

# 47 Series Gas Fryers

## Installation & Operation Manual

 **Frymaster**<sup>®</sup>



**CFESA**  
Commercial Food Equipment Service Association

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

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

**819-5383  
SEP 2002**

### **NOTICE**

This appliance is intended for professional use only and is to be operated by qualified personnel only. A Frymaster/DEAN Factory Authorized Service Center (FASC) or other qualified professional should perform installation, maintenance, and repairs. Installation, maintenance, or repairs by unqualified personnel may void the manufacturer's warranty. See Chapter 1 of this manual for definitions of qualified personnel.

### **NOTICE**

This equipment must be installed in accordance with the appropriate national and local codes of the country and/or region in which the appliance is installed. See NATIONAL CODE REQUIREMENTS in Chapter 2 of this manual for specifics.

### **NOTICE TO U.S. CUSTOMERS**

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 U.S. Food and Drug Administration.

### **NOTICE**

Drawings and photos used in this manual are intended to illustrate operational, cleaning and technical procedures and may not conform to onsite management operational procedures.

### **NOTICE TO OWNERS OF UNITS EQUIPPED WITH COMPUTERS**

#### **U.S.**

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

#### **CANADA**

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

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

### **DANGER**

Improper installation, adjustment, maintenance or service, and unauthorized alterations or modifications can cause property damage, injury, or death. Read the installation, operating, and service instructions thoroughly before installing or servicing this equipment. Only qualified service personnel may convert this appliance to use a gas other than that for which it was originally configured. See Chapter 1 of this manual for definition of qualified service personnel.

### **DANGER**

Adequate means must be provided to limit the movement of this appliance without depending upon the gas line connection. Single fryers equipped with legs must be stabilized by installing anchor straps. All fryers equipped with casters must be stabilized by installing restraining chains. If a flexible gas line is used, an additional restraining cable must be connected at all times when the fryer is in use.

**⚠ DANGER**

The front ledge of the fryer is not a step! Do not stand on the fryer. Serious injury can result from slips or contact with the hot oil.

**⚠ DANGER**

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

**⚠ DANGER**

Instructions to be followed in the event the operator smells gas or otherwise detects a gas leak must be posted in a prominent location. This information can be obtained from the local gas company or gas supplier.

**⚠ DANGER**

The crumb tray in fryers equipped with a filter system must be emptied into a fireproof container at the end of frying operations each day. Some food particles can spontaneously combust if left soaking in certain shortening material.

**⚠ WARNING**

Do not bang fry baskets or other utensils on the fryer's joiner strip. The strip is present to seal the joint between the fry vessels. Banging fry baskets on the strip to dislodge shortening will distort the strip, adversely affecting its fit. It is designed for a tight fit and should only be removed for cleaning.

**NOTICE**

The Commonwealth of Massachusetts requires any and all gas products to be installed by a licensed plumber or pipe fitter.

# 47 SERIES GAS FRYERS

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# 47 SERIES GAS FRYERS

## CHAPTER 1: GENERAL INFORMATION

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### 1.1 Applicability and Validity

The 47 Series model family has been approved by the European Union for sale and installation in the following EU countries: AT, BE, DE, DK, ES, FI, FR, GB, IE, IT, LU, NL, NO, PT and SE.

This manual is applicable to and valid for all 47 Series units, including those sold in the European Union. Should a conflict exist between instructions and information in this manual and local or national codes of the country in which the equipment is installed, installation and operation shall comply with those codes.

This appliance is only for professional use and shall be used by qualified personnel only, as defined in Section 1.7.

### 1.2 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 and service information are found in the 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. 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.**

### 1.3 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 those below.

 **CAUTION**

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

 **WARNING**

**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**

**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.

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 to the drain valve prevents burner ignition with the drain valve even partially open.

### 1.4 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 at right.

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

### 1.5 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 simplifies cleaning the frypot. 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 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 controllers, digital controllers, basket lift timers, or Computer Magic III computers.

## **1.6 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 1.7.

**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 1.7.**

## **1.7 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 L.L.C. 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) is included with the fryer when shipped from the factory. *Failure to use qualified service personnel will void the Frymaster Warranty on your equipment.*

### 1.8 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.

**FRYMASTER DOES NOT ASSUME RESPONSIBILITY FOR DAMAGE OR LOSS INCURRED IN TRANSIT.**

# 47 SERIES GAS FRYERS

## CHAPTER 2: INSTALLATION INSTRUCTIONS

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### 2.1 General Installation Requirements

Qualified, licensed, and/or authorized installation or service personnel, as defined in Section 1.7 of this manual, should perform all installation and service on Frymaster equipment.

Conversion of this appliance from one type of gas to another should only be performed by qualified, licensed, and/or authorized installation or service personnel as defined in Section 1.7 of this manual.

Failure to use qualified, licensed, and/or authorized installation or service personnel (as defined in Section 1.7 of this manual) to install, convert to another gas type or otherwise service this equipment will void the Frymaster warranty and may result in damage to the equipment or injury to personnel.

Where conflicts exist between instructions and information in this manual and local or national codes or regulations, installation and operation shall comply with the codes or regulations in force in the country in which the equipment is installed.

 **DANGER**

Building codes prohibit a fryer with its open tank of hot oil/shortening being installed beside an open flame of any type, including those of broilers and ranges.

 **DANGER**

Frymaster appliances equipped with legs are for stationary installations. Appliances fitted with legs must be lifted during movement to avoid damage to the appliance and bodily injury. For movable installations, optional equipment casters must be used. Questions? Call 1-800-551-8633.

