PRO SERIES MARINE ELECTRIC FRYERS

Installation, Operation, Service and Parts Manual

Frymaster®

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

JULY 2005

8196118

www.frymaster.com Email: service@frymaster.com

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NOTICE

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

⚠ DANGER

Copper wire suitable for at least 167°F (75°C) must be used for power connections.

⚠ DANGER

The electrical power supply for this appliance must be the same as indicated on the rating and serial number plate located on the inside of the fryer door.

⚠ DANGER

This appliance must be connected to the voltage and phase as specified on the rating and serial number plate located on the inside of the fryer door.

⚠ DANGER

All wiring connections for this appliance must be made in accordance with the wiring diagrams furnished with the equipment. Wiring diagrams are located on the inside of the fryer door.

⚠ DANGER

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

NOTICE

Drawings and photos used in this manual are intended to illustrate operational, cleaning and technical procedures. They may differ slightly in appearance or placement between fryers but functionality should remain the same. They may not conform to onsite management operational procedures.

⚠ WARNING

Frymaster fryers equipped with legs are for permanent installations. Fryers fitted with legs must be lifted during movement to avoid damage and possible bodily injury. For a moveable or portable installation, Frymaster optional equipment casters must be used.
Questions? Call 1-800-551-8633 or email Service @Frymaster.com

⚠ 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

All wiring connections for this appliance must be made in accordance with the wiring diagrams furnished with the equipment. Wiring diagrams are located on the inside of the fryer door.

⚠ WARNING

This equipment is intended for indoor use only. Do not install or operate this equipment in outdoor areas.

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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.

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.

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.

⚠ WARNING

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.

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 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

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.

⚠ 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 frypots. 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.

⚠ WARNING

Never spray the fryer with water or use water jets to clean the fryer.

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Pro Series Marine Electric Fryers
Installation, Operation, Service and Parts Manual

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PRO SERIES MARINE ELECTRIC FRYERS
CHAPTER 1: INTRODUCTION

1.1 General

Read the instructions in this manual thoroughly before attempting to operate this equipment. This manual covers all configurations of Pro Series Electric Fryer models specifically configured for use aboard surface ships, including FPH17 kW and FPPH17 kW models. The fryers in this model family have most parts in common, and when discussed as a group, will be referred to as "Pro Series Marine Electric" fryers.

The Pro Series Marine Electric fryers feature a built-in filtration system and also include features such as deep cold-zones and open frypots with tilt-up elements. These fryers are equipped with remote mounted solid-state digital controllers. Fryers in this series can be single units or grouped in batteries of two or more fryers.

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.

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

⚠ **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.

Fryers in this series are equipped with the following automatic safety features:

1. Two high-temperature detection features one of which sounds an alarm and the other shuts off power to the elements should the temperature control fail and the temperature continue to rise.

2. A safety switch built into the drain valve, which prevents the elements from heating with the drain valve even partially open.

3. A magnetic tilt switch that shuts off the elements when lifted for frypot cleaning.

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1.3 Controller Information

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. While this device is a verified Class A device, it has 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.

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

1.4 Shipping Damage Claim Procedure

What to do if this equipment arrives damaged:

Please note that this equipment was carefully inspected and packed by skilled personnel before leaving the factory. The freight company assumes full responsibility for safe delivery upon acceptance of the equipment.

1. File Claim for Damages Immediately—Regardless of extent of damage.

2. Visible Loss or Damage—Be sure this is noted on the freight bill or express receipt and is signed by the person making the delivery.

3. Concealed Loss or Damage—If damage is unnoticed until equipment is unpacked, notify the freight company or carrier immediately and file a concealed damage claim. This should be done within 15 days of date of delivery. Be sure to retain container for inspection.

1.5 Service Information

For non-routine maintenance or repairs, or for service information, contact your local Frymaster Authorized Service Center (FASC). Service information may also be obtained by calling the Frymaster Technical Services Department at 1-800-551-8633 or via e-mail at service@frymaster.com. The following information will be needed in order to assist you efficiently:

Model Number: _____
Serial Number: _____
Voltage: _____

Also be prepared to describe the specific problem.

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

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PRO SERIES MARINE ELECTRIC FRYERS
CHAPTER 2: INSTALLATION INSTRUCTIONS

2.1 Introduction

The instructions in this chapter cover all configurations of Pro Series Electric Fryer models specifically configured for use aboard surface ships, including FPH17 kW and FPPH17 kW models. The instructions do not cover and may not be used for installations ashore.

Proper installation is essential for the safe, efficient, trouble-free operation of this appliance. Any unauthorized alteration of this equipment will void the Frymaster warranty.

NOTICE
If this equipment is wired directly into the electrical power supply, a means for disconnection from the supply having a contact separation of at least 3-mm in all poles must be incorporated in the fixed wiring.

NOTICE
This equipment must be positioned so that the plug is accessible unless other means for disconnection from the power supply (e.g., a circuit breaker) is provided.

NOTICE
If this appliance is permanently connected to fixed wiring, it must be connected by means of copper wires having a temperature rating of not less than 167°F (75°C).

NOTICE
If the electrical power supply cord is damaged, it must be replaced by a Frymaster Dean Factory Authorized Service Center technician or a similarly qualified person in order to avoid a hazard.

⚠ DANGER
This appliance must be connected to a power supply having the same voltage and phase as specified on the rating plate located on the inside of the appliance door.

⚠ DANGER
All wiring connections for this appliance must be made in accordance with the wiring diagram(s) furnished with the appliance. Refer to the wiring diagram(s) affixed to the inside of the appliance door when installing or servicing this equipment.

⚠ DANGER
The appliance area must be kept free and clear of combustible material at all times.

⚠ WARNING
Do not block the area around the base or under the fryers.

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All installation and service on FRYMASTER equipment must be performed by qualified, certified, licensed, and/or authorized installation or service personnel.
Service may be obtained by contacting a local Frymaster DEAN Factory Authorized Service Center.

In the event of a power failure, the fryer(s) will automatically shut down. If this occurs, turn the power switch OFF. Do not attempt to start the fryer(s) until power is restored.

A clearance of 6 inches (15cm) must be provided at both sides and back adjacent to combustible construction. A minimum of 24 inches (61cm) should be provided at the front of the equipment for servicing and proper operation.

Connections should be made by means of an approved, flexible-metallic or rubber-covered electrical cable and quick-disconnect plug. The fryers may be installed with "hard-wired" connections, but use of quick-disconnect plugs will facilitate service if required. Connections are made to the fryer power input terminal block located in the contactor box(es) in the bottom of the fryer(s).

2.2 Power Requirements

Use copper wire ONLY, suitable for at least 167°F (75°C)						
MODEL	VOLTAGE	PHASE	WIRE SERVICE	MINIMUM WIRE SIZE AWG	mm	AMPS (per leg)
FPH17	440	3	3	6	(4.11)	23
FPH17	480	3	3	6	(4.11)	21
FPPH17	440	3	3	6	(4.11)	23
FPPH17	480	3	3	6	(4.11)	21

Pro Series Marine electric fryers are equipped with a filter system that requires a separate 120VAC, single-phase, 3-wire, 20 amp service (refer to wiring diagrams in paragraphs 7.10 and 7.11).

NOTICE
If this appliance is permanently connected to fixed wiring, it must be connected by means of copper wires having a temperature rating of not less than 167°F (75°C).

⚠ DANGER
This appliance must be connected to a power supply having the same voltage and phase as specified on the rating plate located on the inside of the appliance door.

⚠ DANGER
All wiring connections for this appliance must be made in accordance with the wiring diagram(s) furnished with the appliance. Refer to the wiring diagram(s) affixed to the inside of the appliance door when installing or servicing this equipment.

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2.3 Installation

Shipboard installations are often unique, however, here's a list of do's and don'ts to avoid trouble:

Do ensure the fryer is adequately attached to the deck.
Do ensure the fryer is mounted well away from appliances, which are sprayed with water.
Do mount the remote controller within easy reach of the operator and away from the heat and vapors of the fryer vat and other cooking equipment.
Do remove the 15-pin plug from the controller cable with a pin pusher before routing it to the fryer and carefully reattach, using the provided diagram in section 7.15.

DO use a pin pusher to remove the 15-pin plug on the controller cable for routing.

Don't mount the remote controller on the fryer's flue cap or on the bulkhead above the fryer vat.
Don't cut and splice the remote controller's cable to facilitate routing it to the fryer.

DO NOT mount the controller on the fryer's flue cap or on the bulkhead above the fryer's vat

⚠ 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 and Dean Service Department at 1-800-551-8633 or via e-mail at service@frymaster.com

2.4 After Fryers Are Anchored At the Frying Station

⚠ DANGER
Hot oil can cause severe burns. Avoid contact. Under all circumstances, oil must be removed from the fryer before attempting to move it to avoid oil spills, falls and severe burns. This fryer may tip and cause personal injury if not secured in a stationary position.

1. Close frypot drain-valve(s) and fill frypot(s) with water to the bottom oil level line.

2. Boil out frypot(s) in accordance with the instructions in Section 5.1.3 of this manual.

3. Drain, clean, and fill frypot(s) with cooking oil. (See ***Equipment Setup and Shutdown Procedures*** in Chapter 3.)

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2.5 Dimensions and Weights

Single Fryer: LWH(inches) 28.29 X 15.67 X 45.5 – 190 lbs. empty.

2-Fryer Battery: LWH (inches) 28.30 X 31.45 X 45.5 – 490 lbs. empty.

