil/shortening, clean all food particles and residual oil/shortening from the frypot. **BE CAREFUL, this material may still cause severe burns if it comes in contact with bare skin.**
5. Close the drain valve securely and fill the frypot with a solution of detergent and water to the bottom OIL-LEVEL line. (**Frymaster** recommends the use of *Frymaster*<sup>®</sup> Boilout Solution, available through your local distributor, for best results.)
6. For units with thermostats, set the thermostat to its lowest setting and bring the frypot contents to a boil. Simmer the solution for 1 hour. If the solution boils over, press the ON/OFF switch to the OFF position immediately.

For units with computers, program the computer for Boil Operation as outlined in the Section 3.2, Computer Magic III Operation and Programming. Simmer 1 hour.


7. After the solution has simmered for 1 hour, press the ON/OFF switch to the OFF position and allow the solution to cool.
8. Drain the solution into a suitable container (**NOT the FootPrint III filter pan or the Shortening Disposal Unit**) and wipe the frypot thoroughly with a clean towel.
9. Close the drain valve and fill the frypot with clean, cold water and drain. Repeat

## 47 SERIES GAS FRYERS

### CHAPTER 5: PREVENTIVE MAINTENANCE

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the rinse process again, and then wipe frypot with a clean, dry towel.

 **DANGER**  
Ensure that the frypot is completely free of water before filling with cooking oil or shortening. When the oil or shortening is heated to cooking temperature, water in the frypot will cause splattering.

#### Clean Detachable Parts and Accessories

As with the frypot, a deposit of carbonized oil/shortening will accumulate on detachable parts and accessories such as baskets, sediment trays, or fish plates

Wipe all detachable parts and accessories with a clean cloth dampened with a detergent solution. (*Frymaster* recommends the use of *Frymaster*<sup>®</sup> Fryer 'N' Griddle Cleaner, available through your local distributor, for best results.) Rinse and thoroughly dry each part.

#### Check Calibration of Thermostat or Analog Controller Temperature Control Knob

(This check applies only to units equipped with Thermostat or Analog Controllers)

1. Set the thermostat knob to frying temperature.
2. Let the burner cycle on and off automatically three times to allow the cooking oil/shortening temperature to become uniform. If necessary, stir to get all shortening in the bottom of the frypot melted.
3. Insert a good-grade thermometer or pyrometer probe into the oil/shortening, with the end touching the fryer temperature probe.

4. When the burner starts for the fourth time, the thermometer/pyrometer reading should be within  $\pm 5^{\circ}\text{F}$  ( $2^{\circ}\text{C}$ ) of the thermostat knob setting. If it is not, calibrate as follows:

- a. Loosen setscrew in thermostat control knob until the knob will rotate freely on its shaft.
- b. Rotate the knob until the index line on the knob is aligned with the marking that corresponds to the thermometer or pyrometer reading.
- c. Hold the knob and carefully tighten the setscrew.
- d. Recheck the thermometer/pyrometer reading against the thermostat knob setting the next time the burner lights.
- e. Repeat steps 4.a. through 4.d. until the thermometer/pyrometer reading and knob setting agree within  $\pm 5^{\circ}\text{F}$  ( $2^{\circ}\text{C}$ ).

5. Remove the thermometer or pyrometer.

If calibration cannot be obtained, call a Factory Authorized Service Center for assistance.

#### Check Thermostat Controller Thermostat Calibration

(This check applies only to units equipped with Thermostat Controllers.)

1. Set the temperature control knob to  $325^{\circ}\text{F}$  ( $162^{\circ}\text{C}$ ) and insert a good grade thermometer or pyrometer into the frypot so that it touches the temperature probe guard.

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### CHAPTER 5: PREVENTIVE MAINTENANCE



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- When the burner cycles off, set the temperature control knob to 340°F (170°C). As the reading on the thermometer or pyrometer nears the control knob setting, but before the burner cycles off, reset the knob to 325°F (162°C). Just as the reading on the thermometer or pyrometer drops below 325°F (162°C), the burner should cycle on. If it does not, calibration is required. Call your Factory Authorized Service Center (FASC) to arrange this service.

#### Check Computer Magic III Set Point Accuracy

(This check applies only to units equipped with Computer Magic III Controllers.)

Insert a good-grade thermometer or pyrometer probe into the oil/shortening, with the end touching the fryer temperature-sensing probe.

- When the computer display shows a series of four dashes “----” with no dot between the first and second dashes (indicating that the frypot contents are within the cooking range), press the  switch once to display the temperature of the cooking oil or shortening as sensed by the temperature probe.
- Press the  switch twice to display the set point.
- Note the temperature on the thermometer or pyrometer. All three readings should be within  $\pm 5^{\circ}\text{F}$  ( $2^{\circ}\text{C}$ ) of each other. If not, contact a Factory Authorized Service Center for assistance.

#### Clean Gas Valve Vent Tube

- Set the fryer power switch and the gas valve to the OFF position.
- Carefully unscrew the vent tube from the gas valve. NOTE: The vent tube may be straightened for ease in removal.
- Pass a piece of ordinary binding wire (.052 inch diameter) through the tube to remove any obstruction.
- Remove the wire and blow through the tube to ensure it is clear.
- Reinstall tube and bend so that the opening is pointing downward.

#### SEMI-ANNUAL CHECKS AND SERVICES

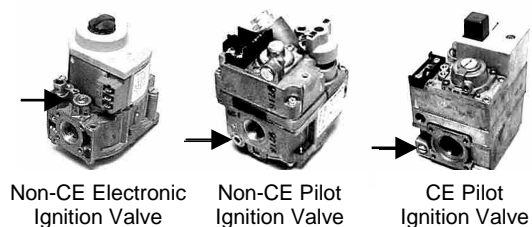
##### Check Burner Manifold Pressure



#### WARNING

This task should be performed by qualified service personnel only.

- Ensure that the gas valve knob is in the OFF position.
- Remove the pressure tap plug from the gas valve (see arrows in photos below for location).



**47 SERIES GAS FRYERS  
CHAPTER 5: PREVENTIVE MAINTENANCE**

3. Insert the fitting for a gas pressure-measuring device into the pressure tap hole.
4. 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, note gas pressure reading for correct pressure in accordance with the accompanying tables.

Non-CE Standard Burner Manifold Gas Pressures	
Gas	Pressure
Natural	3.5" W.C. 0.8 kPa
LP	8.25" W.C. 2.5 kPa

CE Standard Burner Manifold Gas Pressures	
Gas	Pressure (mbar)
Natural Gas Lacq (G20) under 20 mbar	8
Natural Gas Gronique * (G25) under 25 mbar	10
Propane (G31) under 37 or 50 mbar	21
* Belgian G25 = 7,0 mbar	

5. To adjust burner gas pressure, remove the cap from the gas valve regulator and adjust to correct pressure.
6. Place the fryer power switch and the gas valve in the OFF position. Remove the fitting from the pressure tap hole and reinstall the pressure tap plug.

**5.2 FootPrint III Filtration System  
Preventive Maintenance Checks  
and Services**

**⚠ DANGER**  
Always allow cooking oil/shortening to cool below 100°F (38°C) before transporting to the disposal area.  
*Frymaster* recommends the use of a Shortening Disposal Unit, available from your local distributor, for your safety.

**⚠ WARNING**  
Never operate the filter system without cooking oil/shortening in the system.

**⚠ WARNING**  
Never use the filter pan to transport old cooking oil/shortening to the disposal area.

**⚠ WARNING**  
Never drain water into the filter pan.  
Water will damage the filter pump.

There are no periodic preventive maintenance checks and services required for your FootPrint III Filtration System other than daily cleaning of the filter pan with a solution of hot water and detergent.

If you notice that the system is pumping slowly or not at all, verify that the filter pan screen is on the bottom of the filter pan, with the paper on top of the screen. If the filter screen and paper are correctly installed, change the filter paper and verify that the o-ring on the bottom of the filter pan is present and in good condition.

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### CHAPTER 5: PREVENTIVE MAINTENANCE

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Immediately after each use, drain the Power Shower completely. If you suspect blockage, unscrew the clean-out plugs at each corner of the frame. Place the frame in a pan of hot water for several minutes to melt any accumulation of solidified oil/shortening. Use a long, narrow bottlebrush with hot water and detergent to clean inside the tubes. If necessary, insert a straightened paper clip or similar instrument into the holes in the frame

to remove any blockages. Rinse, dry thoroughly, and reinstall the plugs before using.

 **DANGER**

**Failure to reinstall the clean-out plugs will cause hot oil/shortening to spray out of the frypot during the filtering process, creating an extreme burn hazard to personnel.**



# 47 SERIES GAS FRYERS

## CHAPTER 6: OPERATOR TROUBLESHOOTING

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### 6.1 Introduction

This chapter provides an easy reference guide to the more common problems that may occur during the operation of your equipment. The troubleshooting guides in this chapter are intended to help you correct, or at least accurately diagnose, problems with your equipment. Although the chapter covers the most common problems reported, you may very well encounter a problem not covered. In such instances, the Frymaster Technical Service Department will make every effort to help you identify and resolve the problem.

When troubleshooting a problem, always use a process of elimination starting with the simplest solution and working through to the most complex. Never overlook the obvious. Anyone can forget to plug a cord into a receptacle or put a piece of filter paper into a filter pan. Don't assume that you are exempt from such occurrences.

Most importantly, always try to establish a clear idea of why a problem has occurred. Part of your corrective action involves taking steps to ensure that it doesn't happen again. If a controller malfunctions because of a poor connection, check all other connections while you're at it. If a fuse continues to blow, find out why. Always keep in mind that failure of a small component may often be indicative of potential failure or incorrect functioning of a more important component or system.

Several of the corrective actions recommended in this chapter involve removing suspect components from the system and substituting

components that are known to be working. Whenever this is indicated, refer to Chapter 7, Service Procedures, for detailed instructions.

Each guide begins with a description of a common problem in a six-sided figure. Simply follow the arrows and answer the questions to determine the corrective action to take.

If you are in doubt as to the proper action to take, do not hesitate to call the Frymaster Technical Service Department or your local Frymaster Factory Authorized Service Center for assistance.

 **DANGER**

**Hot cooking oil or shortening causes severe burns. Never attempt to move a fryer containing hot cooking oil/shortening or to transfer hot cooking oil/shortening from one container to another.**

 **DANGER**

**Use extreme care when performing electrical circuit tests. Live circuits will be exposed.**

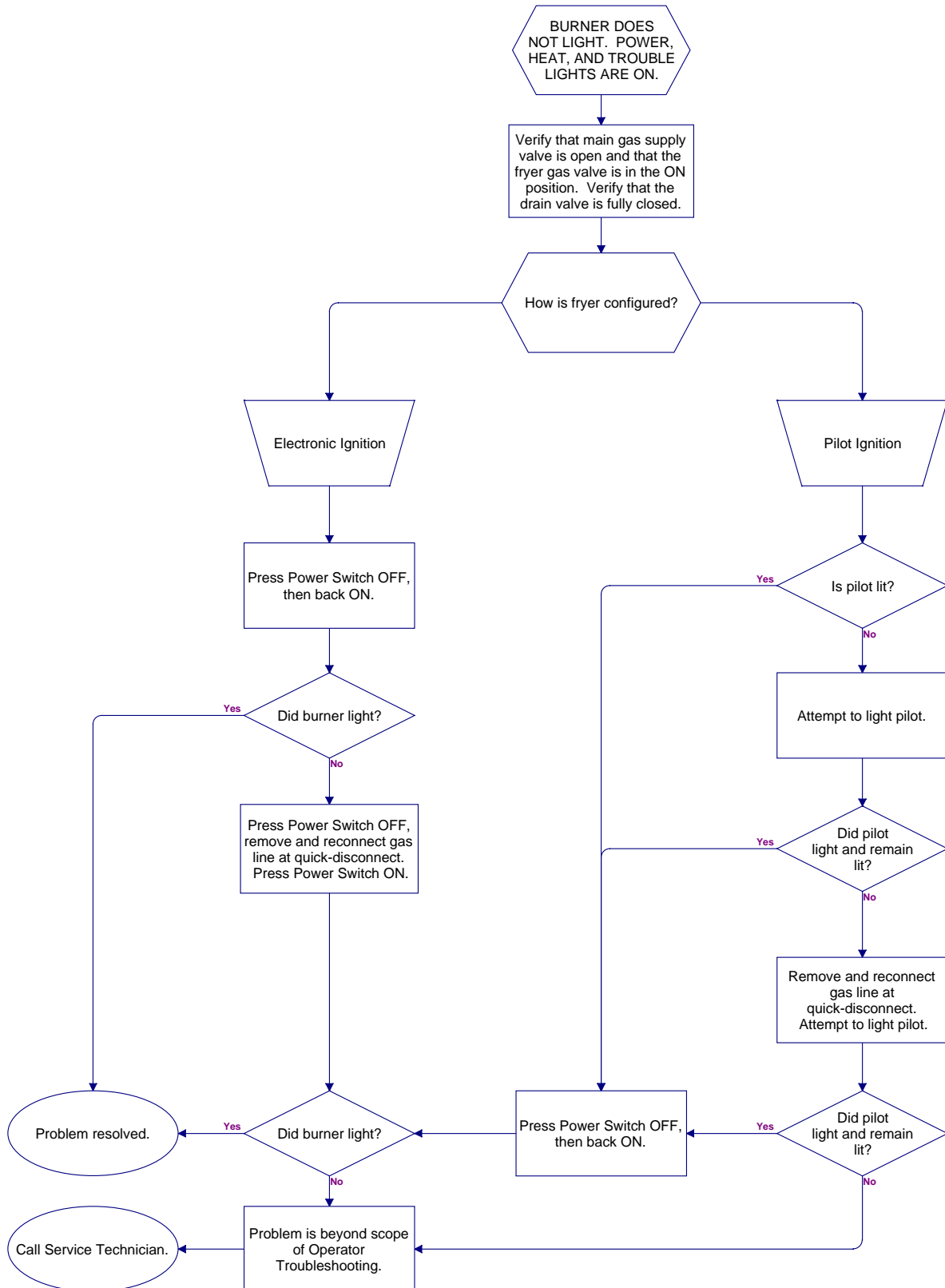
 **WARNING**

**Inspection, testing, and repair of electrical equipment should be performed only by qualified service personnel. The equipment should be unplugged when servicing, except when electrical tests are required.**

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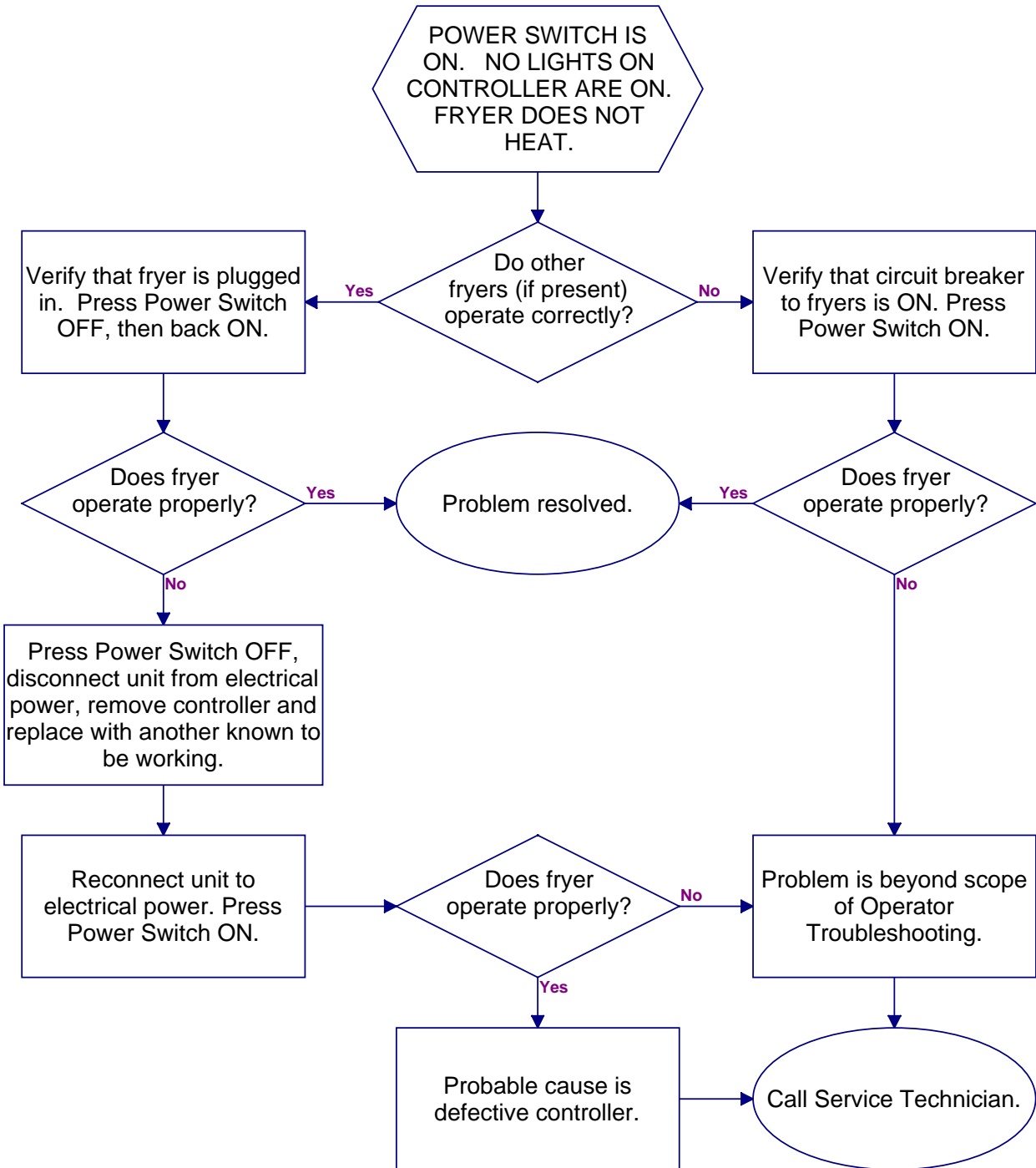
## CHAPTER 6: OPERATOR TROUBLESHOOTING

### 6.2 Troubleshooting Fryers Equipped with Controllers Other Than CM III



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CHAPTER 6: OPERATOR TROUBLESHOOTING**

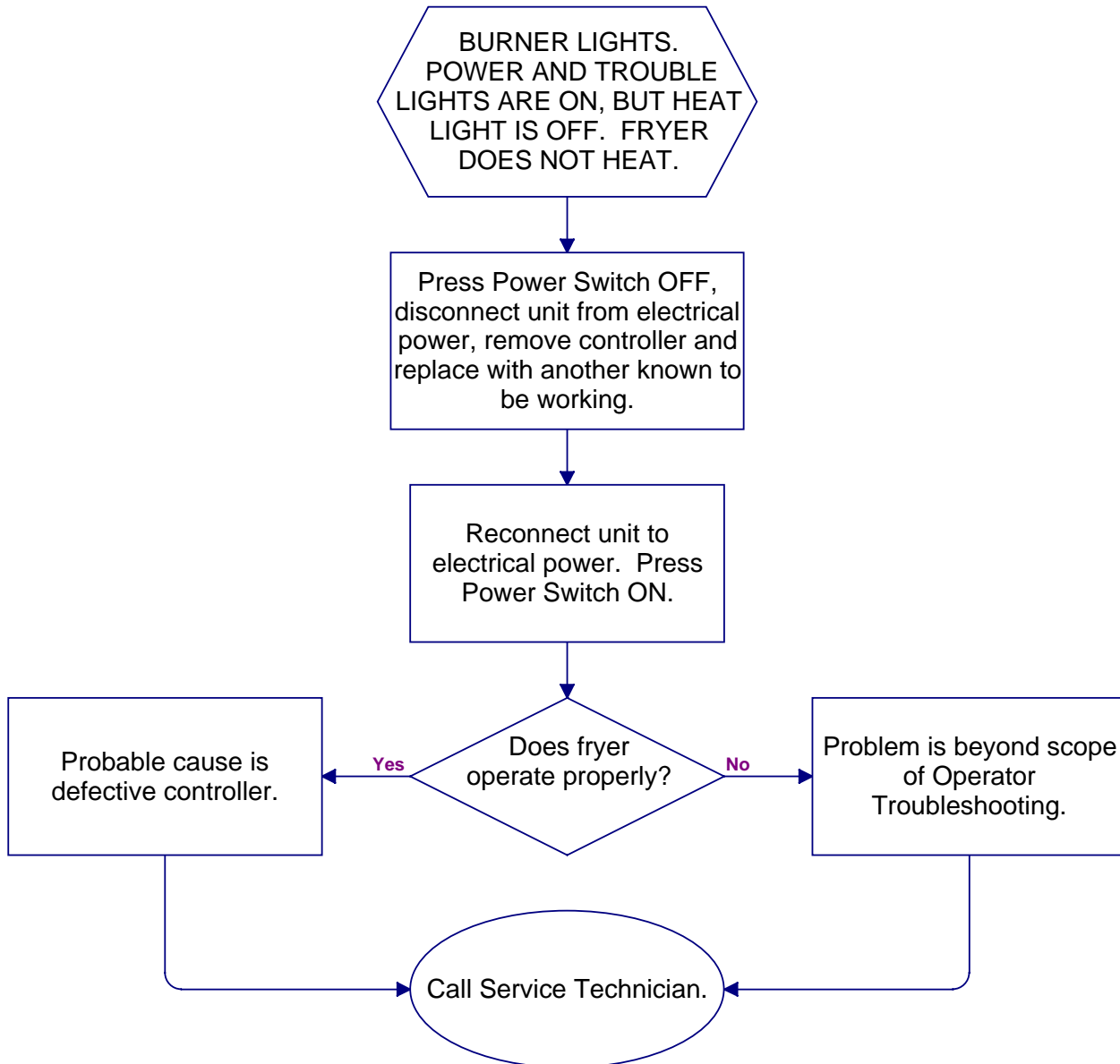
**Troubleshooting Fryers Equipped with Controllers Other Than CM III**



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**CHAPTER 6: OPERATOR TROUBLESHOOTING**

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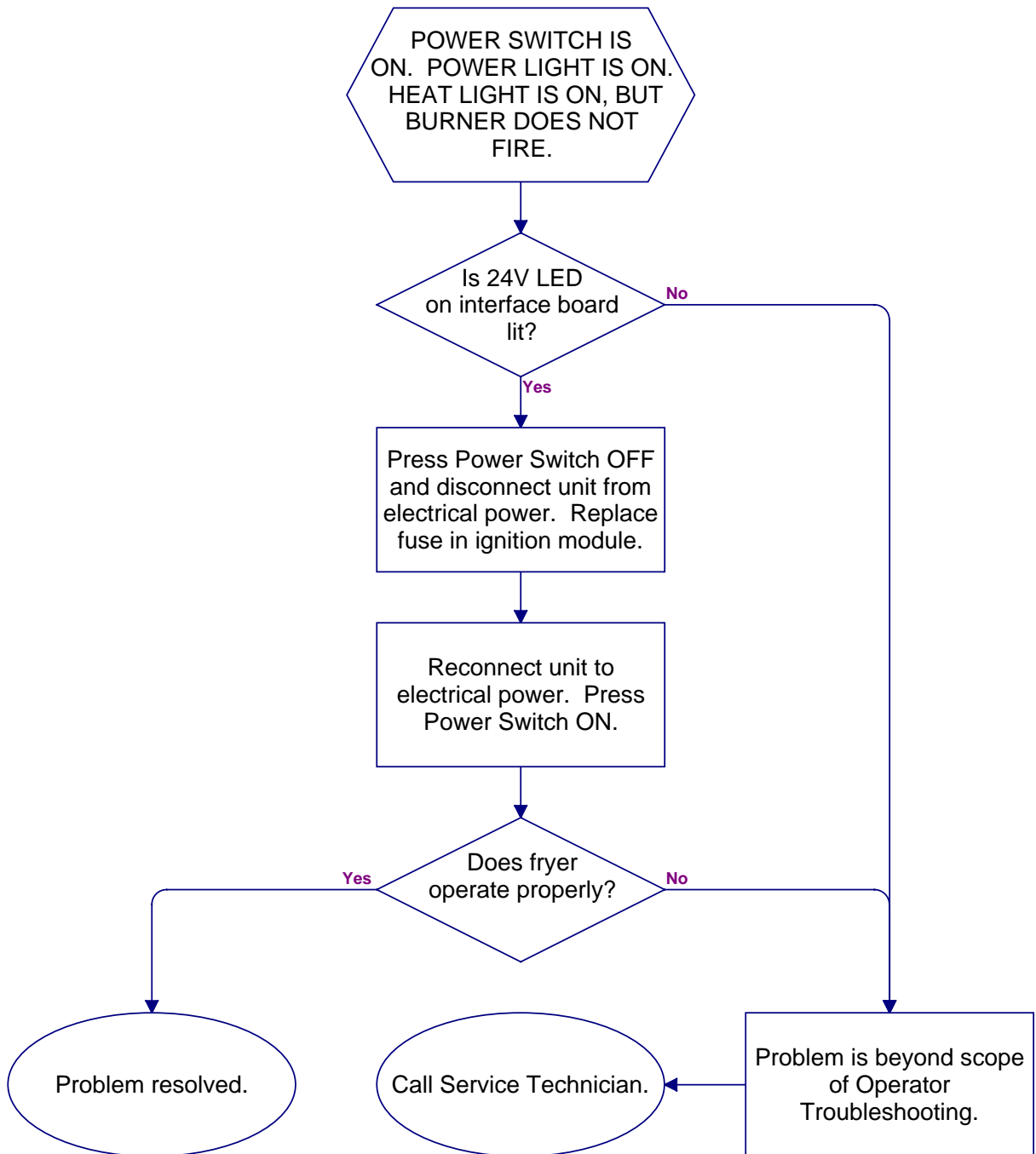
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**CHAPTER 6: OPERATOR TROUBLESHOOTING**

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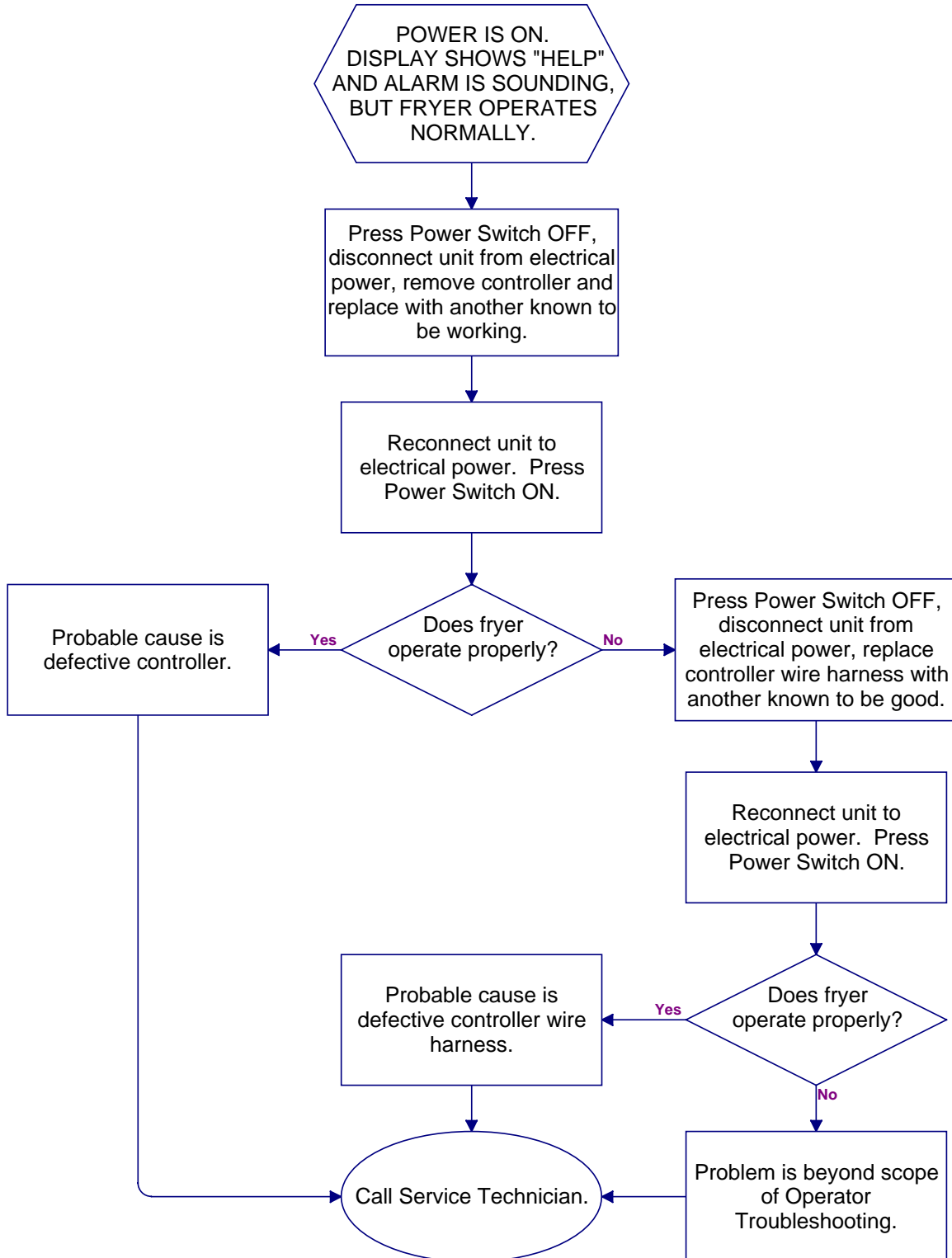
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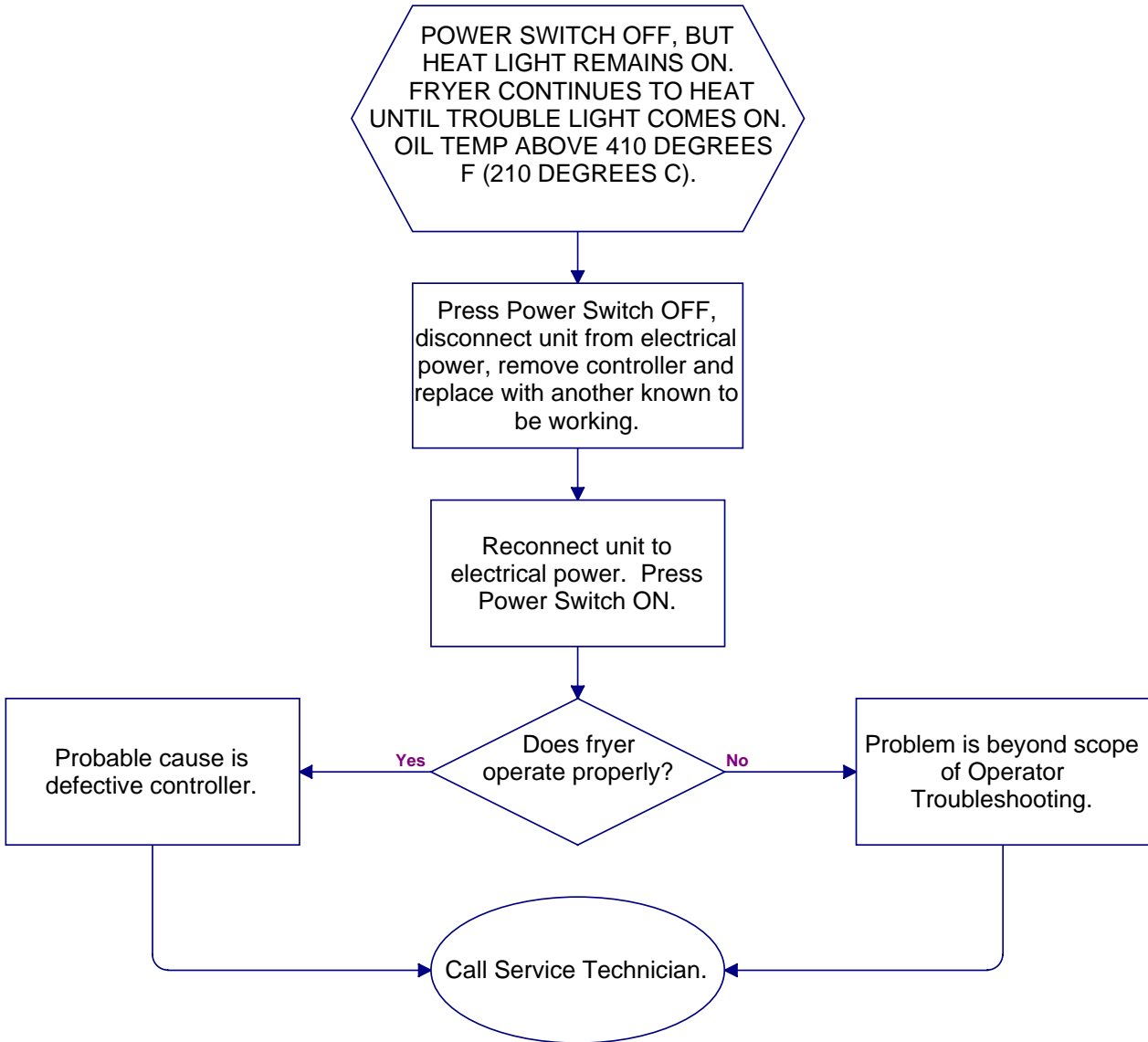
**Troubleshooting Fryers Equipped with Controllers Other Than CM III**



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**CHAPTER 6: OPERATOR TROUBLESHOOTING**

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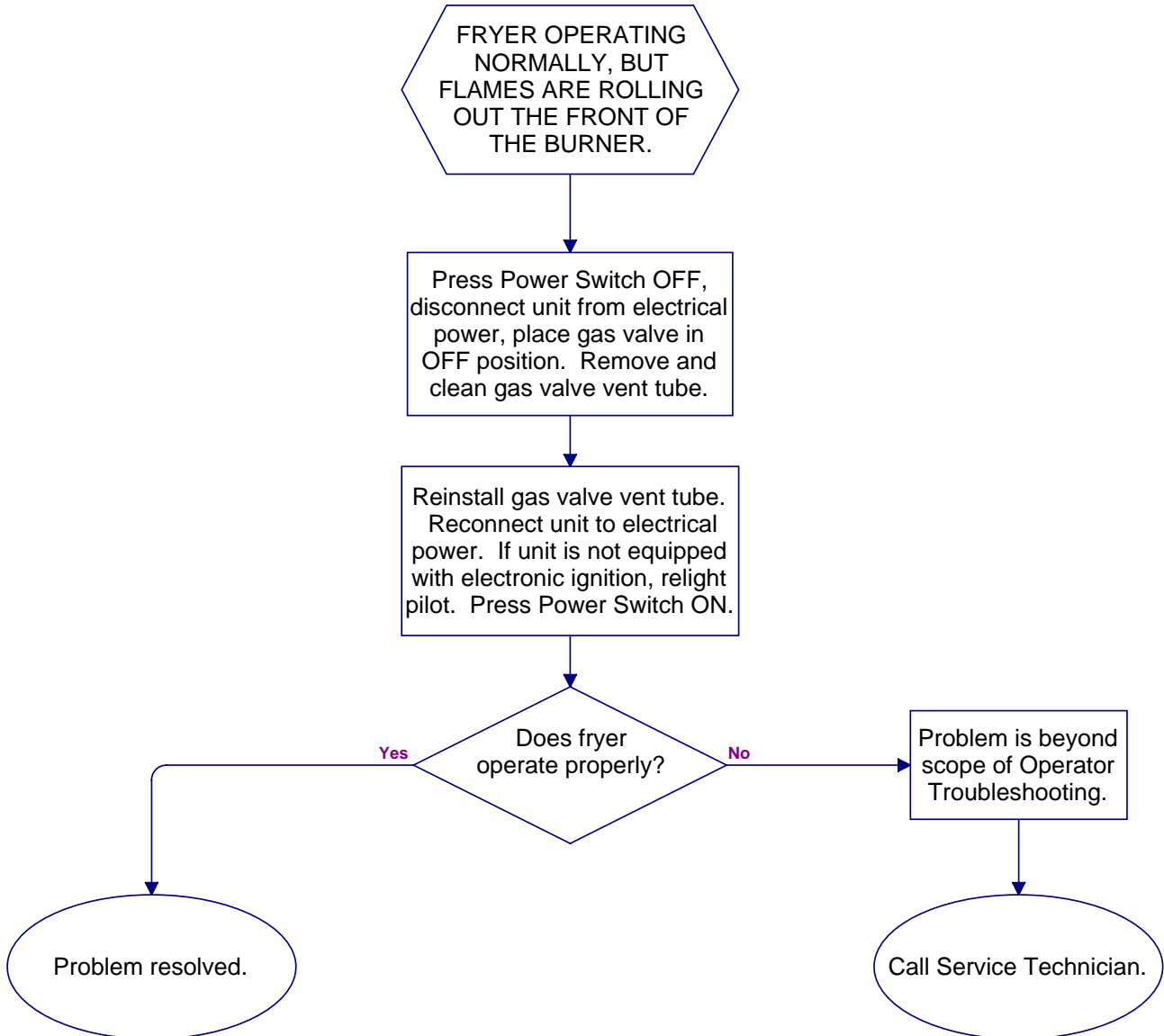
**Troubleshooting Fryers Equipped with Controllers Other Than CM III**



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**CHAPTER 6: OPERATOR TROUBLESHOOTING**

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**Troubleshooting Fryers Equipped with Controllers Other Than CM III**