 **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.

Upon arrival, inspect the cooker 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.*

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**

**No structural material on the fryer should be altered or removed to accommodate placement of the fryer under a hood. Questions? Call the Frymaster/Dean Service Hotline at 1-800-551-8633.**

 **DANGER**

**This appliance must be installed with sufficient ventilation to prevent the occurrence of unacceptable concentrations of substances harmful to the health of personnel in the room in which it is installed.**

## **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 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**

**This appliance is equipped with a three-prong (grounding) plug for your protection against electrical shock, and must be plugged directly into a properly grounded three-prong receptacle. Do not cut, remove, or otherwise bypass the grounding prong on this plug!**

**⚠ DANGER**

**This appliance 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 operate this appliance 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.**

## 2.3 Pre-Connection Preparations

 **DANGER**

**Do not connect this appliance to the gas supply before completing each step in this section.**

After the fryer has been positioned under the 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 appliances equipped with casters or anchor straps on appliances equipped with legs. Follow the instruction shipped with the casters/legs to properly install the chains or straps.

 **DANGER**

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

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 **C Y C L**.
  - 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.

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

<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>
G20	20	18 x 1,40 mm	7,5 mbar	3,00 m <sup>3</sup> /h
G25	20 - 25	18 x 1,40 mm	10 mbar	3,50 m <sup>3</sup> /h
G31	37 - 50	18 x 0,86 mm	20,6 mbar	2,21 kg/h

(1) mbar = 10,2 mm H<sup>2</sup>O

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

### DANGER

Before connecting new pipe to this appliance, the pipe must be blown out thoroughly to remove all foreign material. Foreign material in the burner and gas controls will cause improper and dangerous operation.

### DANGER

When pressure-testing incoming gas supply lines, disconnect the fryer from the gas line if the test pressure will be ½ PSIG (3.45 kPa, 13.84 inches W.C.) or greater to avoid damage to the fryer's gas tubes and gas valve(s).

### DANGER

All connections must be sealed with a joint compound suitable for the gas being used and all connections must be tested with a solution of soapy water before lighting any pilots.

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 appliance at the main shut-off valve and immediately contact the local gas company or an authorized service agency for service.

### DANGER

“Dry-firing” your unit will cause damage to the frypot and can cause a fire. Always ensure that melted shortening, cooking oil, or water is in the frypot before firing the unit.

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	I12Esi3P	G20/G25	20/25
		G31	37 ET 50
LU	I2E	G20/G25	20/25
ES	I12H3P	G20	20
		G31	37 ET 50
NL	I12L3P	G25	25
		G31	50
IE-PT-GB	I12H3P	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 1½" (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 the combustion air supply airflow is 2m<sup>3</sup>/h times the kW rating of the fryer. (See the rating plate affixed to the fryer door for the kW rating.)**

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

- 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.**

- 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.**

- It is suggested that the burner manifold pressure be checked at this time by the local gas company or an authorized service agent.

<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	

- For units equipped with thermostat controls, check the thermostat calibration as prescribed in the following section. For units equipped with other type controllers, refer to the separate *Frymaster Fryer Controllers Users Manual* provided with this equipment for the procedure to be followed to set and check the setpoint temperature.

## **Thermostat Controller Calibration (For units equipped with thermostat controls, perform the following procedure)**

**NOTE:** The fryer control panel must be opened to perform thermostat calibration. In order to open the control panel 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.)
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), and 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 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.

## 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**

**This appliance was configured at the factory for a specific type of gas. Converting from one type of gas to another requires the installation of specific gas-conversion components. Switching to a different type of gas without installing the proper conversion components may result in fire or explosion. NEVER ATTACH THIS APPLIANCE TO A GAS SUPPLY FOR WHICH IT IS NOT CONFIGURED! Conversion of this appliance from one type of gas to another should only be performed by qualified, licensed, and authorized installation or service personnel, as defined in Section 1.7 of this manual.**

#### **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)

#### **Non-CE Gas Conversion Kits**

##### **Robertshaw Gas Valves**

**Natural to LP:** 826-0962 [for **dual-vat** configurations, order P/N 817-0098 (Qty-1) and P/N 810-0148 (Qty-1) in addition to the kit]

**LP to Natural:** 826-0963 [for **dual-vat** configurations, order P/N 810-0187 (Qty-1) and P/N 810-0149 (Qty-1) in addition to the kit]

##### **Honeywell Gas Valves**

**Natural to LP:** 826-1143 [for **dual-vat** configurations, order P/N 807-1846 (Qty-1) and P/N 810-0148 (Qty-1) in addition to the kit]

**LP to Natural:** 826-1144 [for **dual-vat** configurations, order P/N 807-1849 (Qty-1) and P/N 810-0149 (Qty-1) in addition to the kit]

### **CE and Non-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.

# 47 SERIES GAS FRYERS

## CHAPTER 3: OPERATING INSTRUCTIONS

### 3.1 Start-Up Procedure

#### DANGER

Never operate this appliance with an empty frypot. The frypot must be filled with water or cooking oil/shortening before lighting the burners. Failure to do so will damage the frypot and may cause a fire.

#### WARNING

The on-site supervisor is responsible for ensuring that operators are made aware of the inherent hazards of operating a hot oil filtering system, particularly the aspects of oil filtration, draining and cleaning procedures.

#### 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.

**NOTE:** For units configured as pilot ignition (millivolt) systems, the pilot must be manually lit before the fryer can be placed into operation. On fryers configured with electronic ignition, the pilot is automatically lit when the unit is turned on.

### ACCESSING THE PILOT

In full-vat units, the pilot is mounted on the left side of the burner manifold and is accessed through an opening in the front frypot insulation. In dual-vat units, there is a pilot on both the left and the right halves of the burner manifold. In either case, swing the round cover over the opening out of the way and insert a long match or taper through the hole to light the pilot.

