

**OPERATOR'S MANUAL
FRYMASTER H52 SERIES
GAS FRYER**



This equipment chapter is to be installed in the Fryer Section of the *Equipment Manual*.

FOR YOUR SAFETY
Do Not Store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

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WARNING

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

WARNING

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

COMPUTERS

FCC

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

CANADA

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

Cet appareil numerique n'emet pas de bruits radioelectriques depassany les limites de classe a et b prescrites dans la norme NMB-003 edictee par le ministre des communications du Canada.

WARNING

THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND/OR BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

Operation, installation and servicing of this product could expose you to airborne particles of glasswool or ceramic fibers, crystalline silica, and/or carbon monoxide. Inhalation of airborne particles of glasswool or ceramic fibers is known to the State of California to cause cancer. Inhalation of carbon monoxide is known to the State of California to cause birth defects or other reproductive harm.

FRYMASTER FRYERS ARE MANUFACTURED FOR USE WITH THE TYPE VOLTAGE AND GAS SPECIFIED ON THE FRYER RATING PLATE LOCATED ON THE FRYER DOOR. FOR PROPER ELECTRICAL INSTALLATION PROCEDURES IN THE UNITED STATES, REFER TO THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE ANSI/N.F.P.A. NO. 70; IN CANADA, CANADIAN ELECTRICAL CODE PART 1, CSA-22.1. FOR INSTALLATION IN COUNTRIES OTHER THAN THE UNITED STATES AND CANADA, REFER TO THE NATIONAL CODE APPROPRIATE FOR THE COUNTRY IN WHICH THE EQUIPMENT IS BEING INSTALLED. FOR GAS COMPONENTS, INSTALLATION IS TO COMPLY 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 (US FDA) OR THE APPLICABLE NATIONAL AND LOCAL REGULATIONS OF THE COUNTRY IN WHICH THE EQUIPMENT IS BEING INSTALLED.

INFORMATION ON THE CONSTRUCTION AND INSTALLATION OF VENTILATING HOODS MAY BE OBTAINED FROM THE LATEST EDITION OF THE "STANDARD FOR THE INSTALLATION OF EQUIPMENT FOR THE REMOVAL OF SMOKE AND GREASE LADEN VAPORS FROM COMMERCIAL COOKING EQUIPMENT," N.F.P.A. NO. 96. COPIES OF THESE ELECTRICAL STANDARDS ARE AVAILABLE FROM THE NATIONAL FIRE PROTECTION ASSOCIATION, BATTERY MARCH PARK, QUINCY, MASS. 02269

NOTICE

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

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 models MH52 and BIH52 fryers built since December 1995. Models designated MH52 do not have built-in filtration systems. Models designated BIH52 are equipped with FootPrint III built-in filtration systems.

H52 Series fryers feature deep cold-zones and easy to clean, open frypots. The fryers are controlled by multi-product cooking computers or optional thermostat controllers. Fryers in this series come in full or split-pot arrangements, and can be purchased as single units or grouped in batteries of up to five 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 ones below.

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



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



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



Fryers in this series are equipped with automatic safety features:

1. A high-limit thermostat causes the gas valve to close should the controlling thermostat fail or computer temperature probe fail.
2. In BIH52 fryers, a safety switch built into the drain valve prevents the gas valve from opening with the drain valve even partially open.

1.3 Computer 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. Operation of the equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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

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

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 European Community (CE) Specific Information

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



1.5 Shipping Damage Claim Procedure

What to do if your 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 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.

1.6 Service Information

McDonald's store personnel perform routine maintenance. 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 (1-800-24FRYER). The following information will be needed in order to assist you efficiently:

Model Number _____

Serial Number _____

Gas Type _____

Nature of the Problem _____

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

CHAPTER 2: INSTALLATION INSTRUCTIONS

2.1 General Installation Requirements

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

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

CLEARANCE AND VENTILATION

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

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

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

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

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

DANGER

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

NATIONAL CODE REQUIREMENTS

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

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

ELECTRICAL GROUNDING REQUIREMENTS

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

DANGER

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

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

DANGER

This equipment requires electrical power for operation.