Single Fryer

2-Fryer Battery

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PRO SERIES MARINE ELECTRIC FRYERS
CHAPTER 3: OPERATING INSTRUCTIONS

3.1 Equipment Setup and Shutdown Procedures

Setup

⚠ DANGER
Never operate the appliance with an empty frypot. The frypot must be filled with water, oil or shortening before energizing the elements. Failure to do so will result in irreparable damage to the elements and may cause a fire.

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

1. Fill the frypot with oil to the bottom OIL LEVEL line located on the rear of the frypot. This will allow for oil expansion as heat is applied. Do not fill cold oil any higher than the bottom line; overflow may occur as heat expands the oil.

   NOTE: If solid shortening is used, first raise the elements, then pack the shortening into the bottom of the frypot. Lower the elements, and then pack the shortening around and over the elements to the lower mark. It may be necessary to add shortening to bring the level up to the upper mark after the packed shortening has melted. Cooking oil/shortening capacity of H17 series fryer is 50 lbs. (25 liters) at 70°F (21°C).

⚠ DANGER
Never set a complete block of solid shortening on top of the heating elements.

When using solid shortening, always pre-melt the shortening before adding it to the frypot. If the shortening is not pre-melted, it must be packed down into the bottom of the frypot and between the elements, and the fryer must be started in the melt-cycle mode.

Never cancel the melt-cycle mode when using solid shortening. Doing so will result in damage to the elements and increase the potential for a flash fire.

2. Replace the basket support rack on top of the heating elements.

3. If the fryer is not hard-wired into the power supply, ensure that the power cord is plugged into the appropriate receptacle. Verify that the face of the plug is flush with the outlet plate, with no portion of the prongs visible.

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4. Ensure that the oil level is at the *top* OIL LEVEL line when the oil *is at its cooking temperature*. It may be necessary to add oil to bring the level up to the upper mark, *after it has reached cooking temperature*.

Shutdown

1. Turn the fryer off.

2. Filter the oil and clean the fryers (See Chapters 4 and 5).

3.2 Operation of the Solid-State Digital Controller

NOTE: Refer to Chapter 4 of this manual for operating instructions for the built-in filtration system.

Fryers configured for marine use are equipped with remotely mounted solid-state digital controllers.

Marine Solid-State Digital Controller

ITEM	DESCRIPTION
1	Lighted Display – LED display for a full-pot fryer. Displays setpoint temperature.
2	On/Off Switch – Switches the power On or Off.
3	C/F Switch – Toggles the display between Fahrenheit and Celsius
4	Lighted Display- LED Display – Displays current frypot temperature and heat mode light (decimal) will alternately illuminate as the elements cycle on and off.
5	Temperature / Setpoint Display Switch –Toggles the display between frypot temperature and setpoint temperature.
6	Up Arrow – Raises setpoint temperature.
7	Down Arrow – Lowers the setpoint temperature.
8	Melt-Cycle Cancel Switch – Cancels the melt-cycle mode.

The digital controller, illustrated above, is used to maintain oil at the temperature indicated by the controller.

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The fryer has two built-in high-limit protection features. If the temperature in the frypot reaches 411°F (210°C), an alarm will sound. In the event that the temperature continues to rise, there is a second and separate high limit circuit that will shut down the system at 425° (218°C), sound an alarm and display "help".

A shunt trip device is integrated into the Cruise Line specifications. The shunt trip is a contact, which is closed by a coil in the fryer's 24-volt safety circuit. Leads from the shunt trip extend from the fryer and can be wired to a specialized shipboard circuit breaker. Voltage from the ship passes through the closed shunt trip on the fryer, keeping the ship's circuit breaker closed. If the fryer's safety circuit opens due to the hi-limit opening or the opening of a drain valve while the fryer is on, the shunt-trip circuit on the fryer opens, which opens the ship's circuit breaker, killing power to the fryer.

The digital controller has no timing features, so the operator must monitor cooking.

⚠ WARNING
Before pressing the power switch to the ON position, ensure that the frypot is properly filled with oil. See Section 3.1.

CONTROLLER OPERATING PROCEDURE

1. Turn the power switch ON.

2. Verify that the control is set to the desired cooking temperature.

3. Press the power switch to the ON position. The POWER light will illuminate.

4. If the frypot temperature is below 180°F (82°C), the controller will automatically enter a warm-up cycle (often called a melt cycle). The heating elements will cycle on and off repeatedly, allowing the oil to heat gradually, without scorching. During the warm-up cycle, the heating mode light (decimal point) will alternately illuminate and go off as the elements cycle on and off. When the frypot temperature reaches 180°F (82°C), the controller will exit the warm-up cycle and the heating mode light will remain continuously illuminated.

5. When the oil temperature reaches the setpoint, the elements will cycle OFF and the HEAT light will go off, indicating that the fryer is ready for the cooking process to begin.

INTRODUCTION

The Digital Controller allows the operator to program the frypot setpoint and to toggle the display between the frypot temperature and the programmed setpoint. The setpoint is an operator-determined frying temperature. When the controller is turned on, it automatically brings the cooking oil to the setpoint and maintains it at that temperature until the controller is turned off. Units display the setpoint by default. This controller also features a programmable melt-cycle cancel switch and a switch for toggling the temperature display between Fahrenheit and Celsius as well as toggling between the setpoint and the actual temperature.

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The controller has three error display messages:

HELP, indicating a heating problem or drain valve problem. Turn the fryer off reset the drain handle and try again. If the error still appears, call the Frymaster hotline.

HOT and actual frypot temperature, indicating that the shortening temperature is above 411°F (210°C). If this display is seen, turn the fryer off immediately and contact an authorized service center.

Prob, indicating that the controller has detected a problem in the temperature measuring circuits and control circuits. Turn the fryer off and contact an authorized service center.

NOTE: This controller is configured for the fryer on which it installed (i.e., gas or electric and full- or split-pot). Although identical in appearance, controllers configured for use on one type of fryer are not interchangeable with those configured for use on another type.

CONTROLLER OPERATING INSTRUCTIONS

1. Turn the controller on by pressing the ON/OFF switch.

   The controller software version number will display for four seconds then, *in non-CE units*, the setpoint temperature will appear in the display. *In CE units*, the frypot temperature will appear in the display – to view the setpoint temperature, press the temperature switch for the frypot in question.

   A decimal point will appear between the first two numbers of the display, indicating that the unit is heating. When the frypot has reached the setpoint temperature, the heat indicator decimal point will go out, indicating that the fryer is ready for cooking.

2. Adjust the setpoint if necessary. To raise the setpoint temperature, press an up arrow. Press a down arrow to lower the setpoint temperature.

   The display will change at the rate of approximately one-degree per second initially. If the arrow is pressed and held, after a change of about 12°, the rate of change will increase, allowing large changes in setpoint temperature to be made quickly.

SELECTING FAHRENHEIT OR CELSIUS DISPLAY MODE

To toggle the temperature display between Fahrenheit and Celsius, press the right C/F switch. The display(s) will change from xxx°F to xxx°C, where "xxx" is the frypot or setpoint temperature.

CANCELING THE MELT-CYLE

⚠ DANGER
Do not cancel the melt-cycle mode if using solid shortening!

The melt-cycle is designed to prevent scorching shortening and overheating the frypot or elements while gradually melting blocks of shortening. The controller automatically starts the fryer in the

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melt-cycle mode and remains in this mode until the frypot temperature reaches 180°F (82°C) or the melt-cycle is cancelled by the operator. If you are not using solid shortening, you may cancel the melt-cycle.

To cancel the melt-cycle on a full-pot unit, press the right melt-cycle cancel switch. On a split-pot unit, press the left switch for the left frypot or the right switch for the right frypot.

DISABLING OR ENABLING THE MELT-CYCLE CANCEL SWITCH

The controller can be programmed to disable the melt-cycle cancel switch to prevent accidentally canceling the melt-cycle.

1. With the controller in the OFF mode, press the melt-cycle cancel switch. The display will show either "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 configuration, press and hold the melt-cycle cancel switch for five to six seconds to toggle the "0" to "1" or "1" to "0". Release the switch when the display shows the desired setting.

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PRO SERIES MARINE ELECTRIC FRYERS
CHAPTER 4: FILTRATION INSTRUCTIONS

4.1 Introduction

The FootPrint Pro filtration system allows the oil in one frypot to be safely and efficiently filtered while the other frypots in a battery remain in operation. Section 4.2 covers preparation of the filter system. Operation of the system is covered in section 4.3.

⚠ WARNING

The work center 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.

4.2 Preparing the Filter for Use

1. Rotate the pan-locking rod to either side until it clears the filter pan, then pull the pan out from the cabinet. Remove the crumb tray, hold-down ring. Remove the used filter paper in the pan. Remove the filter paper support screen. Clean all components with a solution of detergent and hot water then dry thoroughly.

   The filter pan on the FPPH217 is equipped with rollers in rails, much like a kitchen drawer. The pan may be removed for cleaning or to gain access to interior components by lifting the front of the pan to disengage the front rollers, then pulling it forward until the rear rollers clear the rails. The pan cover must not be removed except for cleaning, interior access, or to allow a shortening disposal unit (SDU) to be positioned under the drain. On the FPH117, the pan slides out on rails, but when fully removed from the cabinet, it has wheels to roll on.