### LIGHTING THE PILOT ON NON-EUROPEAN (NON-CE) FRYERS

1. Ensure power to the unit is OFF, then turn the gas valve knob to the OFF position. Wait at least 5 minutes, then rotate the gas valve knob to the PILOT position (see Figure 1).

Lighting the Pilot

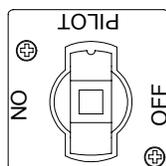


Figure 1

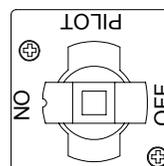


Figure 2

2. Push the knob in and light the pilot. (If the fryer is equipped with a piezo ignitor, repeatedly press the piezo ignitor button while depressing the gas valve knob until the pilot lights.) Continue to hold the knob in for about 60 seconds after the flame appears on the pilot. Release the knob. The pilot should remain lit.

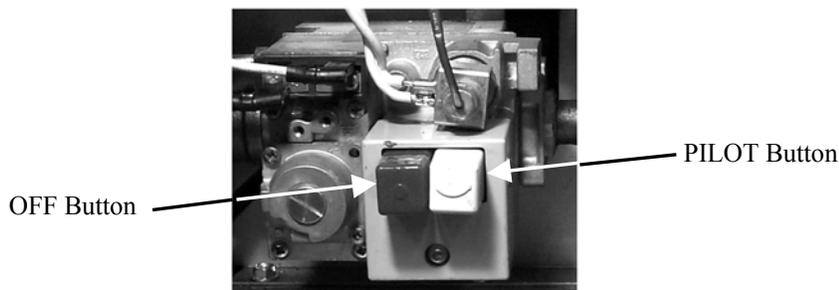
**⚠ CAUTION**

**If the pilot fails to remain lit, turn the gas valve knob to the OFF position and wait at least five minutes before attempting to re-light.**

3. With the pilot lit, push down and slowly turn the knob to the ON position (see Figure 2 on Page 3-1).

### **LIGHTING THE PILOT ON FRYERS BUILT FOR THE EUROPEAN COMMUNITY (CE)**

1. Ensure power to the unit is OFF, then press the OFF (red) button on the gas valve (see photo below). Wait at least 5 minutes.



2. 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. (If the fryer is equipped with a piezo ignitor, press the ignitor button repeatedly while holding in the PILOT button until the pilot lights.) Failure to hold the button in long enough will cause the pilot to go out when the button is released. If the pilot goes out when the button is released, wait at least 5 minutes then repeat this step.

### **NOTES ABOUT FRYERS WITH ELECTRONIC IGNITION SYSTEMS**

**⚠ WARNING**

**Never use a match or taper to light the pilot on this ignition system.**

When the computer/controller power switch is placed in the ON position, the ignition module will turn the pilot gas supply on and provide an ignition spark. The spark will light the pilot. A flame sensor verifies the presence of the pilot flame. Unless the pilot flame is sensed, the ignition module will not allow the gas valve to supply gas to the burners. The computer/controller controls the firing of the burners after pilot ignition takes place.

If the pilot flame fails, the ignition module will shut down and “lock out” the system. To restart the system, turn the computer/controller OFF, wait approximately 5 minutes for the system to recycle itself, then turn the computer/controller ON again.

 **WARNING**

In the event of prolonged power failure, the ignition module will shut down and “lock out” the system. Turn the computer/controller OFF and then back ON after power has been re-established.

## PLACING THE FRYER INTO OPERATION

 **CAUTION**

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

### For units equipped with Thermostat Controls:

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

 **CAUTION**

Thermostat-controlled fryers equipped with Melt Cycle switches 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 controller to – or program the controller for – the desired cooking temperature, referred to as the *setpoint*. The U-shaped burner should ignite 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 (setpoint).

## 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 the fryer off immediately and let the solution cool for a few minutes before resuming the process. To lessen the chance of boil over, turn the fryer’s gas valve knob to the PILOT position occasionally.

1. 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 dishwashing detergent.

2. For units equipped with a *Thermostat or Solid State (Analog) Controller*, set the thermostat to 195°F (91°C).

For units equipped with a *Digital Controller*, set the setpoint to 195°F (91°C).

For units equipped with a *Basket Lift Timer*, press the Boil-Out Mode button  to begin the boil-out process.

For units equipped with a *Computer Magic III Computer*,

- Press the Power switch  followed by the Program Mode switch . Code will appear in the left display.
- Enter the code number 1653. 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  switch is pressed, which cancels the boil-out mode.

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 (8 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 a shortening disposal unit, a built-in filtration unit, or a portable filter unit. These units are not intended for this purpose, and will be damaged by the solution.**

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 or shortening. Failure to do so will cause spattering of hot liquid when the oil or shortening is heated to cooking temperature and may cause injury to nearby personnel.**

### 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 Computer Magic III (CM III) computers, Basket Lift Timers, Digital Controllers, Solid State (Analog) Controllers, or Thermostat Controllers. Instructions for using each type are included in the separate *Frymaster Fryer Controllers User's Manual* provided with your equipment.

# 47 SERIES GAS FRYERS

## CHAPTER 4: FILTRATION INSTRUCTIONS

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### 4.1 Draining and Manual Filtering

 **WARNING**

The on-site supervisor is responsible for ensuring that operators are made aware of the inherent hazards of operating a hot oil filtering system, particularly the aspects of oil filtration, draining and cleaning procedures.