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

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

FCC COMPLIANCE

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

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

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

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

2.2 Caster/Leg Installation

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

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

2.3 Pre-Connection Preparations

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

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

1. Adequate means must be provided to limit the movement of fryers without depending upon the gas line connections. If a flexible gas hose is used, a restraining cable must be connected at all times when the fryer is in use. The restraining cable and installation instructions are packed with the flexible hose in the accessories box that was shipped with your unit.
2. **Single unit** fryers must be stabilized by installing restraining chains on fryers equipped with casters or anchor straps on fryers equipped with legs. Follow the instructions shipped with the casters/legs to properly install the chains or straps.
3. Level the fryer, if necessary, by loosening the locking screw on the caster legs and rotating the leg to increase or decrease the exposed length. Verify that the fryer is at the proper height in the exhaust hood. Frymaster recommends that the minimum distance from the flue outlet to the bottom edge of the hood be 24 in. (600 mm) when the appliance consumes more than 120,000 BTU per hour.
4. Test the fryer electrical system:
 - a. Plug the fryer electrical cord(s) into a grounded electrical receptacle.
 - b. Place the power switch in the **ON** position.
 - For fryers equipped with thermostat controls, note the illumination of the power light and the heat light.
 - For fryers having computers, note that the display reads **LO-TEMP** and the heat light comes on.
 - If the store is equipped with a hood interlock system, the hood exhaust fan should be on. If not, the store hood interlock system is improperly wired and must be corrected.
 - c. Place the fryer power switch in the **OFF** position. Verify that the power and heat lights are out, or that the display is blank.

- Refer to the data plate on the inside of the fryer door to determine if the fryer burner is configured for the proper type of gas before connecting the fryer quick-disconnect device or piping from the gas supply line.
- Verify the minimum and maximum gas supply pressures for the type of gas to be used in accordance with the accompanying tables.

CE Standard for Incoming Gas Pressures for Fryers Manufactured After April 1999					
Gas	Pressure (mbar) ⁽¹⁾	Orifice Diameter		Regulator Pressure	
		Single Vat	Dual Vat	Single Vat	Dual Vat
G20	20	2 x 3.40	2 x 3.40	7 mbar	6.5 mbar
G25	20 or 25	2 x 3.40	2 x 3.40	10 mbar	9 mbar
G30	28/30 or 50	2 x 2.05	2 x 2.05	17 mbar	17 mbar
G31	37 or 50	2 x 2.05	2 x 2.05	20 mbar	18.5 mbar

(1) mbar = 10.2 mm H₂O

CE Standard for Incoming Gas Pressures for Fryers Manufactured Through April 1999					
Gas	Pressure (mbar) ⁽¹⁾	Orifice Diameter		Regulator Pressure	
		Single Vat	Dual Vat	Single Vat	Dual Vat
G20	20	2 x 3.40	2 x 3.40	7 mbar	6.5 mbar
G25	20 - 25	2 x 3.40	2 x 3.40	10 mbar	9 mbar
G31	37 - 50	2 x 2.05	2 x 2.05	20.2 mbar	18.5 mbar

(1) mbar = 10.2 mm H₂O

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

- For fryers equipped with a FootPrint III system (BIH52 models), plug the electrical cord into a power receptacle behind the fryer.

2.4 Connection to Gas Line

The H52 Series has received the CE mark for the countries and gas categories indicated in the accompanying table. **NOTE:** The nominal heat input (Qn) is 21kW except for AT, DE, LU, and for category 3B/P under 50 mbar, which is 23kW.