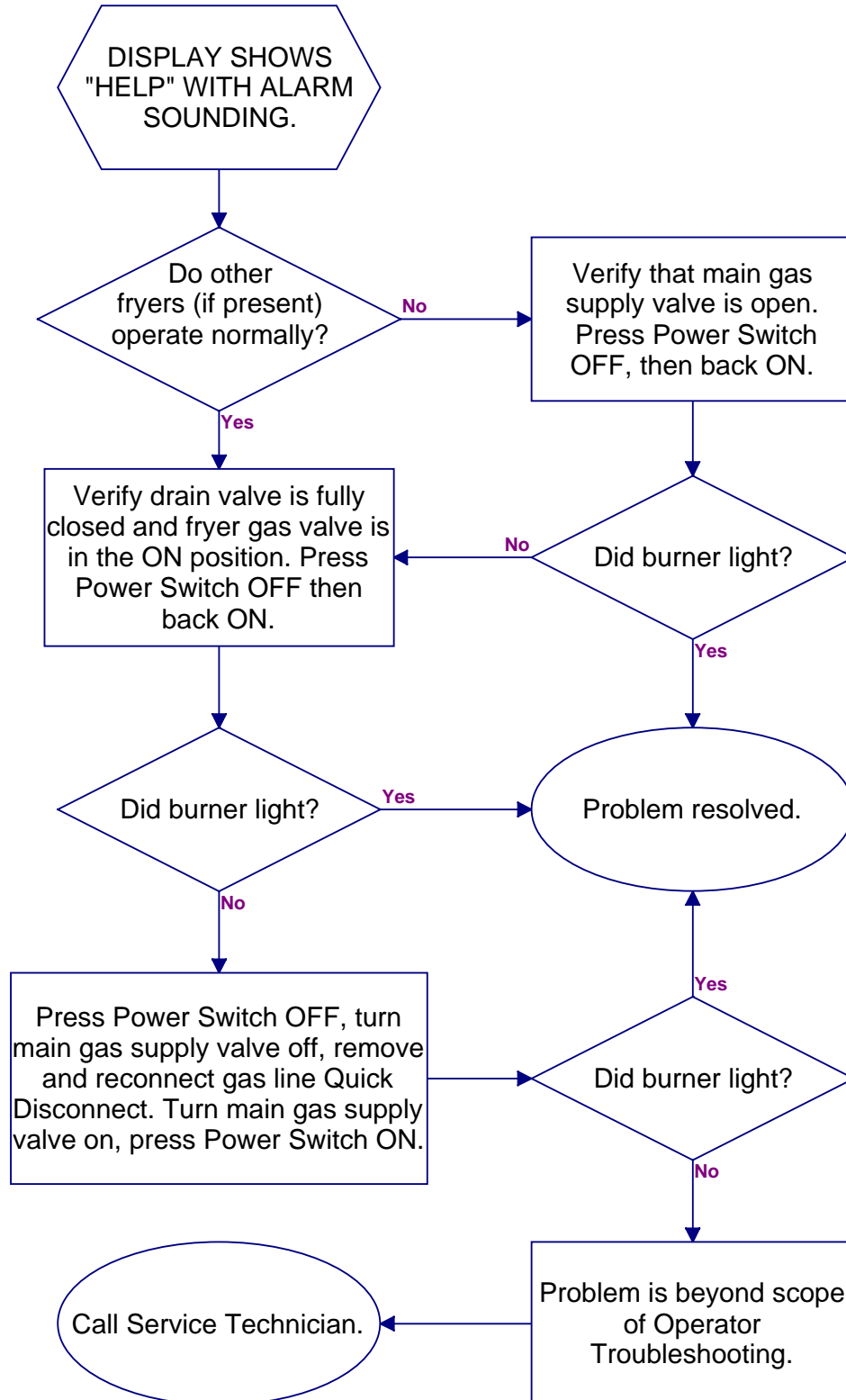




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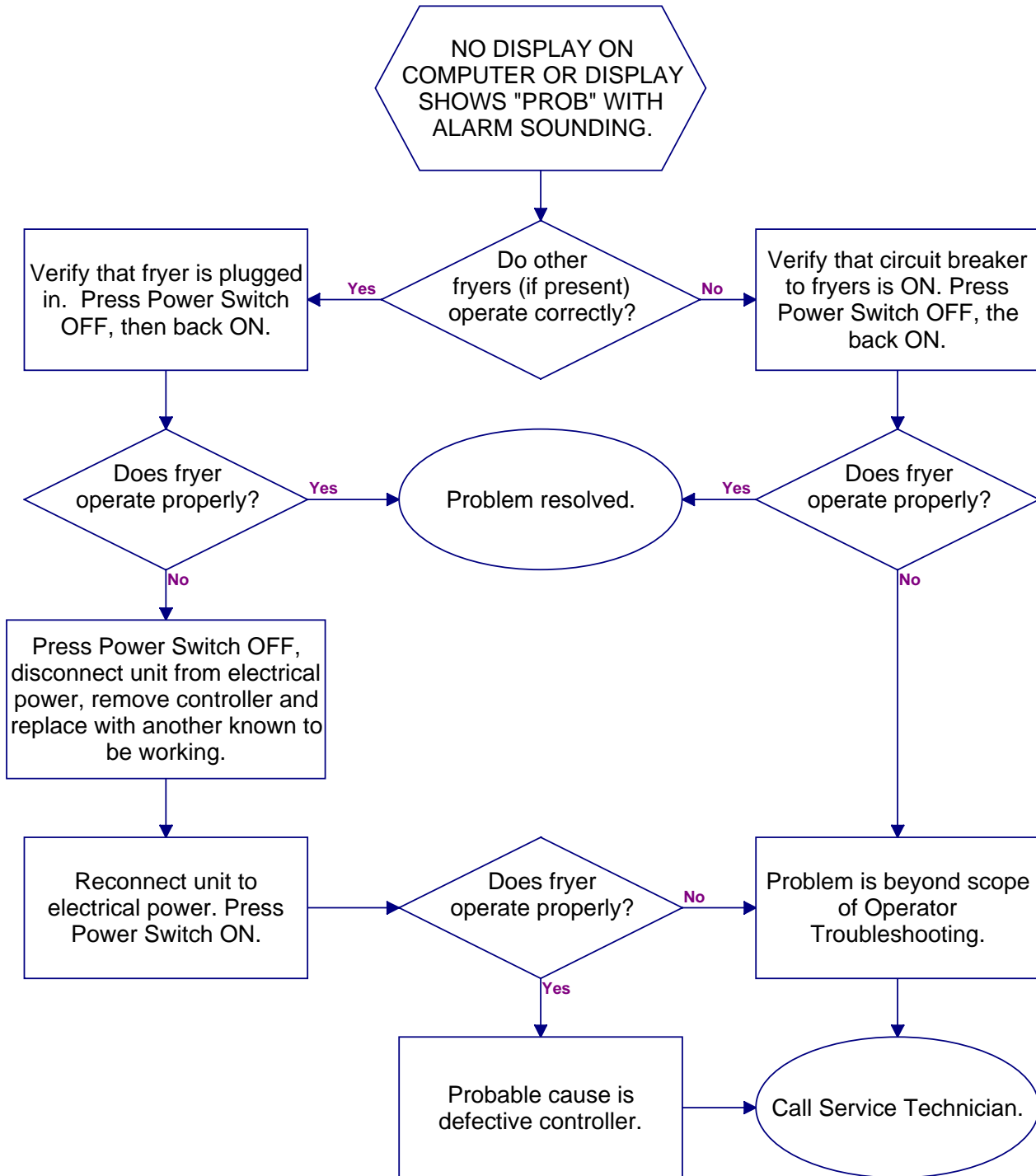
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**6.3 Troubleshooting Fryers Equipped with Computer Magic III Computers**



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CHAPTER 6: OPERATOR TROUBLESHOOTING**

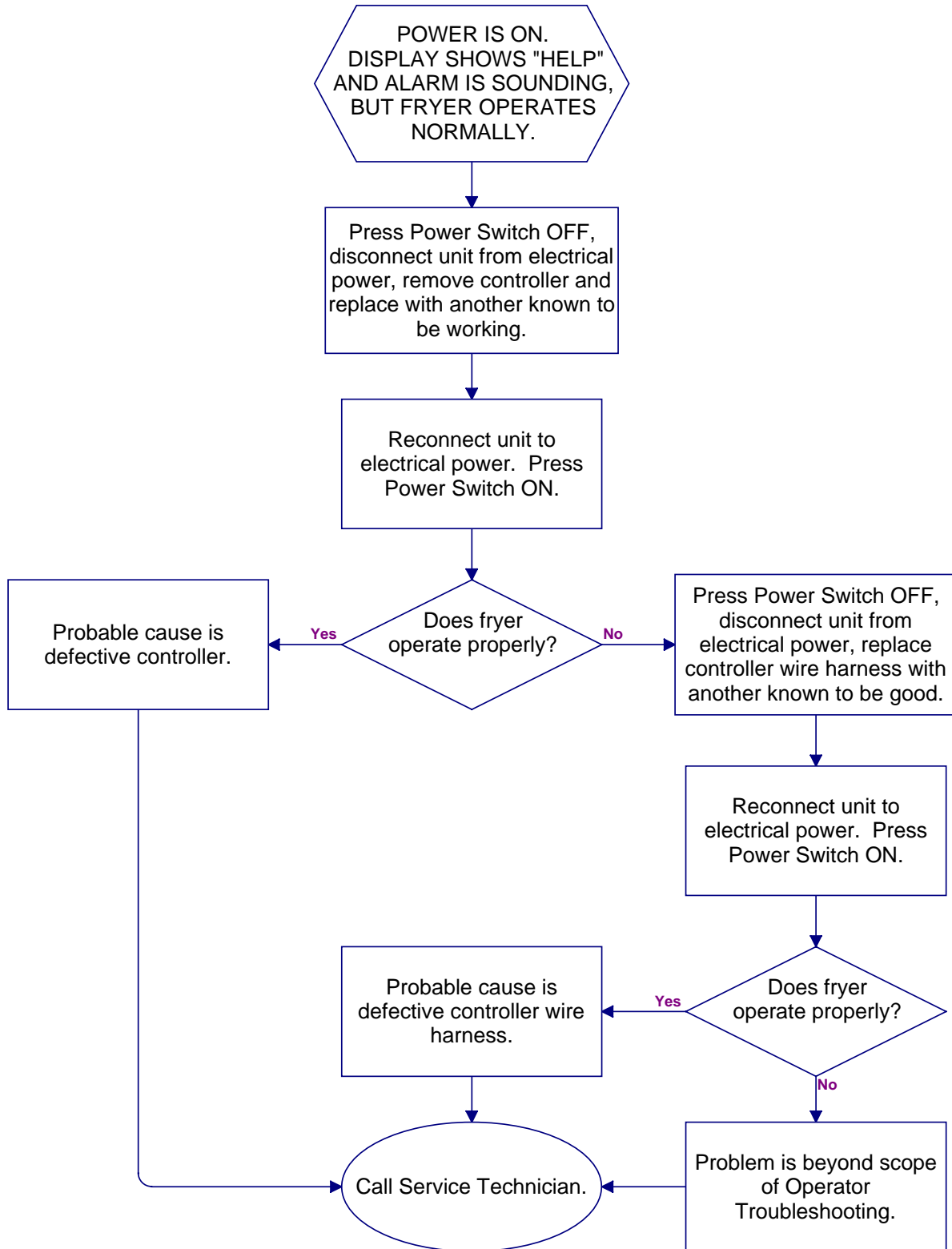
**Troubleshooting Fryers Equipped with Computer Magic III Computers**



**47 SERIES GAS FRYERS**  
**CHAPTER 6: OPERATOR TROUBLESHOOTING**

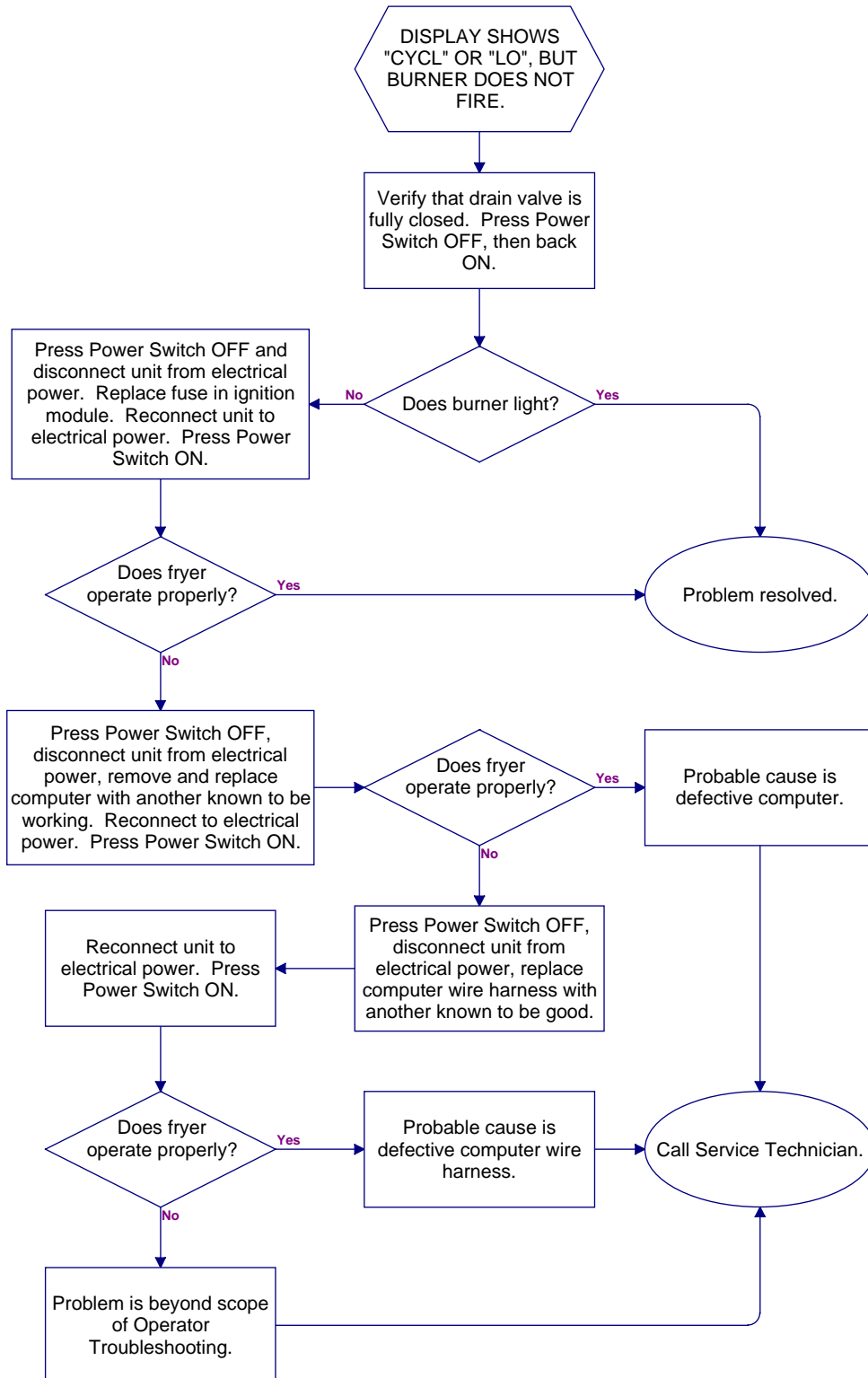
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**Troubleshooting Fryers Equipped with Computer Magic III Computers**



## 47 SERIES GAS FRYERS CHAPTER 6: OPERATOR TROUBLESHOOTING

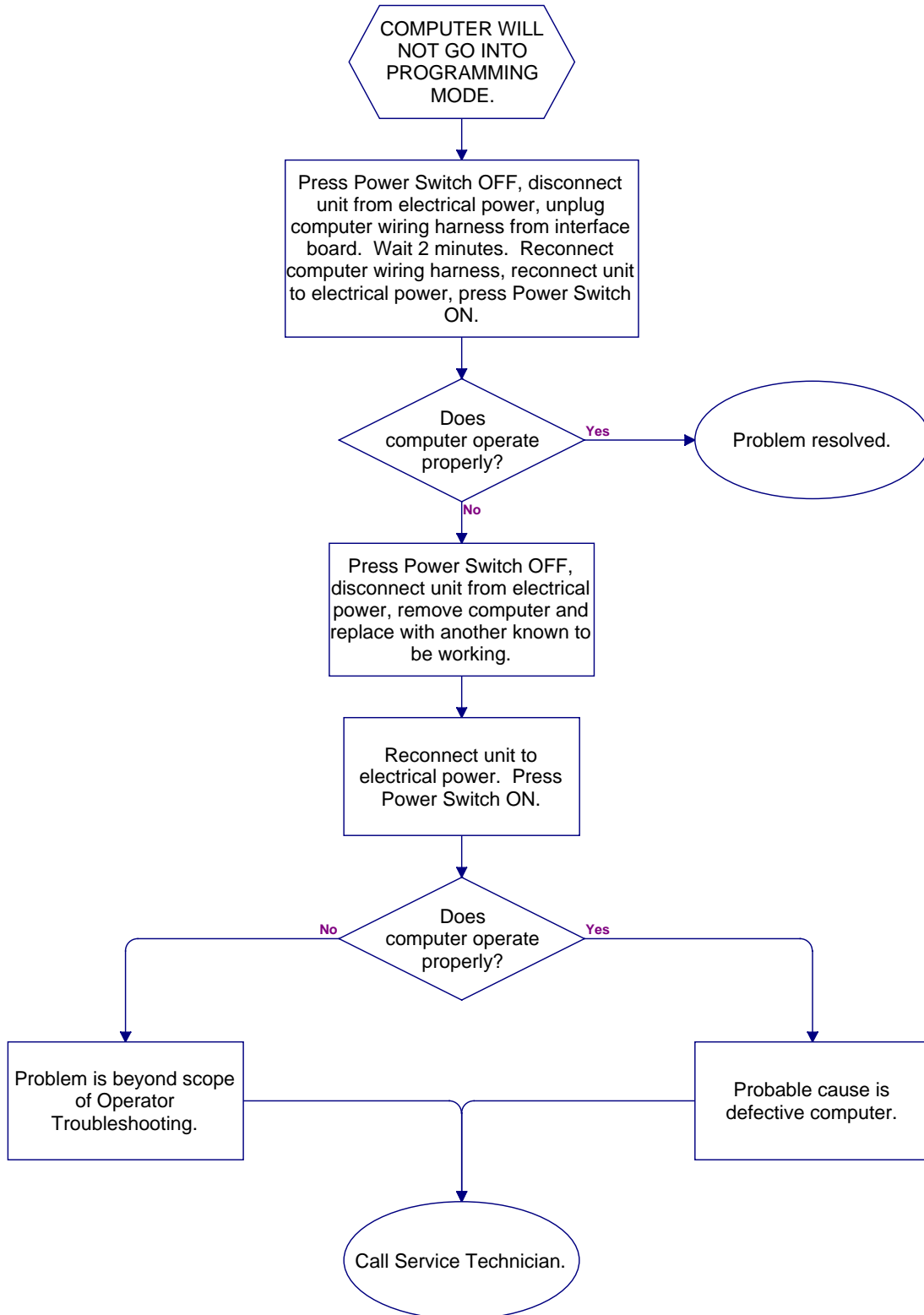
### Troubleshooting Fryers Equipped with Computer Magic III Computers



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**CHAPTER 6: OPERATOR TROUBLESHOOTING**

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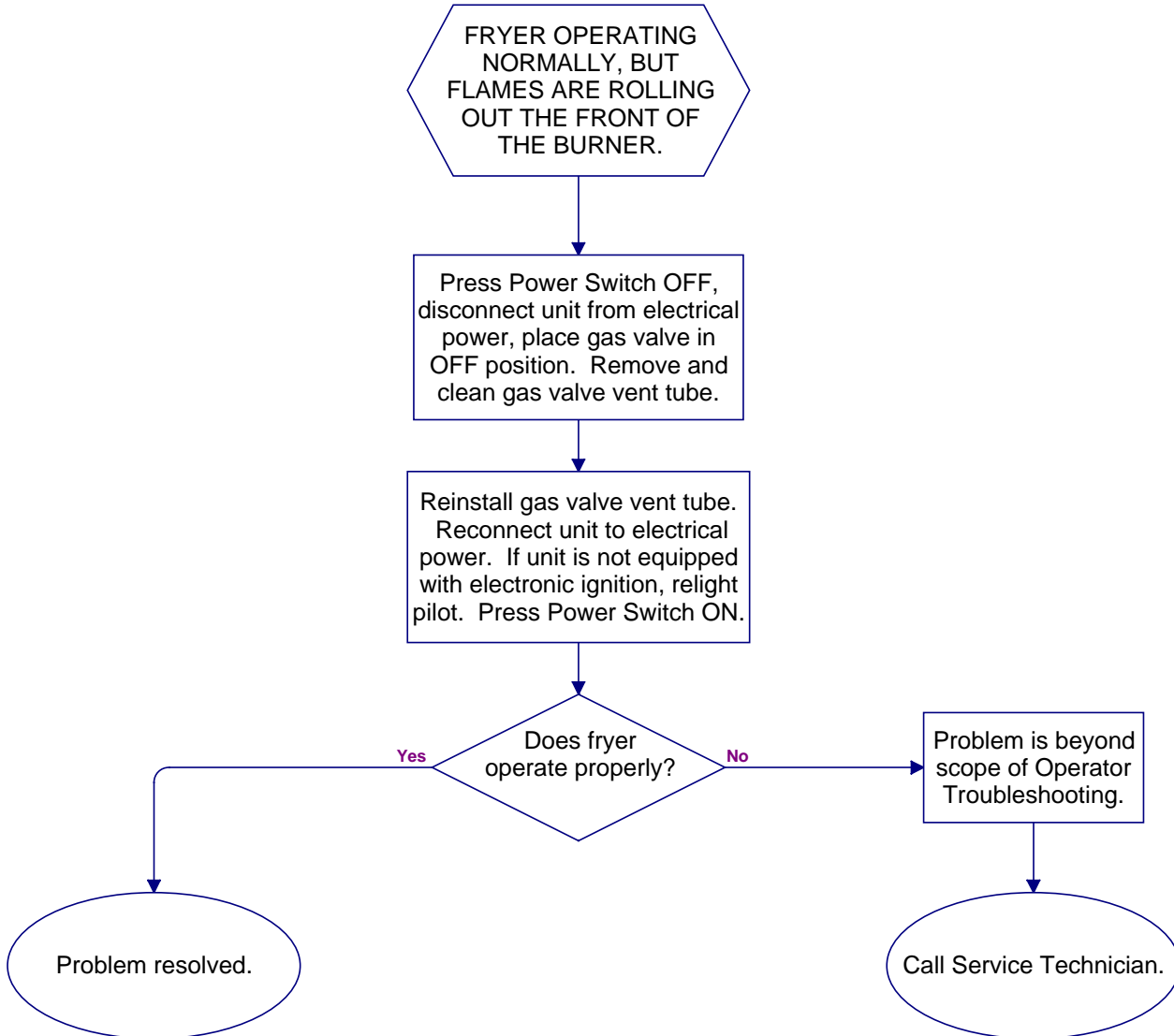
**Troubleshooting Fryers Equipped with Computer Magic III Computers**



**47 SERIES GAS FRYERS  
CHAPTER 6: OPERATOR TROUBLESHOOTING**

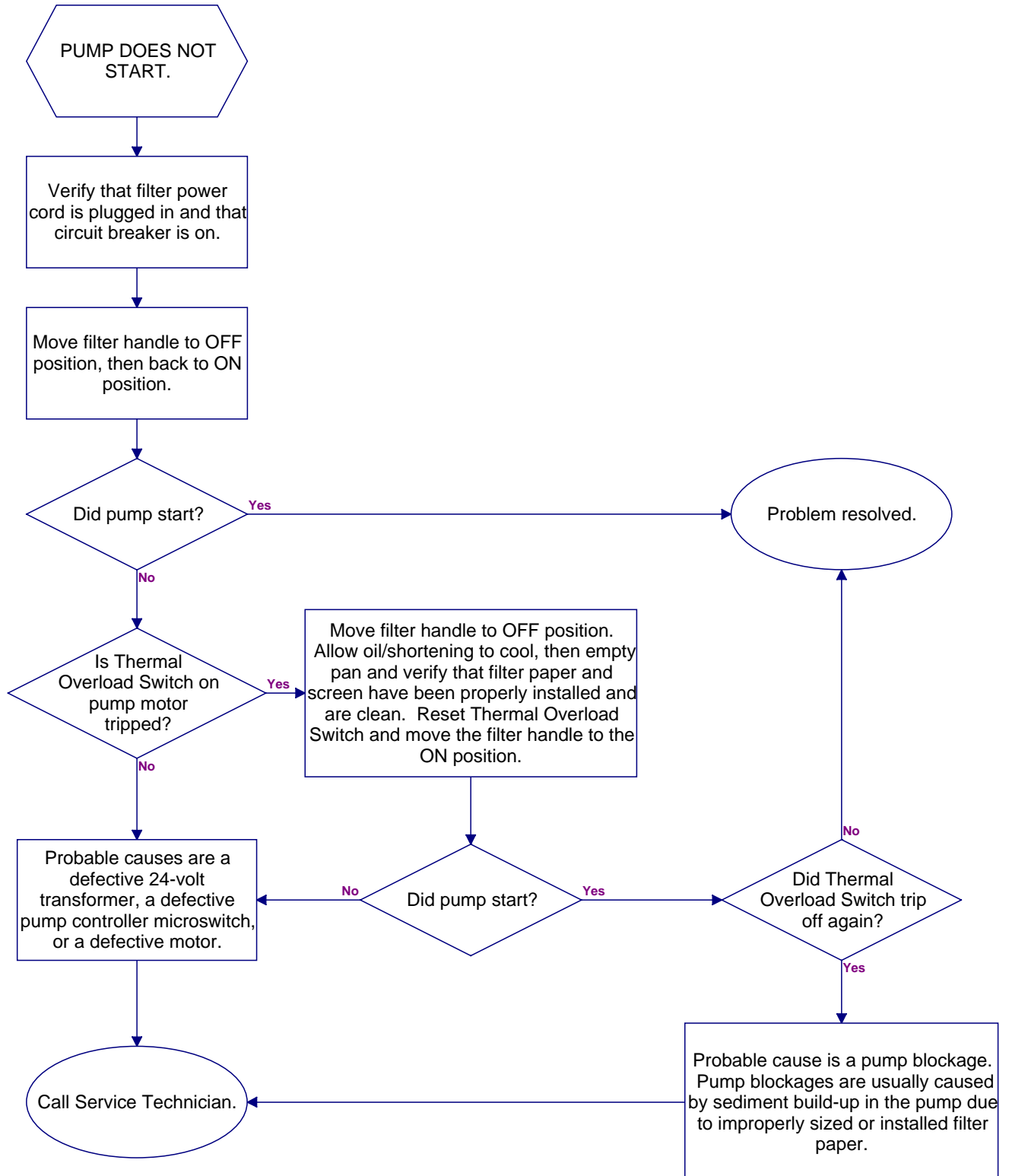
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**Troubleshooting Fryers Equipped with Computer Magic III Computers**



47 SERIES GAS FRYERS  
CHAPTER 6: OPERATOR TROUBLESHOOTING

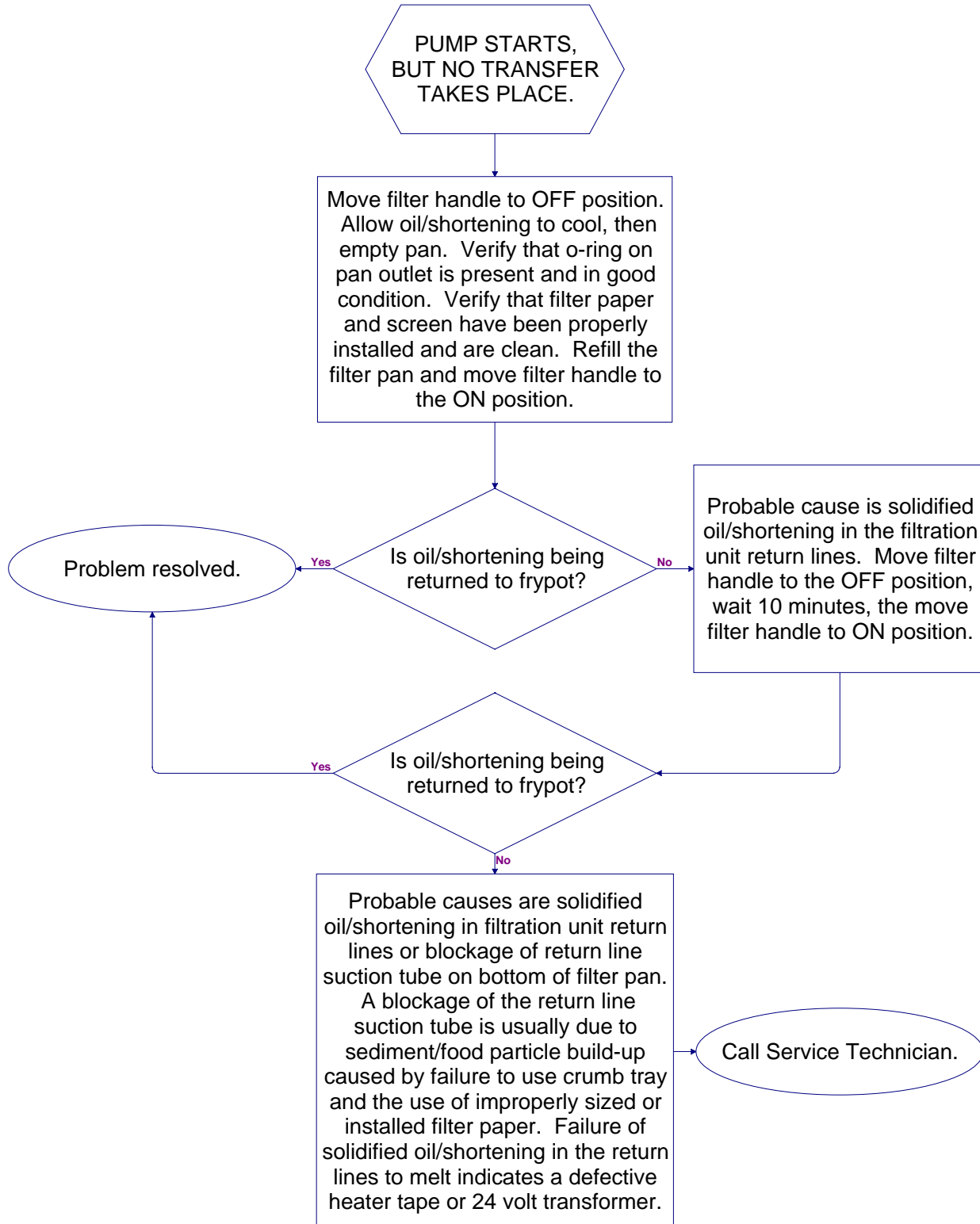
6.4 Troubleshooting the FootPrint III Filtration System



**47 SERIES GAS FRYERS**  
**CHAPTER 6: OPERATOR TROUBLESHOOTING**

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**Troubleshooting the FootPrint III Filtration System**

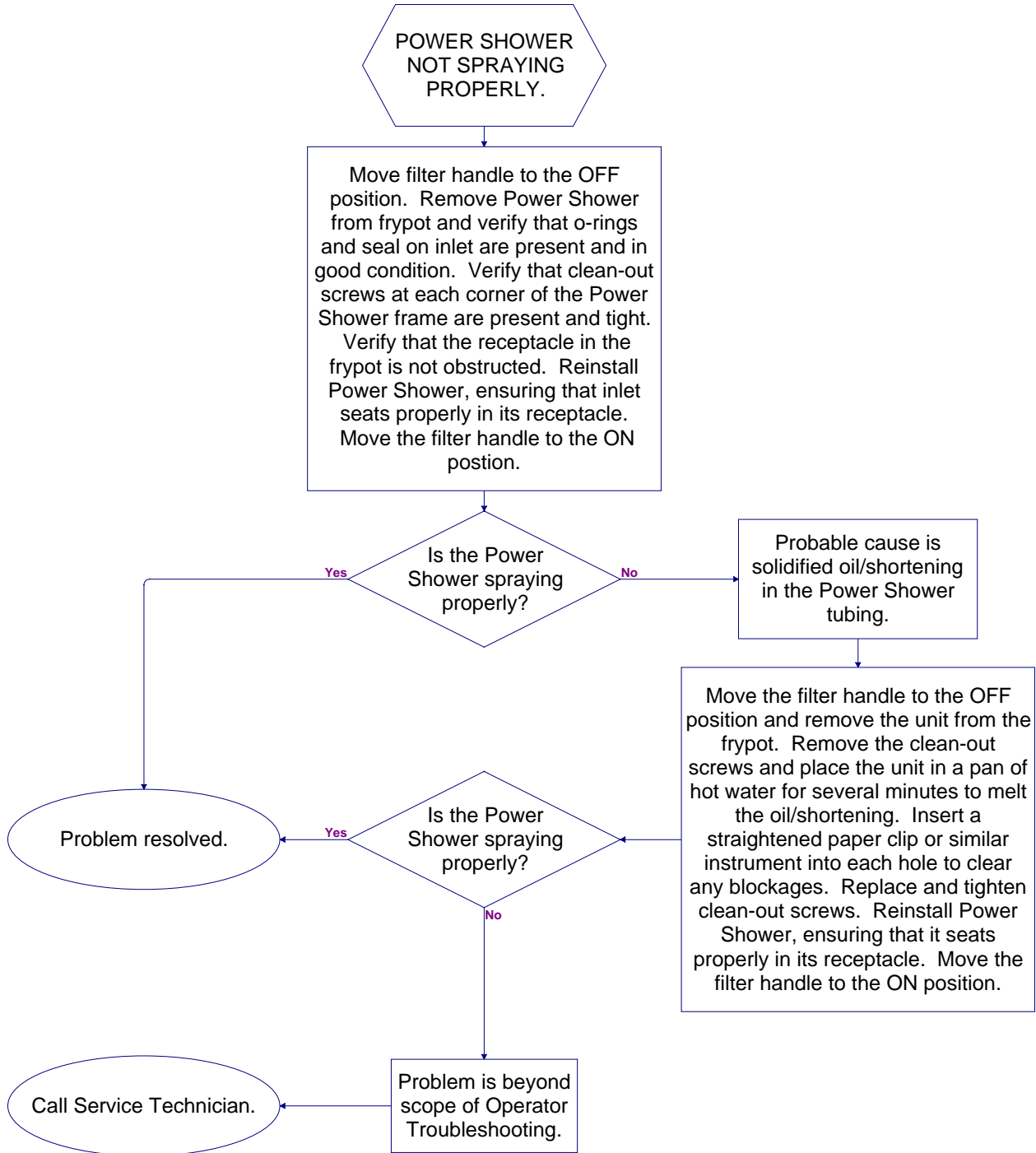




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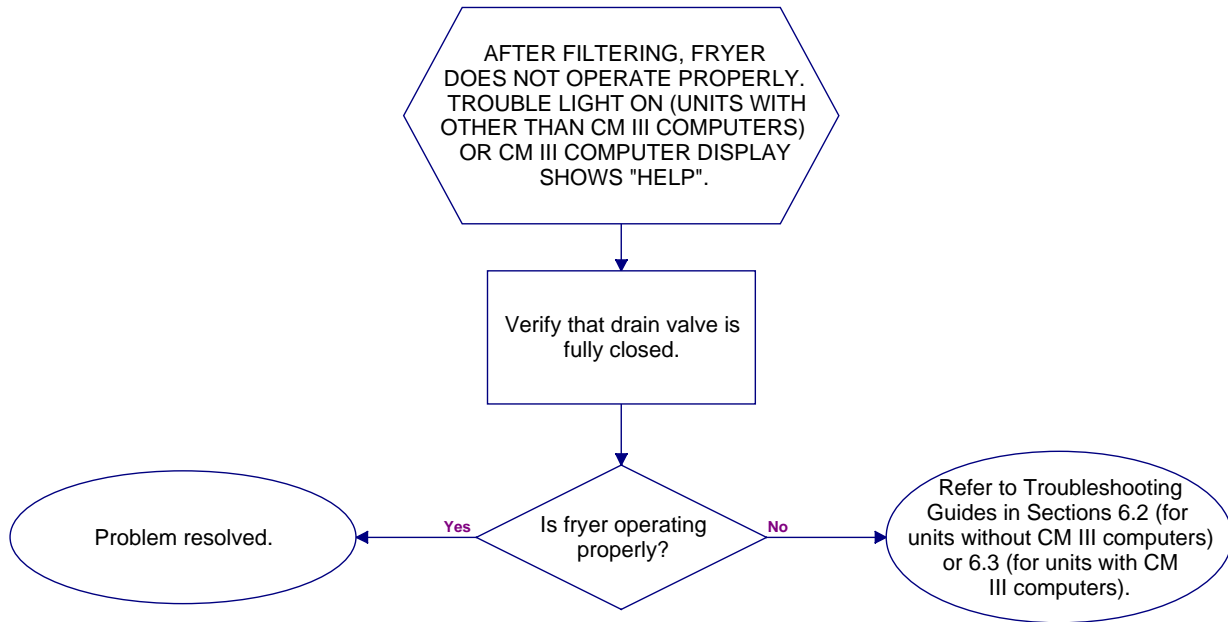
**Troubleshooting the FootPrint III Filtration System**



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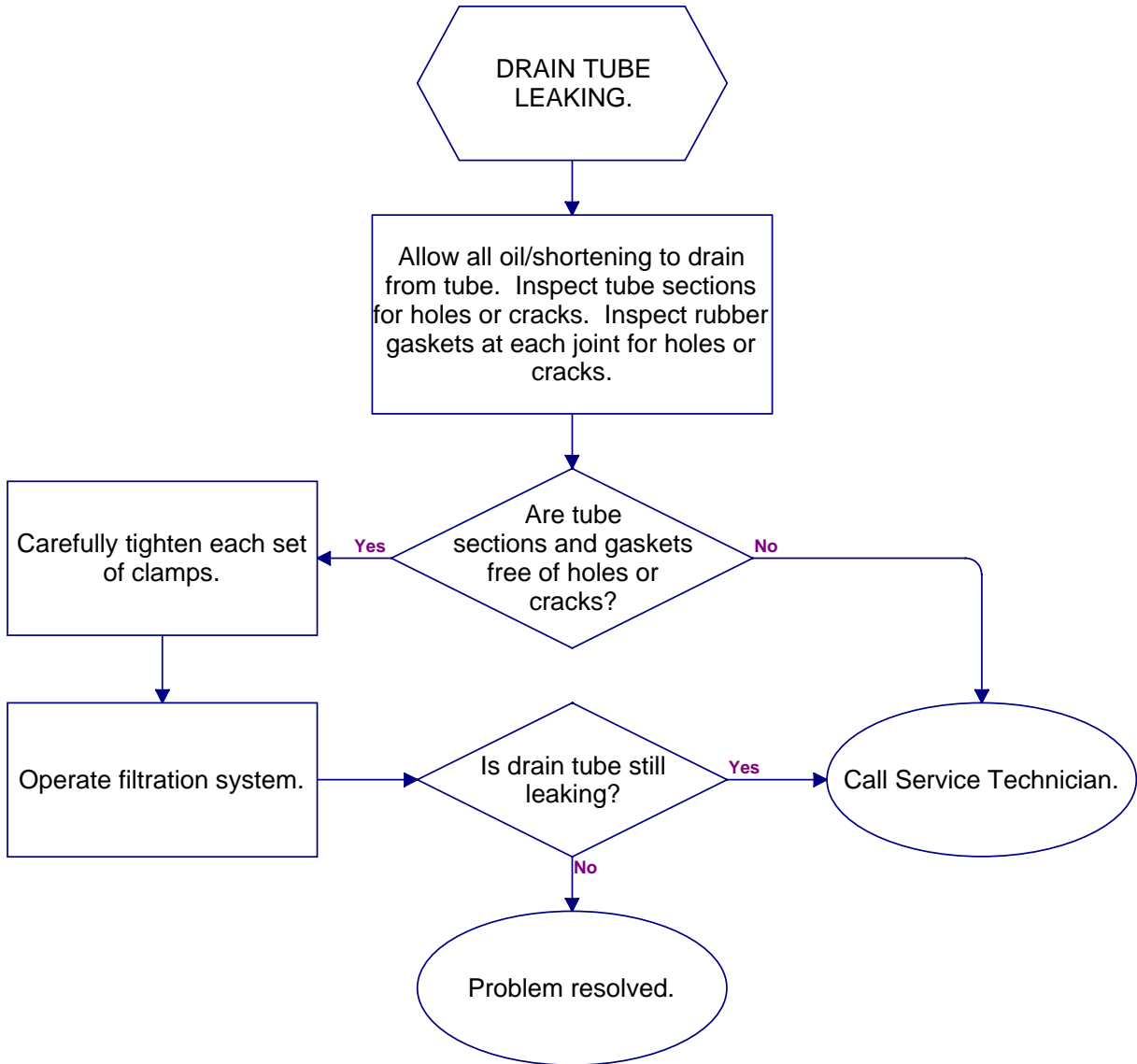
**Troubleshooting the FootPrint III Filtration System**



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**Troubleshooting the FootPrint III Filtration System**



# 47 SERIES GAS FRYERS

## CHAPTER 7: SERVICE PROCEDURES

### 7.1 Functional Description

The 47 Series fryers contain a welded stainless steel frypot that is directly heated by gas flames that are diffused evenly over its lower surface by ceramic “targets.”