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2. On the FPH117 fryer, inspect the filter pan connection fitting to ensure that both O-rings are in good condition. The O-rings are located on the tube spout behind the filter pan at the rear of the fryer. (See drawing to the right.)
   Likewise, on the FPPH217, inspect the filter pan connection fitting to ensure that both O-rings are in good condition. The O-rings are located on the tube disconnect inside the filter pan as shown on the drawing down and to the right.

3. Place the metal filter screen in the center of the bottom of the pan, then lay a sheet of filter paper on 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 lowered to the bottom of the pan.

5. When the hold-down ring is in position, sprinkle one cup of filter powder evenly over the paper.

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

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4.3 Operation of the Filter

⚠ DANGER

Draining and filtering of oil 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 drain handles are in their proper position before operating any switches or valves. Wear all appropriate safety equipment when draining and filtering oil.

⚠ DANGER

NEVER attempt to drain oil from the fryer with the elements energized! Doing so will cause irreparable damage to the elements and may cause a flash fire. Doing so will also void the Frymaster warranty.

1. Ensure that the filter is prepared. See Sec. 4.2

2. Make sure the oil is at operating temperature.

3. Turn the fryer power OFF. Drain the frypot into the filter pan. Remove the basket support rack and raise the element assembly to the up position. If necessary, use the ***Fryer's Friend*** clean-out rod to clear the drain from **inside** the frypot.

⚠ 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.

⚠ DANGER

NEVER attempt to clear a clogged drain valve from the front of the valve! Hot oil 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 the oil has drained from the frypot, turn the filter handle to the ON position to start the pump and begin the filtering process. Make sure the drain valve is left open. There may be a slight delay before the pump activates.

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5. The filter pump draws the oil through the filter medium and circulates it through the frypot during a 5-minute process called polishing. Polishing cleans the oil by trapping solid particles in the filter medium.

6. After 5 minutes, close the drain valve and allow the fryer to refill. Let the filter pump run 10 to 12 seconds after the oil begins to bubble. Turn the filter off.

⚠ WARNING

The filter pump is equipped with a manual reset switch (see photo below) 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.

7. Lower the elements into the frypot and reinstall the basket support rack. Ensure the drain valve is fully closed. (If the drain valve is not fully closed, the fryer will not operate.) Turn the fryer ON and allow the oil to reach setpoint.

⚠ DANGER

The crumb tray 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.

4.4 Draining and Disposing of Waste Oil

When your oil has reached the end of its usable life, drain the oil into an appropriate container for transport to the disposal container. Frymaster recommends the use of the Frymaster Shortening Disposal Unit (SDU). Refer to the documentation furnished with the disposal unit for specific operating instructions. If a shortening disposal unit is not available, allow the oil to cool to 100°F

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(38°C), and then drain the oil into a metal stockpot or similar metal container. When draining is finished, close the fryer drain valve securely.

⚠ DANGER

Allow oil to cool to 100°F (38°C) before draining into an appropriate container for disposal. When draining oil into a disposal unit, do not fill above the maximum fill line located on the container.

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PRO SERIES MARINE ELECTRIC FRYERS
CHAPTER 5: PREVENTIVE MAINTENANCE

5.1 Cleaning the Fryer

⚠ 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.

⚠ DANGER
Never attempt to clean the fryer during the frying process or when the frypot is filled with hot oil. If water comes in contact with oil heated to frying temperature, it will cause spattering of the oil, which can result in severe burns to 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.

5.1.1 Clean Inside and Outside of the Fryer Cabinet – Daily

Clean inside the fryer cabinet with a dry, clean cloth. Wipe all accessible metal surfaces and components to remove accumulated oil and dust.

DO NOT spray the fryer cabinet with water.

Clean outside the fryer cabinet, with a clean, damp cloth soaked with dishwashing detergent. Wipe with a clean, damp cloth.

5.1.2 Clean the Built-in Filtration System – Daily

⚠ 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 the FootPrint Pro Filtration System other than daily cleaning of the filter pan and associated components with a solution of hot water and detergent.

⚠ WARNING
Never spray the fryer with water or use water jets to clean this equipment.

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5.1.3 Clean the Frypot and Heating Elements – Weekly

⚠ DANGER
Never operate the appliance with an empty frypot. The frypot must be filled with water or oil/shortening before energizing the elements. Failure to do so will result in irreparable damage to the elements and may cause a fire.

Boiling-Out the Frypot

Before the fryer is first used, it should be boiled out to ensure that residue from the manufacturing process has been eliminated. Also, after the fryer has been in use for a period of time, a hard film of caramelized vegetable oil will form on the inside of the frypot. This film should be periodically removed by following the boil-out procedure that follows.

1. Before switching the fryer(s) ON, close the frypot drain valve(s), then fill the empty frypot with a mixture of cold water and low-sudsing dishwashing detergent (or a commercially available boil-out solution). Follow instructions on the container when mixing.

2. Press the fryer ON/OFF switch to the ON position.

3. Set the temperature to 190°F (88°C).

4. Simmer the solution for 45 minutes to one hour. Do not allow the water level to drop below the bottom oil-level line in the frypot during the boil-out operation.

⚠ 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.

5. Turn the fryer ON/OFF switch(s) to the OFF position.

6. Add two gallons of water. Drain out the solution into a stockpot and clean the frypot(s) 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.

7. Refill the frypot(s) with clean water. Rinse the frypot(s) twice, drain and dry with a clean towel. Thoroughly remove all water from the frypot and elements before refilling the frypot with oil.

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⚠ DANGER

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

5.1.4 Clean Detachable Parts and Accessories – Weekly

Wipe all detachable parts and accessories with a clean, dry cloth. Use a clean cloth saturated with detergent to remove accumulated carbonized oil on detachable parts and accessories. Rinse the parts and accessories thoroughly with clean water and wipe dry before reinstalling.

5.2 Annual/Periodic System Inspection

This appliance should be inspected and adjusted periodically by qualified service personnel as part of the galley material maintenance management (3M) program.

Frymaster recommends that a Factory Authorized Service Technician inspect this appliance at least annually as follows:

Fryer

- Inspect the cabinet inside and out, front and rear for excessive oil build-up and/or oil migration.
- Verify that the heating element wires are in good condition and that leads have no visible fraying or insulation damage and that they are free of oil migration build-up.
- Verify that heating elements are in good condition with no carbon/caramelized oil build-up. Inspect the elements for signs of extensive dry-firing.
- Verify that the tilt mechanism is working properly when lifting and lowering elements and that the element wires are not binding and/or chafing.
- Verify the heating-element amp-draw is within the allowed range as indicated on the appliance's rating plate.
- Verify that the temperature and high-limit probes are properly connected, tightened and functioning properly, and that mounting hardware and probe guards are present and properly installed.
- Verify that component box and contactor box components (i.e. controller, relays, interface boards, transformers, contactors, etc.) are in good condition and free from oil migration build-up and other debris.
- Verify that component box and contactor box wiring connections are tight and that wiring is in good condition.
- Verify that all safety features (i.e. contactor shields, drain safety switches, hood shunts, reset switches, etc.) are present and functioning properly.

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- Verify that the frypot is in good condition and free of leaks and that the frypot insulation is in serviceable condition.

- Verify that all wiring harnesses and wiring 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, instruct the supervisor that the crumb basket must be emptied into a fireproof container and cleaned daily.

- Verify that all O-rings and seals (including those 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:

– Verify that filter pan cover is present and properly installed.

– 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 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.

– Verify that the filter pan is properly prepared for filtering, then drain a frypot of oil heated to 350°F into the filter pan and close the frypot drain valve. Place the oil return handle in the ON position. Allow all oil to return to the frypot (indicated by bubbles in the oil). Return the oil return handle to the OFF position. The frypot should have refilled in no more than 2 minutes and 30 seconds.

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PRO SERIES MARINE ELECTRIC FRYERS
CHAPTER 6: OPERATOR TROUBLESHOOTING

6.1 Introduction

This section provides an easy reference guide to some of the common problems that may occur during the operation of this equipment. The troubleshooting guides that follow are intended to help correct, or at least accurately diagnose, problems with this 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. Never overlook the obvious – anyone can forget to plug in a cord or fail to close a valve completely. Most importantly, always try to establish a clear idea of why a problem has occurred. Part of any 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, too. 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.

Before calling a service agent or the Frymaster HOTLINE (1-800-551-8633) or contacting via e-mail at service@frymaster.com:

- **Verify that electrical cords are plugged in and that circuit breakers are on.**
- **Verify that frypot drain valves are fully closed.**

⚠ DANGER

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

⚠ DANGER

This equipment should be disconnected from the electrical power supply 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 authorized personnel only.

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6.2 Troubleshooting

6.2.1 Control and Heating Problems

Problem	Probable Causes	Corrective Action
Controller won't activate.	A. Power cord is not plugged in or circuit breaker is tripped.	A. Plug power cord in and verify that circuit breaker is not tripped.
	B. Controller has failed.	B. If available, substitute a controller known to be working for the suspect controller. If the substitute controller functions correctly, order a new controller.
	C. Power supply component or interface board has failed.	C. If any of the components in the power supply system (including the transformer and interface board) fail, power will not be supplied to the controller and it will not function. Determining which component has failed is beyond the scope of operator troubleshooting. Call FASC.
Fryer does not heat or heat after filtering.	A. Drain valve is open.	A. This fryer is equipped with a drain safety switch that prevents the heating element from being energized if the drain valve is not fully closed. Verify that the drain valve is fully closed.
	B. Controller has failed.	B. If available, substitute a controller known to be working for the suspect controller. If the substitute controller functions correctly, order a new controller.
	C. One or more other components have failed.	C. If the circuitry in the fryer control system cannot determine the frypot temperature, the system will not allow the element to be energized or will de-energize the element if it is already energized. If the contactor, element, or associated wiring fails, the element will not energize. Determining which specific component is malfunctioning is beyond the scope of operator troubleshooting. Call FASC.