CE Approved Gas Categories by Country*			
COUNTRIES	CATEGORIES	GAS	PRESSURE (mbar)
AUSTRIA (AT)	II _{2H3B/P}	G20	20
		G30, G31	50
BELGIUM (BE)	I _{2E(R)B}	G20, G25	20, 25
	I ₃₊	G30, G31	28-30, 37
DENMARK (DK)	II _{2H3B/P}	G20	20
		G30, G31	30
FRANCE (FR)	II _{2Esi3+}	G20, G25	20, 25
		G30, G31	28-30, 37
	II _{2Esi3P}	G20, G25	20, 25
		G31	50
FINLAND (FI)	II _{2H3B/P}	G20	20
		G30, G31	30
GERMANY (DE)	II _{2ELL3B/P}	G20, G25	20
		G30, G31	50
	I _{3P}	G31	50
GREECE (GR)	II _{2H3+}	G20	20
		G30, G31	28-30, 37
ITALY (IT)	II _{2H3+}	G20	20
		G30, G31	28-30, 37
IRELAND (IE)	II _{2H3+}	G20	20
		G30, G31	28-30, 37
LUXEMBOURG (LU)	II _{2E3B/P}	G20	20
		G30, G31	50
NETHERLANDS (NL)	II _{2L3P}	G25	25
		G31	50
	II _{2L3B/P}	G25	25
		G30, G31	30
NORWAY (NO)	I _{3B/P}	G30, G31	30
PORTUGAL (PT)	II _{2H3+}	G20	20
		G30, G31	28-30, 37
SPAIN (ES)	II _{2H3+}	G20	20
		G30, G31	28-30, 37
	II _{2H3P}	G20	20
		G31	37, 50
SWEDEN (SE)	II _{2H3B/P}	G20	20
		G30, G31	30
UNITED KINGDOM (GB)	II _{2H3+}	G20	20
		G30, G31	28-30, 37

* *H152-2 units are not approved for G30 (Butane) gas.*

The size of the gas line used for installation is very important. If the line is too small, the gas pressure at the burner manifold will be low. This may cause slow recovery and delayed ignition. Frymaster recommends the incoming gas supply line be a minimum of 1½" (38 mm) in diameter. Refer to the chart on the following page for the minimum sizes of connection piping.

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

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

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

CE Standard
Required airflow for the combustion air supply is 2m³/h per kW.

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

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

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

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

 DANGER

**Never use matches, candles, or any other ignition source to check for leaks.
If gas odors are detected, shut off the gas supply to the fryer
at the main shut-off valve and contact the local gas company or an authorized
service agency for service.**

3. Close the fryer drain valve and fill the frypot with water and boil-out solution to the bottom OIL-LEVEL line at the rear of the frypot. Light the fryer and perform the boil-out procedures that are described in the "Lighting Instructions" and "Boiling Out the Frypot" topics found in Chapter 3 of this manual.

⚠ WARNING

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

4. It is suggested that the burner manifold pressure be checked at this time by the local gas company or an authorized service agent. Refer to “Check Burner Manifold Pressure” in Chapter 5 of this manual for the proper procedure. The accompanying tables list the burner manifold gas pressures for the various gas types that can be used with this equipment.

CE Standard Burner Manifold Gas Pressures for Fryers Manufactured After April 1999		
Gas	Pressure (mbar)	
	Single Vat	Dual Vat
Natural Gas Lacq (G20) under 20 mbar	7	7
Natural Gas Groningue * (G25) under 25 mbar	10	10
Natural Gas Groningue (G25) under 20 mbar	10	10
Butane (G30) at 28/30 or 50 mbar	17	17
Propane (G31) under 37 or 50 mbar	20	20

* Belgian G25 = 7,0 mbar (single or dual)

CE Standard Burner Manifold Gas Pressures for Fryers Manufactured Through April 1999		
Gas	Pressure (mbar)	
	Single Vat	Dual Vat
Natural Gas Lacq (G20) under 20 mbar	7	6,5
Natural Gas Groningue * (G25) under 25 mbar	10	9
Natural Gas Groningue (G25) under 20 mbar	10	9
Butane (G30) at 28/30 or 50 mbar	17	16,5
Propane (G31) under 37 or 50 mbar	20,2	18,5

* Belgian G25 = 7,0 mbar (single) or 6,5 (dual)

Non-CE Standard Burner Manifold Gas Pressures	
Gas	Pressure
Natural	3" W.C. 0.73 kPa
Propane	8.25" W.C. 2.5 kPa

5. Check the programmed temperature or analog controller thermostat setting. (Refer to Chapter 3, Operating Instructions, for the setpoint programming instructions for your particular controller.)

2.5 Converting to Another Gas Type

Your fryer is configured at the factory for either natural gas or propane (LP) gas. If you desire to switch from one type of gas to another, a gas conversion kit must be installed by a Factory Authorized Service Center technician.