In full vat configurations, the flames originate from orifices in a U-shaped burner manifold positioned beneath the frypot. In dual (split) vat configurations, the U-shaped manifold is replaced by a pair of J-shaped manifolds, one for each vat. The diameter of the orifices differs for natural and LP gas as indicated in the accompanying table.

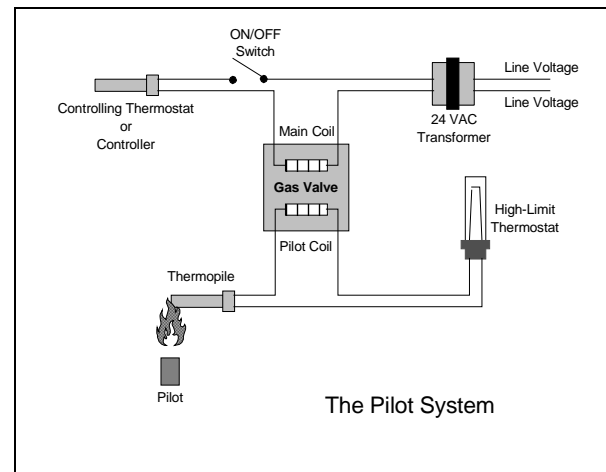
47 Series Orifice Sizes		
Gas	Drill Size	Millimeters
Natural	53	1.45
LP	65	0.86

Gas flow to the manifold(s) is regulated by an electromechanical gas valve. This series of fryers is equipped with a 24-volt valve system. Units with thermostat controls will have a pilot ignition (millivolt) system, and those with other type controllers may be configured with either a pilot ignition (millivolt) system or an electronic ignition system.

#### PILOT SYSTEM CONFIGURATION

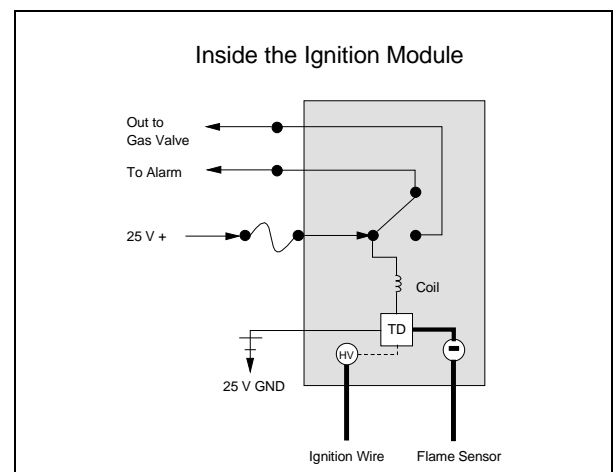
The pilot system is comprised of the pilot orifice, pilot hood, and a thermopile. The pilot serves two purposes. The first is to light the burner, the second is to heat the thermopile. In operation, the thermopile is in contact with the pilot flame and generates millivolts. The millivolt output passes 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 when the fryer is first placed into operation.



#### ELECTRONIC IGNITION CONFIGURATION

In units configured for electronic ignition, an ignition module connected to an igniter assembly replaces the pilot system. The ignition module performs four important functions: it provides fuse protection for the 24-volt circuit, provides an ignition spark, supplies voltage to the gas valve, and proofs the pilot flame.



## 47 SERIES GAS FRYERS

### CHAPTER 7: SERVICE PROCEDURES

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The module contains a 4-second time delay circuit and a coil that activates the gas valve. The igniter assembly consists of a spark plug, a pilot, and a flame sensor element.

At start-up the ON/OFF switch is placed in the ON position, supplying 12-volts DC to the heat control circuitry in the controller or computer and to one side of the heat relay coil on the interface board. If resistance in the temperature probe indicates the temperature in the frypot is below 180°F (82°C), the current flows through a melt cycle circuit where a timer switch alternately closes for 3 seconds and opens for 24 seconds. If the temperature is 180°F (82°C) or above, the current flows through a heat circuit, bypassing the timer switch. In either case, current is supplied to the other leg of the heat relay coil which then closes an electronic switch in the 24 VAC circuit to provide current to the ignition module.

Circuitry in the ignition module sends 24 VAC current to the gas valve via a normally closed high-limit switch and a drain safety switch. Simultaneously, the module causes the igniter to spark for 4 seconds to light the pilot flame. A flame sensor verifies that the pilot is lit by measuring the flow of microamps through the flame. If the pilot does not light (or is extinguished), current to the ignition module is cut, preventing the main valve from opening, and the ignition module “locks out” until the power switch is turned off then back on.

A temperature probe monitors the temperature in the frypot. When the programmed setpoint temperature is reached, resistance in the probe causes the heat cycle circuitry in the controller to cut off current flow through the heat relay. This in turn cuts off the 24 VAC current to the ignition module, resulting in closure of the gas valve.

### CONTROL OPTIONS

47 Series fryers may be equipped with thermostat controls, solid-state analog controls, solid-state digital controls, 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 unit, once started, the melt cycle will continue until it is manually turned off regardless of the temperature in the frypot.

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

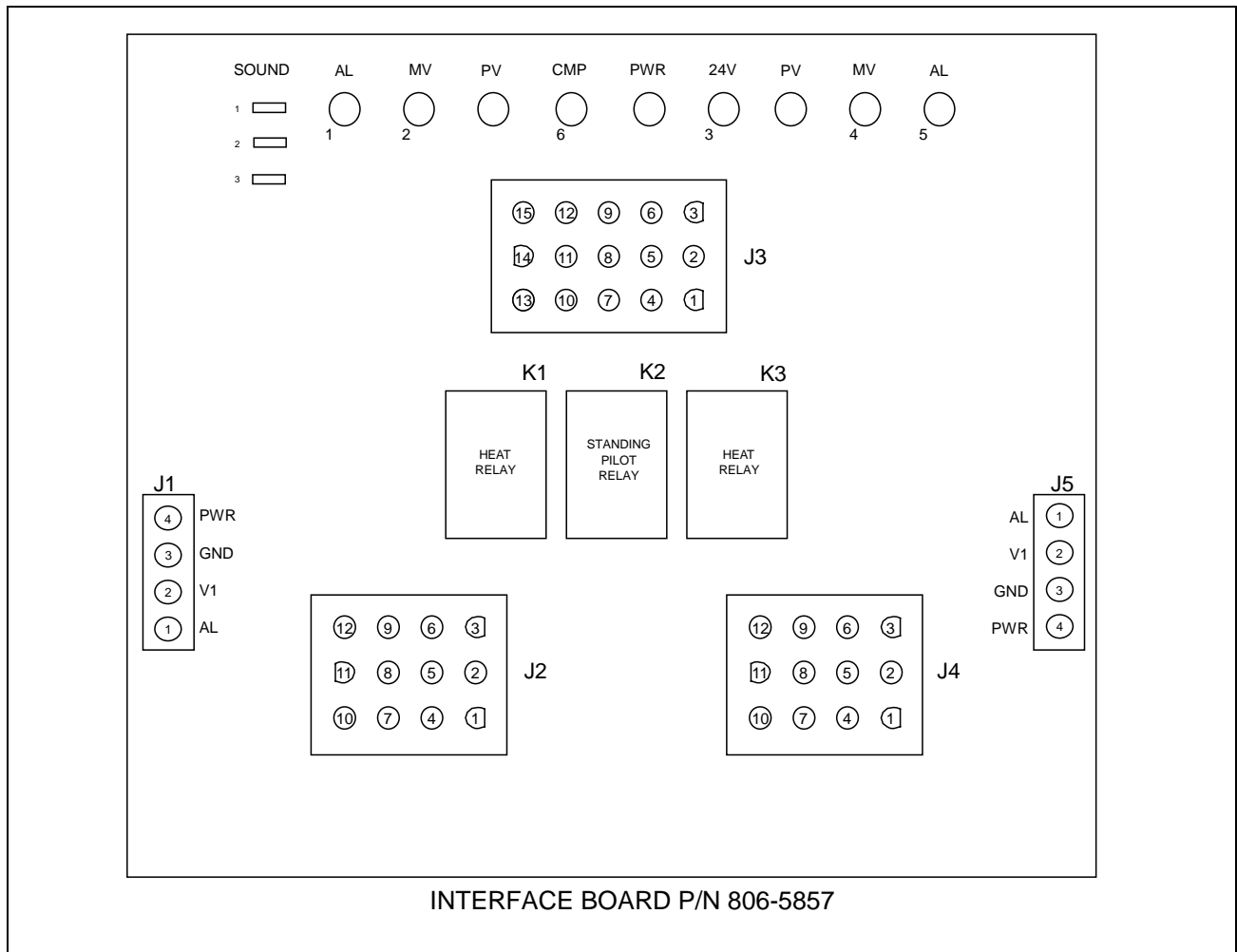
### INTERFACE BOARDS

The interface board provides a 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. Two types of interface boards may be used in 47 Series fryers; the type used depends on the fryer configuration.

In units configured for electronic ignition, P/N 806-5857 is used; the other board is P/N 806-3398.

**IFB 806-5857.** This board contains two types of relays. Heat relays (K1 and K3) operate at 12 volts DC output from the controller. They switch 24 VAC to the main gas circuit when the unit calls for heat. The middle relay (K2) switches 24 VAC to the pilot circuit when the unit is powered up. The purpose of this relay is to allow the pilot to remain continuously lit.

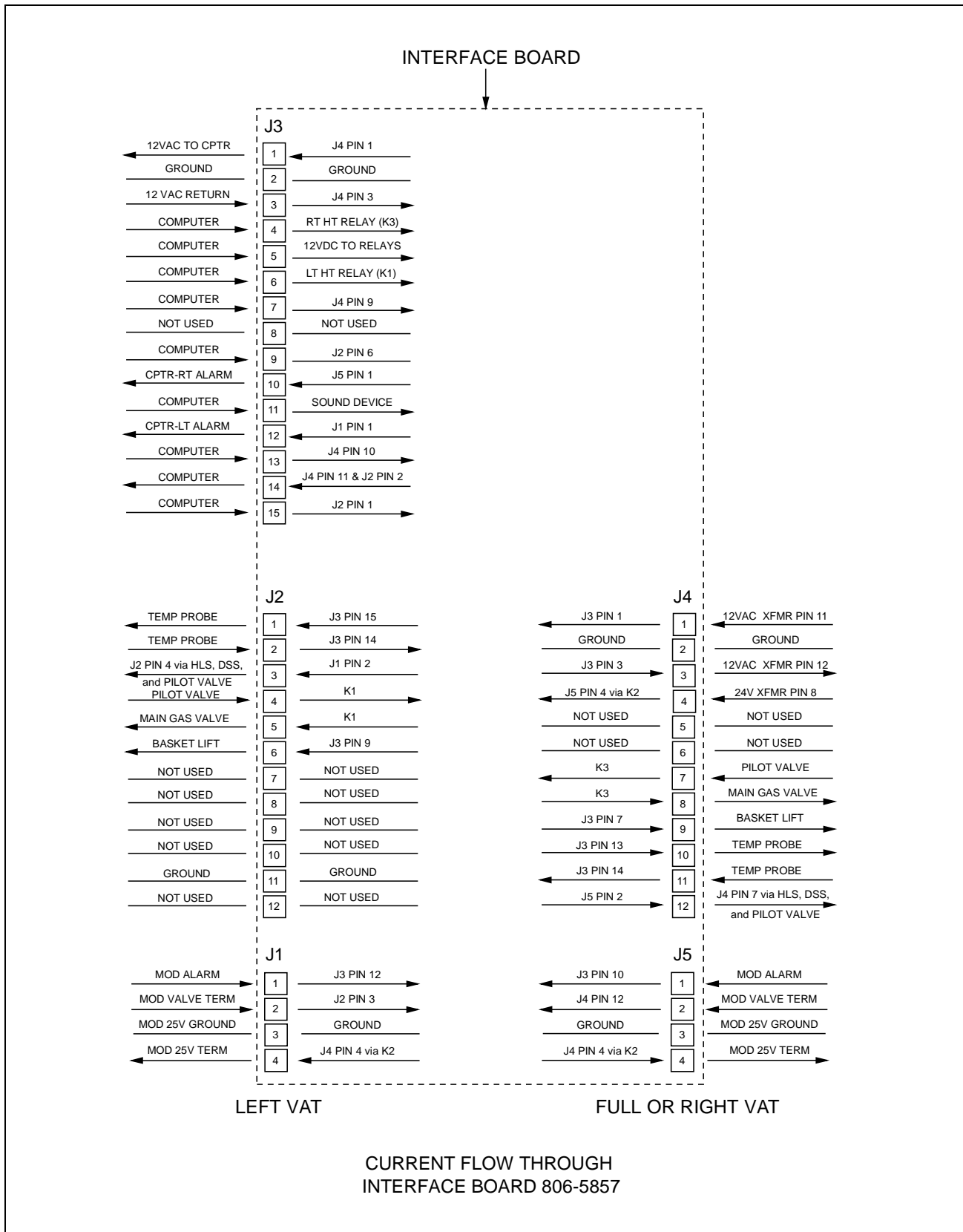
## 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES



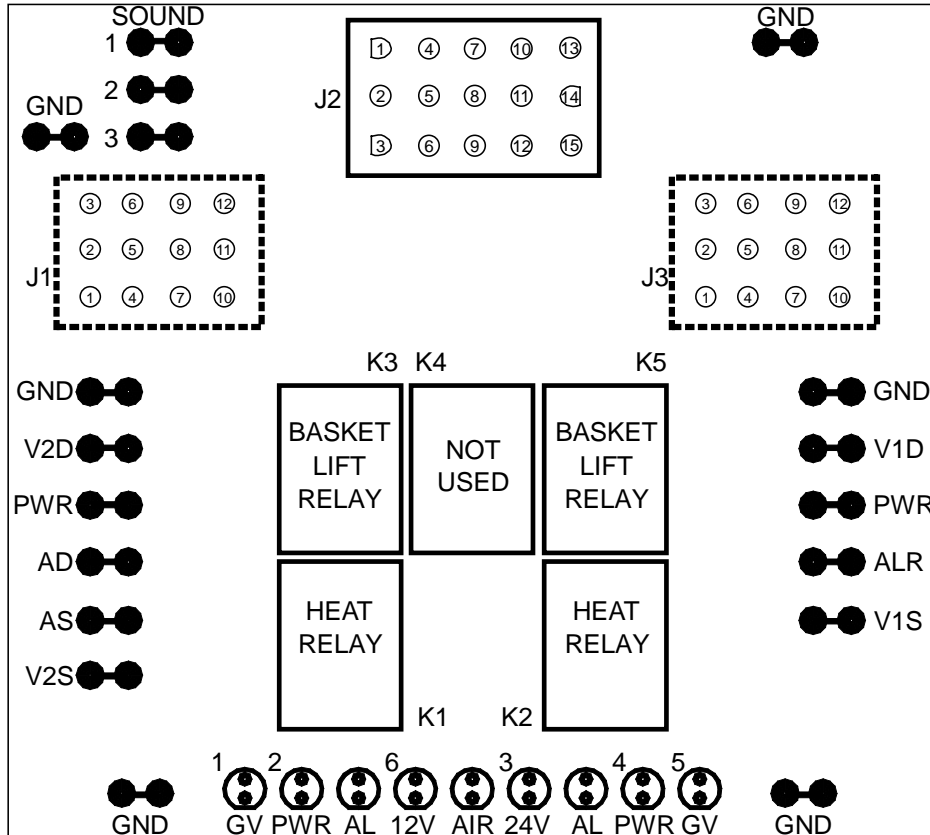
FREQUENTLY USED TEST POINTS FOR INTERFACE BOARD P/N 806-5857			
Test	Meter Setting	Pins	Results
12VAC Power to Controller	50VAC Scale	1 and 3 on J3	12-18
24VAC Power to Right Module	50VAC Scale	4 on J5 and GROUND	22-28
24VAC Power to Left Module	50VAC Scale	4 on J1 and GROUND	22-28
12VAC Power to Right MBL Relay	50VAC Scale	7 on J3 and 9 on J4	12-18
12VAC Power to Left MBL Relay	50VAC Scale	9 on J3 and 6 on J2	12-18
24VAC Power to Right High-Limit	50VAC Scale	12 on J4 and GROUND	22-28
24VAC Power to Left High-Limit	50VAC Scale	3 on J2 and GROUND	22-28
Probe Resistance (Right) *	R x 1000 OHMS	14 on J3 and 10 on J4	**
Probe Resistance (Left) *	R x 1000 OHMS	14 on J3 and 1 on J2	**
High-Limit Continuity (Right)	R x 1 OHM	12 on J4 and Wire 13C on Gas Valve	0
High-Limit Continuity (Left)	R x 1 OHM	3 on J2 and Wire 12C on Gas Valve	0
* Disconnect 15-pin harness from controller before testing probe circuit.			
** See Probe Resistance Chart at end of chapter.			

# 47 SERIES GAS FRYERS

## CHAPTER 7: SERVICE PROCEDURES



## 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES



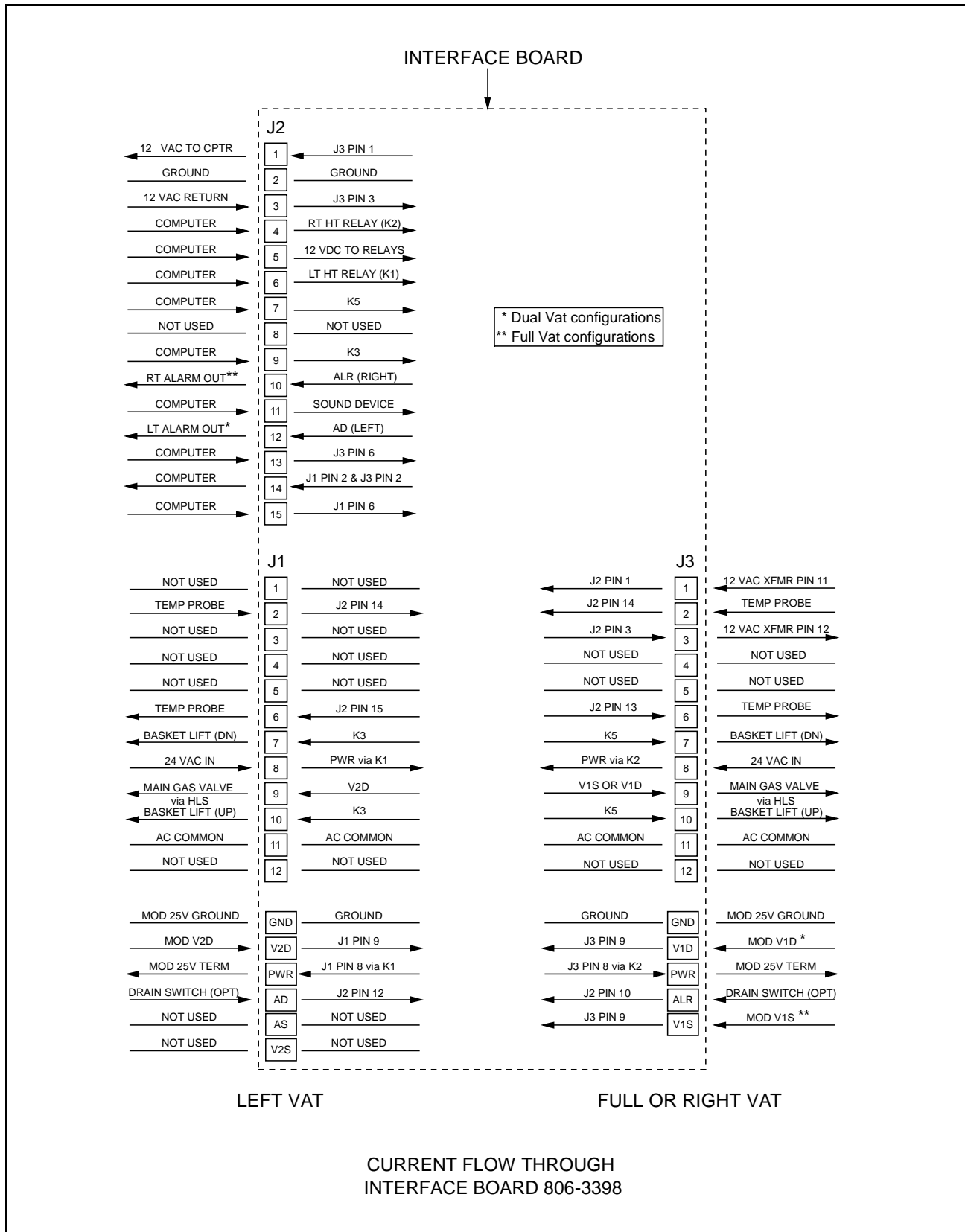
INTERFACE BOARD P/N 806-3398

FREQUENTLY USED TEST POINTS FOR INTERFACE BOARD P/N 806-3398			
Test	Meter Setting	Pins	Results
12VAC Power to Controller	50VAC Scale	1 and 3 on J3	12-18
24VAC Power to Right Module	50VAC Scale	8 on J3 and GROUND	22-28
24VAC Power to Left Module	50VAC Scale	8 on J1 and GROUND	22-28
12VAC Power to Right MBL Relay	50VAC Scale	7 on J2 and 7 or 10 on J3	12-18
12VAC Power to Left MBL Relay	50VAC Scale	9 on J2 and 7 or 10 on J1	12-18
24VAC Power to Right High-Limit	50VAC Scale	9 on J3 and GROUND	22-28
24VAC Power to Left High-Limit	50VAC Scale	9 on J1 and GROUND	22-28
Probe Resistance (Right) *	R x 1000 OHMS	2 on J3 and 6 on J3	**
Probe Resistance (Left) *	R x 1000 OHMS	2 on J1 and 6 on J1	**
High-Limit Continuity (Right)	R x 1 OHM	9 on J3 and Wire 13C on Gas Valve	0
High-Limit Continuity (Left)	R x 1 OHM	9 on J1 and Wire 12C on Gas Valve	0
* Disconnect 15-pin harness from controller before testing probe circuit.			
** See Probe Resistance Chart at end of chapter.			



# 47 SERIES GAS FRYERS

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The following table identifies the meaning associated with each of the LEDs arranged across the top of the interface board. NOTE: For full vat units, ignore the left-side LEDs.

P/N 806-5857 INTERFACE BOARD LED DIAGNOSTIC LIGHTS	
<b>AL</b>	Indicates ignition module lockout
<b>MV</b>	Indicates 24 VAC to gas main valve
<b>PV</b>	Indicates 24 VAC to pilot valve
<b>CMP</b>	Indicates 12 VAC from transformer
<b>24V</b>	Indicates 24 VAC from transformer
<b>PWR</b>	Indicates 24 VAC to ignition module

**IFB 806-3398.** This standard interface board is used in a number of fryer types besides the 47 Series. In the 47 Series, it is used in pilot ignition (millivolt) systems only. **The information contained in this section applies only to 47 Series applications.**


The board contains two heat relays (K1 and K2), and two basket lift relays (K3 and K5). Relay K4 has no function in 47 Series applications. *NOTE: On factory-original units not equipped with basket lifts, the board will have no basket lift relays installed.* Like the 806-5857 interface board, LEDs are provided to assist in troubleshooting.

P/N 806-3398 INTERFACE BOARD LED DIAGNOSTIC LIGHTS	
<b>12V</b>	Indicates 12 VAC from transformer
<b>24V</b>	Indicates 24 VAC from transformer
<b>GV</b>	Indicates 24 VAC to gas valve
<b>PWR</b>	Indicates 24 VAC to PWR via K1 (L) or K2 (R or F)
<b>AL</b>	Indicates open Drain Safety Sw itch (if installed)
<b>AIR</b>	No function in 47 Series applications

#### THERMOSTATS

Different types of thermostats are used in 47 Series fryers, depending on the fryers' configuration.

Fryers equipped with Thermostat Controls have an adjustable *controlling 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 47 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 47 Series is 4 inches long. Do not use 3-inch Fenwal thermostats in 47 Series fryers.**

Fryers equipped with all other type controls have a *temperature probe*. In this type thermostat, 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 47 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 425°F to 450°F (218°C to 232°C). The different types of thermostats have different part numbers for CE and Non-CE configured models, and are not interchangeable.

## 47 SERIES GAS FRYERS

### CHAPTER 7: SERVICE PROCEDURES

#### 7.2 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. Shut off the gas supply to the unit. Unplug the power cords. 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.

#### 7.3 Cleaning the Gas Valve Vent Tube

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

#### 7.4 Checking the Burner Manifold Gas Pressure

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

#### 7.5 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  $\frac{3}{4}$  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.)

#### 7.6 Adjusting the Pilot Flame

1. Remove the cap from the pilot adjustment screw hole on the gas valve.
2. Using a small, flat-tipped screwdriver, turn the pilot adjusting screw counterclockwise to increase length of flame or clockwise to decrease length of flame. Adjust to obtain a flame from 1 inch to  $1\frac{1}{2}$  inches long.
3. Reinstall the pilot adjustment screw cap.

#### 7.7 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.

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 for detailed lighting instructions.)

## 47 SERIES GAS FRYERS

### CHAPTER 7: SERVICE PROCEDURES

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3. Insert a good grade thermometer or pyrometer into the frypot so that it touches the thermostat guard.
4. Disconnect the solid extension shaft from the end of the flexible shaft using an appropriately sized Allen wrench.
5. Remove the flexible shaft from the thermostat shaft screw.
6. 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. Recheck the wiring, and then slowly turn the thermostat adjusting screw **counterclockwise** until the burner lights. Turning the adjusting screw counterclockwise causes the burner to light and clockwise causes it to shut off.

7. When the cooking oil/shortening temperature reaches 325°F (162°C), turn the thermostat adjusting screw slowly **clockwise** until the burner shuts off.
8. Allow the fryer to sit for a few minutes, then slowly turn the thermostat adjusting screw **counterclockwise** until the burner lights.
9. Repeat steps 7 and 8 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 325°F (162°C)—not when the burner shuts off as the temperature rises.
10. 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.

11. After the calibration is complete, place the fryer power switch in the OFF position and disconnect the fryer from the electrical supply.
12. Carefully install the thermostat flexible extension on the thermostat shaft, ensuring that the setscrews are tight.

#### CAUTION

**The thermostat adjusting screw must not be moved while installing the flexible extension shaft.**

13. Install the solid metal extension shaft on the end of the flexible shaft with the stop pin at the 12 o'clock position. Ensure the stop pin and setscrews are tight to prevent slippage.
14. Reinstall and secure the fryer control panel. Loosen the temperature dial plate screws and rotate the dial until the 325°F (162°C) index mark is at the 12 o'clock position, then retighten the screws.
15. Reinstall the thermostat knob with its pointer aligned with the 325°F (162°C) index mark on the temperature dial plate. Tighten the thermostat knob set screws to prevent slippage.

## 7.8 Replacing Fryer Components

### 7.8.1 Replacing the Controller or Computer

1. Disconnect the fryer from the electrical supply.

## 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES

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2. Unscrew the two control panel screws. The control panel is hinged at the bottom and will swing open from the top.
3. Unplug the fryer wiring harness from the back of the controller/computer.
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.
8. Unscrew the thermostat from the frypot and remove.
9. Apply Loctite™ PST56765 thread sealant or equivalent to the replacement thermostat threads.
10. Reverse steps 1 through 8 to install the replacement.

### 7.8.2 Replacing the Thermostat

1. Disconnect the fryer from the electrical supply.
2. Drain cooking oil/shortening below level of probe.
3. Remove thermostat 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 wiring plug(s) from the component shield/control box.
5. Remove the control panel from the fryer by disengaging its tabs from the hinge slots in the mounting frame.
6. Remove the solid extension shaft from the end of the flexible shaft using an appropriately sized Allen wrench. Remove the flexible shaft from the thermostat shaft screw.
7. Disconnect leads from terminal block.



### 7.8.3 Replacing the Temperature Probe

1. Disconnect the fryer from the electrical supply.
2. Drain cooking oil/shortening below level of probe.
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 from the back of the controller.
5. Remove the controller from the fryer by disengaging its tabs from the hinge slots in the mounting frame.
6. Remove two screws and nuts from the base of the interface board mounting bracket.

## 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES

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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 from the 12-pin plug disconnected in step 7.
10. Unscrew the temperature probe from the frypot and remove.
11. Apply Loctite™ PST56765 thread sealant or equivalent to new probe threads.
12. Reverse steps 1 through 10 to install replacement probe.
5. Remove the control panel from the fryer by disengaging its tabs from the hinge slots in the mounting frame.
6. Remove the molded high-limit thermostat wire adapter 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 high-limit thermostat.

### **7.8.4 Replacing the High-Limit Thermostat in Fryers with Thermostat Controls**

1. Disconnect the fryer from the electrical supply.
2. Drain cooking oil/shortening below the level of the thermostat.
3. Remove the thermostat 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 wiring plug(s) from the component shield/control box.

### **7.8.5 Replacing the High-Limit Thermostat in Fryers with Temperature Probes**

1. Disconnect the fryer from the electrical supply.
2. Drain cooking oil/shortening below the level of the thermostat.
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 from the back of the controller.
5. Remove the controller from the fryer by disengaging its tabs from the hinge slots in the mounting frame.
6. Remove two screws and nuts from the base of the interface board mounting bracket.

## 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES

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7. Disconnect the 12-pin plug from the back of the interface board and lay board in the left end of compartment with all other wires still connected.
8. Remove the high-limit thermostat wires from the gas valve pilot coil and pull them up through the control shield.
9. Unscrew the high-limit thermostat from the frypot and remove.
10. Apply Loctite™ PST56765 thread sealant or equivalent to new thermostat threads.
11. Reverse steps 1 through 9 to install the replacement thermostat.

### **7.8.6 Replacing Control Panel Power Indicator Light in Fryers with Thermostat Control**

1. Disconnect the fryer from the electrical supply.
2. Remove the thermostat knob.
3. 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. Unplug the control panel wiring harness from the component shield/control box.
5. Carefully press the light out of the back side of the control panel. Remove one wire terminal at a time and connect to the replacement light until all wires are transferred.
6. Carefully press the light back into the control panel.

7. Reverse steps 1-4 to reassemble fryer.

### **7.8.7 Replacing Power or Melt Cycle Switch in Fryers with Thermostat Controls**

1. Disconnect the fryer from the electrical supply.
2. Remove the thermostat knob.
3. 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. Unplug the control panel wiring harness from the component shield/control box.
5. Unsnap the chrome bezel from the rear of the switch and push the switch out through the rear of the control panel.
6. Remove wires one at a time from the switch and connect to the replacement switch until all wires are transferred.
7. Reverse steps 1-5 to reassemble fryer.

### **7.8.8 Replacing Melt Cycle Timer Motor in Fryers with Thermostat Controls**

1. Disconnect the fryer from the electrical supply.
2. Remove the thermostat knob.
3. 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.

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4. Remove the screws securing the timer motor to the fryer.
5. Remove one wire at a time and connect to the replacement timer motor until all wires have been transferred.
6. Reverse steps 1-4 to reassemble fryer.

#### 7.8.9 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. Disconnect the wires from the gas valve terminal block, marking each wire to facilitate reconnections.
3. Remove the high-limit thermostat wires from the gas valve pilot coil.
4. Remove the pipe union collar at the left side of the gas valve.
5. Remove the burner heat shield hanger screws at the front of the burner and remove the heat shield.
6. Remove the burner hanger screws.
7. Lower the front of the main burner and pull it forward to clear the rear burner hanger. Lower the burner to the floor.
8. Raise 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, using a 1/2-inch box end wrench, remove the two brass orifices that hold the assembly to the burner manifold, replace the assembly, and replace the orifices.

 **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 7.5.

#### 7.8.10 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. Remove the pilot gas line fitting from the gas valve.



## 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES

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5. Remove 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.

### 7.8.11 Replacing the Pilot Assembly

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

1. Remove the burner assembly in accordance with Section 7.7.9.
2. Remove the pilot tubing from the bottom of the pilot assembly.
3. Bend the clip at the bottom of the pilot assembly and remove the pilot. Disconnect the pilot fitting from the gas valve pilot coil.
4. Remove the two pilot mounting screws from the pilot mounting bracket and remove the pilot.
5. Reverse the procedure to replace the pilot assembly.

### 7.8.12 Replacing Gas Valve High-Limit Thermostat Wire Adapter

1. Remove the pilot electrical fitting from the gas valve pilot coil.

2. Lift the molded plastic wire adapter assembly and wires out of the pilot coil.
3. Cut the in-line splices from the wire adapter and high-limit thermostat wires.
4. Strip the wire insulation from the end of the high-limit thermostat wires and splice on a new high-limit thermostat wire adapter assembly.
5. Insert the new molded plastic wire adapter into the gas valve pilot coil.
6. Screw the pilot electrical fitting into the gas valve pilot coil finger tight, then 1/8 turn more with a wrench.

### 7.8.13 Replacing the Frypot

1. Drain cooking oil/shortening from 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. Remove the thermostat knob. Remove the screws from the upper left and right corners of the control panel. Disconnect the control panel from the fryer wiring harness and remove it from the fryer.

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### CHAPTER 7: SERVICE PROCEDURES

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7. Remove the thermostat flexible shaft from the thermostat shaft adjusting screw.
8. Remove the two screws and nuts from the thermostat shaft bracket and lift the thermostat flexible shaft and bracket out of the component box.
9. Disconnect both wires from the gas valve and the 20-hole terminal block. Skip to Step 14.
10. For fryers equipped with other than Thermostat Controls, remove the screws from the upper left and right corners of the control panel. Disconnect the controller from the fryer wiring harness and remove it from the fryer.
11. Remove the two screws and nuts from the base of the interface board bracket.
12. Disconnect the 12-pin plug from the back of the interface board and remove the temperature probe and high-limit thermostat wires from the plug using a pin pusher.
13. Lay the interface board and bracket on top of the control shield with wires still connected.
14. Remove the louvered frame above the control panel opening.
15. Remove screws and nuts securing the component box to the fryer.
16. Disconnect wires from components in component box and mark to facilitate reconnection.
17. Remove pilot generator fitting from gas valve pilot coil and lift the high-limit thermostat wire adapter from the slot. Pull the high-limit thermostat wires and adapter up through the grommet at the rear of the box.
18. Remove the wires from the gas valve terminal block. Mark each wire to facilitate reconnection.
19. For fryers equipped with Thermostat Controls, remove the thermostat wire from the gas valve and pull it up through the grommet at the rear of the box. Disconnect the other thermostat wire from the 20-hole terminal block. Mark each wire to facilitate reconnection.
20. Remove the cover from the safety drain switch, disconnect the wires from the switch, and pull them out of the switch box.
21. Pull up and forward on the component box to clear the rear mounting stud on the front of the frypot.
22. Remove the component box from the fryer by rotating its right side up and to the left.
23. Remove the pipe union from the right side of the gas valve.
24. Remove the section of square drain from the drain valve of the frypot to be removed.
25. Remove the frypot hold down bracket.
26. Remove the screws from the flue cap sides and back and lift it clear of the fryer(s).
27. Remove the oil return hose or line from the front of the frypot to be removed.

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28. Lift the frypot complete with burner, gas valve, flue, and drain valve from the fryer cabinet.
29. Transfer burner heat shield and burner to replacement frypot.
30. Remove drain valve, thermostat or temperature probe, and high-limit thermostat and install on replacement frypot.
31. Reverse steps 1-28 to reassemble fryer.



#### **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.**

### **7.9 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. Modular 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.

#### **7.9.1 Ignition Failures**

Ignition failure occurs when the ignition module fails to sense a flame within the 4-second time delay period and locks out. When this happens, the module sends 24 VAC through the interface board alarm circuit to the controller/computer.

Solid-state controllers indicate ignition failure by illuminating the heat light and trouble light simultaneously. Computer Magic III controls display “H E L P.”

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.

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#### 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 fryers equipped with electronic ignition systems, or in the pilot system for those without electronic ignition. If the fryer is equipped with a FootPrint III 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 or pilot system, it is most likely in the gas valve itself, but before replacing the gas valve refer to **TROUBLESHOOTING THE GAS VALVE** on pages 7–34 through 7–35.

#### 7.9.2 Improper Burner Functioning

With problems in this category, the burner ignites but exhibits abnormal characteristics such as “popping,” incomplete lighting of 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
- Heat damage to the controller or ignition module
- A cracked igniter or broken ignition wire
- A defective ignition module

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 Section 2.3 of this manual, and that the pressure remains constant throughout all hours of usage. Refer to **Check Burner Manifold Pressure** in the semi-annual checks and services section of Chapter 5 for the procedure for checking the pressure of gas supplied to the burner.

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” long. Refer to Section 7.6 for 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.

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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 ignition module for signs of melting/distortion and/or discoloration due to excessive heat build-up in the fryer. (This condition usually indicates improper flue performance.). Also, examine the controller for the same conditions. A melted or distorted ignition module is automatically suspect and should be replaced, but unless the condition causing excessive heat in the fryer is corrected, the problem is likely to recur.

Next, check to ensure the ignition wire is tightly connected at both ends and examine it for obvious signs of damage. Again, if damage is due to excessive heat in the fryer, that problem must also be corrected.

Check for proper operation by disconnecting the wire from the igniter (spark plug), inserting the tip of a screw driver into the terminal, and holding it near the frame of the fryer as the power switch is placed in the ON position. A strong, blue spark should be generated for at least 4 seconds.

Examine the igniter (spark plug) for any signs of cracking. A cracked igniter must be replaced.

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 is unobstructed, the gas valve regulator is probably defective.



**DANGER**  
**MAKE SURE YOU ARE HOLDING THE**  
**INSULATED HANDLE OF THE**  
**SCREWDRIVER AND NOT THE BLADE.**  
**THE SPARKING CHARGE IS**  
**APPROXIMATELY 25,000 VOLTS.**

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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 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 misadjusted gas valve regulator. Refer to the **Check Burner Manifold Pressure** procedure in the semi-annual checks and services section of Chapter 5.