 **DANGER**

Draining and filtering of cooking oil or shortening must be accomplished with care to avoid the possibility of a serious burn caused by careless handling. The oil to be filtered is at or near 350°F (177°C). Ensure all hoses are connected properly and drain handles are in their proper position before operating any switches or valves. Wear all appropriate safety equipment when draining and filtering cooking oil or shortening.

 **DANGER**

**NEVER** attempt to drain cooking oil or shortening from the fryer with the burner lit! Doing so will result in a flash fire if the oil or shortening splashes onto the burner. Also, applying burner heat to an empty frypot will severely damage the frypot and void the Frymaster warranty.

 **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 the use of the Frymaster *Shortening Disposal Unit* (SDU). The SDU is available through your local distributor.

 **DANGER**

**When draining oil/shortening into a disposal unit or portable filter unit, do not fill above the maximum fill line located on the container.**

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 steel clean-out rod to clear the blockage.

**⚠ DANGER**

**NEVER attempt to clear a clogged drain valve from the front of the valve! Hot oil or shortening will rush out creating the potential for severe burns.**

**DO NOT hammer on the drain valve with the cleanout rod or other objects. Damage to the ball inside will result in leaks and will void the Frymaster warranty.**

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 it down into the bottom of the frypot. DO NOT operate the fryer with a 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 Operation of the FootPrint III Built-In Filtration System

The FootPrint III (FP III) filtration system allows cooking oil or shortening in one frypot to be safely and efficiently filtered while the other frypots in a battery remain in operation. Operation of the FootPrint III system is illustrated in the steps below. Most reported problems with these systems are caused by improper operation. Careful attention to the instructions that follow will ensure that your system operates as intended.

### 4.2.1 Preparing the Filter Unit for Use and/or Changing the Filter Paper

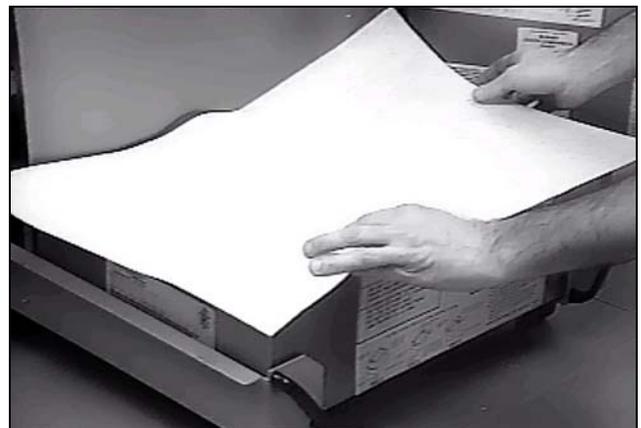
1. Pull the filter unit from the cabinet, open the cover, and remove the crumb tray.



2. Remove the paper hold-down ring (and if changing the filter paper, remove and discard the used filter paper). Remove the filter screen and clean the crumb tray, hold-down ring, filter screen, and pan with a solution of hot water and dishwashing detergent, ensuring that all breading and food particles are removed from the pan. Ensure the pan is dried completely. Allow the screen to dry completely before reinstalling.



3. After verifying that the metal filter screen is in the bottom of the pan, lay a sheet of filter paper over the top of the pan, overlapping on all sides.



4. 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, then sprinkle filter powder over the filter paper. (For powder quantity, see the filter powder manufacturer's instructions.)

5. Replace the crumb tray in the filter pan, close the cover, and push the filter pan back into the fryer, positioning it all the way to the back of the cabinet.

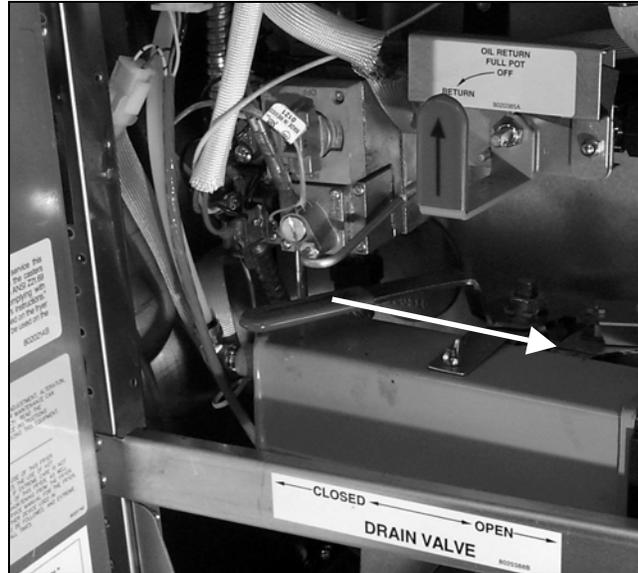


### 4.2.3 Operating the Filter Unit

**⚠ CAUTION**

Never operate the filter unit unless the cooking oil/shortening is at operating temperature.

1. To filter the cooking oil, turn the fryer power OFF, then open the drain valve on the fryer you have selected to filter.



2. Use the steel clean-out rod to clear the drain from **inside** the frypot as necessary.

**⚠ DANGER**

Do not drain more than one frypot at a time into the built-in filtration unit to avoid overflow and spillage of hot oil/shortening.

**⚠ DANGER**

**NEVER** attempt to clear a clogged drain valve from the front of the valve! Hot oil or shortening will rush out creating the potential for severe burns. **DO NOT** hammer on the drain valve with the cleanout rod or other objects. Damage to the ball inside will result in leaks and will void the Frymaster warranty.