⚠ DANGER

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

H52 Series Fryers manufactured for Non-CE countries use different burners for each type gas. The burners in fryers built for Propane gas have a special gray-colored coating on the burner tiles to enable them to withstand the higher caloric value of the Propane gas. Burners designed for use in Propane units may be used in natural gas applications, but not vice versa.

Non-CE Gas Conversion Kits

Natural Gas to Propane (LP) Gas

Full Vat: Part Number 826-1145

Dual Vat: Part Number 826-1147

Propane (LP) Gas to Natural Gas

Full Vat: Part Number 826-1146

Dual Vat: Part Number 826-1148

Units manufactured for export to CE countries are equipped with “universal” burners that may be used with either natural (G20, G25) gas or Butane (G30) and Propane (G31) gasses.

CE Gas Conversion Kits for Units with Gas Valve 810-1011

G20 or G25 (Natural) to G30 or G31 Gas:

Part Number 826-1196

G30 or G31 to G20 or G25 (Natural) Gas:

Part Number 826-1197

CE GAS CONVERSION INSTRUCTIONS

1. Between G20- and G25-type Natural Gas, adjust the gas pressure at the regulator. (Refer to the CE Standard Burner Manifold Gas Pressure Chart.) Do not change the orifice.
2. Between a 2nd family (G20 or G25) and a 3rd family gas (G30 Butane or G31 Propane):
 - a. Change the orifices.
 - b. Change the gas valve spring (units with valve part number 810-1011 only)
 - c. Adjust the manifold pressure.
3. Affix the new label included with the conversion kit next to the existing rating plate stating that the gas type has been converted. Remove any references to the previously used gas from the existing rating plate. Conversion rating label PN 802-2144.
4. If the destination language changes, replace the labels. Call your local service agency or KES for a label kit. The language of reference will be on the corner of the label.

2.6 Frypot Boil-Out

Before the fryer is first used for cooking product, it should be boiled out to ensure that any residue from the manufacturing process has been eliminated.

In addition, 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.

Refer to Fryers Maintenance Requirement Card (MRC) 14A for the boil-out procedure.

CHAPTER 3: OPERATING FRYERS WITH M100B™ COOKING COMPUTERS

3.1 Equipment Setup and Shutdown Procedures

Setup

⚠ WARNING

Fill the frypot to the bottom oil level line with vegetable oil before pressing the ON/OFF switch  to the ON position. Failure to do so could damage the frypot.

1. Fill the frypot with vegetable 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.
2. Ensure that the power cord(s) is/are plugged into the appropriate receptacle(s). Verify that the face of the plug is flush with the outlet plate, with no portion of the prongs visible.
3. Ensure that the vegetable oil level is at the *top* OIL LEVEL line when the vegetable oil *is at its programmed cooking temperature*. It may be necessary to add vegetable oil to bring the level up to the proper mark, *after the oil has reached the programmed cooking temperature*.

⚠ CAUTION

Do not add vegetable oil to the fryer between the time the computer is turned on and the time it reaches programmed cooking temperature. Doing so is likely to cause RECOVERY LOCKOUT (REC LOCK). See Section 3.4.

Shutdown

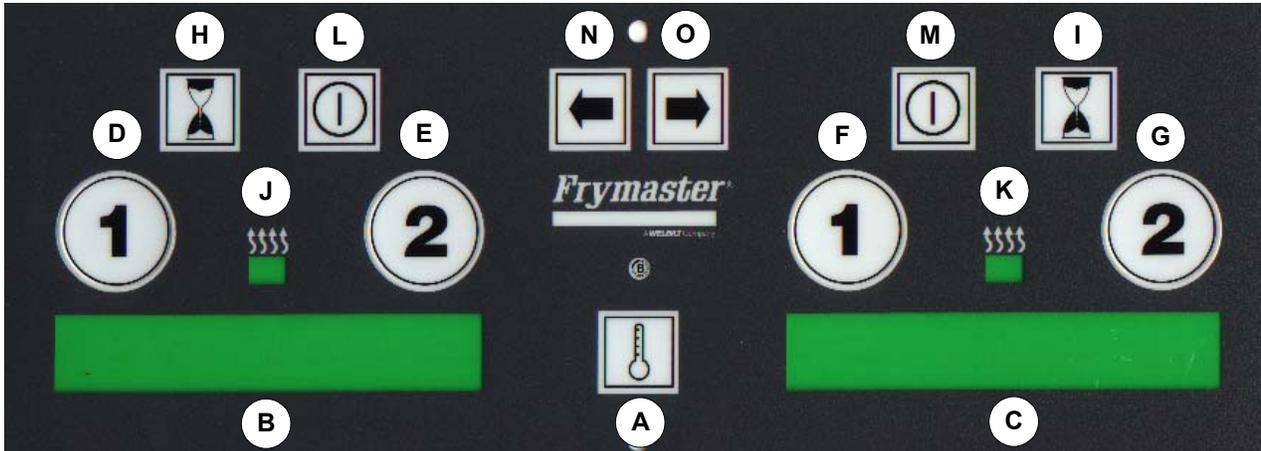
1. Press the ON/OFF switch  to the OFF position (the display will show OFF).
2. Filter vegetable oil and clean fryers.
3. Place the frypot covers on frypots.