#### 7.9.3 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, the controller itself, and the ignition module.

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 control-

ler 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 adjusting screw, a thermostat wire is disconnected, or the thermostat is defective. Refer to Section 7.7 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.

#### 7.9.4 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

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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 the 47 Series of fryers is two minutes.

#### COMPUTER MAGIC III STRAPPING

The Computer Magic III controller does not automatically recognize a full vat or dual vat fryer. Each computer is set up at the factory for full or dual vat, gas or electric, and controlling or non-controlling applications. This is accomplished through the strapping or unstrapping of the computer's three dip-type switches.

Occasionally you may encounter a situation in which a computer that has been strapped for one type of fryer has been installed in another type. An examination of the computer strapping may explain the incorrect functioning of an otherwise good computer.

The computer's dip-type switches are numbered S1 through S3, from left to right.

S1 should be open for non-controlling applications and closed for controlling.

S2 should be open for electric fryers and closed for gas fryers.

S3 should be open for full vat and closed for dual vat configurations.

#### WARNING

**Do not attempt to alter the strapping of the computer. Doing so may render the computer inoperable and will void the component warranty.**

#### 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.

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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.

### 7.9.5 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-ring on the bottom of the filter pan is present and in good condition. A missing or worn O-ring will allow the pump to suck air and decrease its efficiency.

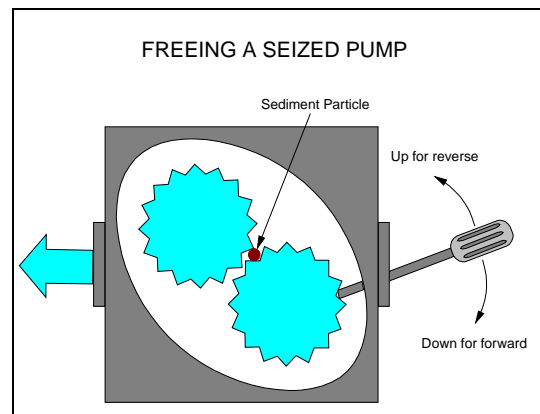
If the pump motor does not start, the most likely cause is that the filter carriage is not properly positioned all the way to the rear of the fryer.

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 rear of the motor. 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 runs 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.



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- 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.

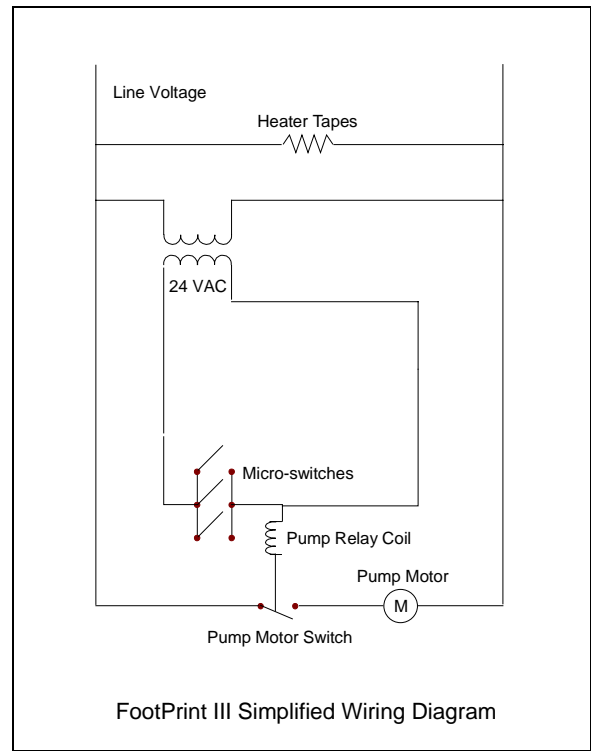
Incorrectly sized or installed paper will also allow food particles and sediment to pass through and clog the suction tube on the bottom of the filter carriage. Particles large enough to block the suction tube may indicate that the crumb tray is not being used.

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 FootPrint III Filter are simple and straightforward. Microswitches, attached to handles for each vat and wired in parallel, provide the 24 VAC required to activate the pump relay coil when the handles are moved to the ON position. The activated pump relay coil pulls in the pump motor switch, supplying power to the pump motor.



The suction tube heater and flexible hose heater are wired directly into the 120 VAC source. They remain energized as long as the unit is plugged in.

#### 7.9.6 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.

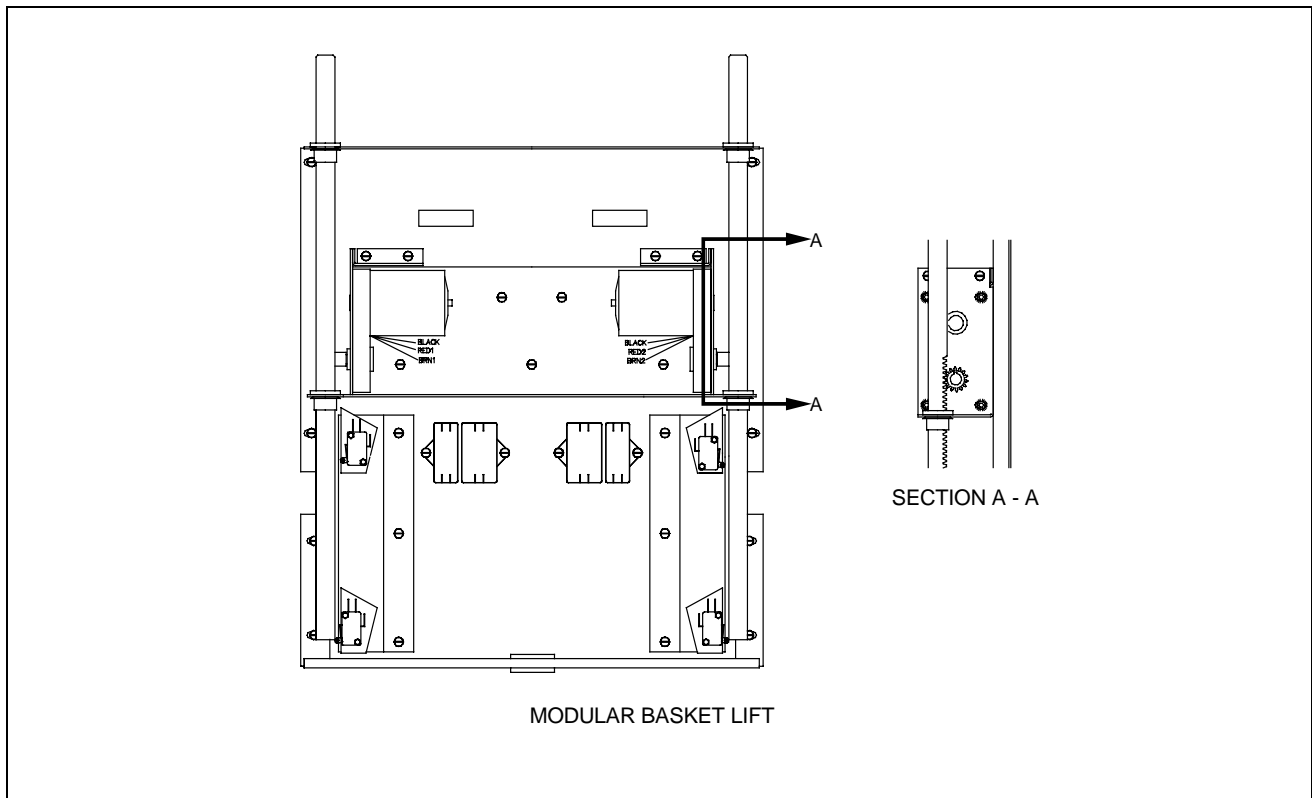
## 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES

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.

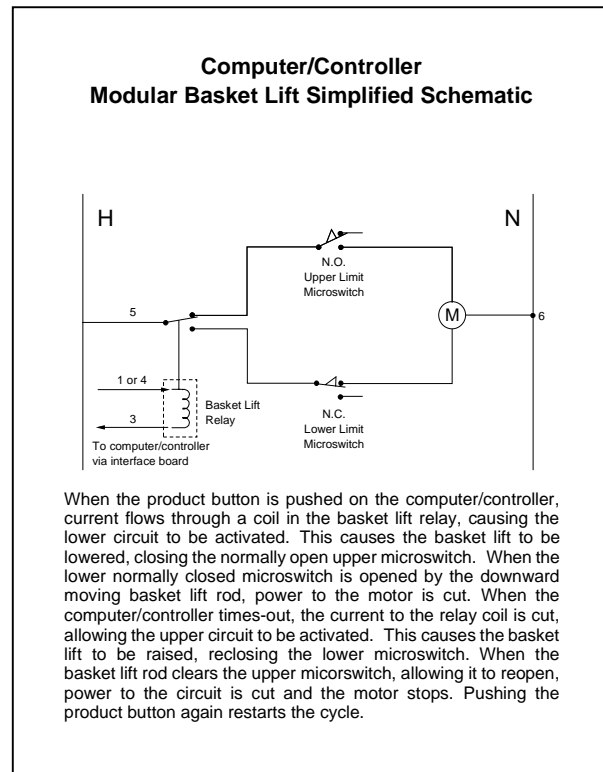
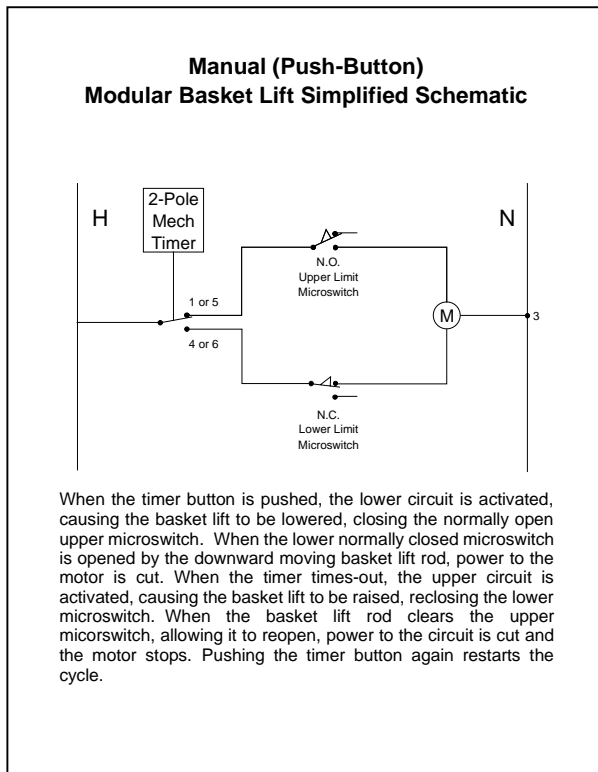
### 7.9.7 Modular Basket Lift Malfunctions

47 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.

A 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. In units configured for manual (push-button) controls, a mechanical 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 by applying power through the lower micro-switch. The motor drives the basket lift down. As the rod moves downward, it closes the upper micro-switch, preparing the motor to run in the opposite direction when the cooking time has expired. When the rod contacts the lower micro-switch, power to the motor is cut and the motor stops.



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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.

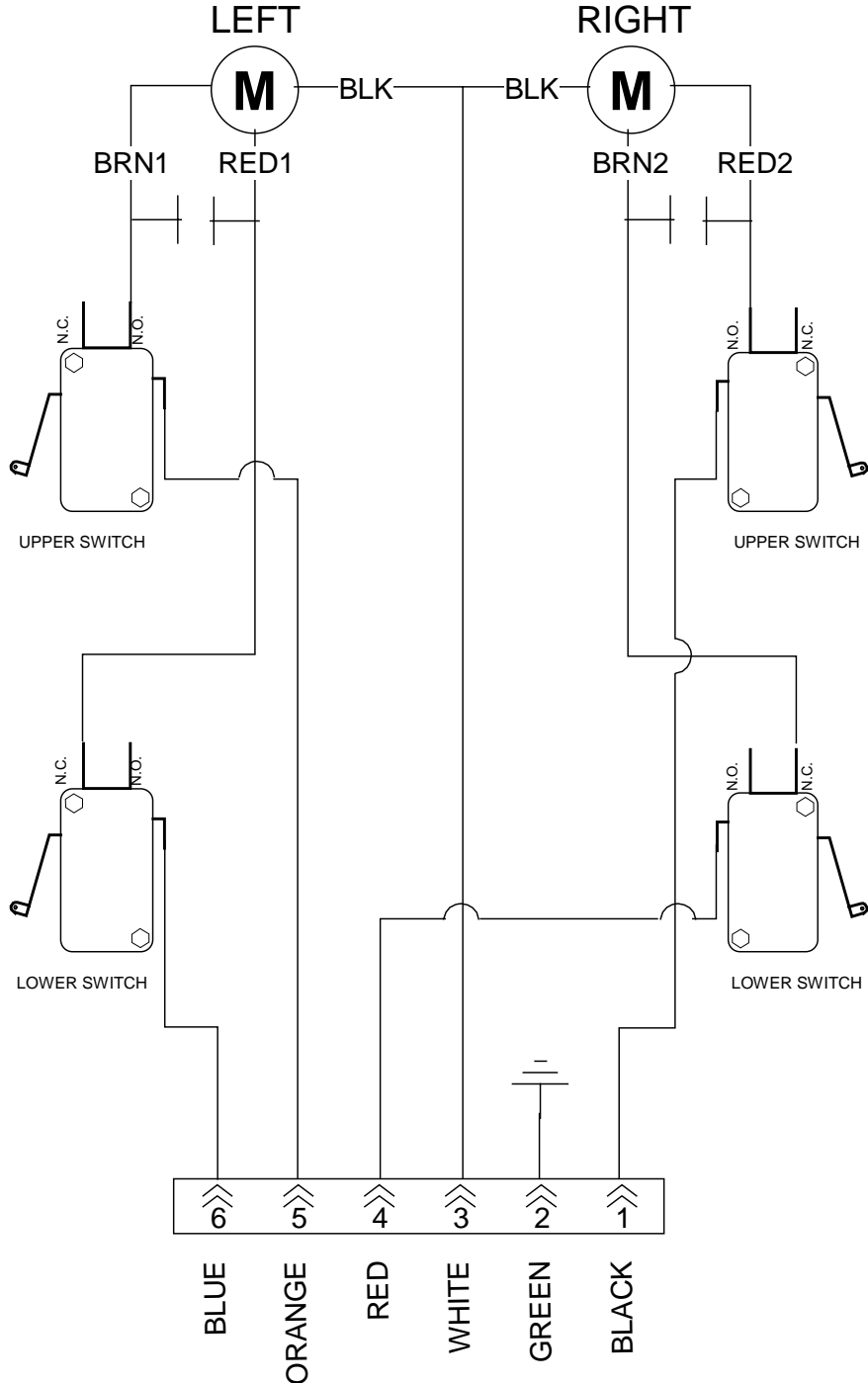
Another possible cause of binding is improper positioning of the motor, which prevents the gear from correctly engaging the teeth in the rod. To correct the problem, loosen the screws that hold the motor in place and move it forward or backward until the rod has just enough slack to be rotated slightly.

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**Manual (Push-Button)**  
**Modular Basket Lift Simplified Wiring Diagram (120V)**

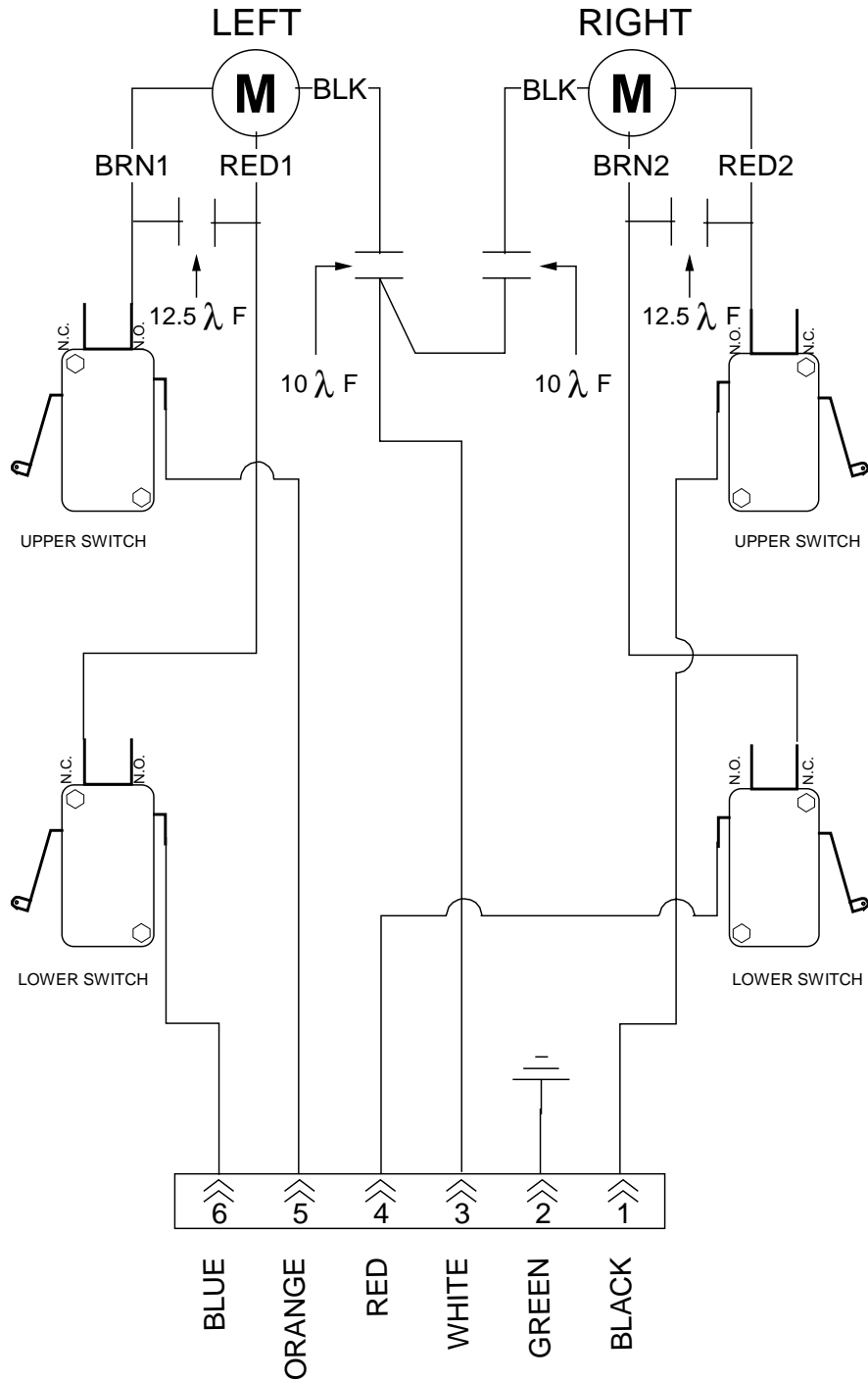
NOTE: References to right and left are from the rear of the fryer.



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**Manual (Push-Button)  
Modular Basket Lift Simplified Wiring Diagram (240V)**

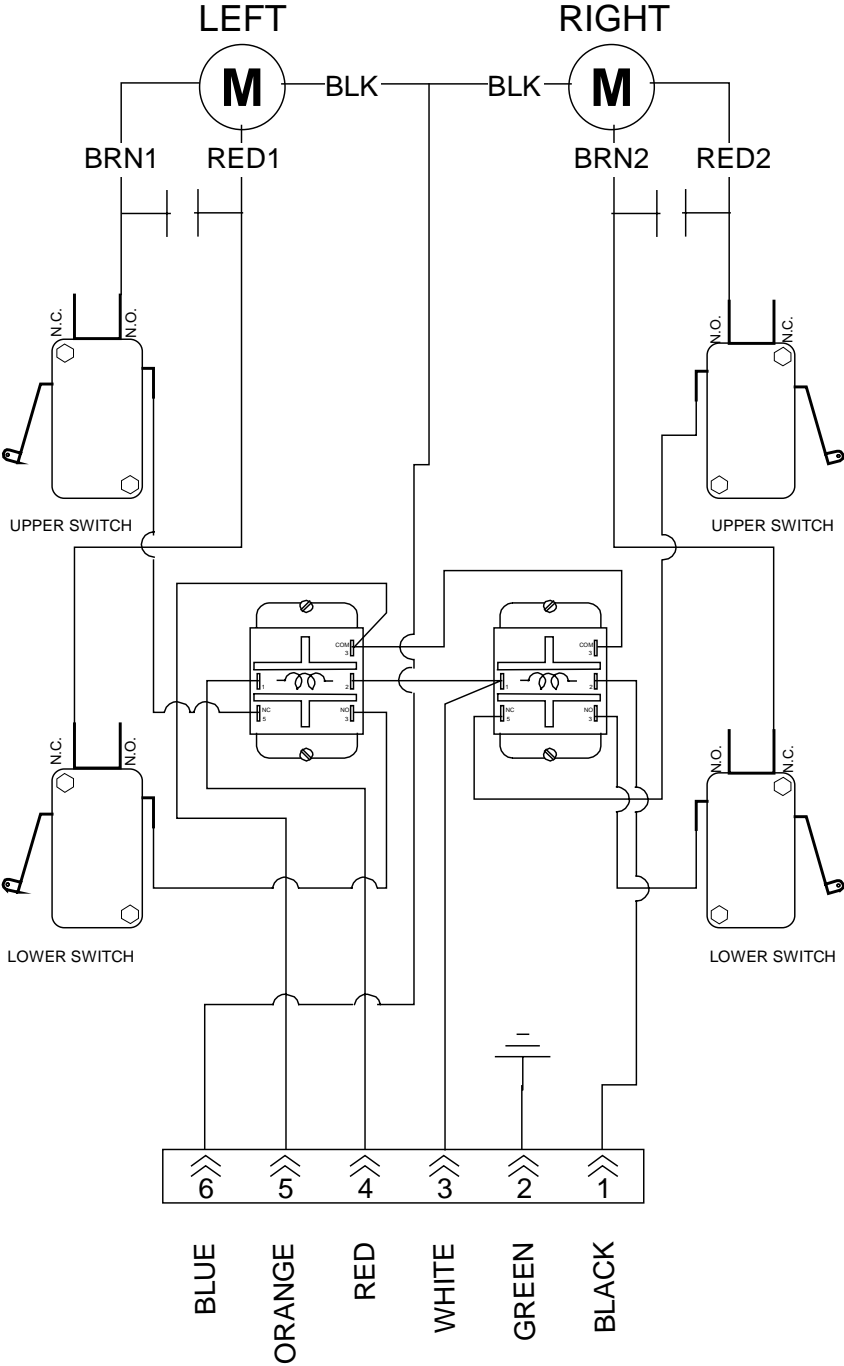
NOTE: References to right and left are from the rear of the fryer.



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**Computer/Controller  
Modular Basket Lift Simplified Wiring Diagram**

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



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#### MOTOR AND GEAR PROBLEMS

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 the modular basket lift is simply a process of verifying current flow through the individual components up to and including the motor. Using a multimeter set to the 250 VAC range, check the connections on both sides of the component for the presence of 120 VAC. The simplified wiring diagrams on the preceding pages identify the components and wiring connection points.

#### 7.9.8 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.

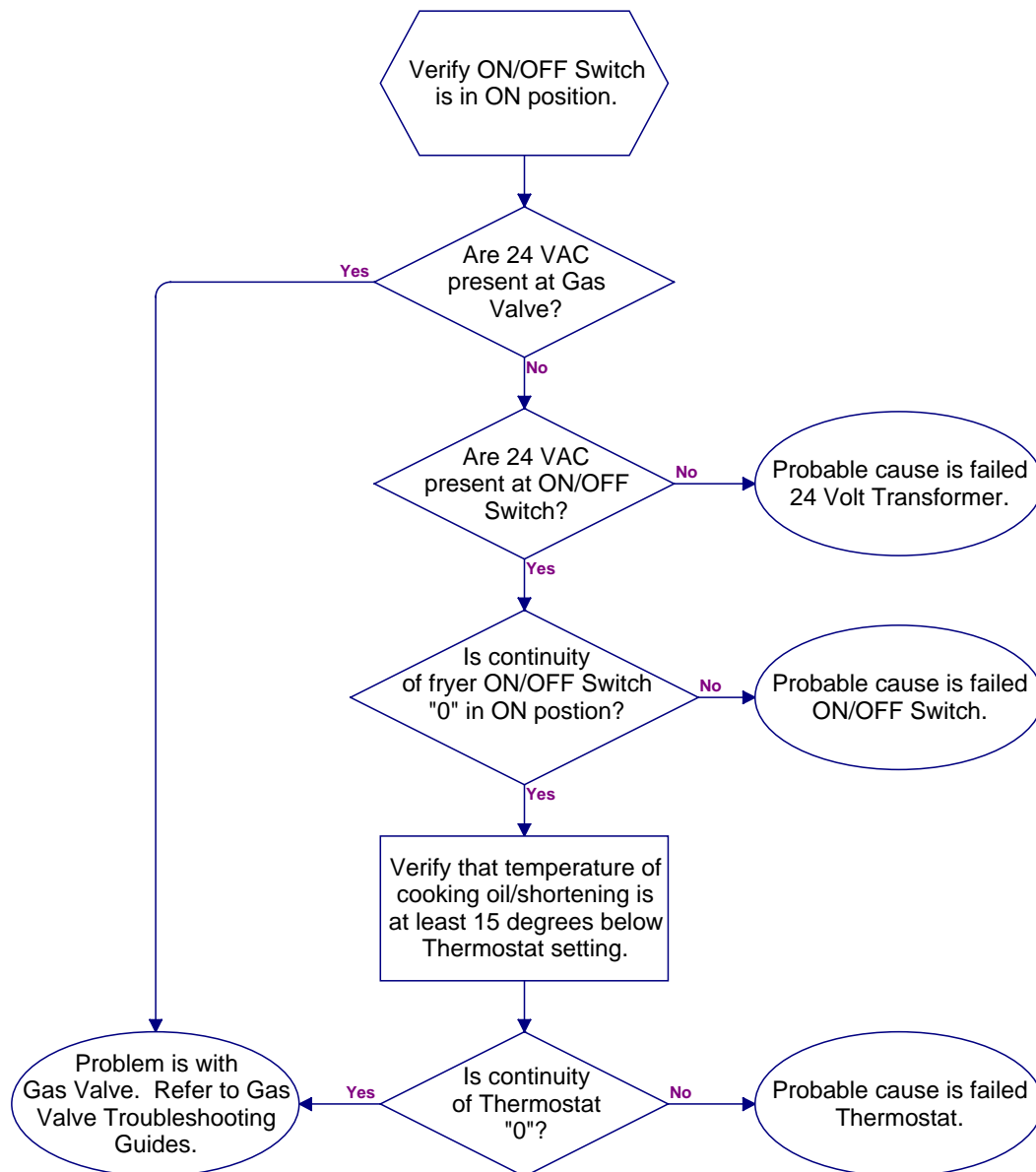
## 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES

### 7.10 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.

An additional set of operator troubleshooting guides is contained in Chapter 6. It is suggested that service technicians thoroughly familiarize themselves with both sets.

#### 7.10.1 Troubleshooting the 24 VAC Circuit in Units without Interface Boards





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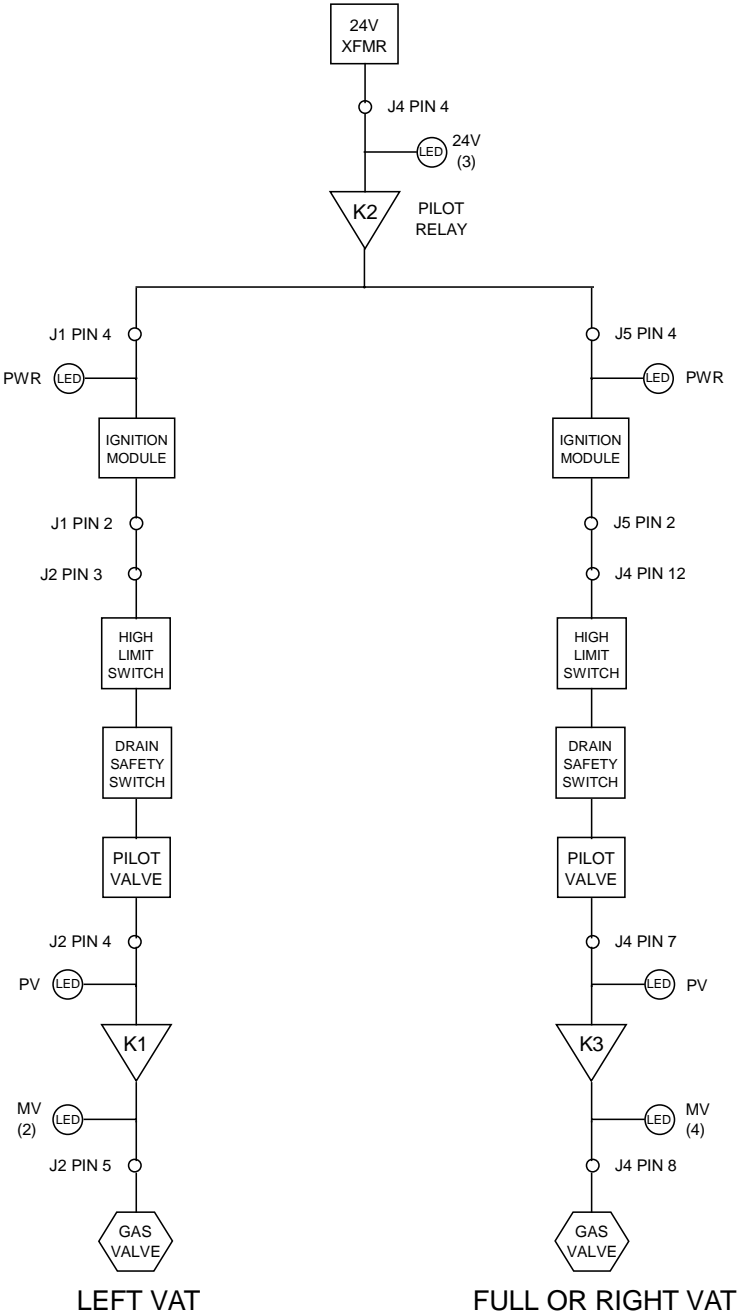
### 7.10.2 Troubleshooting the 24 VAC Circuit in Units Configured for Electronic Ignition



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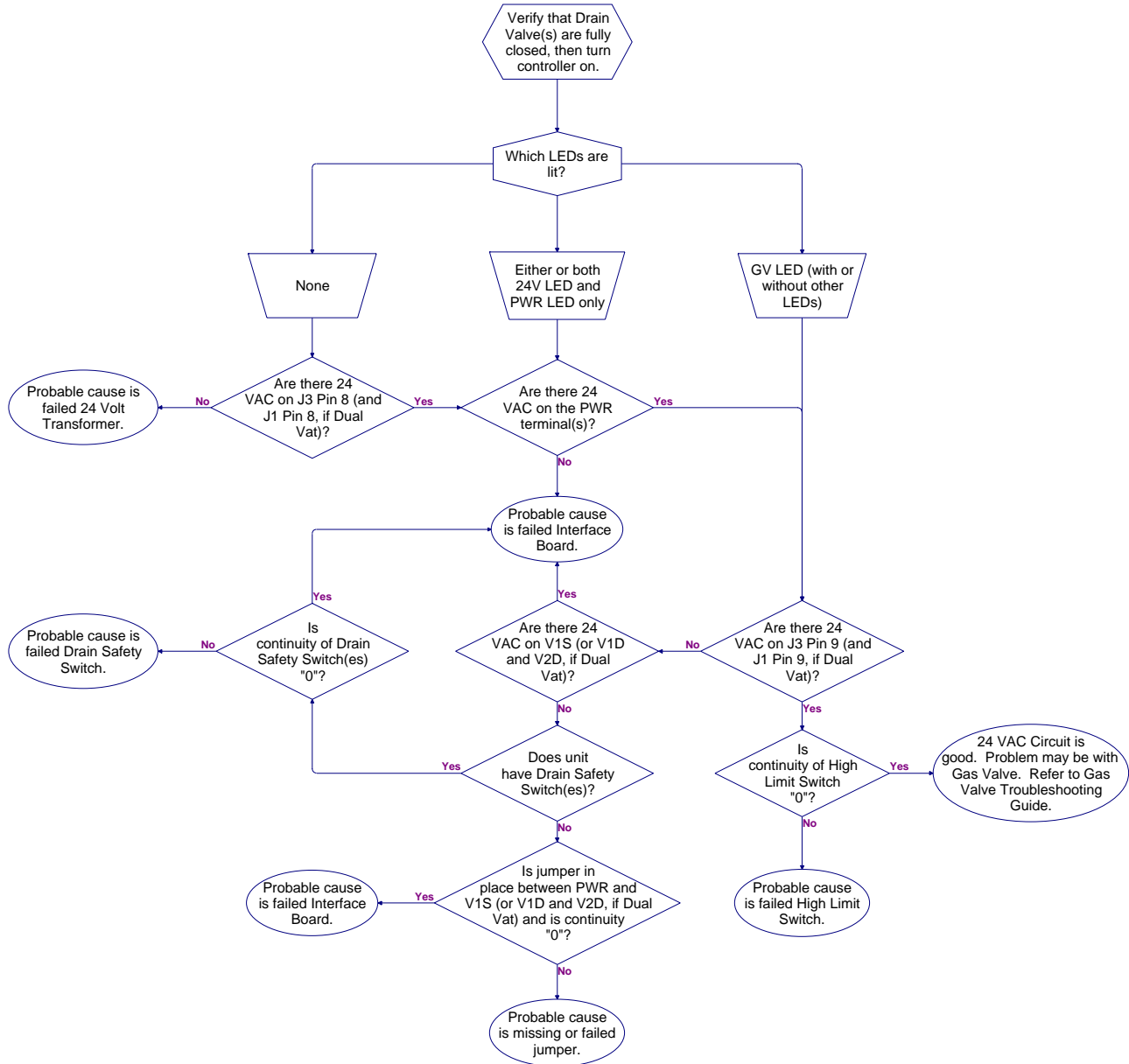


24 VOLT CIRCUIT  
FOR ELECTRONIC IGNITION UNITS  
(IFB 806-5857)

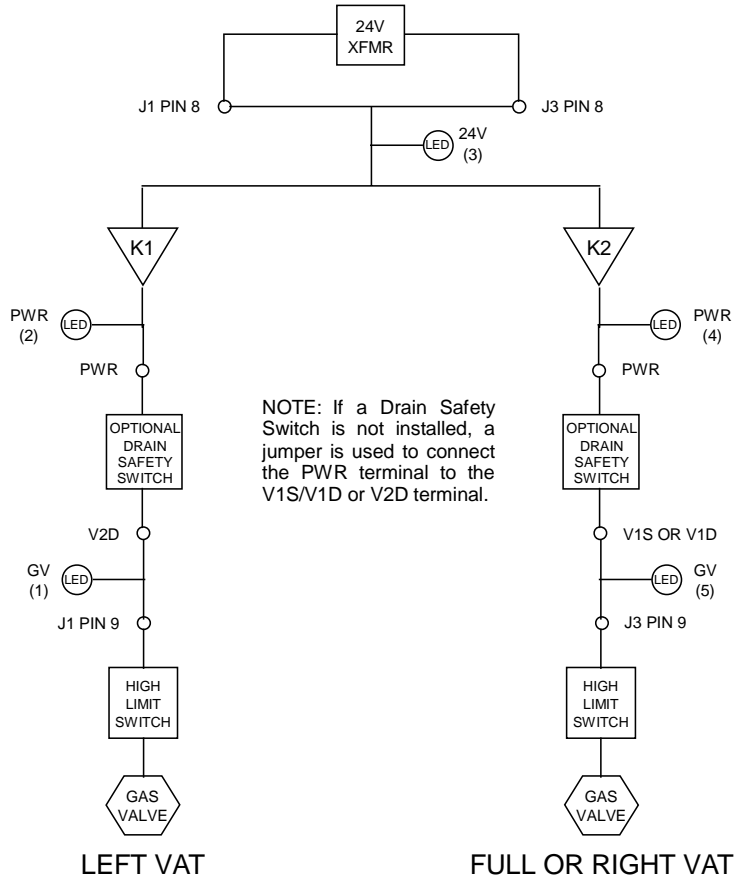
# 47 SERIES GAS FRYERS

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### 7.10.3 Troubleshooting the 24 VAC Circuit in Non-Electronic Ignition Units



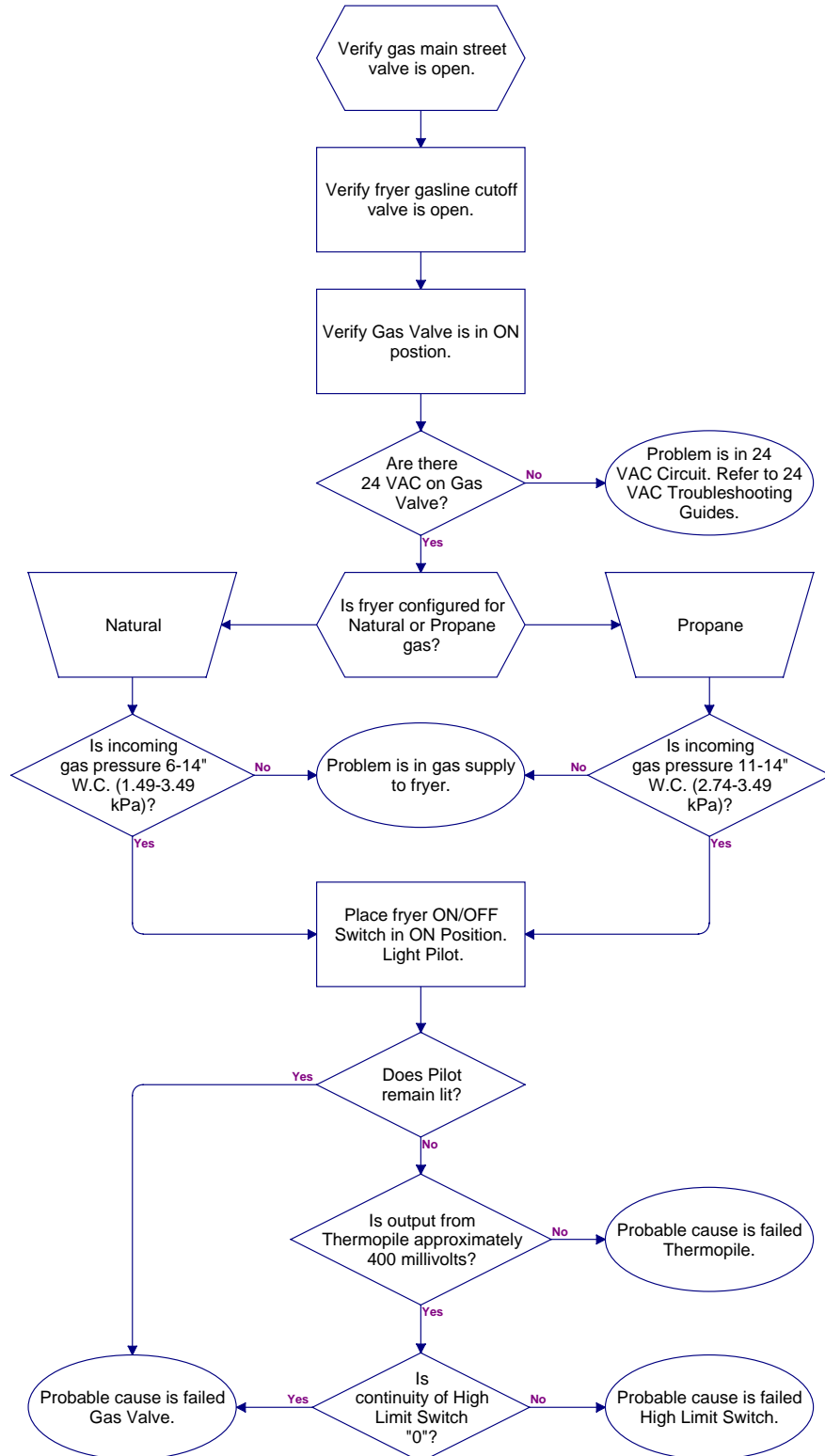
# 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES