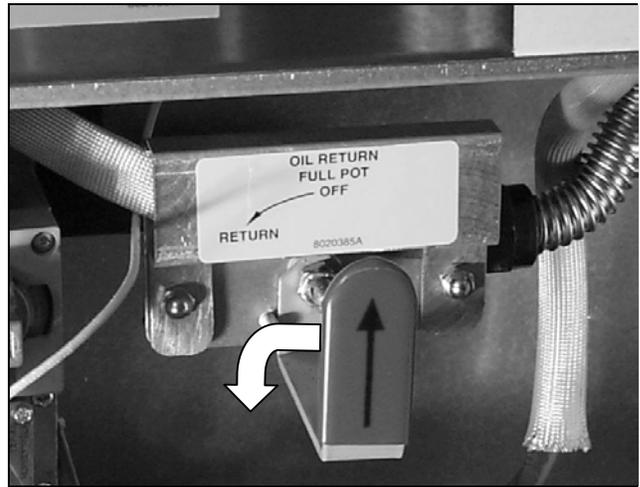
3. Snap the Power Shower into the frypot.



**⚠ DANGER**

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

4. After all the cooking oil/shortening has drained from the frypot, rotate the oil return handle to RETURN to start the pump and begin the filtering process. There may be a slight delay before the pump activates.



5. The cooking oil/shortening is pulled through the filter and pumped up to and through the Power Shower, finally returning to the filter pan through the open frypot-drain.

Polishing is the process of circulating the cooking oil/shortening through the filter for several minutes to ensure that fine particles are removed.

Polish the cooking oil/shortening by allowing it to circulate through the filtration system and frypot for about 5 minutes.

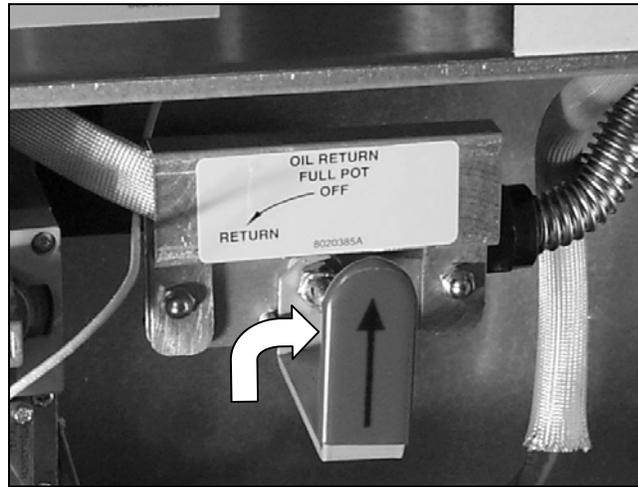


6. After the oil is filtered, close the drain valve and allow the fryer to refill.

**NOTE:** Ensure the drain valve is fully closed. If the drain valve is not fully closed, the controller will display an error message or a trouble light when the fryer is turned on again after the filtering process and the burners will not light.



7. Let the filter run 10 to 12 seconds after oil/shortening stops coming out of the Power Shower to clear the lines and prevent shortening from hardening in them. Rotate the oil return handle to the OFF position to stop the pump. Remove the Power Shower and allow it to drain. Turn the fryer on and allow the cooking oil/shortening to reach setpoint.



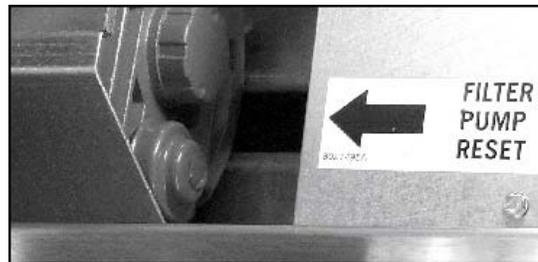
**⚠ DANGER**

The crumb tray in fryers equipped with a filter system must be emptied into a fireproof container at the end of frying operations each day. Some food particles can spontaneously combust if left soaking in certain shortening material.

**⚠ 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.

The switch is accessed by pulling the filter assembly out of the fryer cabinet so that the motor can be reached. The switch is the red button on the face of the motor (see photo below).



# 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

 **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.**

 **WARNING**

**Use a commercial-grade cleaner formulated to effectively clean and sanitize food-contact surfaces. Read the directions for use and precautionary statements before use. Particular attention must be paid to the concentration of cleaner and the length of time the cleaner remains on the food-contact surfaces.**

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.

##### Filter Cooking Oil/Shortening

The cooking oil/shortening used in your fryer should be filtered at least once every day (more often if the fryer is in constant use). Refer to Chapter 4, Filtration Instructions, for details.

#### WEEKLY CHECKS AND SERVICES

##### Check Recovery Time

"Recovery time" is the amount of time it takes the fryer to raise the oil temperature from 250°F to 300°F (121°C to 149°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 minutes and 30 seconds, 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     (1 6 5 2) 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 250°F (121°C), start the stopwatch or record the time. When the temperature reaches 300°F (149°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. In order to maintain your fryer's efficiency, this deposit must be periodically removed by boiling out the frypot. Refer to Section 4.1 of Chapter 4 for instructions on draining the frypot and to Section 3.2 of Chapter 3 for instructions on boiling out the frypot.