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Problem	Probable Causes	Corrective Action
Fryer repeatedly cycles on and off when first started.	Fryer is in melt-cycle mode.	This is normal. The standard operational mode for the controller is for the elements to cycle on and off until the temperature in the frypot reaches 180ºF (82°C). The purpose of the melt-cycle is to allow controlled melting of solid shortening to prevent scorching and flash fires or damage to the element.
Fryer heats until high limit trips with heat indicator ON.	Temperature probe or controller has failed.	If available, substitute a controller known to be working for the suspect controller. If the substitute controller functions correctly, order a new controller. If substitution of the controller does not resolve the problem, the most likely cause is a failed temperature probe.
Fryer heats until high limit trips without heat indicator ON.	Contactor or controller has failed.	If available, substitute a controller known to be working for the suspect controller. If the substitute controller functions correctly, order a new controller. If substitution of the controller does not resolve the problem, the most likely cause is a contactor failed in the closed position.
Fryer stops heating with heat indicator ON.	The high limit thermostat or contactor has failed.	The fact that the heat indicator is ON indicates that the controller is functioning properly and is calling for heat. The hi-limit thermostat functions as a normally closed switch. If the thermostat fails, the "switch" opens and power to the elements is shut off. If the contactor fails to close, no power is supplied to the elements. Determining which component has failed is beyond the scope of operator troubleshooting. Call FASC.

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6.2.2 Filtration Problems

Problem	Probable Causes	Corrective Action
Filter pump won't start.	A. Power cord is not plugged in or circuit breaker is tripped.	A. Verify that the power cord is fully plugged in. If so, verify that circuit breaker is not tripped.
	B. Pump motor has overheated causing the thermal overload switch to trip.	B. If the motor is too hot to touch for more than a few seconds, the thermal overload switch has probably tripped. Allow the motor to cool at least 20 minutes then press the Pump Reset Switch.
	C. Blockage in filter pump. **Test:** Close the drain valve and pull the filter pan out from the fryer. Activate the pump. If the pump motor hums for a short time then stops, the probable cause is blockage of the pump itself.	C. Pump blockages are usually caused by sediment buildup in the pump due to improperly sized or installed filter paper and failure to use the crumb screen.
Filter pump runs but oil does not return to frypot and there is no bubbling oil.	Blockage in filter pan suction tube. **Test:** Close the drain valve and pull the filter pan out from the fryer. Activate the pump. If the air or bubbling oil occurs, there is a blockage in the filter pan suction tube.	The blockage may be caused by sediment buildup or, if solid shortening is used, solidified shortening in the tube. Use a thin, flexible wire to remove the blockage.
Filter pump runs, but oil return is very slow and bubbling oil occurs.	A. Improperly installed filter pan components.	A. Verify that filter screen is in bottom of pan with paper top of screen. Verify that o-rings are present and in good condition on filter pan connection fitting.

(continued on the following page)

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Problem	Probable Causes	Corrective Action
Filter pump runs, but oil return is very slow and bubbling oil occurs.	B. Attempting to filter with oil or shortening that is not hot enough.	B. In order to properly filter, the oil or shortening should be at or near 350ºF (177°C). At temperatures lower than this, the oil becomes too thick to pass through the filter medium easily, resulting in much slower oil return and eventual overheating of the filter pump motor. Make sure oil is at or near frying temperature before draining oil into filter pan.

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PRO SERIES MARINE ELECTRIC FRYERS
CHAPTER 7: SERVICE PROCEDURES

7.1 General

Before performing any maintenance on this equipment, disconnect the fryer from the electrical power supply.

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

7.2 Replacing a Remote Digital Controller

1. Unplug all power cords.

2. Unplug the 15-pin connector from the back of the controller.

3. Remove the mounting screws.

4. Reassemble in reverse order to complete the replacement and return the fryer to service.

7.3 Replacing Component Box Components

1. Unplug all electrical power cords.

2. On the FPH17 remove the 2 screws securing the front panel and it will swing open from the top.

3. On the FPPH17 remove the screw in the top center of the front panel bezel. Lift up on the bezel to disengage the tabs on its lower edge from the panel frame and pull towards you to remove panel.

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

   NOTE: If replacing the interface board, connectors J1 and J2 must also be disconnected from the 12-pin connectors on the rear of the component box, directly behind the interface board.

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

   NOTE: If more room to work is required, the control panel frame and top cap assembly may be removed by removing the hex head screws that secure it to the fryer cabinet (see illustration below). If this option is chosen, all control panel assemblies must be removed per steps 1 and 2 above. The cover plate on the lower front of the component box may also be removed if desired. *Removing the component box itself from the fryer is not recommended due to the difficulty*

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involved in disconnecting and reconnecting the oil-return valve rods, which pass through openings in the component box.

Removing the Control Panel Frame and Top Cap Assembly

6. Reconnect the wiring disconnected in step 3, referring to your notes and the wiring diagrams on the fryer door to ensure that the connections are properly made. Also, verify that no other wiring was disconnected accidentally during the replacement process.

7. Reassemble in reverse order to complete the replacement and return the fryer to service.

7.4 Replacing a Temperature Probe or High-Limit Thermostat

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

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

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

3. Remove the tilt housing and back panels from the fryer. The tilt housing must be removed first in order to remove the upper back panel. To remove the tilt housing, raise the elements and allow them to rest on the basket support racks as shown in the photo below.

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Next, remove the hex head screws from the rear edge of the housing. The housing can then be lifted straight up and off the fryer. Lift up on the upper back panel to disengage the tabs on its upper corners from the cutouts in the fryer frame.

4. Disconnect the wire harness at connector C6 and, using a pin pusher, disconnect the probe leads or high-limit leads from the connector**. (Mark each wire for re-assembly.)**

5. ***If replacing a temperature probe***, remove the screw securing the probe bracket to the element and slide the bracket off the element and probe. Pull the probe out of the tilt housing assembly, install the replacement probe, and reattach the element bracket. Secure the upper portion of the probe with a replacement metal wire tie.

If replacing a high-limit thermostat, unscrew the thermostat to be replaced. Apply Loctite™ PST 567 or equivalent sealant to the threads of the replacement and screw it securely into the frypot.

6. ***If a temperature probe was replaced***, insert the probe leads into the connector (see left illustration below). For full-vat units or the left half (as viewed from the rear of the fryer) of a dual-vat unit, the red lead goes into position 6 and the white into position 7. For the right half of a dual-vat unit (as viewed from the rear of the fryer), the red lead goes into position 12 and the white into position 13.

Probe Lead Positions

High-Limit Lead Positions

If a high-limit thermostat was replaced, insert the leads into the connector (see right illustration above). For full-vat units or the left half of a dual-vat unit (as viewed from the rear of the fryer), the leads go into positions 4 and 5 of the connector. For the right half of a dual-vat unit (as viewed from the rear of the fryer), the leads go into positions 10 and 11. In either case, polarity does not matter.

7. Reinstall the back panels and tilt housing to complete the installation, then reverse steps 1 and 2 to return the fryer to service.

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7.5 Replacing a Heating Element

1. Perform steps 1-3 of section 7.4, *Replacing a Temperature Probe*.

2. On dual-vat fryers, and on full-vat fryers where the temperature probe is attached to the element being replaced, disconnect the wire harness containing the probe wiring (connector C6). Using a pin pusher, disconnect the probe wires from the connector.

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

4. Raise the element to the full up position and disconnect the element springs.
5. Remove the nuts and machine screws that secure the element to the tilt plate assembly and pull the element out of the frypot. **NOTE:** Full-vat elements consist of two dual-vat elements clamped together. For full-vat units, remove the element clamps before removing the nuts and machine screws that secure the element to the tilt plate assembly.

6. If applicable, recover the probe bracket and probe from the element being replaced and install them on the replacement element, then install the replacement element in the frypot, securing it with the nuts and screws removed in Step 5.

7. Route the element leads through the wire loom to prevent chafing and press the pins into the connector in accordance with the diagram below, then close the connector to lock the leads in place. **NOTE:** It is critical that the wires be routed through the loom to prevent chafing.

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8. Insert the element connector into the receptacle on the front of the contactor box, ensuring that the latches lock.

9. If disconnected in step 2, insert the temperature probe leads into the wiring harness connector (see illustration below). For full-vat units or the right half of a dual-vat unit, the red lead goes into position 6 and the white into position 7. For the left half of a dual-vat unit, the red lead goes into position 12 and the white into position 13. **NOTE:** ***Right*** and ***left*** refer to the fryer as viewed from the rear.

10. If disconnected in step 2, reconnect connector C6 of the wiring harness.

11. Reconnect the element springs and lower the element back down onto the basket rack.

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

7.6 Replacing Contactor Box Components (See Illustrations pages 8-15 and 8-17)

1. If replacing a contactor box above the built-in filter system, remove the filter pan and lid from the unit. Drain the frypots into a Shortening Disposal Unit (SDU) or other appropriate container. If replacing a contactor box in a non-filter unit, drain the frypot above the box into a Shortening Disposal Unit (SDU) or other appropriate container.