**24 VOLT CIRCUIT  
FOR NON-ELECTRONIC IGNITION UNITS  
(IFB 806-3398)**

## 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES

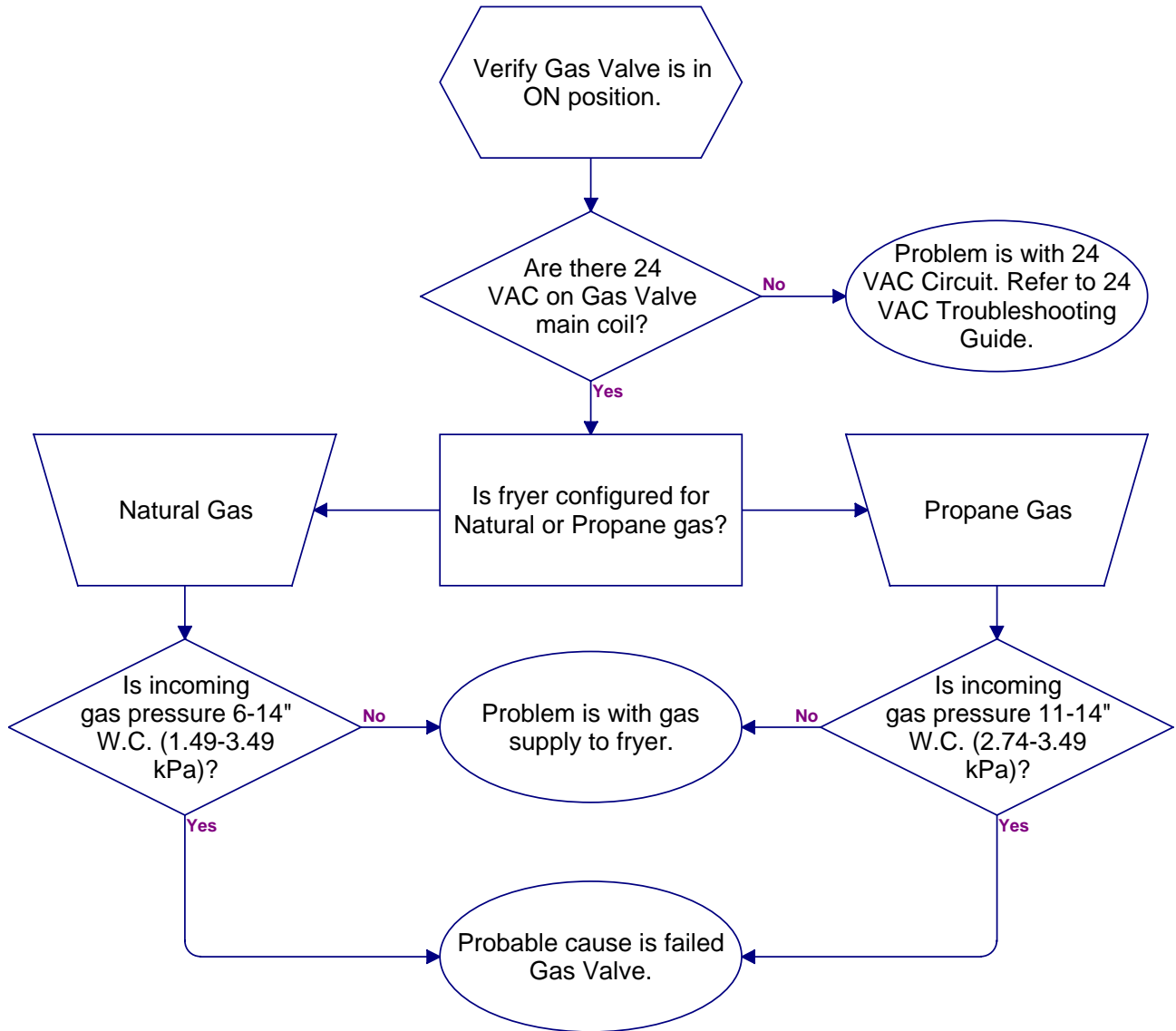
### 7.10.4 Troubleshooting the Gas Valve on Fryers without Interface Boards



**47 SERIES GAS FRYERS**  
**CHAPTER 7: SERVICE PROCEDURES**

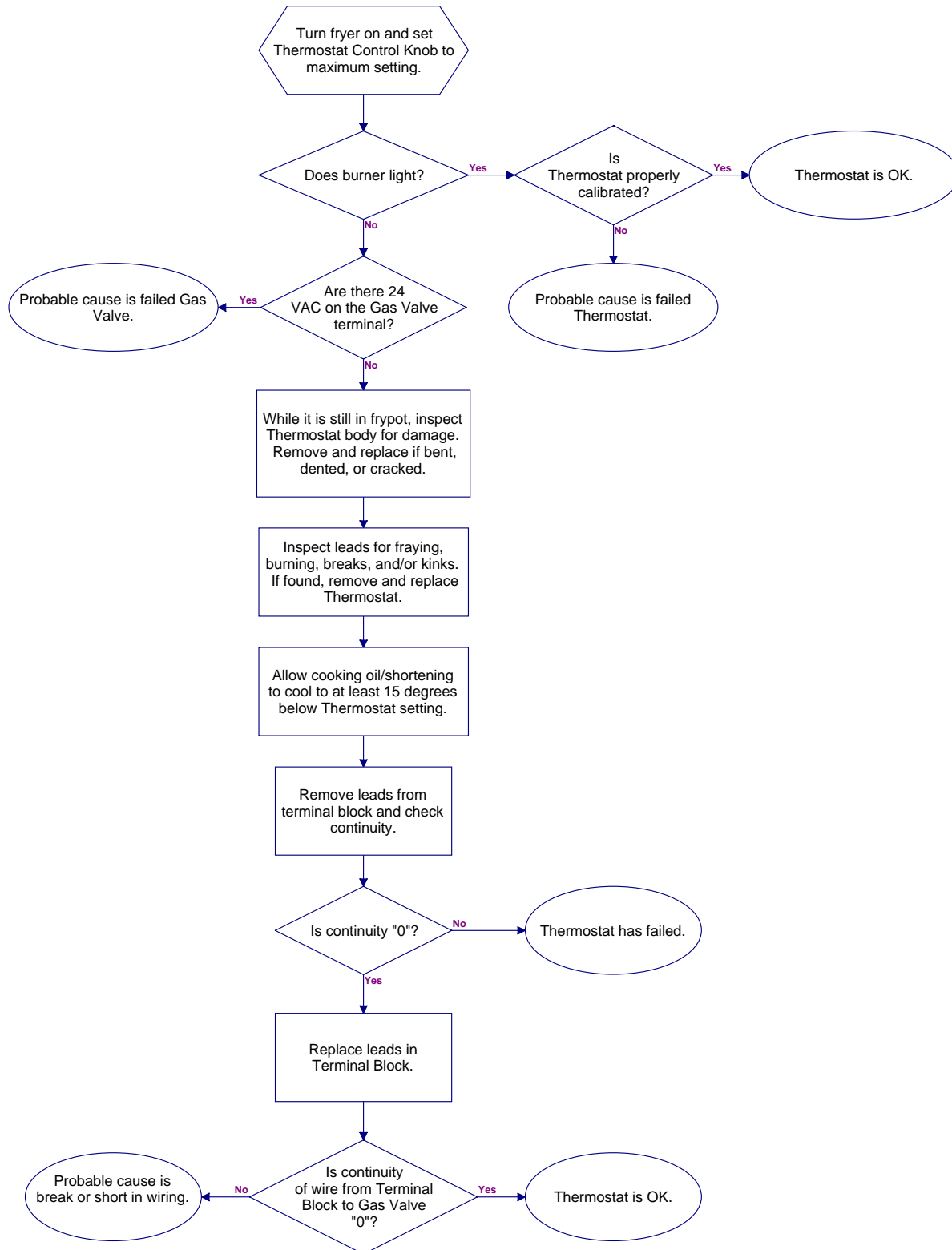
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**7.10.5 Troubleshooting the Gas Valve on Fryers with Interface Boards**



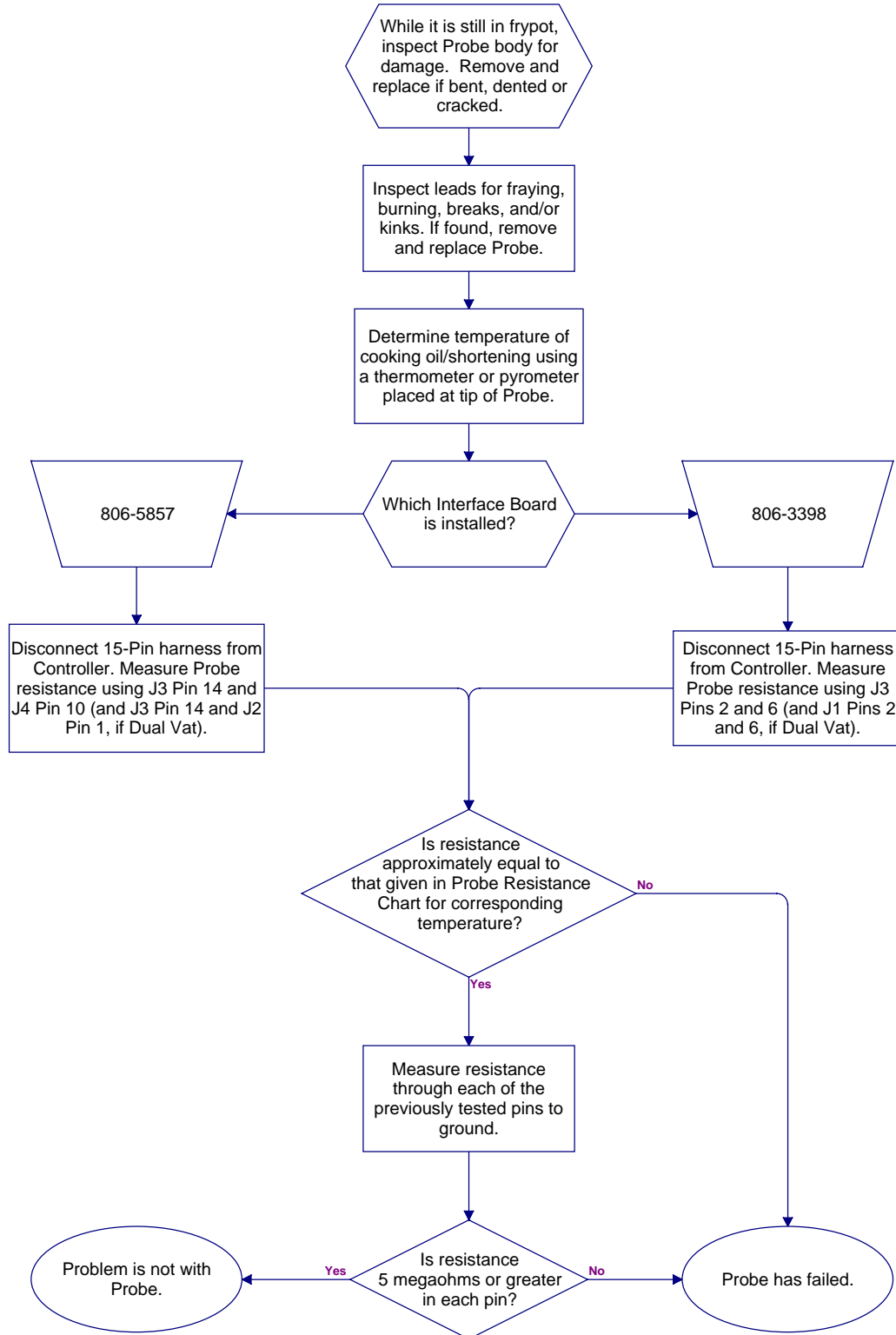
## 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES

### 7.10.6 Troubleshooting the Thermostat



# 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES

## 7.10.7 Troubleshooting the Temperature Probe





**47 SERIES GAS FRYERS  
CHAPTER 7: SERVICE PROCEDURES**

**Probe Resistance Chart**

*For use with 47 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

**47 SERIES GAS FRYERS**  
**CHAPTER 7: SERVICE PROCEDURES**

**Probe Resistance Chart (Continued)**

*For use with 47 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
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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

## 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES

### 7.11 Redesigned FootPrint III System Supplemental Information

In September 1997, **Frymaster** began production of a modified FootPrint III Filtration System for 47 Series Gas Fryers. *The modified FP-III is distinguished from original-design units by the absence of casters on the filter base assembly.* The modification incorporated a redesigned oil return system that allows oil/shortening to drain back to the filter pan when the filter system is turned off, eliminating the need for most heated oil return

components. Additionally, one-piece, welded oil return manifolds eliminate the many couplings in the original design. The changes are summarized in the table below.

Operation of the modified FP-III system is the same as for the original design. Specific changes in the major sub-systems of the filtration system are discussed in the following paragraphs. **NOTE: Numbers in the illustrations refer to the Item Numbers in the Abbreviated Parts List at the end of this section.**

ORIGINAL VS REDESIGNED FP-III FILTRATION SYSTEM	
Original System	Redesigned System
Oil return manifolds assembled from 1/2" NPT piping and fittings.	One-piece, welded oil return manifolds.
Return lines and manifolds wrapped with silicone strip heaters and aluminum tape.	No heater strips or aluminum tape on return lines or manifolds.
Filter base assembly connected to unit with a black, heated return hose beneath the filter.	Non-heated Teflon hose with a swivel joint connects the filter base assembly to the unit above the filter.
Filter base assembly equipped with swivel casters.	Filter base assembly has no casters.
Operator-removable filter base assembly. (Filter base assembly stoplocks in cabinet can be rotated to remove tray.)	Filter base assembly is not removable except by a qualified service technician. (Filter base assembly stoplocks fitted with a screw and nut to prevent filter removal.)
Oil/shortening remains in return lines when filter system is turned off.	Oil/shortening gravity-drains back to the filter pan when filter system is turned off, leaving no oil or shortening in return lines or manifolds.

### Square Drain Sub-System

The only change to the square drain sub-system is the addition of a 1/4" NPT coupling to the leftmost end sections to allow attachment to a vacuum-breaking solenoid. The

new end sections may also be used on the original-design filtration system by plugging the vent port with a 1/4" NPT pipe plug coated with sealant. All other square drain components remain unchanged.

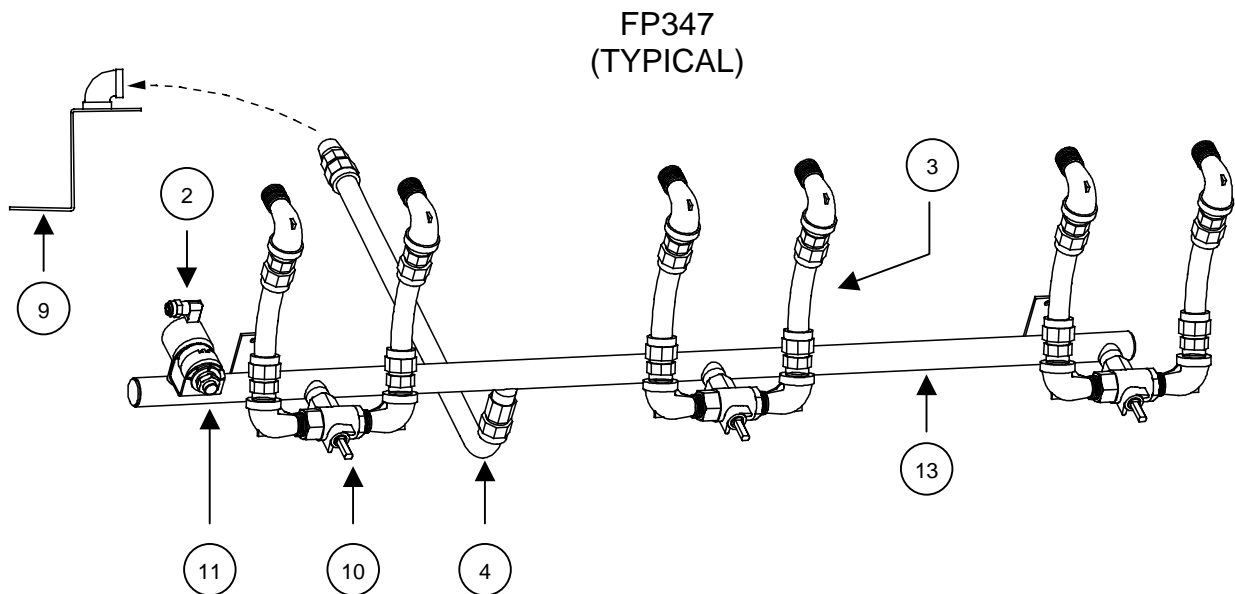


## 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES

### Power Shower Sub-System

A one-piece welded manifold and Dormont S/S flexlines replace the various pieces of ½” NPT piping, flexline, and heater-strips used on the original-design filtration system. A solenoid vent valve, designed to prevent vacuum-lock of the system as oil/shortening drains back to the filter pan when the unit is turned off, is mounted on the left end of the manifold. The solenoid valve is connected to the square drain sub-system by a clear 8” O.D. Teflon tube and threaded fittings. The 180° three-way ball valve used on the manifold is the same as

that used on the earlier design. Seven-inch Dormont S/S flexlines connect the valves to the frypot assembly. Standard, ½” X ½”, 90° black metal street elbows are used to make the connections. A 20-inch Dormont S/S flexline, running above the filter assembly, replaces the previous stainless tubing that ran from the manifold to the oil return hose bracket in the left front of the cabinet. The female end of the new hose attaches to the manifold, and the male end attaches to a 90° elbow of a support bracket attached to the heat shield at the rear of the cabinet.



### Filter Base Assembly and Pump Sub-System

Castors are not used on the new-design filter base. In addition, the filter base assembly has been redesigned to prevent its being taken out of the cabinet without removing a set of machine screws and nuts. The filter pan is unchanged and is completely removable.

A new Teflon hose with a braided stainless steel covering replaces the heated hose run-

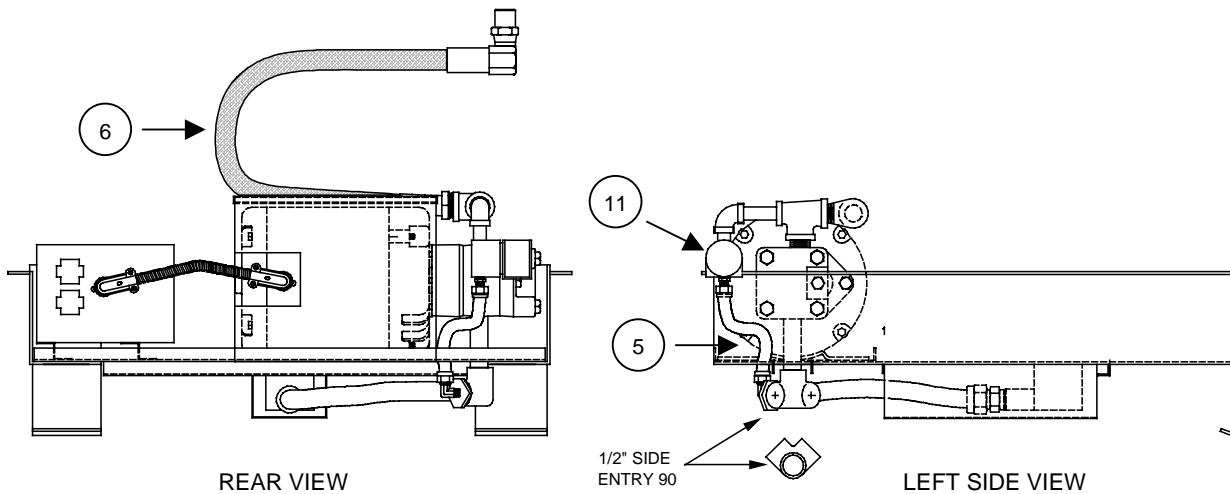
ning from the pump discharge to the Power Shower plumbing. The new hose is fitted with a 90° swivel to prevent kinking.

The pump plumbing has been changed by the addition of a solenoid valve at the pump discharge, a ¼” I.D. Dormont flexline that connects the solenoid valve to the pump inlet fittings, and miscellaneous standard black metal fittings for connections. This design allows oil/shortening to bypass the pump as it drains

## 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES

from the oil return lines back into the filter pan when the system is turned off. Bypassing the pump expedites draining of the lines. The

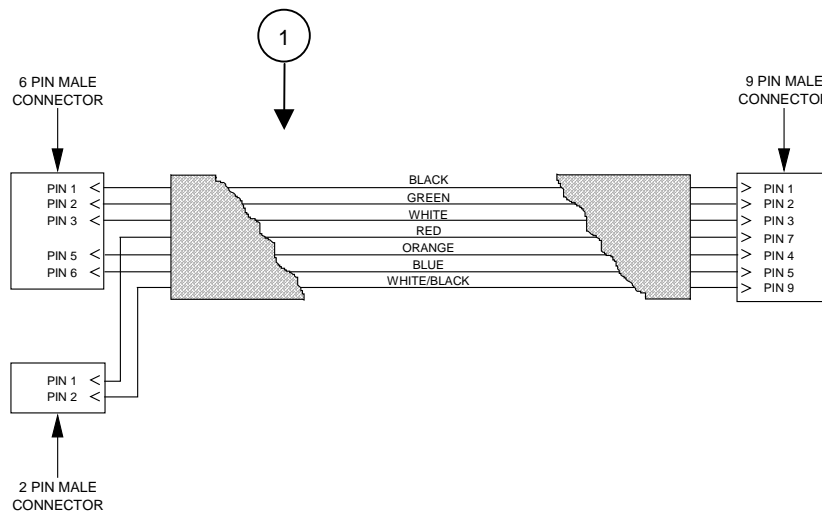
pump solenoid leads are connected to Pins 7 and 9 of the upper 9-pin plug assembly.



### Filter Wiring Box

The original-design 5-lead cable connecting the filter assembly to the filter wiring box has been replaced with a new, universal 7-lead cable to accommodate the solenoid mounted on the manifold. The two new leads have a

separate connector for attachment to the solenoid. When a filter cable is ordered for either filtration system configuration (original or modified), the new 7-wire cable is sent. The two extra wires and connectors will not interfere with original-design filtration systems.



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**Fryer Heat Shield**

The heat shield has been modified by cutting a notch in the back edge to allow mounting of the pump discharge hose support bracket to the heat shield above the filter base assembly. It includes a new hose support (essentially a tray) attached to the inside right rear corner to keep the hose clear of other filter components.

**Important:** The pump discharge hose must stay above the hose support when the filter tray is pushed in under the fryer.

**Verifying Solenoid Operation**

Proper operation of the 24 VAC manifold and pump solenoids can be verified by removing the pump motor lead from terminal 4 of the pump motor relay in the filter wiring box and then activating the oil return lever. Proper solenoid operation will be evidenced by an audible “click” or vibration of the solenoids.

**Abbreviated Parts List** (See illustrations on Pages 7-40 through 7-42)

ITEM	PART #	COMPONENT
1	810-1421	Cable, Filter, FP47
2	810-1372	Fitting, 90° (for use with Teflon vent tube P/N 812-1322)
3	810-1370	Flexline, Dormont, ½-inch X 9-inch (to Power Shower)
4	810-1369	Flexline, Dormont, ½-inch X 18.5-inch (filter to manifold)
5	810-1373	Flexline, Dormont, ¼-inch X 6-inch (pump bypass)
6	810-1423	Hose, Teflon w/Stainless Braiding, ½-inch X 30-inch (from pump)
*	900-5673	Shield, Heat, FP47
7	823-2585	Square Drain Section, End, Left, Long (for full vat)
8	823-2584	Square Drain Section, End, Left, Short (for dual vat left)
9	823-2583	Support, Oil Return, FP47
10	810-1003	Valve, Ball, 3-Way, 180°
*	813-0156	Plug, ½-inch BM Pipe (used to close left valve port on full vat units)
11	807-2484	Valve, Vent, Solenoid, ¼” NPT (for use on manifold and pump)
*	811-0932	Vent Tube, ⅜-inch O.D., Teflon
		Manifold, FP47 Power Shower Oil Return
*	810-1362	FP247
12	810-1394	FP347
*	810-1395	FP447

\* Not illustrated.

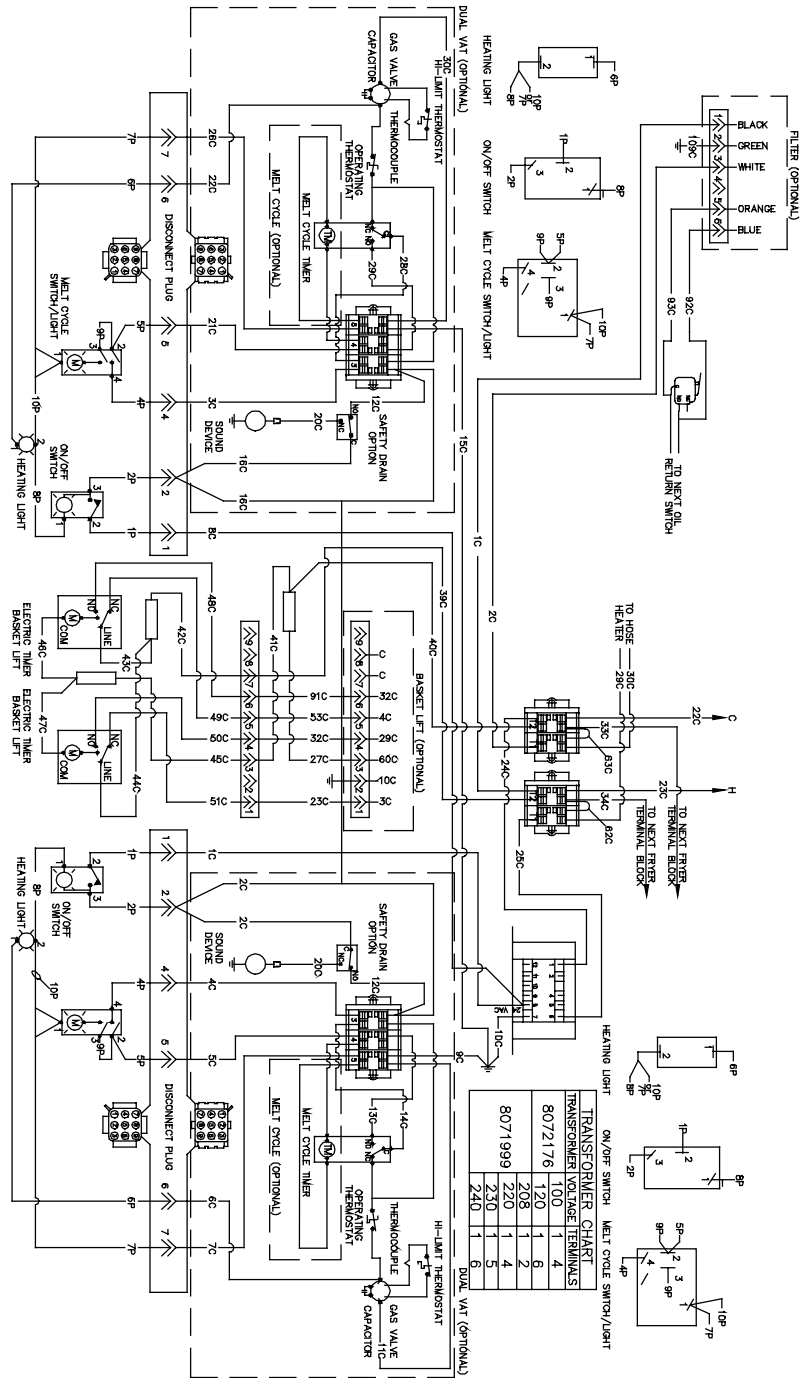
# 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES

## 7.12 Wiring Diagrams

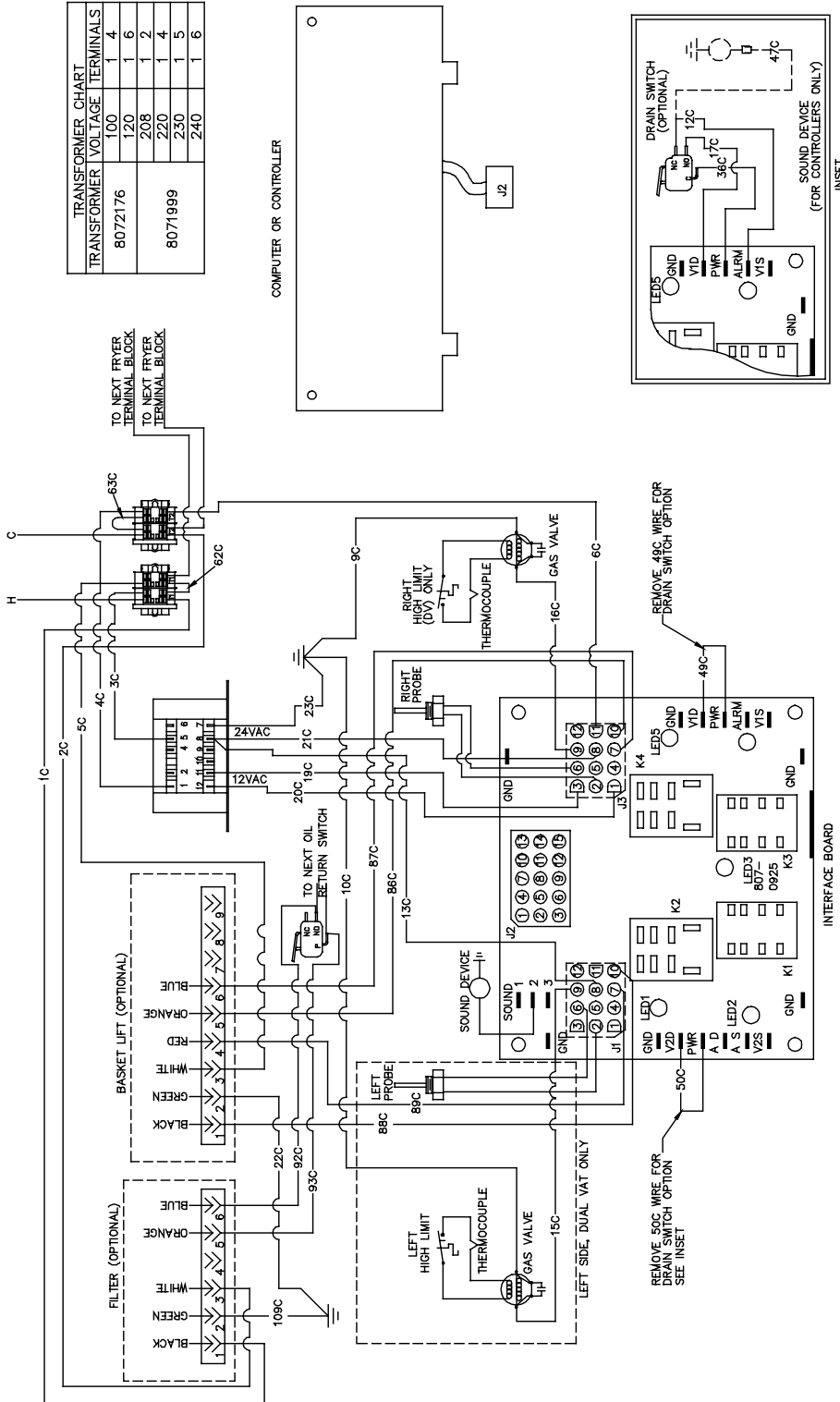
**Note:** The diagrams in this section depict wiring as of the date of manual publication. It may not reflect design changes made to the equipment after publication. Refer to the wiring diagram affixed to the unit when actually troubleshooting this equipment.

### STANDARD CONTROLS WITH PILOT IGNITION

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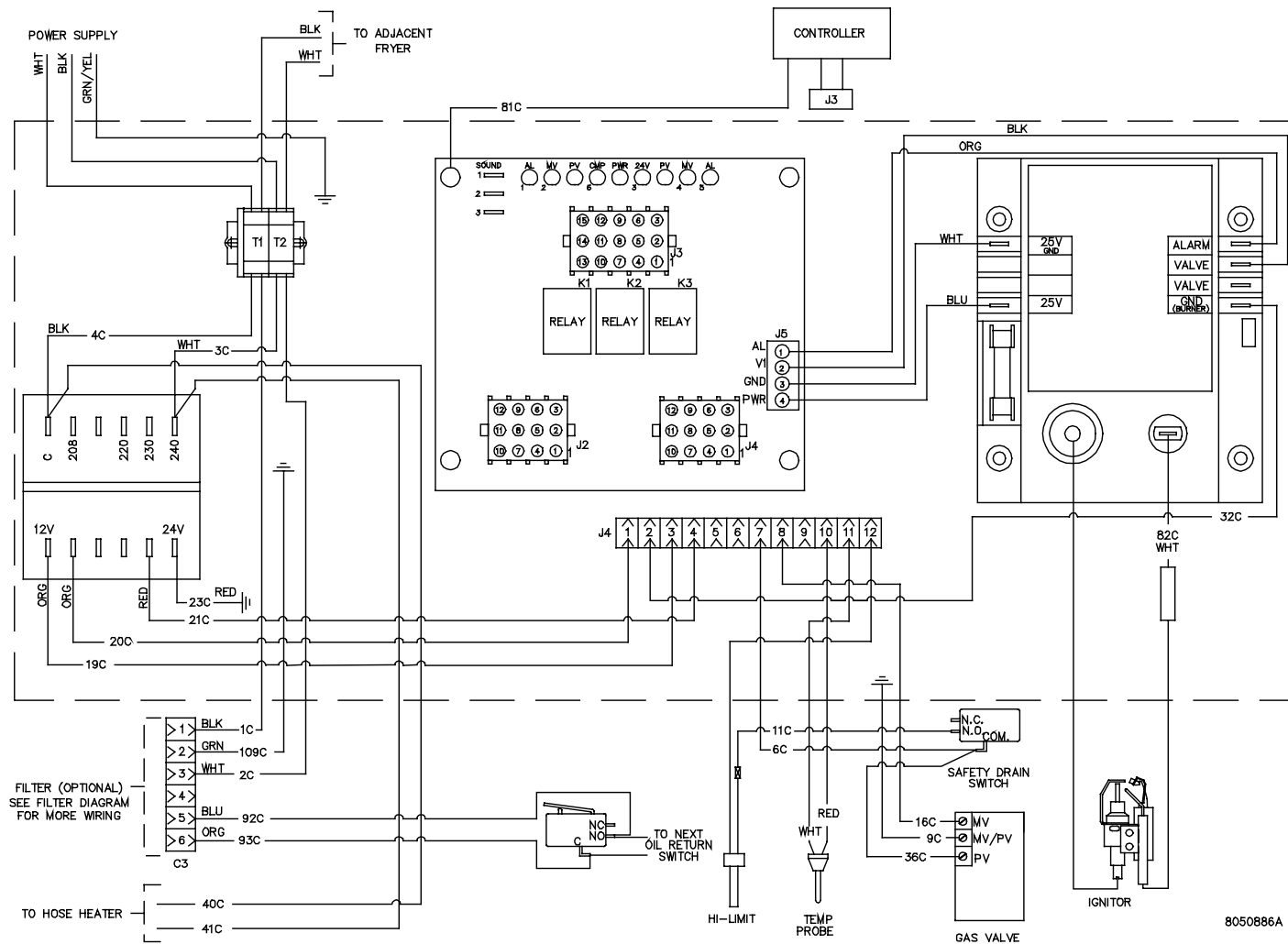