### **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. Rinse and thoroughly dry each part.

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

**(NOTE:** This check applies only to units equipped with Thermostat or Solid State (Analog) Controllers.)

1. Set the temperature control 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**

**(NOTE:** 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.
2. When the burner cycles off, set the temperature control knob to  $340^{\circ}\text{F}$  ( $170^{\circ}\text{C}$ ). As the reading on the thermometer or pyrometer nears the control knob setting, but before the burner cycles off, reset the knob to  $325^{\circ}\text{F}$  ( $162^{\circ}\text{C}$ ). Just as the reading on the thermometer or pyrometer drops below  $325^{\circ}\text{F}$  ( $162^{\circ}\text{C}$ ), 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**

**(NOTE:** 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.

1. When the computer display shows a series of four dashes " - - - - " with no dot between the first and second dashes (indicating that the oil/shortening temperature is plus/minus  $20^{\circ}\text{F}$  within setpoint), press the  switch once to display the temperature of the cooking oil or shortening as sensed by the temperature probe.
2. Press the  switch twice to display the setpoint.
3. 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**

**(NOTE:** This check applies only to Non-CE units without electronic ignition.)

1. Carefully unscrew the vent tube from the valve (**NOTE:** The vent tube may be straightened.)

2. Pass a piece of ordinary binding wire (.052 inch diameter) through the tube to remove any obstruction.
3. Remove the wire and blow through the tube to ensure it is clear.
4. Reinstall the tube and bend it so that the opening is pointing downward.

## **SEMI-ANNUAL CHECKS AND SERVICES**

### **Check Burner Manifold Pressure**



**This task should be performed by qualified service personnel only. Contact FASC to arrange this service.**

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

Other than daily cleaning of the filter pan with a solution of hot water and detergent and the recommended Annual/Periodic System Inspection, there are no periodic preventive maintenance checks and services required for your FootPrint III Filtration System.

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.

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.



**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.**

### **5.3 Annual/Periodic System Inspection**

**This appliance should be inspected and adjusted periodically by qualified service personnel as part of a regular kitchen maintenance program.**

**Frymaster recommends that this appliance be inspected at least annually by a Factory Authorized Service Technician as follows:**

#### **Fryer**

- Inspect the cabinet inside and out, front and rear for excessive oil build-up and/or oil migration.

- Verify that the flue opening is not obstructed by debris or accumulations of solidified oil or shortening.
- Verify that burners and associated components (i.e. gas valves, pilot assemblies, ignitors, etc.) are in good condition and functioning properly. Inspect all gas connections for leaks and verify that all connections are properly tightened.
- Verify that the burner manifold pressure is in accordance with that specified on the appliance's rating plate.
- Verify that the temperature and high-limit probes are properly connected, tightened and functioning properly, and that probe guards are present and properly installed.
- Verify that component box components (i.e. computer/controller, transformers, relays, interface boards, etc.) are in good condition and free from oil migration build-up and other debris. Inspect the component box wiring and verify that connections are tight and that wiring is in good condition.
- Verify that all safety features (i.e. drain safety switches, reset switches, etc.) are present and functioning properly.
- Verify that the frypot/cookpot is in good condition and free of leaks and that the frypot/cookpot insulation is in serviceable condition.
- Verify that wiring harnesses and connections are tight and in good condition.

### **Built-In Filtration System**

- Inspect all oil-return and drain lines for leaks and verify that all connections are tight.
- Inspect the filter pan for leaks and cleanliness. If there is a large accumulation of crumbs in the crumb basket, advise the owner/operator that the crumb basket should be emptied into a fireproof container and cleaned daily.
- Verify that all O-rings and seals (including those on the Power Shower and on quick-disconnect fittings) are present and in good condition. Replace o-rings and seals if worn or damaged.
- Check filtration system integrity as follows:
  - With the filter pan empty, place each oil return handle, one at a time, in the ON position. Verify that the pump activates and that bubbles appear in the cooking oil/shortening (or that gurgling is heard from the Power Shower port) of the associated frypot..
  - Close all oil return valves (i.e., place all oil return handles in the OFF position). Verify proper functioning of each oil return valve by activating the filter pump using the lever on one of the oil return handle microswitches. No air bubbles should be visible in any frypot (or no gurgling should be heard from the Power Shower ports).

- Verify that the filter pan is properly prepared for filtering, then drain a frypot of oil heated to 350°F (177°C) into the filter pan and close the frypot drain valve. Place the oil return handle in the ON position. Allow all cooking oil/shortening to return to the frypot (indicated by bubbles in the cooking oil/shortening or, on units with Power Showers, cessation of oil flow from the Power Shower). Return the oil return handle to the OFF position. The frypot should have refilled in no more than 2 minutes and 30 seconds.

# 47 SERIES GAS FRYERS

## CHAPTER 6: OPERATOR TROUBLESHOOTING

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### 6.1 Introduction

This chapter provides an easy reference guide to some of the common problems that may occur during the operation of your equipment. The troubleshooting guides that follow 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 encounter problems that are not covered. In such instances, the Frymaster Technical Services staff 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. 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.

Some of the troubleshooting actions recommended in this chapter involve removing suspect components and substituting components that are known to be good. Whenever this is indicated, refer to Sections 6.7 for specific instructions

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.

***Before calling a servicer or the Frymaster HOTLINE (1-800-551-8633):***

- **Verify that electrical cords are plugged in and that circuit breakers are on.**
- **Verify that gas line quick-disconnects are properly connected.**
- **Verify that any gas line cutoff valves are open.**
- **Verify that frypot drain valves are fully closed.**

 **DANGER**

**Hot cooking oil/shortening will cause severe burns. Never attempt to move this appliance when filled hot cooking oil/shortening or to transfer hot cooking oil/shortening from one container to another.**

 **DANGER**

**This equipment should be unplugged when servicing, except when electrical circuit tests are required. Use extreme care when performing such tests.**

**This appliance may have more than one electrical power supply connection point. Disconnect all power cords before servicing.**