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

2. Disconnect the fryer from the electrical power supply.

3. Unplug the wiring harnesses from the contactor box to be serviced.

4. On the FPH17 fryers remove the screw securing the contactor box in place. Lift the contactor box and push back slightly to release the tabs holding the box in the rear of the cabinet. Lift and pull the box forward to allow access to the plugs at the rear of the unit.

5. On the FPPH17 fryers remove the two screws that secure the box in place. (See drawing on the following page.)

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Remove these screws to dismount the left contactor box.
The right contactor box is secured in a similar manner.

6. Carefully lower the box to the floor and pull it out the front of the fryer. Remove the top cover to access contactors and other components.

7. After performing necessary service, reverse steps 1-6 to return the fryer to operation.

7.7 Replacing a Frypot

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

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

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

3. Remove the screw in the top center of the front panel bezel. Lift up on the bezel to disengage the tabs on its lower edge from the panel frame and pull towards you to remove panel.

4. Remove the tilt housing and back panels from the fryer. The tilt housing must be removed first in order to remove the upper back panel. To remove the tilt housing, raise the elements and allow them to rest on the basket support racks (see photo on page 7-2).

   Next, remove the hex head screws from the rear edge of the housing. The housing can then be lifted straight up and off the fryer. Lift up on the upper back panel to disengage the tabs on its upper corners from the cutouts in the fryer frame.

5. Dismount the top cap by removing the hex head screws at each end that secure it to the control panel frame.

6. Remove the hex head screw that secures the front of the frypot to the cabinet cross brace.

7. Remove the top-connecting strip that covers the joint with the adjacent frypot.

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8. Open the drain tube cleanout covers, unscrew the retainer nuts from the drain valve nipples, and remove the tube assembly from the fryer. (If replacing a frypot over the built-in filtration system, unscrew the vacuum-breaker tube fitting from the drain tube assembly also.)

9. Remove the covers from the drain safety switch and disconnect the switch wiring at the switch.

10. At the rear of the fryer, unplug the C6 connector and, using a pin pusher, disconnect the high-limit thermostat leads.

11. Disconnect the oil return flexlines at the frypot ends.

12. Raise the elements to the full up position and disconnect the element springs.

13. Remove the machine screws and nuts that secure the tilt plate and element assembly to the frypot. Carefully lift the tilt plate and element assembly from the frypot and secure it to the cross brace on the rear of the fryer with wire ties or tape.

14. Carefully lift the frypot from the fryer and place it upside down on a stable work surface.

15. Recover the drain valves, oil return flexline connection fittings, and high-limit thermostats from the frypot. Apply Loctite™ PST 567 or equivalent sealant to the threads of the recovered parts and install them in the replacement frypot.

16. Carefully lower the replacement frypot into the fryer. Reinstall the hex head screw removed in step 7 to attach the frypot to the fryer.

17. Position the tilt housing and element assembly in the frypot and reinstall the machine screws and nuts removed in step 14.

18. Reconnect the oil return flexlines to the frypot, and replace aluminum tape, if necessary, to secure heater strips to the flexlines.

19. Insert the high-limit thermostat leads disconnected in step 11 (see illustration on page 7-4 for pin positions).
20. Reconnect the drain safety switch wiring to the switches in accordance with the diagram below then reinstall the switch covers.

21. Reinstall the drain tube assembly.

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22. Reinstall the tilt housing and back panels, top cap, and top connecting strip.

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

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

7.8 Built-in Filtration System Service Procedures

7.8.1 Filtration System Problem Resolution

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

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

Whenever the complaint is "the pump is running, but no oil is being filtered," check the installation of the filter paper, and ensure that the correct size is being used. While you are checking the filter paper, verify that the O-ring on the bottom of the filter pan is present and in good condition. A missing or worn O-ring allows the pump to take in air and decreases its efficiency. Also, oil leaks on the floor each time a vat is drained.

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

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

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

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

A pump seized by debris or hard shortening can usually

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be freed by manually moving the gears with a screwdriver or other instrument.

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

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

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

7.8.2 Replacing the Filter Motor, Filter Pump and Related Components

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

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

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

3. Remove the two lower back panels, unplug the wiring harnesses from the contactor boxes, and remove the two screws that secure one of the boxes in place (it doesn't matter which one; see illustration on page 7-6). **NOTE:** If you remove the screws from both boxes at the same time, the boxes will jam against each other and neither can be removed.

4. Carefully lower the box to the floor and pull it out the front of the fryer. Remove the remaining box following the same procedure.

5. Disconnect the two flexlines running to the oil-return manifold at the rear of the fryer. Remove the nut and bolt that secures the bridge to the oil-return manifold. (See drawing below.)

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6. Disconnect the pump suction flexline at the filter pan connection end.

7. Remove the cover plate from the front of the motor and disconnect the motor wires.
8. Unplug the 15-pin connector from the rear of the left component box and, using a pin pusher, disconnect the solenoid valve wires (pins 4, 6, 10 and 12). **NOTE:** If the vacuum-breaker solenoid valve is connected to the manifold rather than the pump, its wires (pins 4 and 6) do not need to be disconnected.

9. Remove the two nuts and bolts that secure the front of the bridge to the cross brace and carefully slide the bridge rearward off the cross brace until its front end can be lowered to the floor. Be careful not to let the rear of the bridge slip off the manifold at this point. **NOTE:** In some early production units, the bridge will not slide far enough to the rear to clear the front brace. In such cases, the front brace must be removed. It is held in place by two hex head screws on each end and a nut and bolt inside the brace near each end.

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

11. When required service has been completed, reverse steps 6-12 to reinstall the bridge. **NOTE:** The black motor wires go on the top terminal, the white on the bottom. The pump solenoid valve wires go in positions 10 and 12 of the 15-pin connector; the vacuum-breaker solenoid valve wires go in positions 4 and 6. In both cases, polarity does not matter.

12. Once the bridge is back in place, reverse steps 4 and 5 to reinstall the contactor boxes.

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

14. When proper operation has been verified, reinstall the back panels and the filter pan and lid, and return the fryer to service.

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7.8.3 Replacing the Filter Transformer or Filter Relay

Remove the left controller from the fryer to expose the interior of the left component box. The filter transformer and relay are located as shown in the illustration below. **NOTE:** The right component box is identical to the left except that the filter transformer and relay are not present.

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7.9 Interface Board Diagnostic Chart

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

Diagnostic LED Legend

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

Meter Setting	Test	Pin	Pin	Results
12 VAC Power	50 VAC Scale	1 of J2	3 of J2	12-16 VAC
24 VAC Power	50 VAC Scale	2 of J2	Chassis	24-30 VAC
*Probe Resistance (RH)	R X 1000 OHMS	11 of J2	12 of J2	See Chart
*Probe Resistance (LH)	R X 1000 OHMS	3 of J1	2 of J1	See Chart
Hi-Limit Continuity (RH)	R X 1 OHMS	7 of J2	4 of J2	0 - OHMS
Hi-Limit Continuity (LH)	R X 1 OHMS	4 of J1	7 of J1	0 - OHMS
Latch Contactor Coil (RH)	R X 1 OHMS	8 of J2	Chassis	3-10 OHMS
Latch Contactor Coil (LH)	R X 1 OHMS	5 of J1	Chassis	3-10 OHMS
Heat Contactor Coil (RH)	R X 1 OHMS	9 of J2	Chassis	18-25 OHMS
Heat Contactor Coil (LH)	R X 1 OHMS	6 of J1	Chassis	18-25 OHMS

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

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7.10 Wiring Diagram, Simplified H17

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7.11 Wiring Diagram, System

7.11.1 FPH117 Single kW, 440-480V, 60 Hz, 3-Ø, 3-Wire Configurations

Refer to page 2-2 for power requirements.

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7.11.2 FPPH217 kW, 440-480V, 60 Hz, 3-Ø, 3-Wire Configurations

Refer to page 2-2 for power requirements.

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7.12 Wiring Diagram, Contactor Box

7.12.1 FPH117 Single kW 440-480V, 60 Hz, 3-Ø, 3-Wire Configurations

Refer to page 2-2 for power requirements.

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7.12.2 FPPH217 kW, 440-480V, 60 Hz, 3-Ø, 3-Wire Configurations

Refer to page 2-2 for power requirements.

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7.13 Wiring Diagram, Filter Box

FPH117 Single kW, 440-480V, 60 Hz, 3-Ø, 3-Wire Configurations

Refer to page 2-2 for power requirements.

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7.14 Wiring Diagram, Wiring Harnesses

7.14.1 FPH117 Single Wiring Harness

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7.14.2 FPPH217 Wiring Harness

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7.15 Wiring Diagram, Remote Cable

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PRO SERIES MARINE ELECTRIC FRYERS
CHAPTER 8: PARTS LIST

8.1 Accessories

ITEM	PART #	COMPONENT
1	809-0989	Thumbscrew, ¼ -20 X 1-inch
2	810-2793	Hanger, Wireform Basket
3	809-0921	Spacer, Basket Hanger
4	803-0278	L-Shaped Brush
5	803-0197	Cleanout Rod, 27-inch
6	803-0209	Brush, Frypot
7	210-9083	Connecting Strip, Frypot
8	803-0132	Rack, Full-Vat Basket Support
9	803-0271	Basket, Twin
*	803-0352	5/16” Nut Driver
*	803-0002	Powder, Filter (80 1-Cup Applications)
*	803-0170	Paper, Filter (100-Sheet Pack)

* Not illustrated.