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## COMPUTER/CONTROLLER WITH ELECTRONIC IGNITION

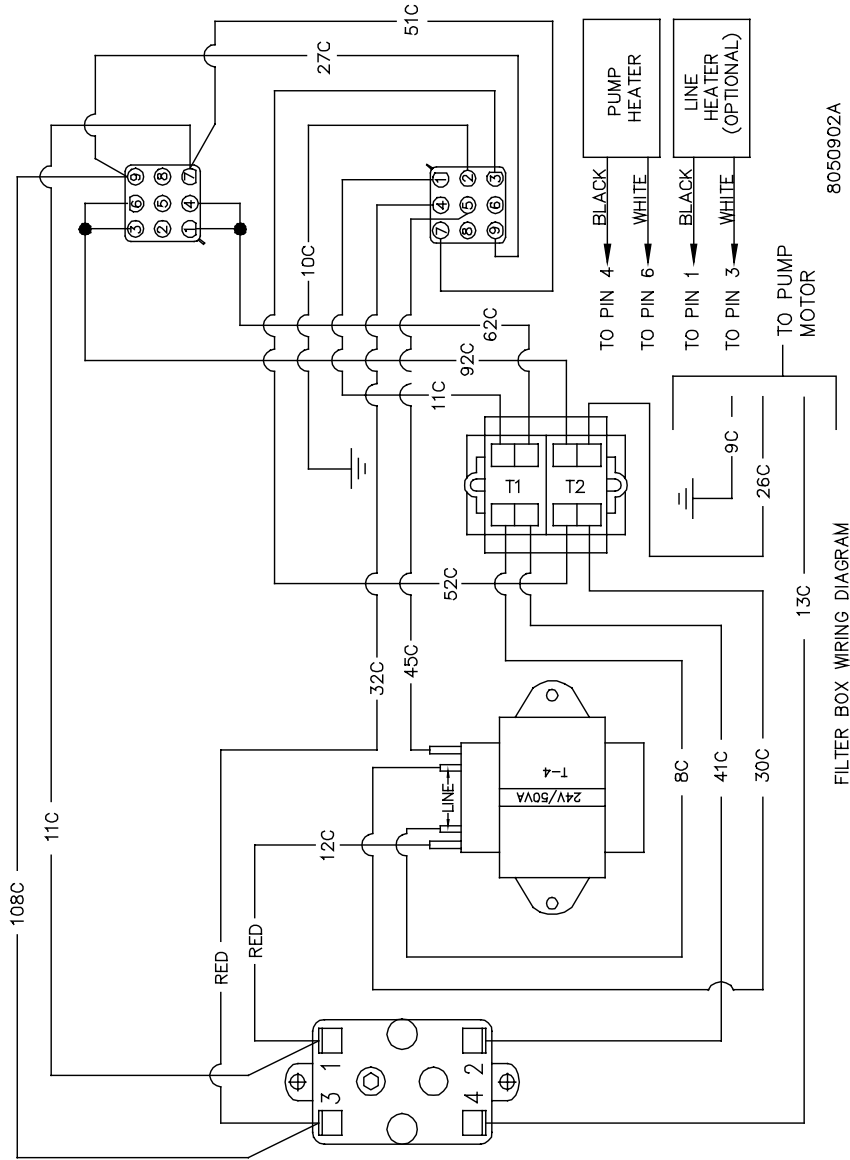


**47 SERIES GAS FRYERS  
CHAPTER 7: SERVICE PROCEDURES**



**COMPUTER/CONTROLLER WITH ELECTRONIC IGNITION  
(240V AND NO BASKETLIFTS)**

**47 SERIES GAS FRYERS**  
**CHAPTER 7: SERVICE PROCEDURES**

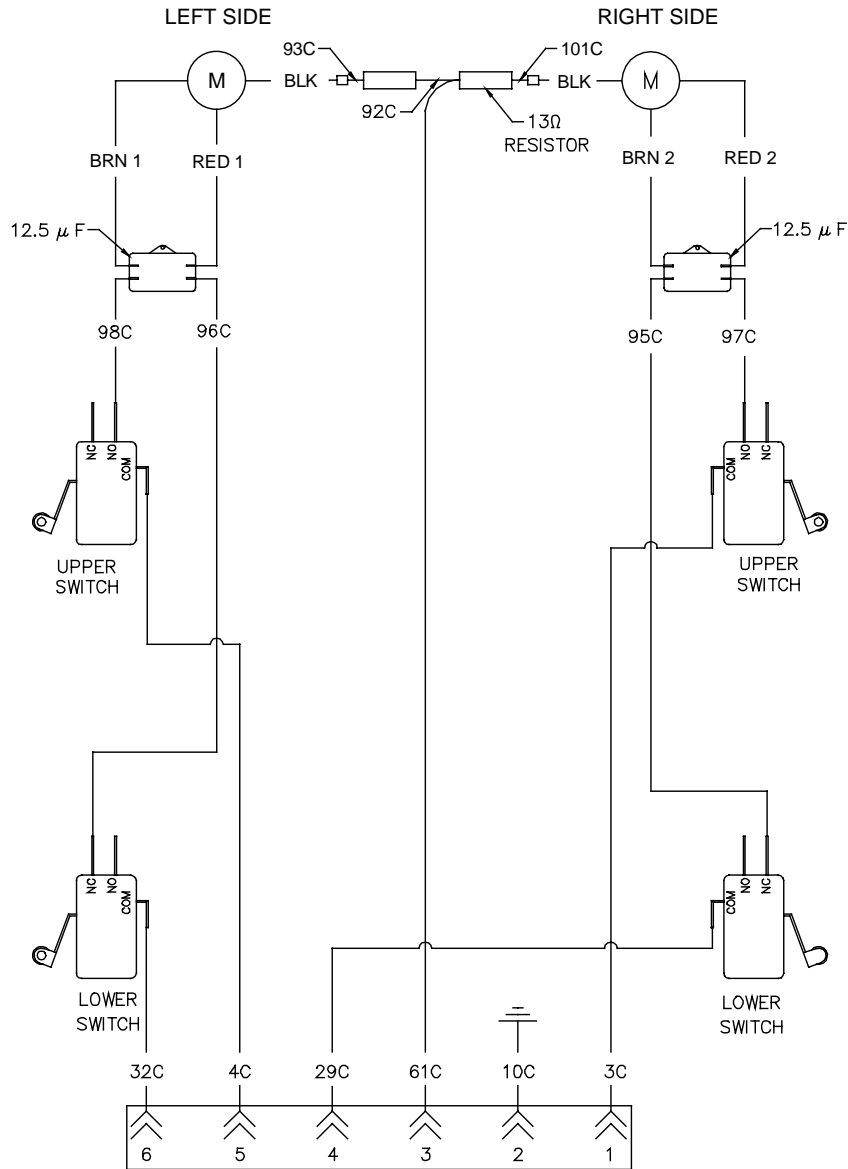


**FP III FILTER BOX**

# 47 SERIES GAS FRYERS

## CHAPTER 7: SERVICE PROCEDURES

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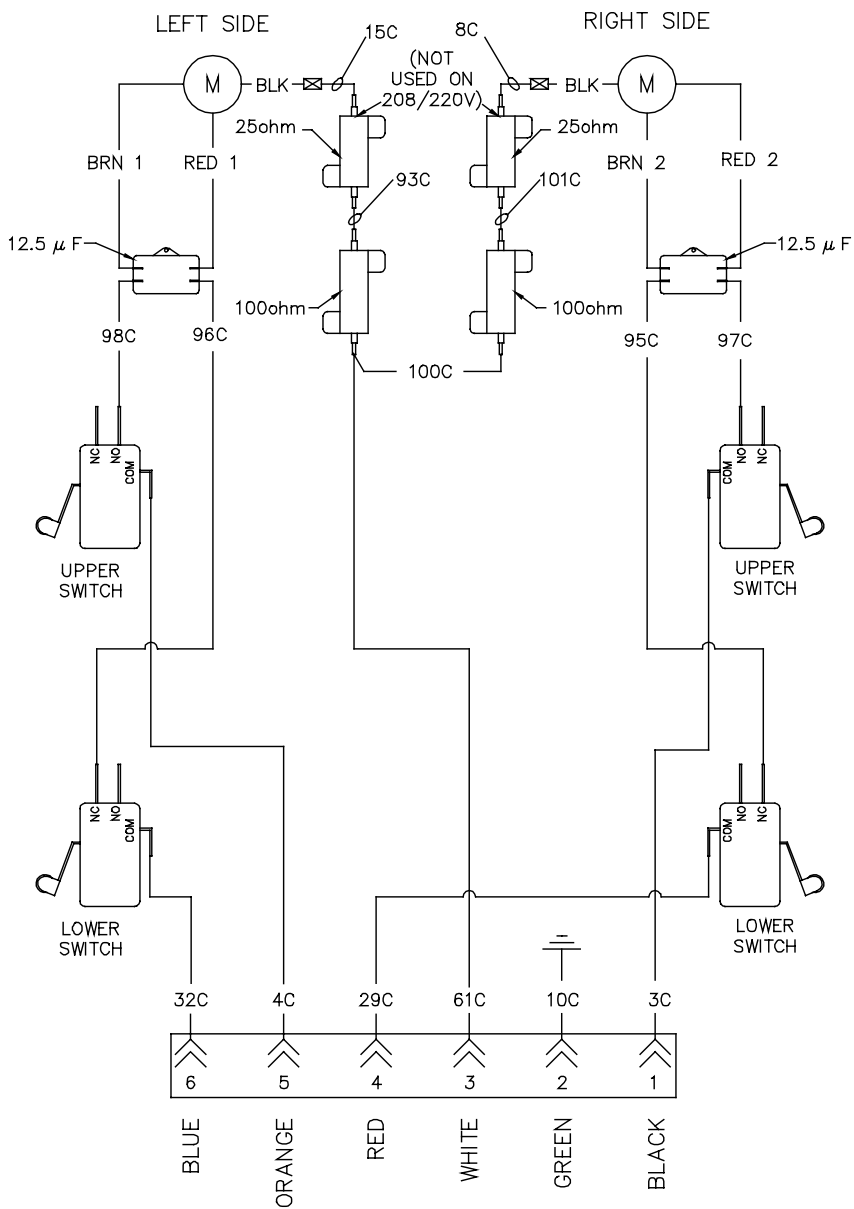


REFERENCES TO LEFT & RIGHT ARE  
FROM THE REAR OF THE FRYER

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## 100/120V MODULAR BASKET LIFT

## 47 SERIES GAS FRYERS CHAPTER 7: SERVICE PROCEDURES



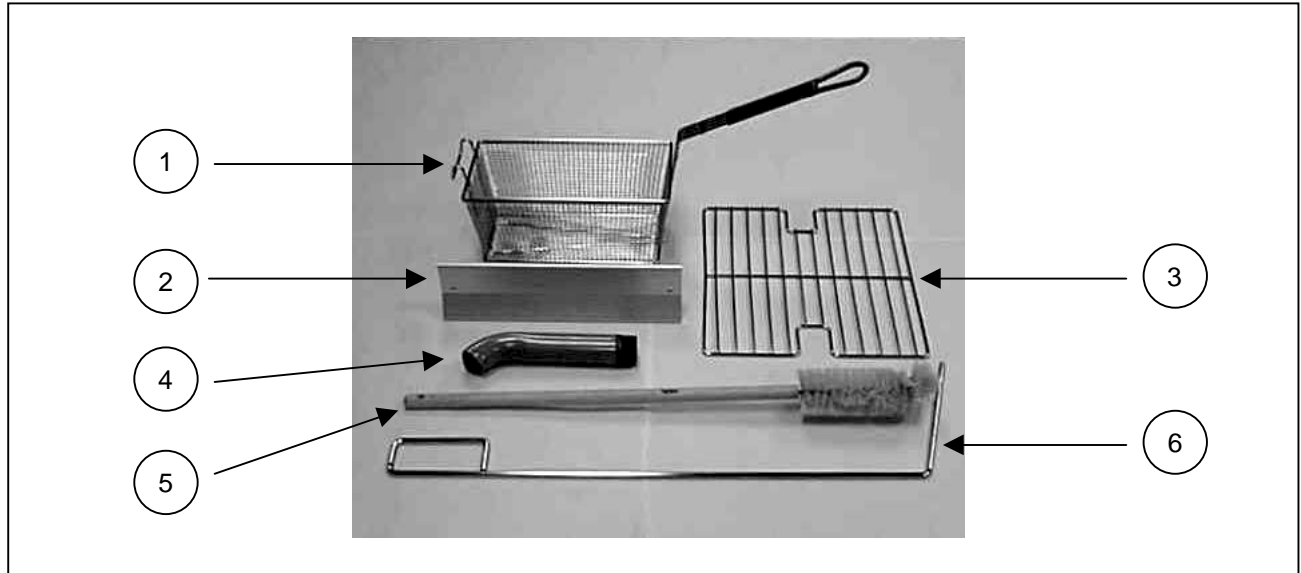
REFERENCES TO LEFT & RIGHT ARE  
FROM THE REAR OF THE FRYER

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## 208V THRU 250V MODULAR BASKET LIFTS WITHOUT RELAY

# 47 SERIES GAS FRYERS CHAPTER 8: PARTS LIST

## 8.1 Accessories

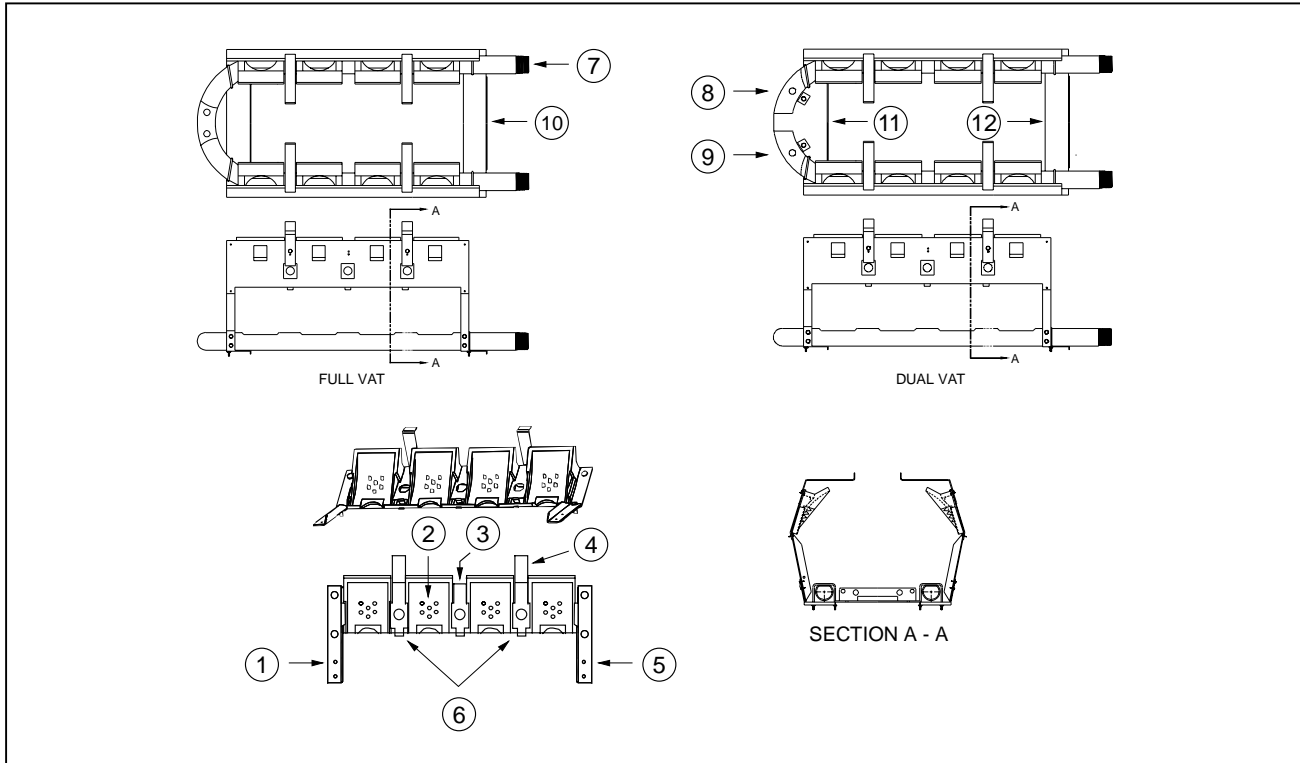


ITEM	PART #	COMPONENT
1	803-0022	Basket, Twin
2	803-0028	Basket Hanger (for Non-Basket Lift Fryers)
3	803-0132	Basket Support Rack
4	812-1226	Drain Extension Pipe (for use on units w/o built-in filtration systems)
5	803-0209	Frypot Cleanout Brush
6	803-0197	Frypot Cleanout Rod (Fryer's Friend)
*	803-0099	Basket, Full
*	810-0357	Caster, 5", w/Brake
*	810-0356	Caster, 5", w/o Brake
*	810-0378	Caster, Rigid
*	806-5518	Frypot Cover
*	806-5043	Kit, 1-Leg
*	806-3811	Kit, 4-Leg
*	809-0171	Screw, Basket Hanger (for use w/803-0028)

\* Not illustrated.

**47 SERIES GAS FRYERS  
CHAPTER 8: PARTS LIST**

**8.2 Burner Manifold Assemblies and Component Parts**

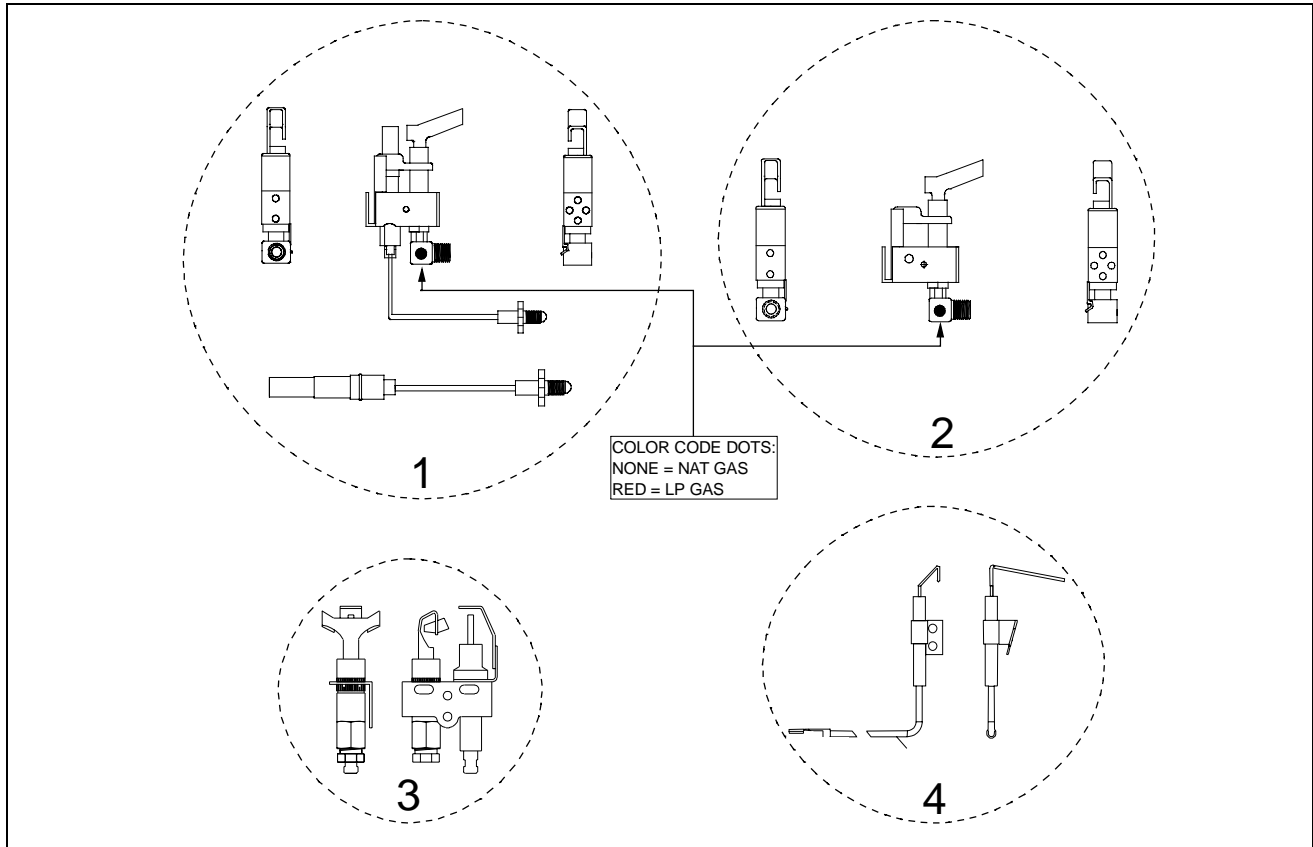


ITEM	PART #	COMPONENT
	806-5927	<b>Burner Manifold Assembly, Full Vat, Complete</b>
	806-5928	<b>Burner Manifold Assembly, Dual Vat, Complete</b>
	806-7949	<b>Burner Manifold Sub-Assembly (Target Assembly)</b>
1	911-2029	Support, Target, Left End
2	814-0034	Ceramics, #R-590 Radiants
3	910-2031	Support, Target, Back Plate
4	910-2027	Standoff, Target
5	912-2029	Support, Target, Right End
6	910-2025	Bracket, Target Retaining
7	810-0989	Burner Manifold, Full Vat
8	810-0987	Burner Manifold, Dual Vat, Left
9	810-0988	Burner Manifold, Dual Vat, Right
10	910-2022	Bracket, Manifold Mounting, Full Vat
11	910-2024	Bracket, Manifold Mounting, Dual Vat, Rear
12	910-2023	Bracket, Manifold Mounting, Dual Vat, Front
*	826-1357	Orifice, Burner Manifold, Natural Gas (Drill # 53, 1.45mm)
*	826-1387	Orifice, Burner Manifold, LP Gas (Drill # 65, 0.86mm)
*	809-0500	Screw, 410 SS, # 10 x 1/2, Hex Washer Head

\* Not illustrated.

**47 SERIES GAS FRYERS  
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**8.3 Burner Ignition System Components**

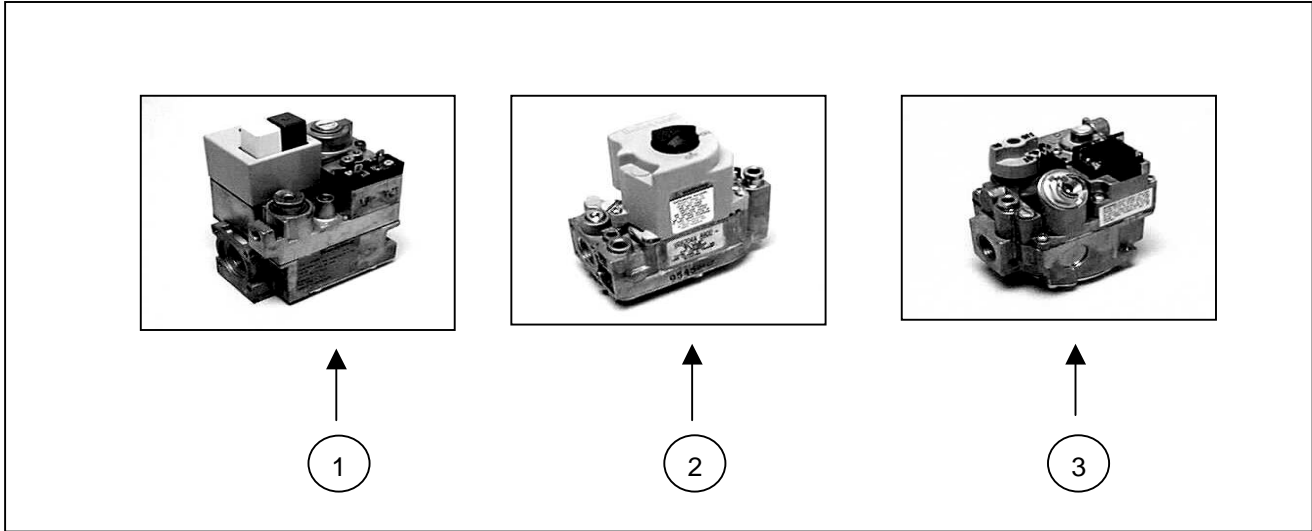


ITEM	PART #	COMPONENT
1		Pilot Assembly w/Thermopile (for use w/Non-CE Pilot Ignition Systems)
	810-0615	Natural Gas
	810-0616	Propane Gas
	810-0617	Thermopile
2		Pilot Assembly w/o Thermopile (for use w/CE Pilot Ignition Systems)
	812-1286	Natural Gas
	812-1287	Propane Gas
	812-1284	Thermocouple
3		Ignitor Assembly, Honeywell (for use w/Electronic Ignition Systems)
	807-1707	Natural Gas
	807-1708	Propane Gas
4	807-1928	Electrode, Flame Sensor (for use w/Electronic Ignition Systems)
*	806-5830	Ignition Cable (Spark Plug Wire)
*	826-1511	Ignitor Kit, Optional Piezo
*	810-1001	Trigger
*	807-1906	Electrode Assembly

\* Not illustrated.

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**8.4 Gas Valve Assemblies and Connection Components**



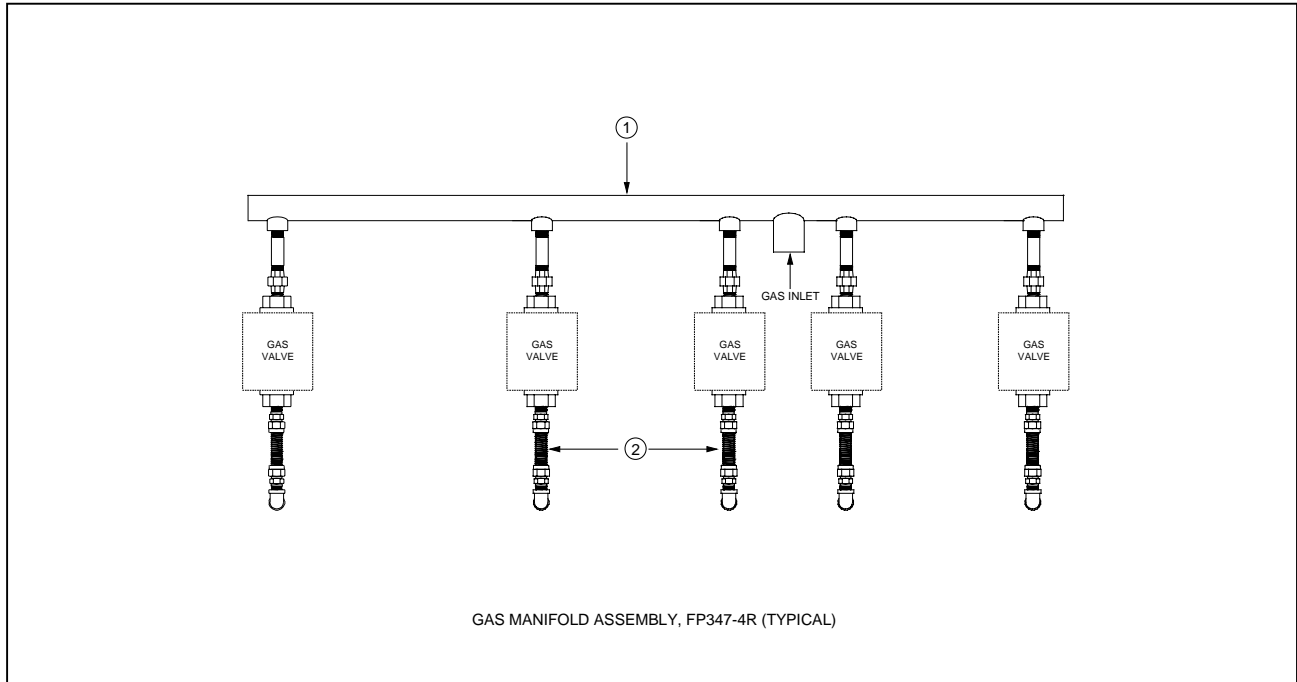
ITEM	PART #	COMPONENT
1		Valve Assembly (for use w/CE Pilot Ignition Systems)
	807-2091	Natural Gas
	807-2127	Propane Gas
2		Valve Assembly (for use w/Non-CE Electronic Ignition Systems)
	810-0786	Natural Gas
	810-0787	Propane Gas
3		Valve Assembly (for use w/Non-CE Pilot Ignition Systems)
	807-0428	Natural Gas
	807-0757	Propane Gas (Full Vat Units)
	807-2922	Propane Gas (Split Vat Units)
*	806-0236	Capacitor, .002 $\mu$ F (for use w/807-0428, 807-0757, 810-0786, 810-0787)
*		Vent Tube, Gas Valve
	810-1166	For use w/CE Gas Valves 807-2091 and 807-2127
	810-0691	For use w/Non-CE Gas Valves 807-0428, 807-0757, 810-0786, 810-0787
*		Hose, Flexible, Gas
	810-0084	3/4-inch (19.05mm) ID, 48 inches (1.2m) long
	810-0085	1-inch (25.4mm) ID, 48 inches (1.2m) long
*		Quick Disconnect Fitting, Female
	810-0072	3/4-inch (19.05mm)
	810-0073	1-inch (25.4mm)
*		Quick Disconnect Fitting, Male
	810-0070	3/4-inch (19.05mm)
	810-0074	1-inch (25.4mm)

\* Not illustrated.



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### 8.5 Gas Manifold Assemblies

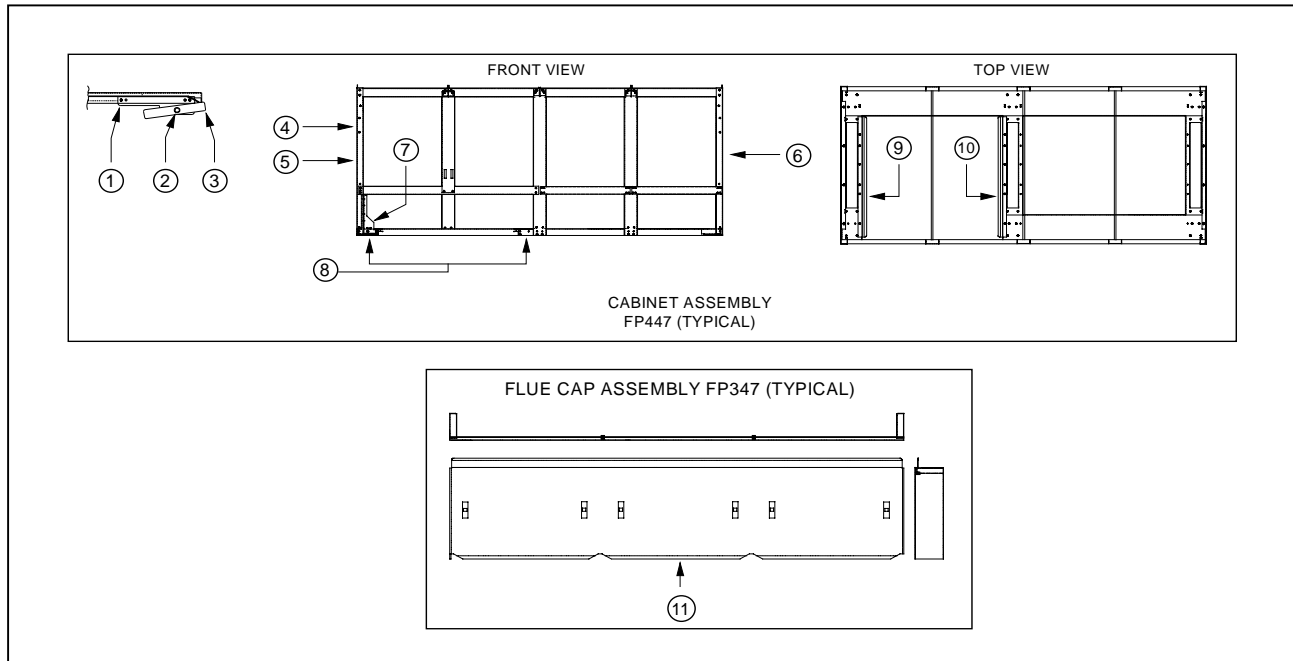


ITEM	PART #	COMPONENT
1		Gas Manifold
	810-0995	FP247
	810-0997	FP247-2L
	810-0996	FP247-2R
	810-0950	FP247-4
	810-0960	FP347
	810-0994	FP347-2L
	810-0947	FP347-2R
	810-0993	FP347-4L
	810-0991	FP347-4R
	810-0992	FP347-6
	810-1119	MJ147-2
2		Flexline
	810-1159	7.5" (Used for all but MJ147-2)
	810-1067	11.0" (Used for MJ147-2 only)

Note: All other components except gas valves are standard black metal fittings that may be locally procured as required. Refer to section 8.4 for appropriate gas valve part number.

## 47 SERIES GAS FRYERS CHAPTER 8: PARTS LIST

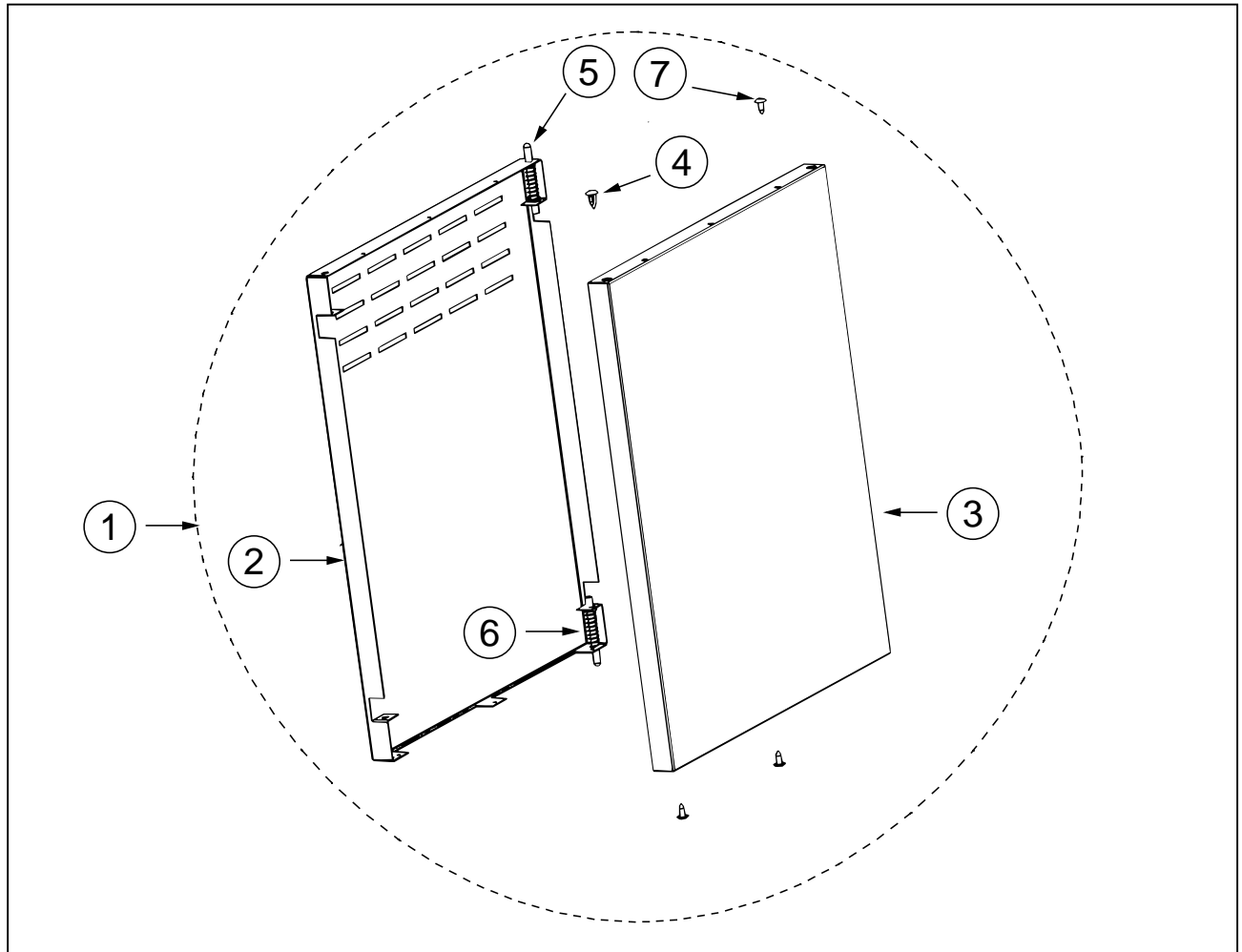
### 8.6 Cabinet Assemblies and Component Parts



ITEM	PART #	COMPONENT
1	900-1959	Bracket, Filter Lock
2	809-0422	Screw, FootPrint III Cover
3	900-1957	Lock, Filter
4	900-7678	Panel, Side, Left or Right, w/No Access Openings (CRS)
4	910-7678	Panel, Side, Left or Right, w/No Access Openings (S/S)
5	901-7679	Panel, Side, Left, w/4 Access Openings (CRS)
5	911-7679	Panel, Side, Left, w/4 Access Openings (S/S)
6	902-7679	Panel, Side, Right, w/4 Access Openings (CRS)
6	912-7679	Panel, Side, Right, w/4 Access Openings (S/S)
7	901-1810	Gusset
8	910-5244	Rail, Filter, Bottom, Left or Right
9	911-4690	Rail, Filter, Top Left
10	912-4690	Rail, Filter, Top, Right
*	809-0266	Screw, #10-1/2 Phillips Head, Zinc Plated
11	823-2541	Flue Cap, Triple Fryer Battery
*	823-2540	Flue Cap, Double Fryer Battery
*	910-5018	Flue Cap, Single Fryer
*	910-3122	Flue Cap Battery Strip
*	900-5486	Flue Cap Support
*	910-7443	Connecting Strip, Frypot

\* Not illustrated.

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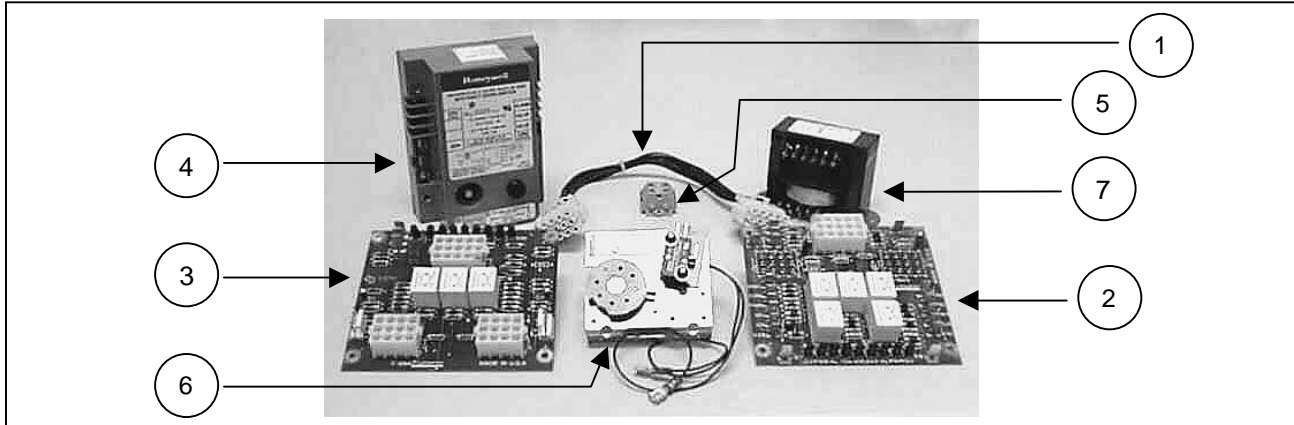


ITEM	PART #	COMPONENT
*	806-7383	Door Assembly, Left
1	806-7384	Door Assembly, Right
2	900-2815	Liner, Door, Left or Right
3	824-0580	Panel, Door, Left or Right
4	809-0545	Clip, Nylon Arrow
5	806-4487	Door Pin Assembly
6	826-1343	Spring, Door Hinge
7	809-0266	Screw, #10 x 1/2, Phillips, Zinc Plated
*	810-1392	Handle, Door, Wireform
*	900-07341	Hinge, Door
*	810-1105	Magnet, Door

\* Not illustrated.