**Inspection, testing, and repair of electrical components should be performed by an authorized service agent only.**

## 6.2 Troubleshooting Fryers with Solid State (Analog), Digital, or CM III Controllers or Basket Lift Timers

PROBLEM	PROBABLE CAUSES	CORRECTIVE ACTION
<b>Burner will not light.</b>	A. Pilot not lit (units w/pilot ignition only).	A. Light pilot per instructions in Chapter 3 of this manual.
	B. Drain valve open.	B. Verify that drain valve is fully closed.
	C. No electrical power to unit.	C. Verify that unit is plugged in and that circuit breaker is not tripped.
	D. No gas being supplied to unit.	D. Verify that the gas line quick disconnect is properly connected, that any cutoff valves between the fryer and the gas main are open, and that the main gas cutoff valve is open.
	E. Blown fuse on ignition module or interface board (units w/electronic ignition only).	E. Replace fuse per instructions in Section 6.6 of this manual.
	F. Failed controller.	F. If available, substitute controller known to be good for suspect controller. If fryer operates normally, order replacement controller from FASC.
<b>Solid state (analog) controller power and trouble lights on, but heat light is not,  OR  LED display shows <i>Prob.</i></b>	Failed controller.	If available, substitute controller known to be good for suspect controller. If fryer operates normally, order replacement controller from FASC.
<b>Unit stays in melt cycle continuously.</b>	Failed controller.	If available, substitute controller known to be good for suspect controller. If fryer operates normally, order replacement controller from FASC.
<b>CM III will not go into programming mode.</b>	A. Temporary controller malfunction caused by voltage surge.	A. Disconnect unit from electrical power, wait at least one minute, reconnect unit to the power supply and turn controller on.
	B. Failed controller.	B. If available, substitute controller known to be good for suspect controller. If fryer operates normally, order replacement controller from FASC.

<b>PROBLEM</b>	<b>PROBABLE CAUSES</b>	<b>CORRECTIVE ACTION</b>
<b>CM III displays H I as it comes out of melt cycle</b>  <b>OR</b>  <b>Heating mode indicator does not come on at all.</b>	A. Setpoint incorrect.	A. Verify that setpoint has been properly entered.
	B. Temporary controller malfunction caused by voltage surge.	B. Disconnect unit from electrical power, wait at least one minute, and reconnect unit to the power supply.
	C. Failed controller.	C. If available, substitute controller known to be good for suspect controller. If fryer operates normally, order replacement controller from FASC.
<b>Heating mode indicator is on but fryer is not heating properly.</b>	A. Burner is not lit.	A. Refer to <i>Burner will not light</i> problem on page 6-3.
	B. Failed controller.	B. If available, substitute controller known to be good for suspect controller. If fryer operates normally, order replacement controller from FASC.
<b>CM III, Basket Lift Timer, or Digital Controller LED display shows HELP or HOT.</b>	Serious problem with the heating system.	Turn fryer off immediately and call the Frymaster Hotline (1-800-551-8633).

### 6.3 Troubleshooting Fryers with Thermostat Controls

<b>PROBLEM</b>	<b>Probable Causes</b>	<b>Corrective Action</b>
<b>Burner does not light.</b>	A. Pilot is not lit.	A. Light pilot per instructions in Chapter 3 of this manual.
	B. Drain valve not fully closed.	B. Verify drain valve is fully closed.
	C. No gas being supplied to unit.	C. Verify that the gas line quick disconnect is properly connected, cutoff valves between the fryer and the gas main are open, and the main gas cutoff valve is open.
<b>Unit will not go into melt cycle when switch is in the ON position or stays in melt cycle when switch is in the OFF position.</b>	Failed melt cycle switch.	Melt cycle switch must be replaced. Call FASC.
<b>Fryer never reaches frying temperature.</b>	Failed thermostat or thermostat out of calibration.	Isolating the problem requires additional troubleshooting beyond the scope of operator troubleshooting. Call FASC.

## 6.4 Troubleshooting Abnormal Burner Operation

PROBLEM	PROBABLE CAUSES	CORRECTIVE ACTION
Fryer is operating normally, but flames are rolling out of the front of the burner.	Obstructed gas valve vent tube.	Shut the fryer down and clean the gas valve vent tube in accordance the instructions on Page 5-4 of this manual.

## 6.5 Troubleshooting the Built-In Filtration System

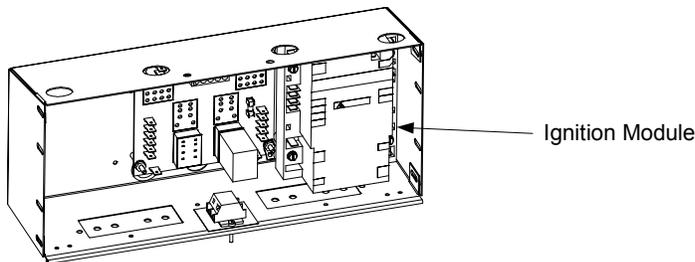
PROBLEM	PROBABLE CAUSES	CORRECTIVE ACTION
<p><b>Pump won't start.</b></p> <p><b>OR</b></p> <p><b>Pump stops during filtering.</b></p>	<p>A. Thermal overload switch has tripped on an overheated motor.</p> <p><i>Test:</i> If the pump stopped suddenly during the filtering process, especially if after several filtering cycles, the pump motor has probably overheated. Place the filter handle in the OFF position, allow the pump to cool for at least 45 minutes, and then press the reset button on the pump motor. Attempt to activate the pump.</p>	<p>A. If the pump runs normally after resetting the thermal overload switch, the pump was overheated.</p> <p>Always filter with the cooking oil/shortening at or near frying temperature.</p> <p>Allow the pump motor to cool off for about ten minutes after filtering two full frypots one after the other.</p> <p>Check the filter paper between filterings. Replace the paper if there is a large accumulation of sediment.</p>
	<p>B. Failed filter handle microswitch.</p> <p><i>Test:</i> If this is a multi-pot fryer, attempt to operate the pump using a different handle. If the pump starts, the handle microswitch is either out of alignment or has failed.</p> <p>When the handle is placed in the ON position, the lever on the microswitch should be firmly pressed against the switch. If so, the switch has failed. If not, the switch is loose and/or misaligned.</p>	<p>B. If the switch is loose, tighten the nuts and bolts holding it in place, ensuring that when the handle is placed in the ON position, the lever on the microswitch is pressed firmly against the switch.</p> <p>If the switch has failed, call FASC.</p>
<i>Continued on following page.</i>		