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8.2 Cabinetry

8.2.1 FPPH217 Backs, Panels, Doors, Handles, Sides, Tilt Housings & Top Caps

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8.2.1 FPPH217 Backs, Panels, Doors, Handles, Sides, Tilt Housings & Top Caps

ITEM	PART #	COMPONENT
1	210-9157	Back Panel, Upper Single FPH117
	210-9032	Back Panel, Upper 2-Station FPPH217
2	210-9158	Back Panel, Center Single FPH117
	210-9028	Back Panel, Center 2-Station FPPH217
3	210-9030	Back Panel, Lower 2-Station FPPH217
	106-4953	Tilt Housing Assembly, Single FPH117 includes transformer, bracket & hardware.
4	824-1513	Tilt Housing, Single FPH117
	824-1496	Tilt Housing, 2-Station FPPH217
5	826-1351	Nut Retainer, ¼-20 (Pkg. of 10)
6	106-5195	Top Cap, Single FPH117
	106-5196	Top Cap, 2-Station FPPH217
*	200-9614	Heat Shield, Single FPH117
*	200-9610	Heat Shield, 2-Station FPPH217
7	106-5016	Frame, Control Panel, Single FPH117
	106-5221	Frame, Control Panel, 2-Station FPPH217
8	106-4979	Door Assembly Single FPH117 (includes items below plus 210-9214)
*	824-1516	Door, Universal Single FPH117
*	210-9215	Liner, Door Universal Single FPH117
*	809-0500	Screw, #10 – ½ Hex TR HD SS
*	826-1343	Spring, Door Pin Hinge Single FPH117 and FPPH217 (Pkg. of 10)
	106-4769	Door, Left or Right (Left shown – move handle to opposite side for Right) 2-Station FPPH217
9	809-0500	Screw, #10 X ½-inch Hex Head FPPH217
10	210-9214	Handle, Door
11	106-0554	Pin Assembly, Door FPH117, FPPH217
12	211-9130	Side, Cabinet Left, Single FPH117
	211-8466	Side, Cabinet Left, 2-Station FPPH217
	212-9130	Side, Cabinet Right, Single FPH117
	212-8466	Side, Cabinet Right, 2-Station FPPH217
13	810-1105	Magnet, Door
14	210-9086	Door Tab
*	210-9154	Bracket, Transformer, Single FPH117
*	810-0045	Bushing, Transformer Bracket Single FPH117
*	809-0123	Screw, #10 –3/4 Truss Slotted Head
*	826-1376	Nut KEPS 10-32 HX ZP (Pkg. of 10)
*	210-9188	Hinge, Door Single FPH117
*	807-0064	Transformer, 480V/120V 150VA Single FPH117

* Not illustrated.

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8.2.2 Cabinet Bases, Braces, and Associated Parts

8.2.2.1 FPH117 Single

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8.2.2.1 FPH117 Single

ITEM	PART #	COMPONENT
	106-4942	Assembly, Cabinet Single FPH 117
1	106-4949	Brace Assembly, Filter Stop
2	210-9141	Rail, Front Top Single
3	210-9140	Brace, Rear Horizontal Single
4	106-4947	Upright, Rear Enclosure Left
5	106-4946	Upright, Rear Enclosure Right
6	106-4950	Leg Pad Assembly
7	106-4951	Filter Rail Assembly
8	106-4952	Base Assembly
9	826-1362	Nut, ¼-20 Hex (Pkg. of 10)
10	809-0191	Washer, ¼ Lock Spring ZP
11	809-0500	Screw, #10 - ½ Hex Head SS
12	809-0417	Nut, Flange ¼ - 20 Serr
13	809-0508	Bolt, 14 – 20 x 1 ¼ AT HX HD SS
14	823-3103	Leg W/A Single FP
15	210-9150	Mount, Motor Single FP
16	211-9130	Cabinet, Side Panel Left
17	212-9130	Cabinet, Side Panel Right
18	210-9148	Channel, Rear Single
19	211-9149	Channel, Side Left
20	212-9149	Channel, Side Right
21	823-5313	Filter Pan Stop

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8.2.2.2 FPPH217 Double Station Fryer

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8.2.2.2 FPPH217 Double Station Fryer

ITEM	PART #	COMPONENT
	106-4919	Cabinet Assembly, FPP Electric Double S/S
1	106-4766	Upright Assembly, Right
2	106-4765	Upright Assembly, Left
3	106-4767	Base Assembly, FPP DBL Electric
4	210-8978	Support, Right Filter Pan
5	210-8979	Support, Left Filter Pan
6	210-8984	Support, Cross Cabinet
7	210-8986	Divider, Cabinet
8	210-8987	Brace, Front Horizontal Two-Station Fryer
9	210-8989	Brace, Rear Horizontal Two-Station Fryer
10	210-9116	Shield, Channel
11	211-8466	Side, Left Cabinet
12	211-8977	Support, Contactor Box Station 1
13	212-8466	Side, Right Cabinet
14	212-8977	Support, Contactor Box Station 2
15	826-1389	Screw, Hex Head ¼ -20x ¾ (Pkg. of 10)
16	809-0190	Washer, Flat ¼ SS
17	809-0191	Washer, ¼ Lock Spring
18	826-1376	Nut, 10-32 Keps Hex (Pkg. of 10)
19	826-1374	Screw, #10x ½-inch Hex Washer Head (Pkg. of 25)
20	809-0417	Nut, ¼ -20 Hex Flange
21	809-0429	Bolt, ¼-20 x 2-inch Hex Head
22	824-1488	Bracket, Rear Support
23	823-5241	Leg, Marine Shipboard (Mounts with Items 20 and 21)
24	210-6862	Hinge, Door
25	210-8993	Brace, Rear Channel Corner
26	826-1374	Screw, #10 X ½-inch Hex Washer Head (Pkg. of 25)
27	823-5105	Channel, Base Rear FPP Two-Station Fryer
28	823-5106	Channel, Base Side
29	810-2346	Magnet, Door
30	210-9023	Bracket, Frypot
31	823-5313	Filter Pan Stop

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8.3 Drain System Components

8.3.1 FPPH217 Euro-Look Drain Tube Sections and Associated Parts

ITEM	EURO-LOOK PART #	COMPONENT
1		Drain Tube, Left/Right End Short
	823-5048	Full-Vat
2	823-5049	Drain Outlet
3	816-0625	Sleeve
4	809-0969	Clamp
5	810-2492	Fitting, Quick-Connect Straight (receives Teflon vent tube)
*	811-1071	Tube, Teflon Vent

Not illustrated.

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8.3.2 Drain Valve Assembly and Component Parts

8.3.2.1 FPH117 Single Drain Valve Assembly

ITEM	PART #	COMPONENT
	106-4962	Valve Assembly, Full Vat Drain
1	810-2946	Valve, 1¼-inch Full-Vat Drain Single SS
2	106-5391	Bracket Assembly, Full-Vat Drain Safety Switch
3	816-0220	Insulation, Drain Safety Switch
4	807-2103	Microswitch, CE Straight Lever
5	210-9178	Cover, Dual Vat Drain Safety Switch
6	826-1366	Nut, 4-40 Keps Hex (Pkg. of 25)
7	824-1602	Handle, Full-Vat Drain Valve
8	210-9203	Nut, ½-13 2-Way Hex Lock SS
9	816-0639	Cap, Red Handle
10	210-9177	Retainer, Nut Drain Valve FV
11	816-0135	O-ring, Round Drain
*	813-0605	1 ½” Drain Valve Extension Down Spout

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8.3.2.2 FPPH 217 Euro-Look Drain Valve Assembly and Component Parts

ITEM	Euro-Look PART #	COMPONENT
	106-4920	Valve Assembly, Full Vat Drain
1	816-0639	Cap, Red Handle
2	816-0220	Insulation, Drain Safety Switch
3	806-8137	Bracket Assembly, Full-Vat Drain Safety Switch
4	810-2946	Valve, 1.25-inch Full-Vat Drain
5	809-0540	Nut, ½-13 2-Way Hex Lock
6	210-9025	Retainer, Full-Vat Drain Valve Nut
7	824-1602	Handle, Full-Vat Drain Valve
8	210-9178	Cover, Dual Vat Drain Safety Switch
9	826-1366	Nut, 4-40 Keps Hex (Pkg. of 25)
10	807-2103	Microswitch, CE Straight Lever
11	810-1165	Washer, Teflon Drain Valve
12	210-8966	Support, 3” Drain
13	816-0135	Round Drain O-Ring
*	WIR0572	Wire Bundle, Drain Safety Switch

* Not illustrated.

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8.4 Electronics and Wiring Components

8.4.1 Component Boxes

8.4.1.1 FPH117 Single Component Box

ITEM	PART #	COMPONENT
	106-4973	Component Box Assembly
1	106-0313	Wire Assembly, Component SFP120
2	806-7179SP	Sound Device
3	806-7935	PCP Assembly, Interface
4	106-4974	Component Box W/ Studs
5	807-0012	Relay, 18AMP 1/3 HP 24V Coil
6	807-0065	Block, Terminal
7	807-0069	Circuit Breaker, 10A
8	807-0070	Terminal, Ground Lug
9	807-0855	Transformer, 120V 50/60 – 12V 20A
10	807-1612	Clamp, 3/8 Connector Type (Thin Screw)

Continued on the following page

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8.4.1.1 FPH117 Single Component Box cont.