## 47 SERIES GAS FRYERS CHAPTER 8: PARTS LIST

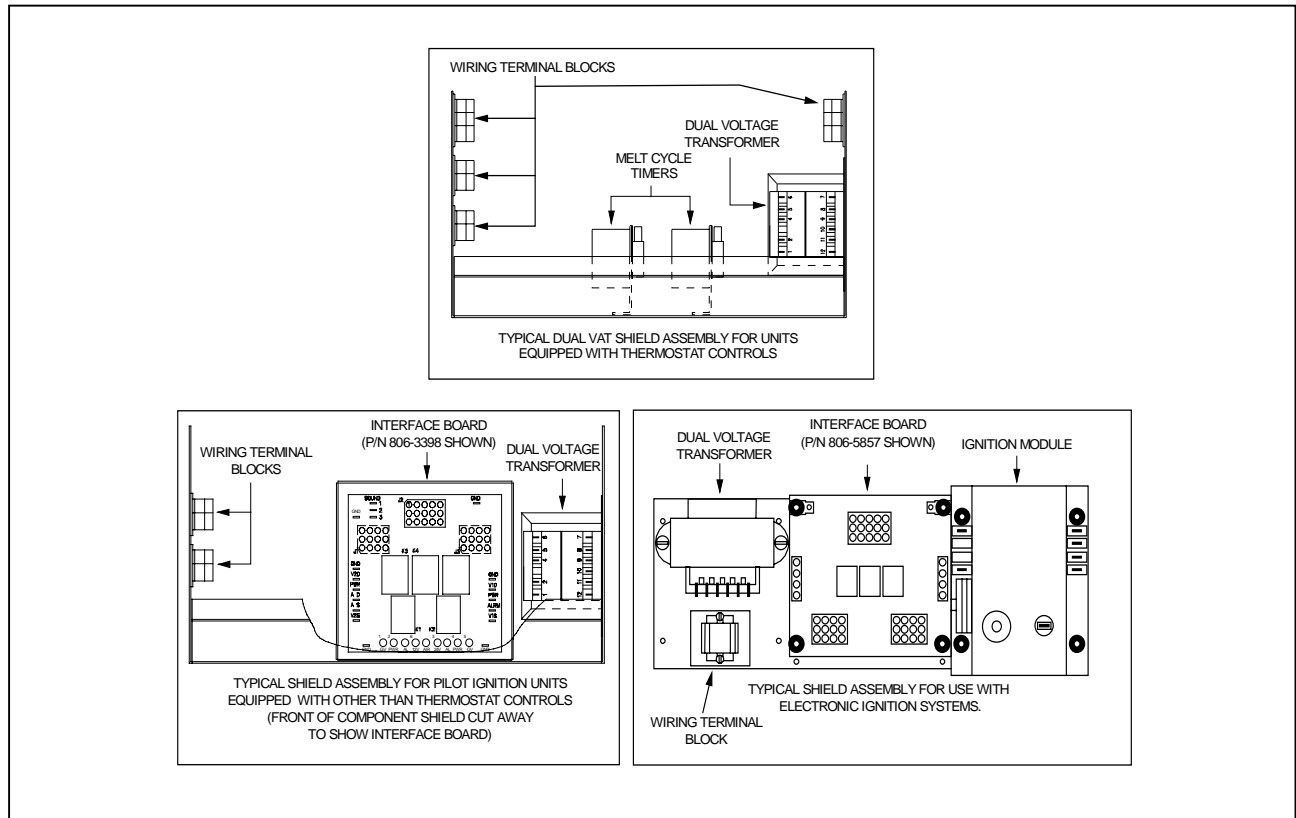
### 8.7 Component Box/Shield Component Parts



ITEM	PART #	COMPONENT
<b>Common Components</b>		
1	806-2071	Cable Assembly, 15-Pin, Computer to Interface Board
*	WIR0163SP	Cable Assembly, Transformer Box to Interface Board
*	806-5830SP	Cable Assembly, Ignition (Spark Plug Wire)
<b>Interface Boards</b>		
2	806-3398	Fryers w/Electronic Ignition
3	806-5857	Fryers w/o Electronic Ignition
4	807-1006	Module, Ignition, 4-Second Delay, Honeywell
		Spacer, Aluminum, for use with Interface Board
*	809-0349	4mm x 6 mm
*	807-1241	5/8" Unthreaded
		Terminal Block, Screwless
5	810-1164	2-Wire
*	810-1168	3-Wire
6	806-1661	Timer, Melt Cycle, 24V, 60Hz
		Transformer, V/F, Dual Voltage
7	807-2176	100-120V
7	807-1999	208-240V
*	806-5879	Wire Assembly, Ignition Module
*	806-3660	Sound Device, High Output

\* Not illustrated.

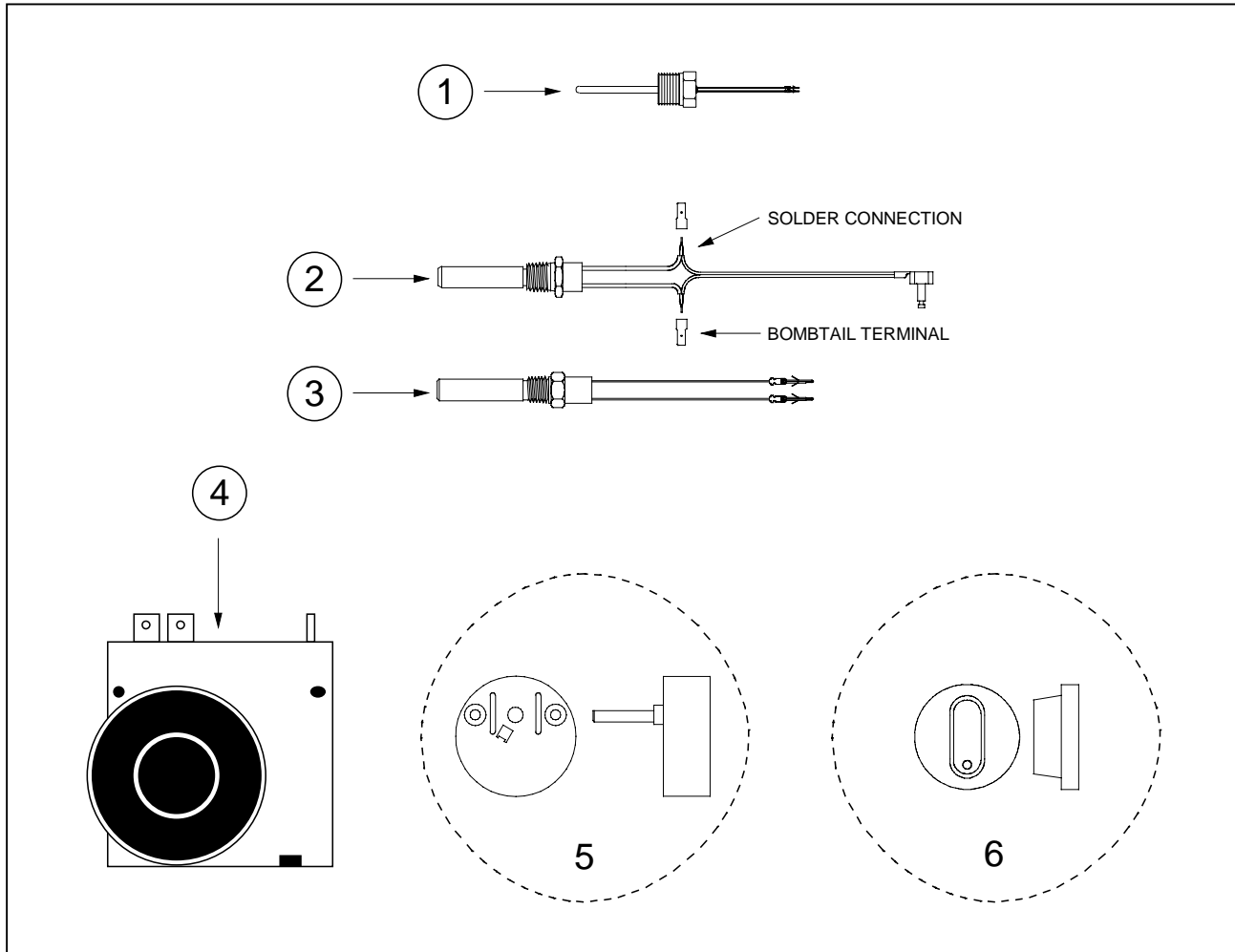
## 47 SERIES GAS FRYERS CHAPTER 8: PARTS LIST



ITEM	PART #	COMPONENT
	806-8175	<b>Control Box Assy, FP/MJ-47, Full Vat, Electronic Ignition, 120V</b>
	806-8048	<b>Control Box Assy, FP/MJ-47, Full Vat, Electronic Ignition, 240V</b>
		<b>Shield Assemblies</b>
	806-6909	100-120V Full Vat, w/o Melt Cycle or Interface Board
	806-6908	100-120V Full Vat, w/Melt Cycle, w/o Interface Board
	806-8174	100-120V Full Vat, w/Electronic Ignition and Interface Board
	806-6907	100-120V Full Vat, w/Pilot Ignition and Interface Board
	806-6906	100-120V Dual Vat, w/o Melt Cycle or Interface Board
	806-6905	100-120V Dual Vat, w/Melt Cycle, w/o Interface Board
	806-6904	100-120V Dual Vat, w/Pilot Ignition and Interface Board
	806-6837	230-240V Full Vat, w/o Melt Cycle or Interface Board
	806-6836	230-240V Full Vat, w/Melt Cycle, w/o Interface Board
	806-7988	230-240V Full Vat, w/Electronic Ignition and Interface Board
	806-6835	230-240V Full Vat, w/Pilot Ignition and Interface Board
	806-6834	230-240V Dual Vat, w/o Melt Cycle or Interface Board
	806-6833	230-240V Dual Vat, w/Melt Cycle, w/o Interface Board
	806-6832	230-240V Dual Vat, w/Pilot Ignition and Interface Board

## 47 SERIES GAS FRYERS CHAPTER 8: PARTS LIST

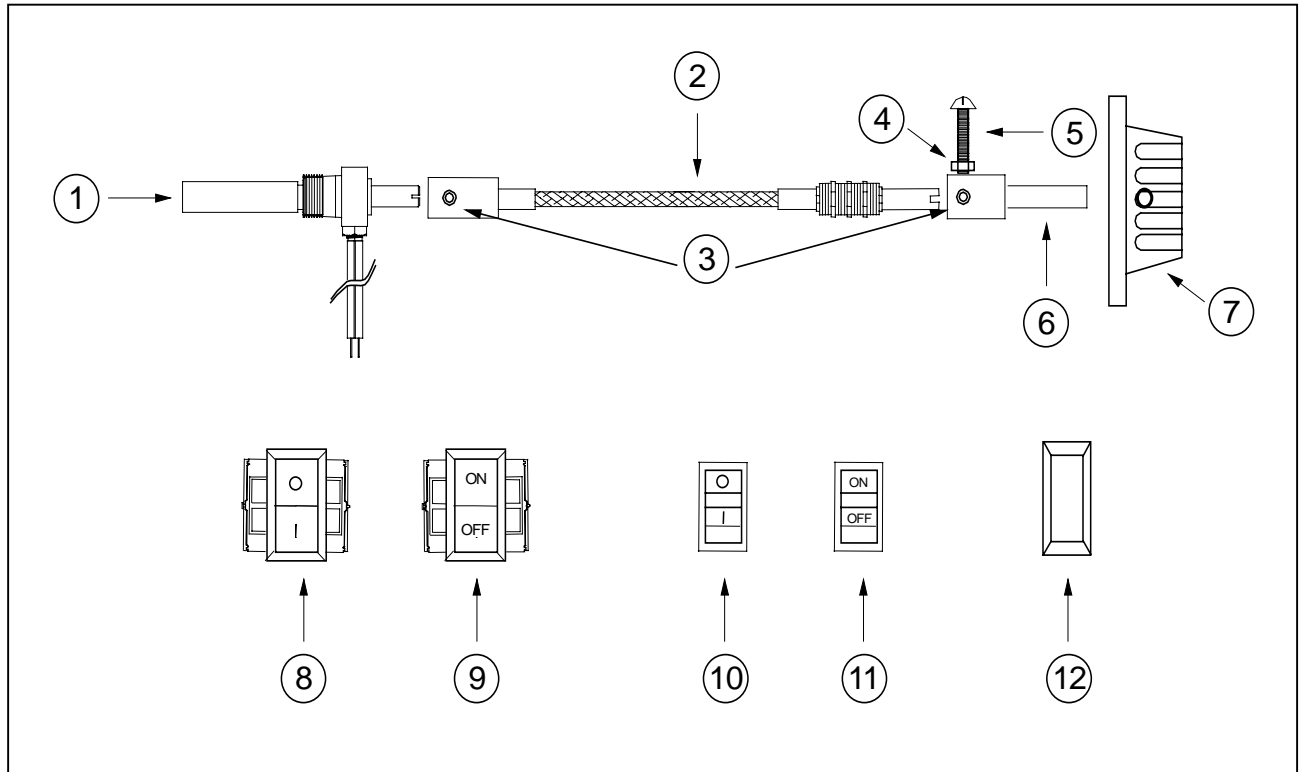
### 8.8 Control Assemblies and Component Parts



ITEM	PART #	COMPONENT
		<b>Common Components</b>
1	806-4206	Probe, Temperature Control (not for use with Thermostat Controllers)
*	810-0625	Probe Guard
		Thermostat Assembly, High Limit
2	806-7550	For use on CE units
3	826-1177	For use on Non-CE units
4		Timer, Basket Lift, Electric
	807-0103	120V, 60 Hz, 5-Minute
	807-0104	120V, 60 Hz, 15-Minute
	807-0401	240V, 50/60 Hz, 18-Minute
5	810-0585	Timer, Basket Lift, Mechanical, 15-Minute
6	810-1287	Knob, Mechanical Timer

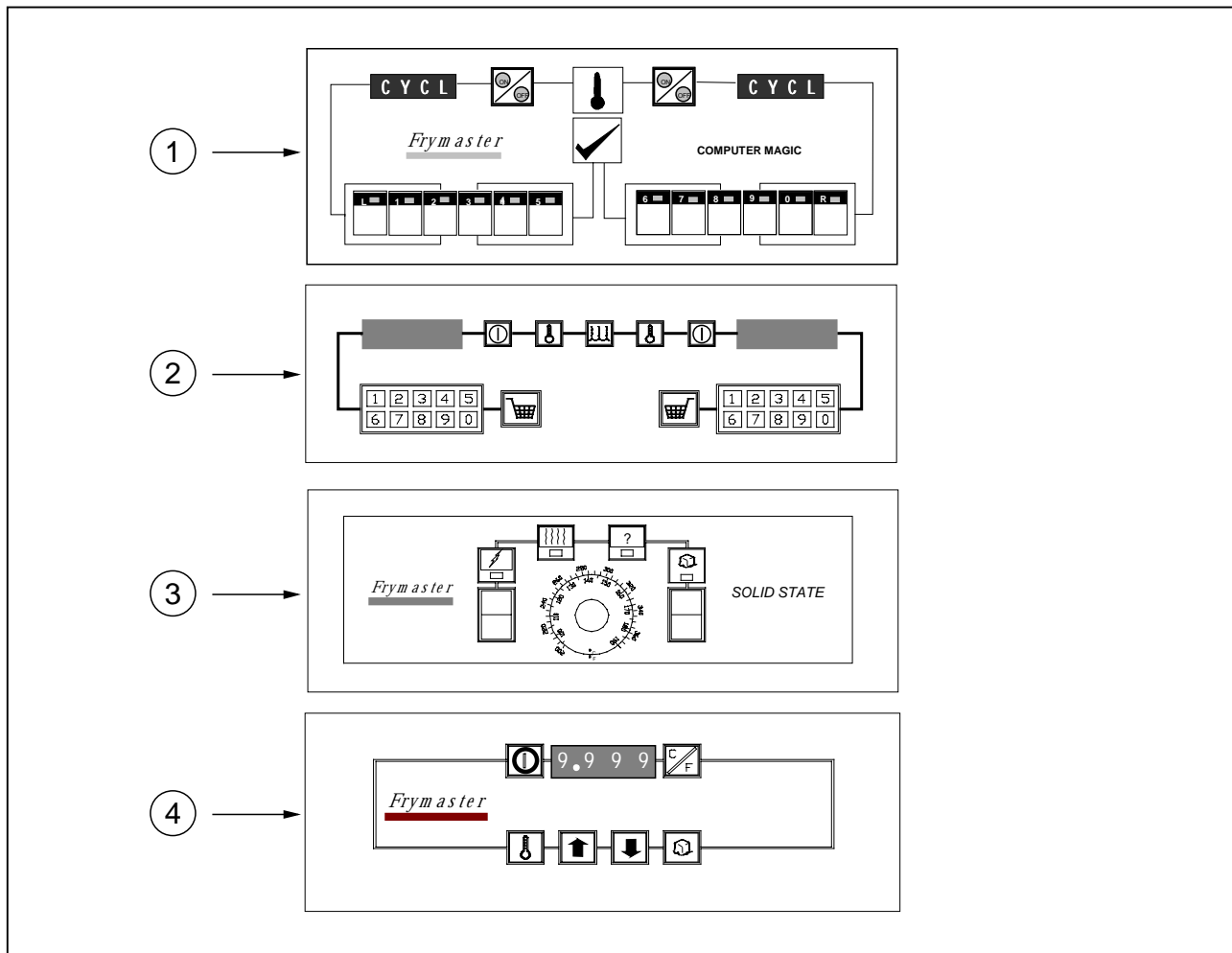
\* Not illustrated.

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ITEM	PART #	COMPONENT
<b>Thermostat Controller Components</b>		
1	806-0183	Thermostat, Operating (for use with Thermostat Controller only)
2	810-0999	Shaft, Flexible
3	809-0157	Set Screw
4	809-0050	Nut, Hex
5	826-1361	Stop Screw
6	810-0276	Adapter, Shaft End
7	810-0334	Knob, Thermostat
8	807-2197	Switch, Rocker, Melt Cycle I/O, w/24V Lamp, Amber (CE)
9	807-0046	Switch, Rocker, Melt Cycle ON/OFF, w/24V Lamp, Amber (Non-CE)
10	807-2196	Switch, Rocker, Fryer I/O, w/24V Lamp, Green (CE)
11	807-1404	Switch, Rocker, Fryer ON/OFF, w/24V Lamp, Red (Non-CE)
12	807-1525	Light, 24V, White

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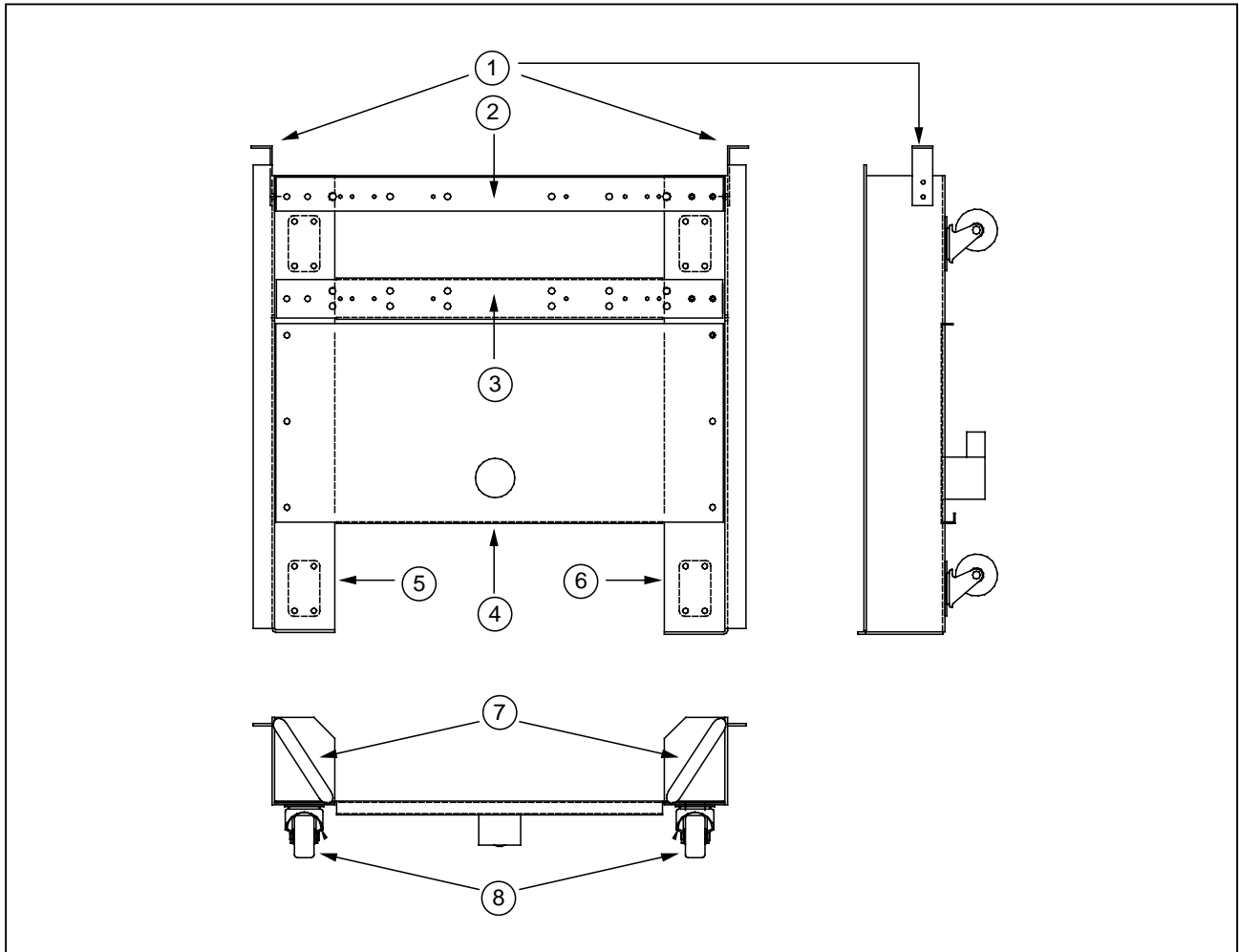


ITEM	PART #	COMPONENT
1		Computer Magic III
	806-7516	Dual Vat (CE)
	806-6983	Dual Vat (Non-CE)
	806-7479	Full Vat (CE)
	806-3705	Full Vat (Non-CE)
2		Computer, Basket Lift Timer
	806-7484	Full Vat (CE)
	806-4353	Full Vat (Non-CE)
3		Analog Controller
	806-3564	Dual Vat
	806-3559	Full Vat
4		Digital Controller
	806-3729	Dual Vat
	806-3728	Full Vat



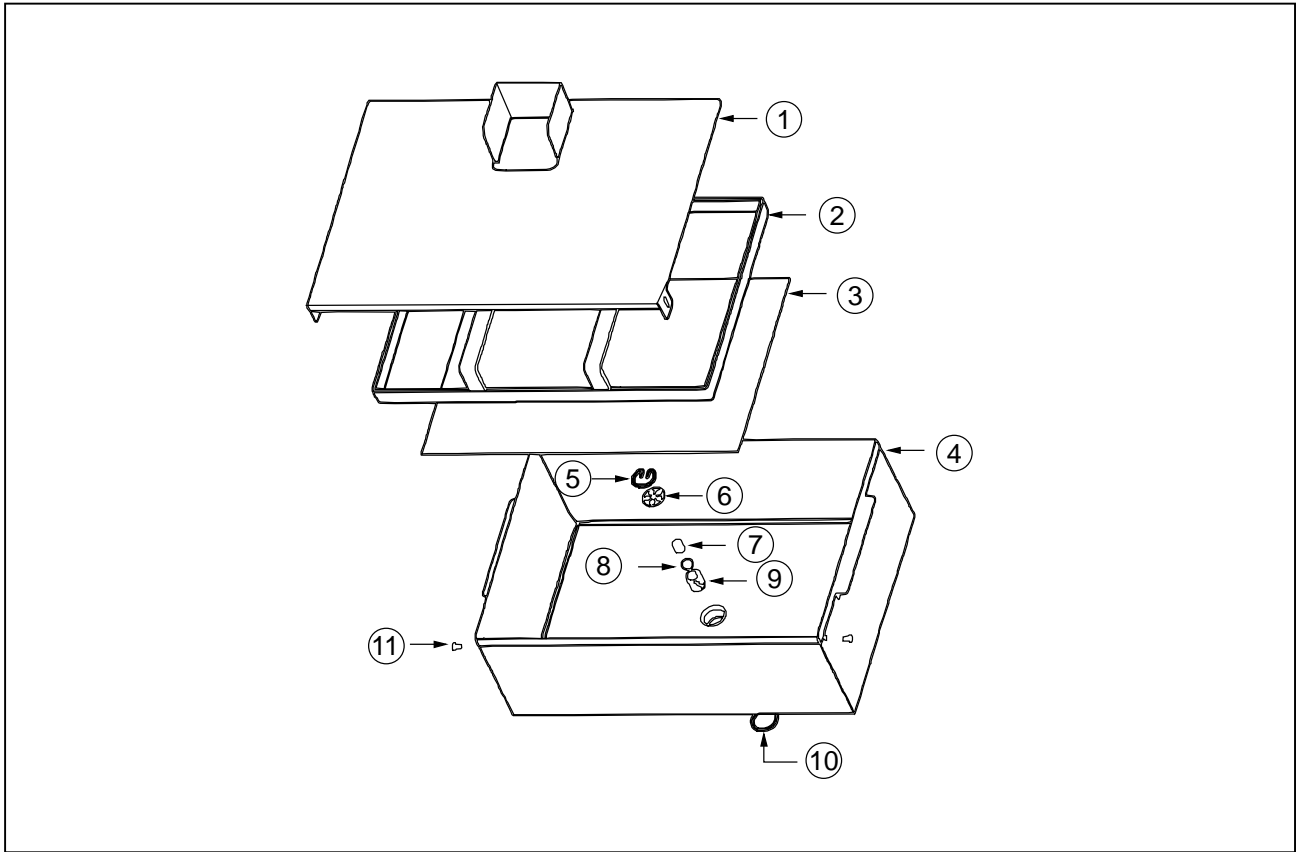
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**8.9 Filtration Systems and Component Parts**



ITEM	PART #	COMPONENT
		<b>Filter Base Assembly</b>
	806-5954	Base Assembly, Complete
1	900-1953	Bracket, Filter Pan Lock
2	900-7469	Support, Filter Motor Angle
3	900-7470	Support, Filter Motor
4	823-2289	Support, Filter Pan
5	901-7650	Frame, Base, Left Side
6	902-7650	Frame, Base, Right Side
7	810-0019	Handle
8	810-0006	Caster, Swivel, Rokite #127-2

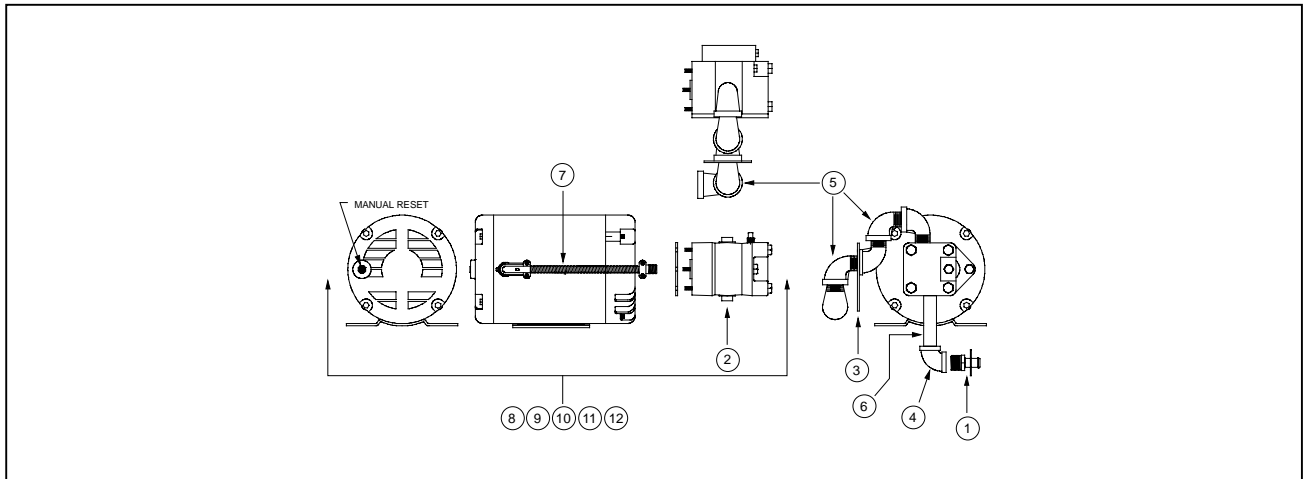
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ITEM	PART #	COMPONENT
		<b>Filter Pan Assembly</b>
	806-5618	Pan Assembly, Complete (less Crumb Screen Pan)
*	824-0430	Pan, Crumb Screen (must be ordered as a separate item)
	803-0170	Paper, Filter, 100 Sheet Pack
1	823-2027	Cover
2	810-1408	Hold Down Ring
3	810-1223	Screen
4	823-1979	Pan
5	810-1387	Retainer, Check Valve
6	900-5448	Strain Plate, Check Valve
7	810-0946	Spring, Check Valve
8	810-0948	Ball, Check Valve
9	810-1388	Tube, Check Valve
10	816-0181	O-Ring, Check Valve
11	809-0422	Screw, Shoulder

\* Not illustrated

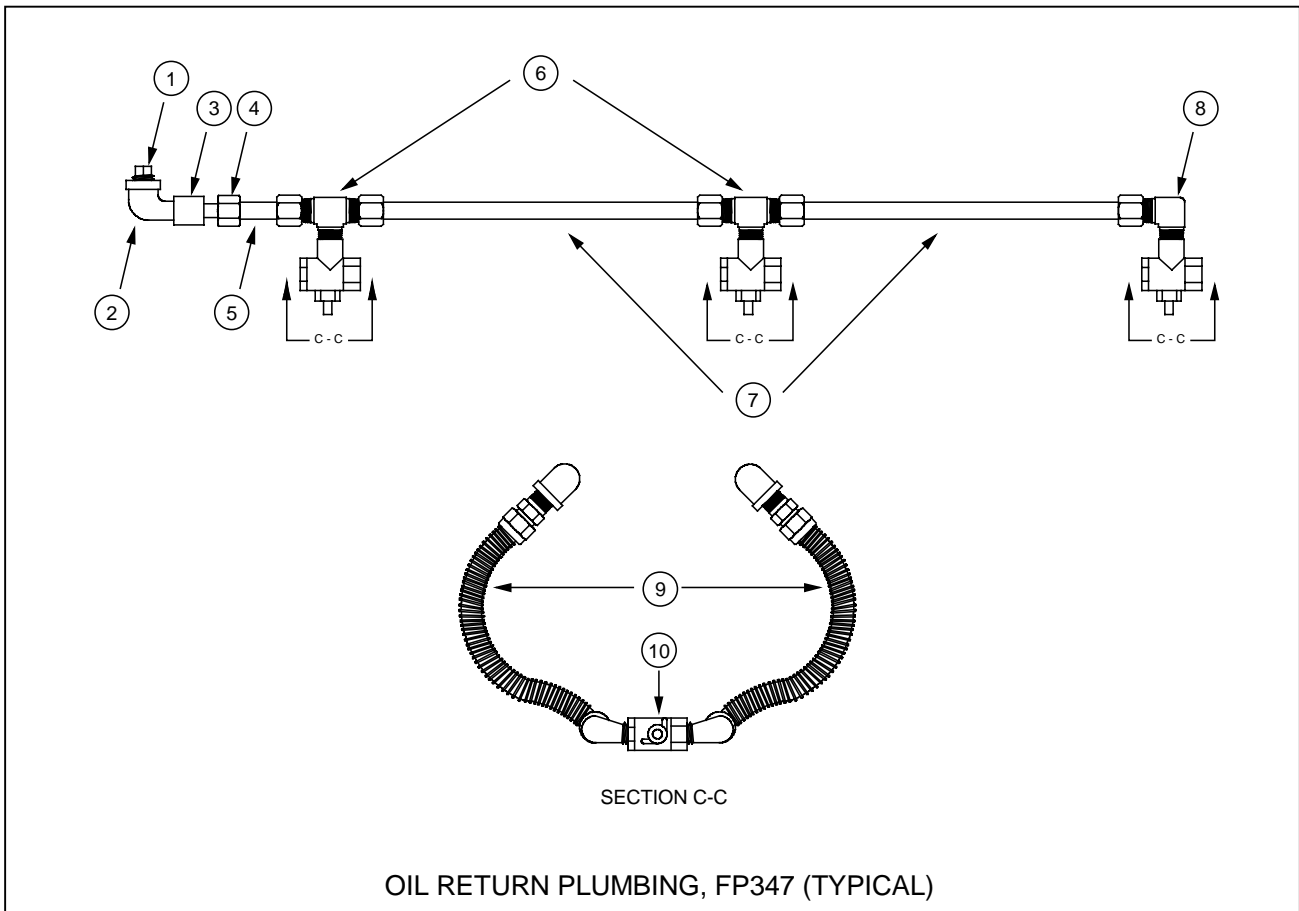
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ITEM	PART #	COMPONENT
		<b>Filter Pump and Motor Assemblies</b>
*	900-7558	Cover, Motor
*	816-0093	Gasket, Pump/Motor
*	810-1159	Flexline, Steel, 7 1/2" Oil Return (Pump to Filter Pan Outlet)
1	813-0376	Fitting, Oil Return Hose (for use with rubber hose only)
2	807-1968	Pump, Viking, 5 GPM
3	900-1958	Support, Oil Return
4	813-0062	Elbow, 1/2", 90°
5	813-0165	Elbow, 1/2", 90° Street
6	813-0265	Nipple, 1/2" x 3.0"
7	806-6728	Pump Wiring Assembly
8	806-6714	100VAC Pump/Motor Assembly w/Fittings, Complete
	806-6120	Pump and Motor Only
	807-1984	Motor Only
9	806-6715	115VAC Pump/Motor Assembly, w/Fittings, Complete
	806-6034	Pump and Motor Only
	807-1969	Motor Only
10	806-6716	208VAC Pump/Motor Assembly, w/Fittings, Complete
	806-6121	Pump and Motor Only
	807-1985	Motor Only
11	806-6717	230VAC Pump/Motor Assembly, w/Fittings, Complete
	806-6119	Pump and Motor Only
	807-1983	Motor Only
12	806-6718	250VAC Pump/Motor Assembly, w/Fittings, Complete
	806-6118	Pump and Motor Only
	807-1982	Motor Only
*	807-2172	Wiring Harness, Controller to Filter

\* Not illustrated.

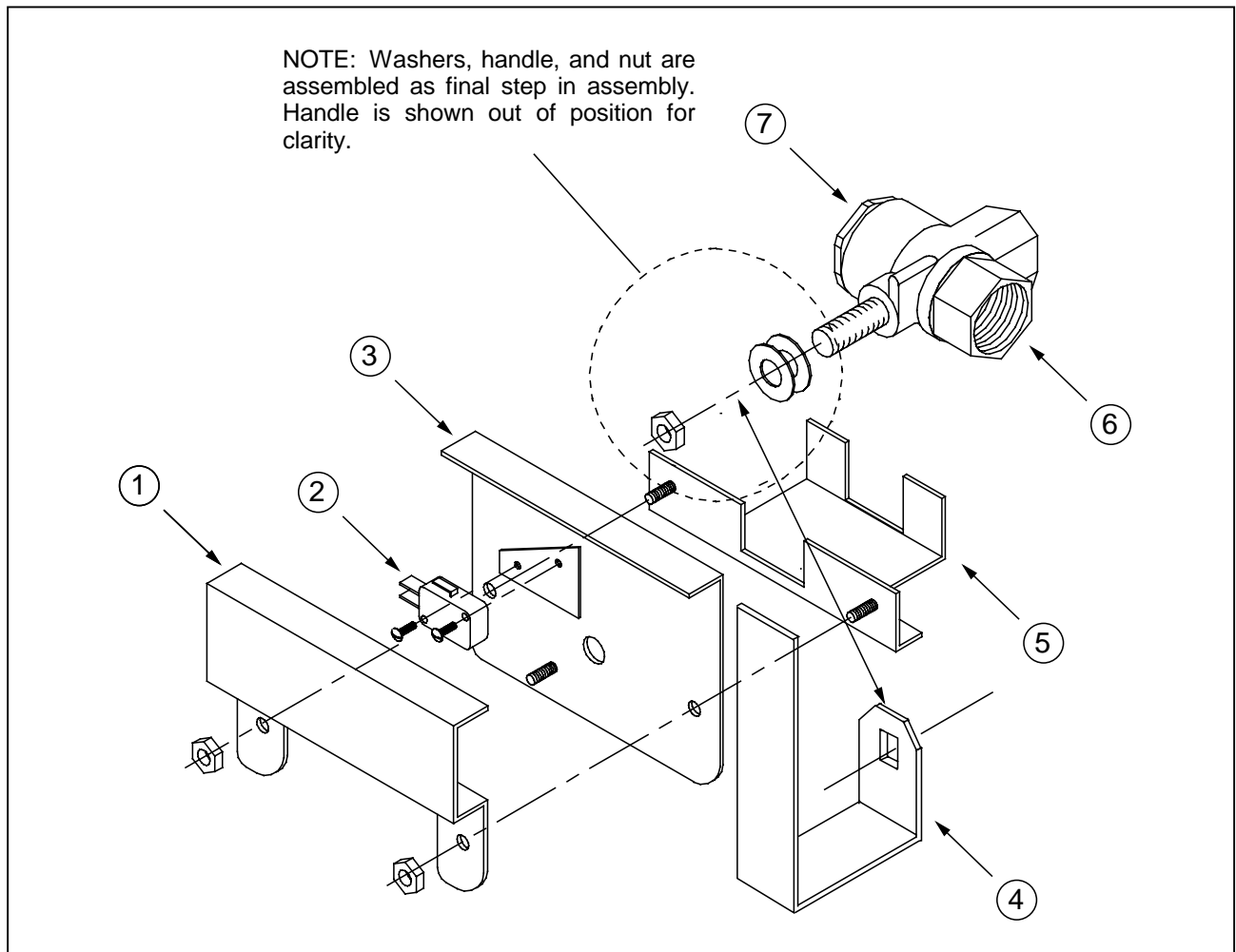
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ITEM	PART #	COMPONENT
<b>Oil Return Plumbing Components</b>		
1	813-0156	Plug, Pipe, 1/2" Hex Head NPT BM
2	813-0165	Elbow, 1/2", 90° Street, NPT BM
3	813-0037	Coupling, Standard 1/2" X 1 1/2"
4	813-0010	Fitting, Compression, 1/2" NPT
5	900-2063	Tubing, ε" x 2.32" Oil Return
6	810-0998	Tee, 1/2" NPT x ε" Tube
7	900-4745	Tubing, ε" x 13.5", Oil Return
8	813-0009	Elbow, Compression, 1/2" NPT Male x ε" Tube
9	810-1067	Flexline, 11.0", Oil Return
10	810-1003	Valve, 180°, 3-Way Ball
*	823-2314	Mount, Oil Return
*	813-0093	Nipple, 1/2" x 4.0" NPT BM
*	810-0953	Tee, ε" Tube Compression Fitting
*	900-1203	Tubing, ε" x 7.34

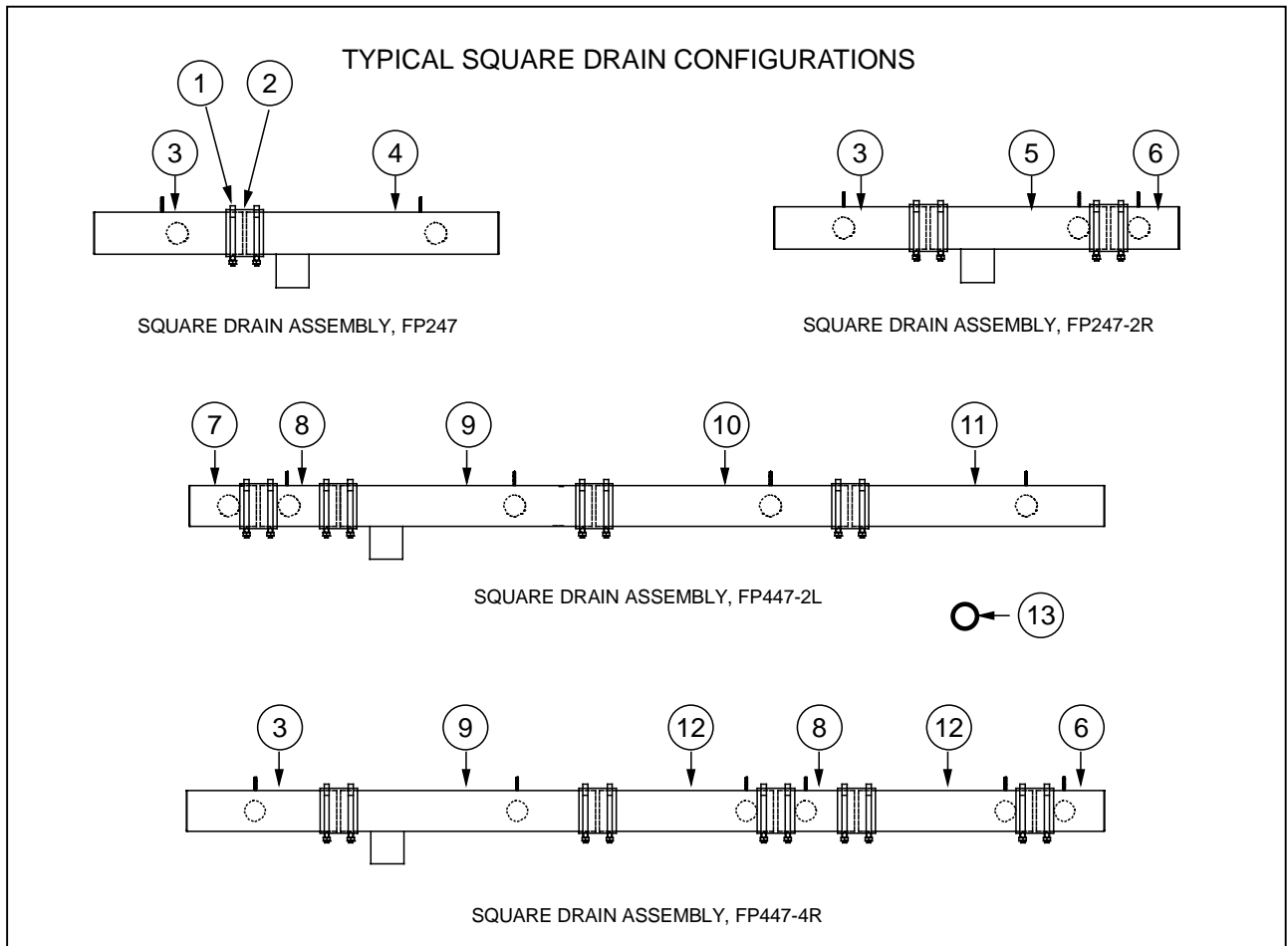
\* Not illustrated.