PROBLEM	PROBABLE CAUSES	CORRECTIVE ACTION
	<p>C. Pump blockage.</p> <p><i>Test:</i> Close the drain valve. Place the filter handle in the OFF position, allow the pump to cool for at least 45 minutes, and then press the reset button on the pump motor. Pull the filter pan from the unit and then activate the pump. If the pump motor hums and then stops, the pump is blocked.</p>	<p>C. Pump blockages are usually caused by sediment build-up in the pump due to improperly sized or installed filter paper and failure to use the crumb screen. Call FASC to have blockage cleared.</p> <p>Ensure that filter paper is of the proper size and is installed properly, and that the crumb screen is used.</p>
<p><b>Pump starts, but no transfer takes place or the transfer is very slow.</b></p>	<p>A. Cooking oil/shortening is too cold for filtering.</p>	<p>A. To properly filter, the oil or shortening should be at or near 350°F (177°C). At temperatures lower than this, the oil/shortening becomes too thick to pass through the filter medium easily, resulting in much slower oil return and eventual overheating of the filter pump motor. Ensure that the cooking oil/shortening is at or near frying temperature before draining into filter pan.</p>
	<p>B. Improperly installed or prepared filter pan components.</p> <p><i>Test:</i> Close the drain valve. Move the filter handle to the OFF position, pull the filter pan (and Power Shower, if so equipped) from the unit. Move the filter handle to the ON position.</p> <p>If a strong stream of air is being pumped out of the oil return port (or the Power Shower port), the problem is with the filter pan components.</p>	<p>B. Remove the oil from the filter pan and replace the filter paper, ensuring that the filter screen is in place <i>under</i> the paper.</p> <p>If this does not correct the problem, the filter tube suction tube is probably blocked. Remove the blockage using a thin, flexible wire. If unable to remove the blockage, call FASC.</p>
	<p>C. Missing or worn filter connection O-rings.</p>	<p>C. Verify that filter connection O-rings are present and in good condition.</p>

PROBLEM	PROBABLE CAUSES	CORRECTIVE ACTION
Power Shower is not spraying properly.	A. Plugged openings or solidified shortening in the Power Shower.  <i>Test:</i> Look for oil/shortening squirting out around the Power Shower gasket. If so, Power Shower is obstructed.	A. Clean the Power Shower per instructions in Chapter 5 of this manual.
	B. Missing/worn O-rings and gasket on Power Shower.	B. Verify that O-rings and gasket are present and in good condition.
	C. Missing paper in filter pan. (This causes too much pressure in the oil return lines, resulting in a strong flow through the Power Shower, but also squirting of oil from around the gasket.)	C. Verify that filter paper is properly installed in the filter pan.

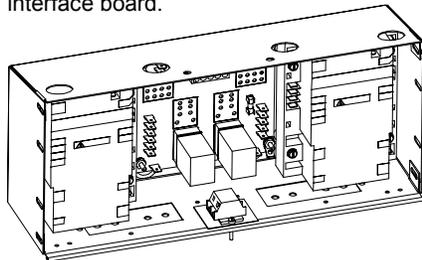
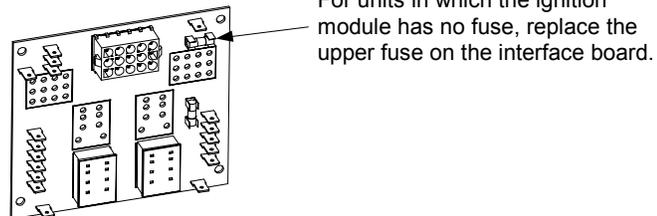
## 6.6 Replacing the Ignition Module Fuse in Units with Electronic Ignition

1. Disconnect the fryer from the electrical supply and remove the two screws in the upper corners of the control panel. Swing the panel open from the top, allowing it to rest on its hinge tabs.
2. Locate the 3-amp ignition module fuse (refer to illustration below) and, using a fuse-puller, remove and replace it with a new fuse.



Depending upon when the unit was manufactured, full vat units may have either one or two ignition modules. If there is only one ignition module, the fuse will be mounted on the interface board.

Dual vat units and some full vat units will have two ignition modules. Look for the fuse on the left side of the module. If there are no fuses on the modules, the fuse will be on the interface board.



3. Close the panel, replace the control panel screws, and reconnect the fryer to the electrical supply.

## **6.7 Replacing the Controller or Controller Wiring Harness**

1. Disconnect the fryer from the electrical supply.
2. Remove the two screws in the upper corners of the control panel and swing the panel open from the top, allowing it to rest on its hinge tabs.
3. Disconnect the wiring harness from the back of the controller and, if replacing the harness, disconnect it from the interface board (see photo on following page).
4. If replacing the controller, disconnect the ground wire and remove the controller by lifting it from the hinge slots in the control panel frame.
5. Reverse the procedure to install a new controller or wiring harness.

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