ITEM	PART#	COMPONENT
11	807-2181	Transformer, Power 100-120V/24V 62VA
12	809-0102	Screw, 8 – 32 x 3/8 TR SL HD ZP
13	809-0104	Screw, 8 – 32 x ½ TR SL HD ZP
14	809-0247	Nut, 8 – 32 Hex KEPS ZP
15	809-0250	Nut, 6 – 32 Hex KEPS ZP
16	809-0349	Spacer, 4mm x 6mm Aluminum
17	809-0360	Screw, 8 x 3/8 Type 8 Hex Washer SL HD ZP
18	826-1374	Screw, #10 – ½ Hex Head (Pkg. of 25)
19	810-0045	Bushing, .875 Dia Hole 11/16
20	810-1164	Block, 1 Plg Screwless Terminal
21	812-0368	Conduit, Flex 3/8”
22	816-0217	Paper, Insulating Terminal Block CE
23	WIR-0428	Wire Assembly, Navy SFP Component
24	WIR-0581	Wire Assembly, Transformer 440V

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8.4.1.2 FPPH 217 Component Boxes

ITEM	PART #	COMPONENT
1	106-4757	Box Assembly, Component
2	210-9002	Bracket, Component Box Strain Relief
3	210-9003	Bracket, Circuit Breaker
4	806-9495SP	Terminal Block and Wire Assembly
5	807-0012	Relay, 18 Amp ⅓ HP 24V Coil
6	826-1337	Terminal, ¼-inch Push-on (Pkg. of 5)
7	807-0121	Bushing, Heyco Plastic AB-625-500
8	807-1321	Holder, AGC Panel-Mount ¼-inch Fuse
9	807-1597	Fuse, 3 Amp Slow-Blow
10	807-0855	Transformer, 100-120V/24V 20VA
11	807-2181	Transformer, 100-120V/12V 60VA
12	826-1366	Nut, 4-40 Keps Hex (Pkg. of 25)
13	809-0250	Nut, 6-32 Keps Hex
14	809-0349	Spacer, 4mm X 6mm Aluminum
15	826-1359	Screw, 4-40 X ¾-inch Slotted Round Head (Pkg. of 25)
16	809-0359	Screw, #8 X ¼-inch Hex Washer Head
17	806-7935	Interface Board
	807-3932	Relay, 12VDC SPDT 12 Amp
18	106-5120	Handle Assembly, rear flush FV
19	807-0069	Circuit Breaker, 10 Amp
20	210-9118	Guard, Finger
21	810-2445	Plug, Button

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8.4.1.2 FPPH 217 Component Boxes cont.

ITEM	PART#	COMPONENT
22	210-8995	Brace, Component Box
23	807-1083	Bushing, Heyco
24	807-3868	Strain Relief
25	809-0581	Nut, ½ NPT Locking
26	809-0582	Washer ½ NPT Locking

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8.4.2 Contactor Boxes

8.4.2.1 FPH117 Single Contactor Box

ITEM	PART #	COMPONENT
	106-4978	Contactor Box Assembly
1	106-5131	Wire Assembly, CI Single FP
2	106-5132	Wire Assembly, HV DV LT Contactor Single
3	106-5133	Wire Assembly, HV DV RT Contactor Single
4	210-9440	Cover, Contactor Box Single FP
5	210-9751	Box, Contactor Single FP
6	807-0012	Relay, Tilt 18 AMP 1/3 HP 24V Coil
7	807-0878	Block, Terminal 3 Lug 12 P
8	807-1338	Fitting, Plastic ¾ Dia Conduit
9	807-1683	Relay, Power 12 VDC
10	807-2284	Contactor, 50 AMP Mech 24V Coil
11	807-2434	Relay, Shunt 24V Coil 18AMP
12	809-0096	Screw, 6 – 32 x 5/8 Bindings SL HD ZP
13	809-0102	Screw, 8 – 32 x 3/8 TR HD ZP
14	809-0250	Nut, 6 – 32 KEPS HX ZP
15	809-0266	Screw, 10- ½ Phil TR HD ZP

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8.4.2.1 FPH117 Single Contactor Box cont.

ITEM	PART#	COMPONENT
16	809-0360	Screw, 8 x 3/8 HX Washer SL HD ZP
17	809-0500	Screw, 410 SS #10x1/2 Hex Washer HD Type B Point
18	812-0917	Conduit, ¾ x 12 LG Flexible
*	WIR0427	Wire Assembly, Navy Single FP
*	WIR0650	Wire Assembly, Contactor Single FP

* Not Illustrated

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8.4.2.2 FPPH217 Contactor Box

NOTE 1: Left and right contactor box assemblies are mirror images of one another. With the exception of the box itself, all components of a left-hand assembly, including the lid, are the same as those in the corresponding right-hand assembly and vice versa.

NOTE 2: See Page 8-21 for Contactor Box Wiring Assembly

ITEM	PART #	COMPONENT
1	826-1374	Screw, #10 x ½ Hex Head (Pkg. of 25)
2	106-5149	Wire Harness, Contactor Box Right Element FPP
3	106-5150	Wire Harness, Contactor Box Left Element FPP
4	106-5152	Wire Harness, Contactor Box CI FV FPP
5	210-9677	Door, Contactor Box w/o Hinge
6	807-0012	Relay, Tilt 18 Amp ⅓ HP 24V Coil
7	807-0064	Transformer, 480V/120V 150VA
8	807-0070	Terminal, Ground Lug
9	826-1339	Bushing, .375 Split (Pkg. of 10)
10	807-1683	Relay, Power 12 VDC
11	807-2284	Contactor, 50 Amp MECH 24V Coil
12	807-2434	Relay, Shunt 24V Coil 18 Amp
13	826-1358	Nut, 6-32 Keps Hex (Pkg. of 25)
14	826-1376	Nut, 10-32 Keps Hex (Pkg. of 10)
15	809-0448	Clip, Tinnerman C1350-10A
16	106-5117	Box Assembly, FPP Right Contactor
17	106-5118	Box Assembly, FPP Left Contactor
*	809-0360	Screw, #8 X ⅜-inch Hex Washer Slot Head
*	809-0123	Screw, #10 X ¾-inch Slot Head
*	826-1365	Screw, 6-32 X ⅜-inch Slot Head (Pkg. of 25)
*	210-9634	Lid, Left or Right Contactor Box

Note: On single units, the transformer is located in the tilt housing area. On double units, the transformer is located inside the contactor box.

* Not illustrated.

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8.4.3 Heating Element Assembly and Associated Parts

NOTES:
The only difference between element assemblies for different voltage and kW ratings is the element itself (Item 1)

Items 21 and 22 are shown as associated parts. They are not part of the element assembly.

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8.4.3 Heating Element Assembly and Associated Parts cont.

ITEM	PART #	COMPONENT
	106-4964	Element Assembly FV 440V 17kW w/ Lift Handle Single FPH117
	106-4922	Element Assembly FV 480V 17kW w/ Lift Handle FPPH217
1	807-2650	Element, 440V 8.5kW
	807-2652	Element, 480V 8.5 kW
2	826-1526	Probe, Temperature Kit (incl. Probe and Tie Wrap)
3	106-4965	Tilt Plate Assembly Single FPH117
	106-4921	Tilt Plate Assembly FPPH217
4	106-4966	Bracket, Left Spring Slot Single FPH117
	106-4759	Bracket, Left Spring Slot FPPH217
5	106-4967	Bracket, Right Spring Slot Single FPH117
	106-4760	Bracket, Right Spring Slot FPPH217
6	210-9183	Tilt Plate, Single FPH117
	210-9108	Tilt Plate, FPPH217
7	810-0035	Hinge
8	826-1330	Screw, 10-32 X ⅜-inch Slotted Truss Head (Pkg. of 25)
9	826-1376	Nut, 10-32 Keps Hex (Pkg. of 10)
10	807-1025	Bushing, .375-inch Split (Pkg. of 10)
11	816-0480	Plug, .375-inch Dome
12	910-5022	Bracket, Temperature Probe
13	809-0503	Screw, 8-32 X ⅜-inch Slotted Hex Head
14	210-9180	Clamp, Element (Short) Single FPH117
	210-9109	Clamp, Element (Short) FPPH217
15	210-9181	Clamp, Element (Long) Single FPH117
	210-9110	Clamp, Element (Long) FPPH217
16	910-3681	Support, Full-Vat Element Rear
17	823-2377	Support, Full-Vat Element Front
18	810-2971	Handle, Element Lift SS
19	826-1364	Pin, .125 X .5-inch Split (Pkg. of 25)
20	809-0567	Tie-Wrap, Metal
21	210-9192	Bracket, Lower Spring Slot Single FPH117
	210-9001	Bracket, Lower Spring Slot (Stainless) FPPH217
22	810-2945	Spring, Element FPH117, FPPH217

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8.4.4 Remote Digital Controller

Remote Digital Controller P/N 106-4931
(not shown Remote Controller Cable P/N 106-5142)

8.4.5 Wiring Assemblies and Harnesses

8.4.5.1 FPPH217 Contactor Box Wiring Assembly – 12-Pin Full-Vat C-1

P/N 106-2522

8.4.5.2 FPPH217 Contactor Box Wiring Assemblies – 6-Pin (Left Element)

P/N 106-3465 17kW

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8.4.5.3 FPPH217 Contactor Box Wiring Assemblies – 9-Pin (Right Element)

P/N 106-3466 17kW

8.4.5.4 FPH117 Single Contactor Box Wiring Assemblies

P/N 106-0313SP 17kW

8.4.5.5 FPPH217 Main Wiring Harness

P/N 807-4033

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8.4.5.6 FPH117 Single Main Wiring Harness

P/N 807-4077

8.4.5.7 FPPH217 Component Box Wiring Harness – 15-Pin

P/N 106-2506

8.4.5.8 FPH117 Single Component Box Wiring Harness – 15-Pin

P/N 106-0595

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8.5 Filtration System Components

8.5.1 FPH117 Single Filtration Components

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8.5.1 FPH117 Single Filtration Components cont.