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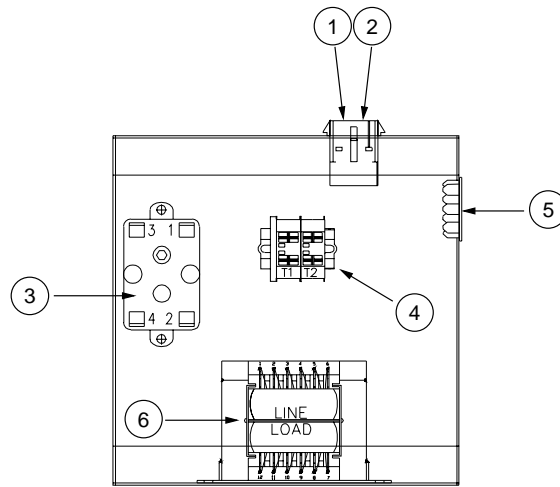
ITEM	PART #	COMPONENT
		<b>Oil Return Valve Assembly</b>
1	900-2110	Cover, Microswitch
2	807-2104	Microswitch
3	900-2431	Support, Microswitch
4	900-1950	Handle
5	900-2111	Support, Oil Return Valve
6	810-1003	Valve, 180° 3-Way Ball
7	813-0463	Plug, Pipe, 1/2" NPT

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ITEM	PART #	COMPONENT
<b>Square Drain Components</b>		
1	806-6374SP	Clamp Assembly
2	816-0420	Seal (Connection Gasket)
<b>Drain Sections</b>		
3	823-2243	End, Left, Long for Full Vat
4	823-2242	Filter Pan Outlet (closed) for Full Vat
5	823-2239	Filter Pan Outlet (open) for Dual Vat
6	823-2244	End, Right, Short for Dual Vat-Right
7	823-2237	End, Left, Short for Dual Vat-Left
8	823-2238	Section, Short for Dual Vat
9	823-2245	Filter Pan Outlet (open) for Full Vat
10	823-2246	Section, Long for Full Vat
11	823-2240	End, Right, Long for Full Vat
12	823-2241	Section, Long for Dual Vat
13	816-0135	O-Ring

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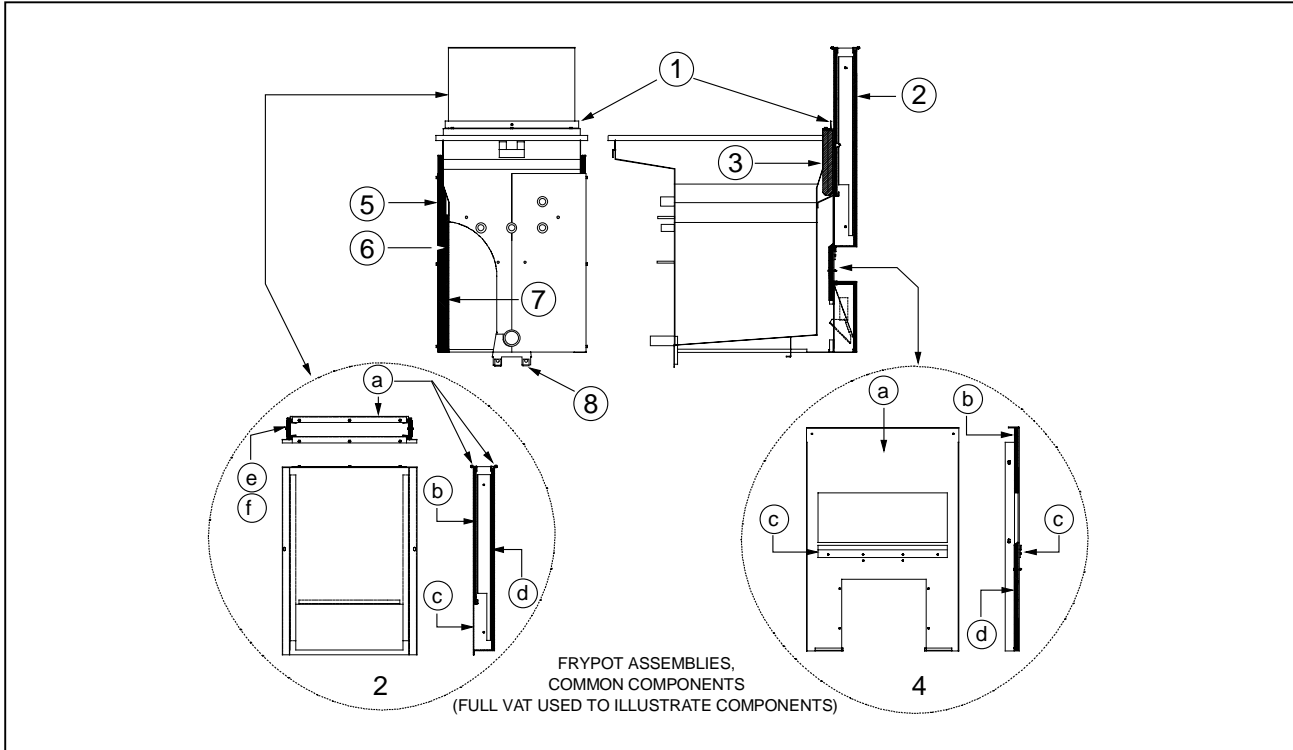


REPLACEMENT FILTER BOX ASSEMBLIES  
806-8581 (100-120V) AND 806-8582 (208-250V)

ITEM	PART #	COMPONENT
		<b>Complete Assemblies</b>
	806-8581	100-120V Replacement Filter Box Assembly
	806-8582	208-250V Replacement Filter Box Assembly
		<b>Components</b>
1	806-8021	Plug Assembly, FP III Non-Reversing (Upper Plug)
2	806-7494	Plug Assembly, FP III Non-Reversing (Lower Plug)
3	807-0012	Relay, 18 Amp, 1/3 HP, 24V Coil
4	810-1164	Block, 1-Piece Screwless Terminal
5	810-0044	Plug Button
6		Transformer, V & F, Dual Voltage
	807-2176	100V-120V
	807-1999	208V-240V

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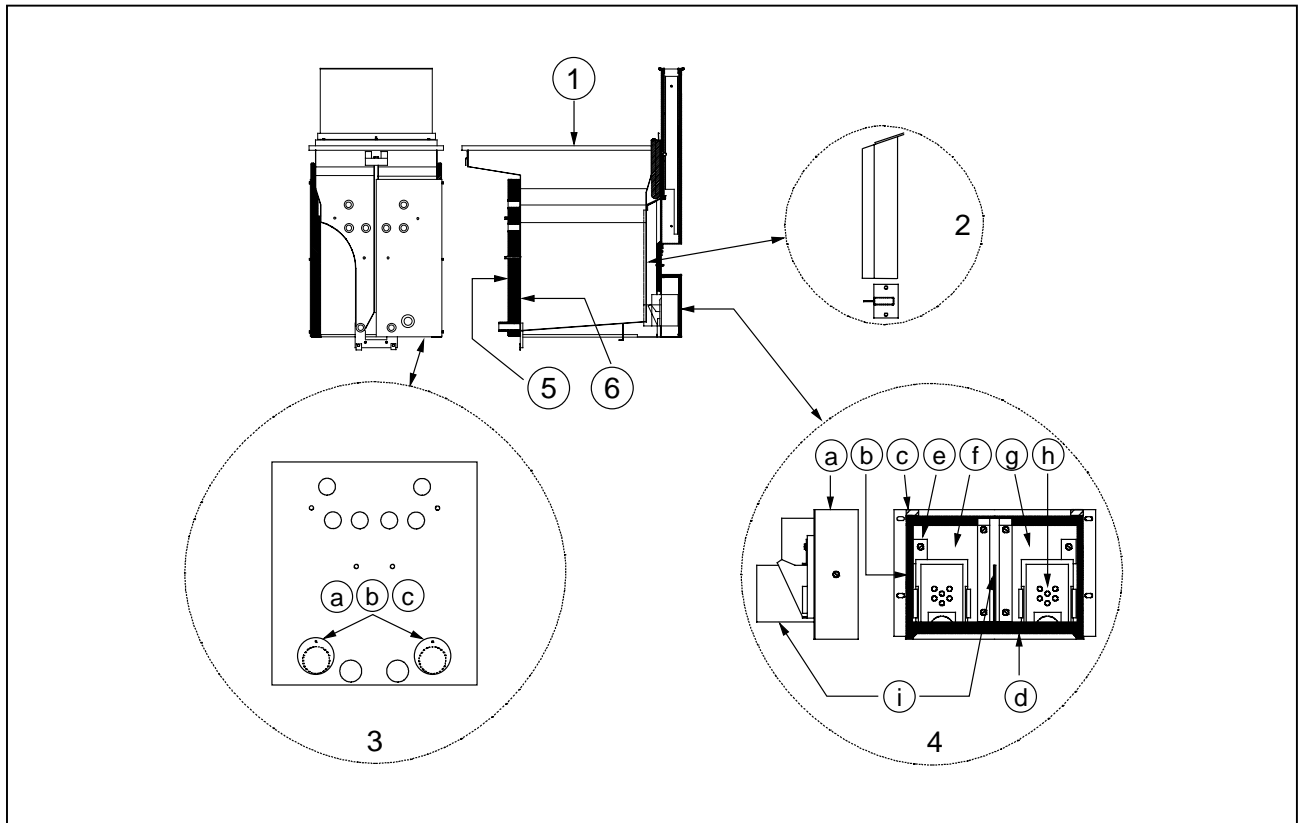
### 8.10 Frypot Assemblies and Component Parts



ITEM	PART #	COMPONENT
<b>Common Components of Dual and Full Vat Frypots</b>		
1	900-4253	Strip, Flue Cap Retainer
2	806-5567	Flue Assembly
2a	900-4664	Retainer, Flue Top Insulation
2b	816-0175	Insulation, Flue Front
2c	823-2018	Welded Flue Assembly
2d	816-0174	Insulation, Flue Rear
2e	812-0256	Insulation, Flue Side
2f	930-0474	Retainer, Flue Insulation
3	812-0269	Insulation, .5" x 14.0" x 14.0", Kaowool Blanket
4	806-5566	Panel Assembly, Rear Combustion Chamber
4a	900-7553	Panel, Rear Combustion Chamber
4b	816-0178	Insulation, Rear Combustion Chamber
4c	900-3420	Support, Flue Back
4d	900-0412	Retainer, Insulation
5	900-6441	Panel, Combustion Chamber Side
6	812-0249	Insulation, Side, Outer Layer, 1" x 16.75" x 19.38"
7	812-0248	Insulation, Side, Inner Layer, .25" x 14.50" x 15.93", Kaowool
8	809-0173	Clip, Tinnerman

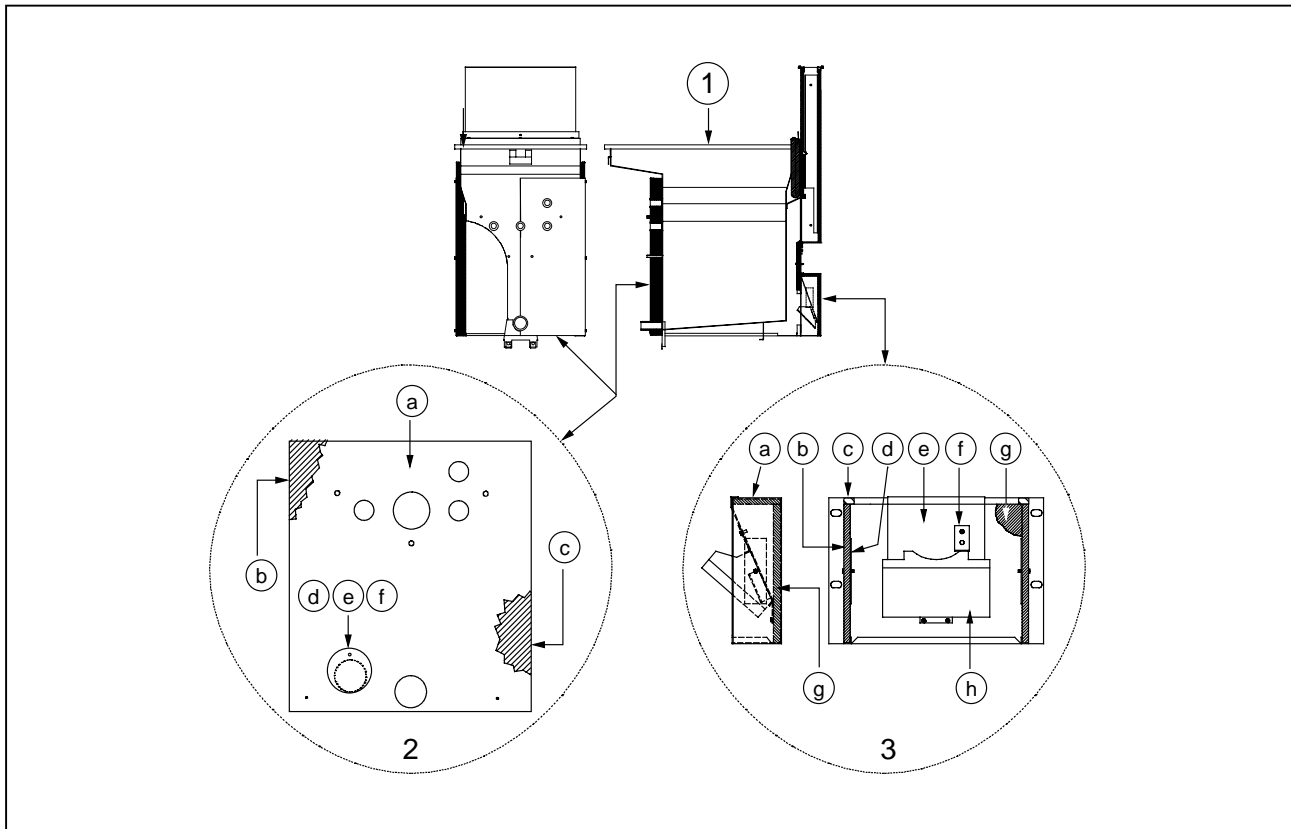


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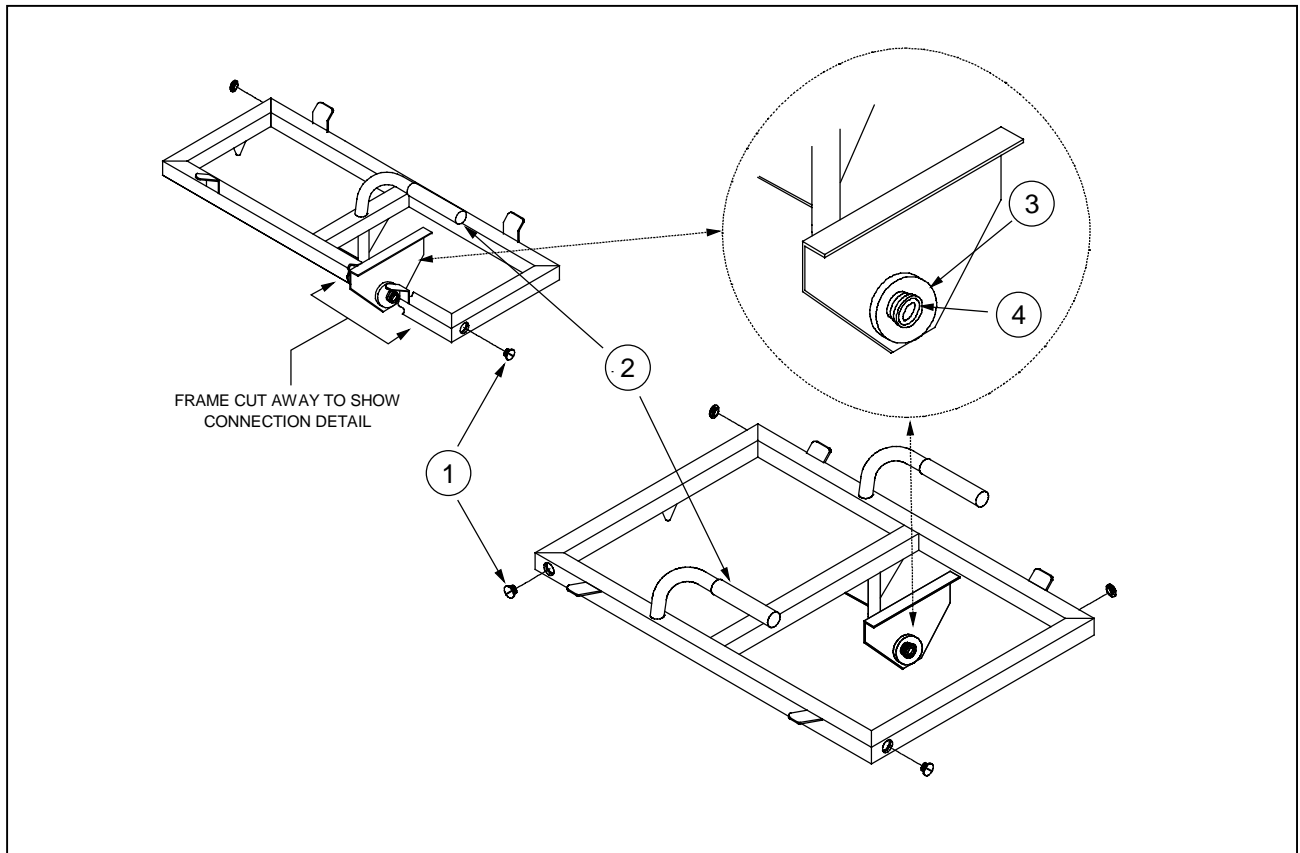
ITEM	PART #	COMPONENT
	806-6266	<b>Frypot Assembly, Dual Vat, Power Shower, Complete</b>
1	823-2177	Frypot, Dual Vat, w/o Insulation or Flue Assembly
2	823-2016	Divider, Upper Combustion Chamber
3	900-4675	Panel, Front Combustion Chamber
3a	900-1090	Cover, Pilot View Port
3b	809-0409	Screw, Security
3c	810-0647	Holder, Security Screw
4	806-5779	Box Assembly, Flue Deflector
4a	900-4685	Box, Flue Deflector
4b	816-0171	Insulation, Side
4c	816-0172	Insulation, Top Edge
4d	816-0173	Insulation, Back
4e	910-2068	Clip, Rear Target
4f	911-2059	Holder, Target, Left
4g	912-2059	Holder, Target, Right
4h	814-0034	Target, Ceramic
4i	823-2015	Divider, Lower
5	816-0176	Insulation, Front, Outer Layer, Spinal Glass
6	816-0177	Insulation, Front, Inner Layer, Kaowool

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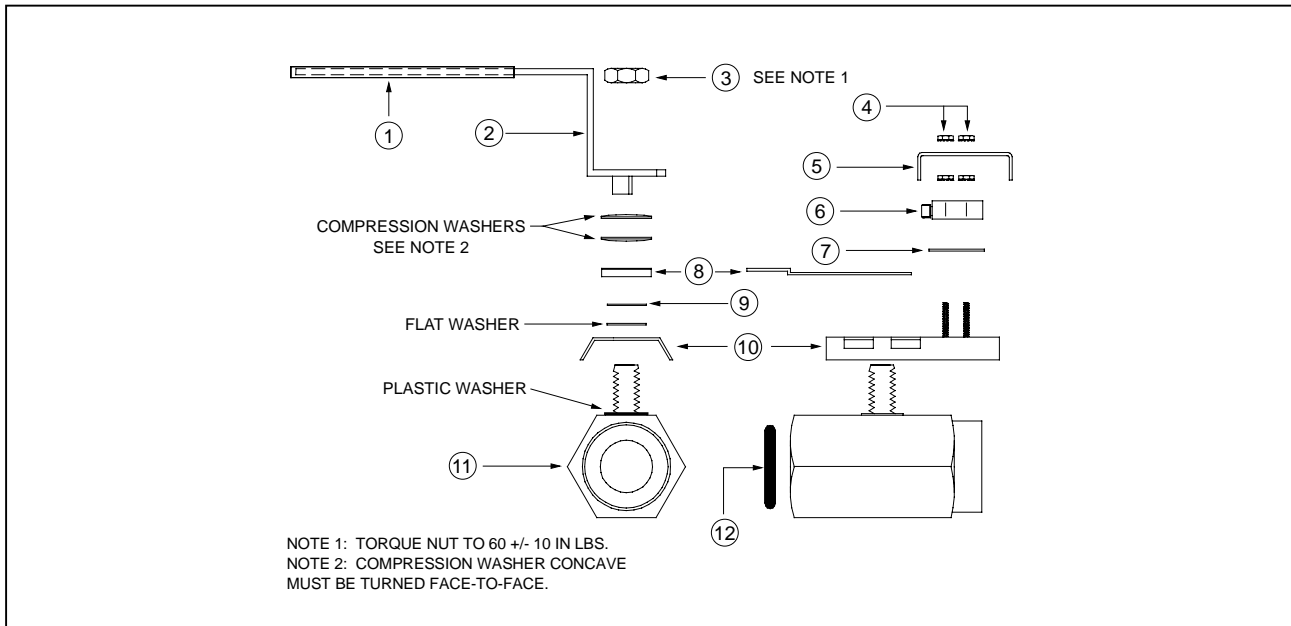
ITEM	PART #	COMPONENT
	806-6267	<b>Frypot Assembly, Full Vat, Power Shower, Complete</b>
1	823-2178	Frypot, Full Vat, w/o Insulation or Flue Assembly
2	806-1095	Front Combustion Chamber Assembly
2a	930-3419	Baffle, Outer Front
2b	812-0245	Insulation, Outer Layer
2c	812-0246	Insulation, Inner Layer
2d	900-1090	Cover, Pilot View Port
2e	809-0409	Screw, Security
2f	810-0647	Holder, Security Screw
3	806-5778	Box Assembly, Flue Deflector
3a	900-4685	Box, Flue Deflector
3b	816-0171	Insulation, Side
3c	816-0172	Insulation, Top
3d	900-0169	Retainer, Insulation
3e	910-2030	Holder, Target
3f	910-2068	Clip, Rear Target
3g	816-0173	Insulation, Rear
3h	810-0424	Deflector, Rear Burner

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ITEM	PART #	COMPONENT
		<b>Power Shower Assemblies</b>
	806-6302	Power Shower Assembly, Dual Vat, Complete
	806-4503	Power Shower Assembly, Full Vat, Complete
1	809-0415	Screw, Cleanout
2	814-0001	Grip, Handle
3	816-0025	Seal (Gasket)
4	816-0071	O-Ring

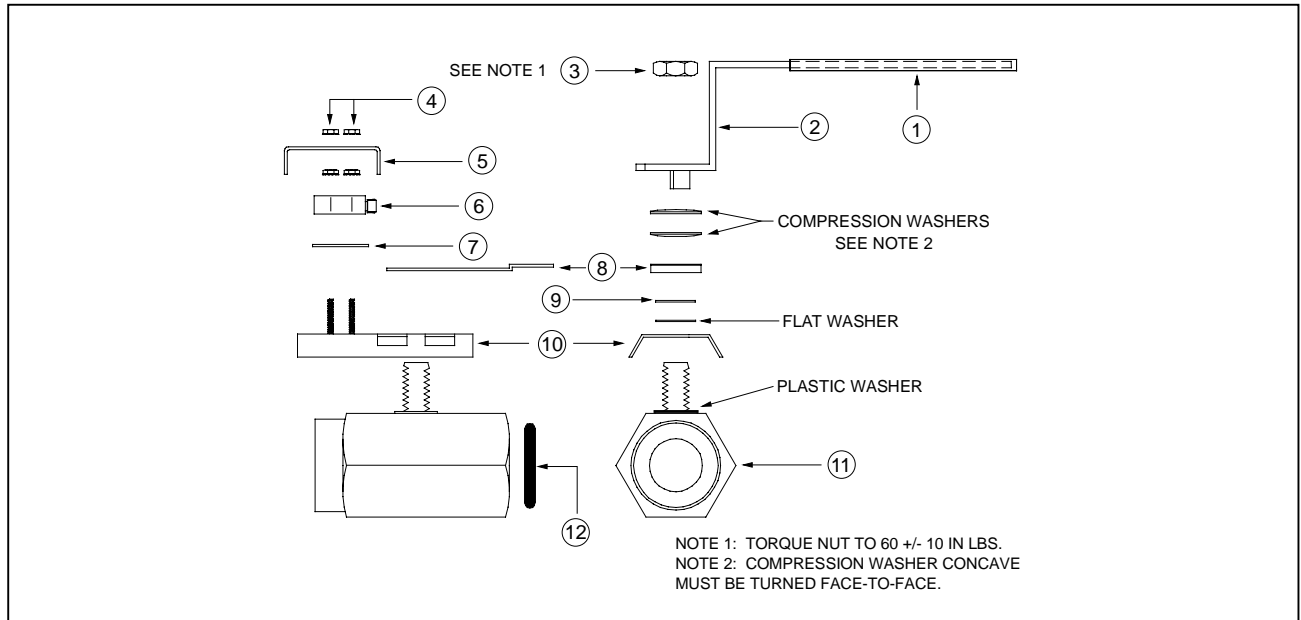
## 47 SERIES GAS FRYERS CHAPTER 8: PARTS LIST



ITEM	PART #	COMPONENT
	806-7507	<b>Drain Valve Assembly, Dual Vat, Left, 1", Complete, Filter Units</b>
1	814-0047	Sleeve, Valve Handle, Red, w/Logo
2	900-2509	Handle
3	809-0539	Nut, 2-Way Lock, $\delta$ - 16
4	826-1366	Nut, Hex Keys 4 - 40
5	901-2348	Cover, Drain Safety Microswitch
6	807-2104	Microswitch, Drain Safety
7	816-0220	Insulation, RF Switch
8	900-2355	Bracket, Drain Valve, 1"
9	810-1165	Washer, Teflon
10	806-8194	Bracket, Drain Safety Microswitch
11	810-1114	Valve, w/o Handle
12	816-0135	O-Ring
*	810-1338	<b>Drain Valve, Dual Vat, Left or Right, 1", Non-Filter Units</b>
*	900-2934	Retainer, Dual Vat Drain Valve
*	806-9062	Handle, Left Drain Valve

\* Not illustrated.

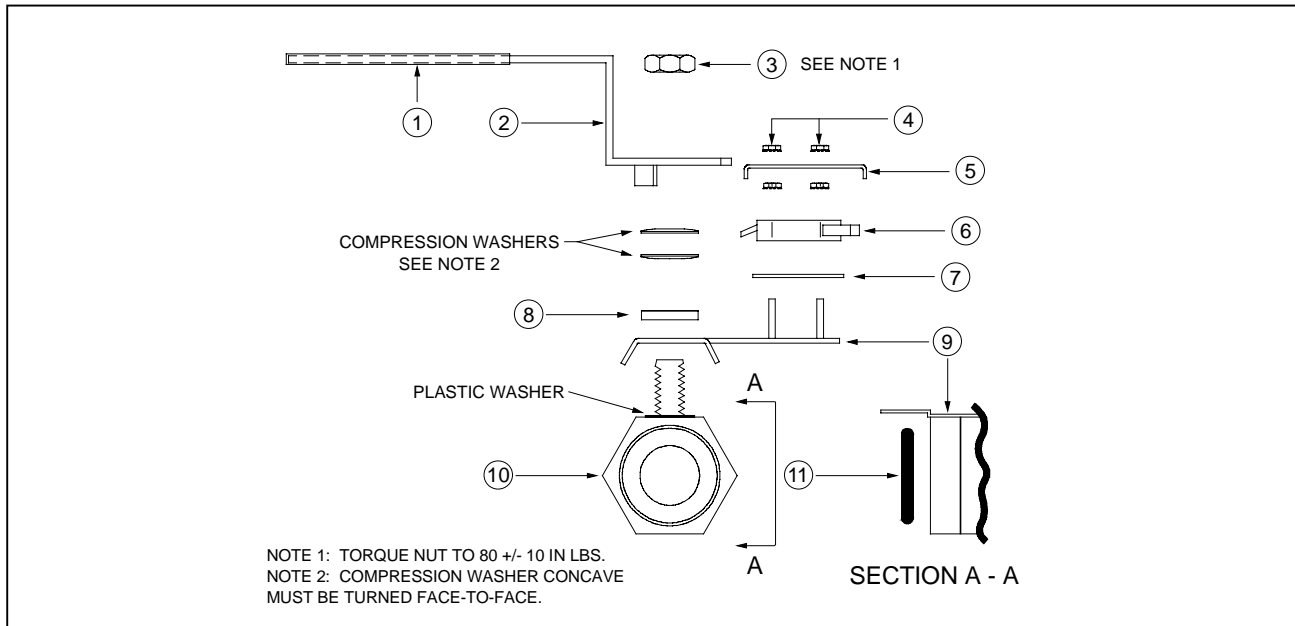
## 47 SERIES GAS FRYERS CHAPTER 8: PARTS LIST



ITEM	PART #	COMPONENT
	806-7506	<b>Drain Valve Assembly, Dual Vat, Right, 1", Complete, Filter Units</b>
1	814-0047	Sleeve, Valve Handle, Red, w/Logo
2	900-2503	Handle
3	809-0539	Nut, 2-Way Lock, $\delta$ - 16
4	826-1366	Nut, Hex Keys 4 - 40
5	902-2348	Cover, Drain Safety Microswitch
6	807-2104	Microswitch, Drain Safety
7	816-0220	Insulation, RF Switch
8	900-2355	Bracket, Drain Valve, 1"
9	810-1165	Washer, Teflon
10	806-8195	Bracket, Drain Safety Microswitch
11	810-1114	Valve, w/o Handle
12	816-0135	O-Ring
*	810-1338	<b>Drain Valve, Dual Vat, Left or Right, 1", Non-Filter Units</b>
*	900-9034	Retainer, Dual Vat Drain Valve
*	806-9064	Handle, Right Drain Valve

\* Not Illustrated.

## 47 SERIES GAS FRYERS CHAPTER 8: PARTS LIST

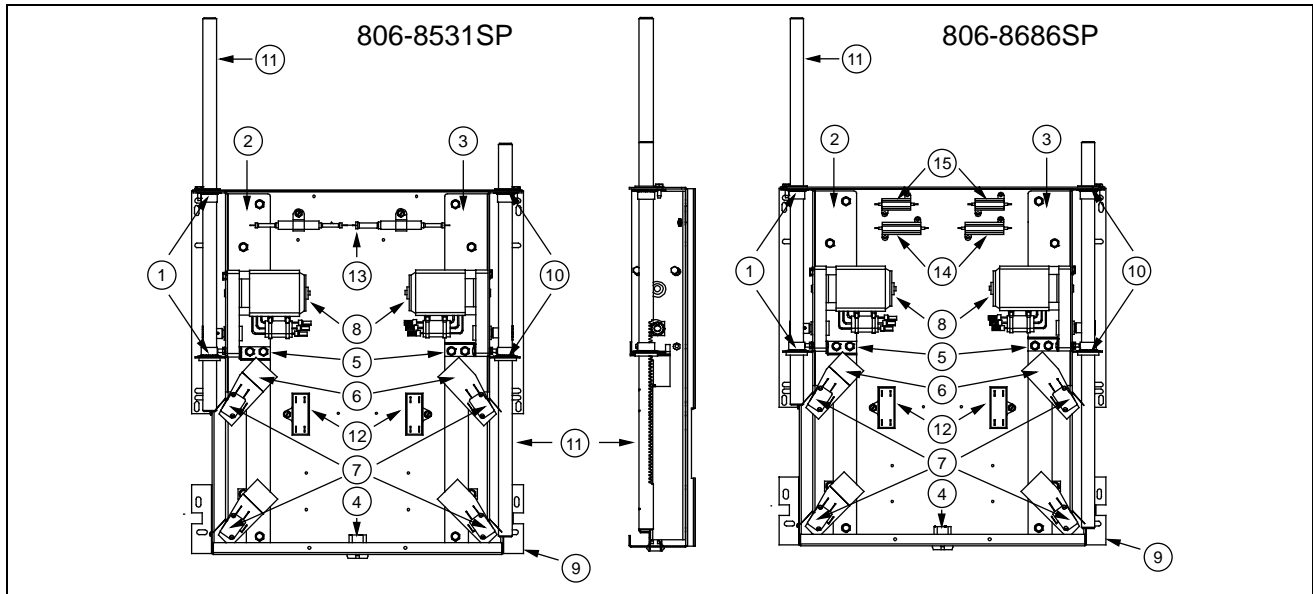


ITEM	PART #	COMPONENT
	806-7508	<b>Drain Valve Assembly, Full Vat, 1 ¼", Complete, Filter Units</b>
1	814-0047	Sleeve, Valve Handle, Red, w/Logo
2	900-2521	Handle
3	809-0540	Nut, 2-Way Lock, ½ – 13
4	826-1366	Nut, Hex Keys 4 – 40
5	900-2841	Cover, Drain Safety Microswitch
6	807-2103	Microswitch, Drain Safety
7	816-0220	Insulation, RF Switch
8	900-2354	Bracket, Drain Valve, 1 ¼"
9	900-2825	Bracket, Drain Safety Microswitch
10	810-1018	Valve, w/o Handle
11	816-0135	O-Ring
*	810-1569	<b>Drain Valve, Full Vat, 1 ¼", Non-Filter Units</b>
*	900-2936	Retainer, Full Vat Drain Valve

\* Not illustrated.

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**8.11 Modular Basket Lift Component Parts**



ITEM	PART #	COMPONENT
	806-8531SP	<b>Modular Basket Lift Assy, 100/120V, Complete</b>
	806-8686SP	<b>Modular Basket Lift Assy, 230/240/250V, Complete</b>
		<b>Components</b>
1	813-0035	Bushing, Bronze, .640" I.D.
2	901-5528	Chassis, Modular Basket Lift, Left
3	902-5528	Chassis, Modular Basket Lift, Right
4	807-0158	Connector, 6-Pin Female, Panel Mount
5	900-5529	Gusset, Modular Basket Lift Motor
6	812-0442	Insulation, Microswitch
7	807-2572	Microswitch
8	806-5964	Motor Assembly, Modular Basket Lift
9	900-7655	Mount, Modular Basket Lift
10	809-0082	Ring, Retaining, Truarc
11	810-1012	Rod, Modular Basket Lift
*	807-2134	10.0 $\mu$ Farad, 250VAC (used in some versions prior to January 1998)
12	807-2133	12.5 $\mu$ Farad, 250VAC
		<b>Resistors</b>
13	806-8530	Resistor Assembly, 120V Modular Basket Lift (used in 806-8531SP)
14	807-2511	Resistor, 25 Watt, 25 ohm (used in 806-8686SP)
15	807-2512	Resistor, 50 Watt, 100 ohm (used in 806-8686SP)
		<b>Wire Assemblies</b>
*	WIR0073	For 806-8531SP
*	806-8555	For 806-8686SP

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<b>ITEM</b>	<b>PART #</b>	<b>COMPONENT</b>
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\* Not illustrated.

**8.12 Gas Conversion Kits**

<b>ITEM</b>	<b>PART #</b>	<b>COMPONENT</b>
	826-1462	Natural Gas to Propane, Full Vat, Complete
	826-1464	Natural Gas to Propane, Dual Vat, Complete
	826-1463	Propane to Natural Gas, Full Vat, Complete
	826-1465	Propane to Natural Gas, Dual Vat, Complete

**NOTE:** Each kit contains a pilot with thermopile, the appropriate number and sizes of orifices, and a gas valve.