ITEM	PART #	COMPONENT
	106-4945	Assembly, Filter Pan Single FPH117
1	806-9547	Lid, Single FPH117
2	810-2743	Crumb Tray
3	823-2899	Hold Down Ring
4	900-8933	SanaGrid Filter Screen
5	823-5141	Pan, Filter
6	826-1360	Screw, 10-24 x 5/16 RD SL HD ZP (Pkg. of 25)
7	826-1376	Nut, KEPS, 10 – 32 HX ZP (Pkg. of 10)
8	810-0180	Handle, Door
9	810-2805	Caster, 2” Filter Pan
10	810-2807	Caster, 2” Rigid
11	813-0568	Pipe Plug 1/8 NPT Socket Head
12	823-5142	Tube, Pan Suction Single FP
	106-4976	Plumbing Assembly, 120V FV Single FP
13	806-6034	Pump & Motor Assembly, 115V 60 HZ
14	810-2944	Gemini Valve w/out Handle
15	810-1057	Flex Line 5/8” O.D. x 13” Long
16	810-1067	Flex Line 5/8” O.D. x 8.5” Long
17	810-1668	Adapter, Male 7/8” O.D. x ½”
18	813-0022	Nipple, ½” x Close N.P.T. B.M.
19	813-0098	Nipple, ½” x 6.50” N.P.T. B.M. Pipe
20	813-0616	Elbow, ST ½” x ½” NPT 90° BM
21	813-0331	Elbow, W/Side Outlet – ½” NPT
22	813-0469	Cap, Pipe ½” BM
23	210-9197	Handle, Right RF Valve
24	826-1264	Pump and Gasket Kit, Pump, Viking 4 GPM 2-piece
25	816-0093	Gasket, Pump / Motor
26	809-0514	Cap Screw, 5/16” – 18 NC SAE Grade 5, HX HD
27	809-0194	Washer, Flat 5/16” SAE ZP
	106-4951	Rail Assembly, Filter Pan Single FPH117
28	809-0500	Screw, 10 – ½” HX HD SS
29	210-9145	Angle, Joining, Pan Rails Filter Magic
30	211-9147	Leg, Pan Rail FM Left
31	211-9146	Bracket, Attaching Filter Pan Left
32	212-9147	Leg, Pan Rail FM Right
33	212-9146	Bracket, Attaching Filter Pan Right
34	211-9455	Rail, Filter Pan Left
35	212-9455	Rail, Filter Pan Right
36	823-5151	Mount W/A, Male Connector
37	810-0697	Disconnect, Filter Pan Connection (Male)
38	826-1392	O-Ring, Filter Pan Connection (Pkg. of 5)

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8.5.2 FPPH217 Filtration Components

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8.5.2 FPPH217 Filtration Components cont.

ITEM	PART #	COMPONENT
*	826-1979	Filter Pan Roller Kit (four each of Items 7 and 8)
*	826-1980	Service Filter Pan (Item 5 minus Item 2)
*	826-1981	Service Filter Pan Assembly (Service Filter Pan above plus Items 3 and 4)
*	826-1392	O-Ring (Pkg. of 5; used with Item 5)
*	813-0568	Plug, ⅛-inch Socket Head Pipe (component of Item 5; two required)
*	811-1071	Tubing, ¼-inch OD Teflon Vent (sold by the foot)
*	106-2851	Heater Strip Assembly, 208-250V
1	823-5130	Lid
2	810-2743	Crumb Tray (component of Item 5)
3	810-2091	Hold Down Ring
4	200-2124	SanaGrid Filter Screen
5	106-4925	Pan, One-Piece Filter (includes Item 2,)
6	810-2012	Rail Set, Filter Pan Roller (includes one left and one right)
7	810-2198	Roller, Filter Pan and Rail
8	826-1372	Nut, ¼-20 Hex (Pkg. of 10)
9	823-4675	Bracket, Lid Support ***(for units built before Feb 04, use 823-3875)***
10	210-9000	Guide, Filter Pan Lid
11	809-0503	Screw, 8-32 X ½-inch Slotted Truss Head
12	809-0247	Nut, 8-32 Hex Keps
13	823-5133	Suction Tube
14	210-8979	Rail, Left Filter
15	210-8978	Rail, Right Filter
16	807-3859	Kit, Motor and Gasket 220-240V
17	826-1264	Pump and Gasket Kit
18	807-2484	Valve, ¼-inch Solenoid
19	810-2493	Fitting, ¼ -inch x 90° Quick Connect
20	813-0342	Elbow, ½-inch 45° Street
21	813-0530	Tee, ½-inch X ¼-inch X ½-inch Reducing
22	813-0087	Nipple, ½-inch Close
23	813-0838	Nipple, ¼-inch Close
24	813-0304	Bushing, ½-inch to ¼-inch Flush
25	810-1668	Adapter, ⅝-inch to ½-inch NPT Male
26	810-1669	Adapter, ⅝-inch to ½-inch NPT Female
27	810-1680	Flexline, 5.0-inch Oil Return
28	810-1057	Flexline, 17.5-inch Oil Return
29	810-1043	Flexline, 11.5-inch Oil Return
30	807-3828	Cable, FootPrint Pro Pump Motor
31	826-1375	Screw, 10-32 X ¾-inch Hex Trim Head (Pkg. of 5)
32	210-9016	Bridge, Filter Motor
33	210-9029	Support, Contactor Box
34	813-0003	Tee, ½-Inch
35	813-0298	Nipple, ½-inch 2.0-inch
36	813-0537	Nipple, ¼-inch 2.0-inch
*	810-1043	Flexline, 9.5-inch Oil Return
*	810-1057	Flexline, 13.0-inch Oil Return

* Not illustrated

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8.6 Frypot Assembly and Thermostat

Frypot P/N 823-5312

Thermostat Assy.
P/N 806-7543

8.7 FPPH217 Oil Return System Components

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8.7 FPPH217 Oil Return System Components cont.

ITEM	PART #	COMPONENT
1	106-5120	Handle Assembly, Full-Vat t Rear Flush Complete
2	813-0469	Cap, ½-inch NPT Pipe
3	807-2103	Microswitch, Straight Lever
4	106-4749	Bracket Assembly
5	210-8998	Bracket, Handle Retainer
6	816-0220	Insulation, Oil Return Microswitch
7	826-1366	Nut, 4-40 Keps Hex (Pkg. of 25)
8	810-2972	Rod, Handle Full-Vat
9	816-0643	Grip, Oil Return Valve Handle
10	809-0601	Clip, Clevis
11	810-2532	Flexline, 7.0-inch
12	810-1067	Flexline, 8.5-inch
13	810-2944	Valve, ½-inch Ball
14	200-5438	Handle, Rear Flush Valve
15	900-2935	Retainer, Oil Return Valve Nut
16	810-1668	Adapter, ⅝-inch to ½-inch NPT Male
17	810-1669	Adapter, ⅝-inch to ½-inch NPT Female
18	813-0165	Elbow, ½-inch X 90° Street
19	813-0570	Elbow, 180° ½-inch NPT
20	813-0022	Nipple, ½-inch X Close NPT
21	813-0298	Nipple, ½-inch X 2.0-inch NPT
22	810-2255	Manifold, Rear Oil Return Two-Station Fryer

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8.8 Wiring Connectors, Pin Terminals, Seals, and Power Cords

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8.8 Wiring Connectors, Pin Terminals, Seals, and Power Cords cont.

ITEM	PART #	COMPONENT
		Power Cords
*	807-3834	Cable, 3-Phase 4-Wire (Fryer Power Cable)
*	807-4142	Cord, Filter System Power 220V 15A
		Connectors
1	807-1068	2-Pin Female
2	807-3232	4-Pin Female
3	807-0158	6-Pin Female
4	807-0156	9-Pin Female
5	807-0159	12-Pin Female
6	807-0875	15-Pin Female
7	807-1067	2-Pin Male
8	807-2078	4-Pin Male
9	807-0157	6-Pin Male
10	807-0155	9-Pin Male
11	807-0160	12-Pin Male
12	807-0804	15-Pin Male
		Universal Mate-N-Lok Seals
13	816-0675	4-Pin Wire Seal
14	816-0676	4-Pin Interface Connector Seal
15	816-0667	6-Pine Wire Seal
16	816-0668	6-Pin Interface Connector Seal
17	816-0669	9-Pin Wire Seal
18	816-0670	9-Pin Interface Connector Seal
19	816-0671	12-Pin Wire Seal
20	816-0672	12-Pin Interface Connector Seal
21	816-0673	15-Pin Wire Seal
22	816-0674	15-Pin Wire Seal
23	826-1341	Terminal, Female Split Pin (Pkg of 25)
24	826-1342	Terminal, Male Split Pin (Pkg of 25)
25	807-2518	Plug, Mate-N-Lock (Dummy Pin)

* Not illustrated.

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