3.2 Finding Information

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3.3 Introduction To The M-100B™ Cooking Computer

The M-100B cooking computer, illustrated below, automatically maintains fryer temperature to cook products according to preprogrammed cooking specifications. The computer also acts as a cooking process timer, displaying the remaining cooking time for each product and alerting the operator by sound and display message to shake or pull the product at the correct time. It also signals quality control (hold-time) limits. The computer automatically adjusts cooking times to compensate for variances in product temperature and basket load so that, for example, a full basket of cold fries will be cooked to the same quality as half a basket of fries at room temperature.



ITEM	DESCRIPTION
A	Temperature Display Switch
B	Left LED Display
C	Right LED Display
D	Cook Switch #1, Left
E	Cook Switch #2, Left
F	Cook Switch #1, Right
G	Cook Switch #2, Right
H	Recovery/Use Time Recall Switch, Left
I	Recovery/Use Time Recall Switch, Right
J	Light - Left Heating Mode Indicator
K	Light - Right Heating Mode Indicator
L	Switch - Left ON/OFF
M	Switch - Right ON/OFF
N	Switch - Left Product Selection
O	Switch - Right Product Selection

To quickly determine the software version number and the current configuration of an M-100B computer, with the computer turned OFF (OFF in both displays) press the temperature check  switch. The displays will automatically cycle through the version number, power configuration (gas or electric), EPRA configuration (On or Off), and frypot configuration (full or split).

The M-100B is factory-programmed with McDonalds's cooking specifications for a group of seven standard products. The cooking times and temperature settings for these factory-programmed products can be changed by store personnel if required. Additionally, two *test menus* are available for store personnel to program product names, cooking times, temperature settings, and shake or duty times for products not included on the factory-programmed menu. The test menus can also be set to automatically adjust the cooking rate to compensate for product variances.

For units equipped with built-in filtration, the computer times the polishing process and alerts the operator when the polishing time has elapsed. (**Polishing** refers to circulating the vegetable oil through the filtration system for a specified time.)

The fryer has two built-in high-limit protection features. If the temperature in the frypot reaches approximately 410°F (210°C), the computer opens the heat relay circuit, turning the burners off. If the temperature in the frypot reaches 450°F (232°C), a mechanical high-limit shuts off electrical power to the coil of the gas valve(s). The operator should periodically test each of the high-limit protection features to verify that they are operating correctly. Refer to Grills/Fryers Maintenance Requirement Card (MRC) 15 for the procedure.

3.4 M-100B™ Computer Operating Instructions

WARNING

Before pressing the on/off switch  to the ON position, ensure that the frypot is properly filled with vegetable oil. See Section 3.1.

Operating the Computer on Full-Vat Fryers

1. Turn ON the cooking computer by pressing the right ON/OFF switch . A product name (for example, **FR FRIES**) will appear in the right LED display.
2. If the frypot temperature is below 180°F (82°C), the computer will automatically enter a warm-up cycle (often called a melt cycle). The burners will cycle on and off repeatedly, allowing the vegetable oil to heat gradually, without scorching. During the warm-up cycle, the right heating mode indicator  will alternately illuminate and go out as the burners cycle on and off. Within about 45 minutes, the computer will exit the warm-up cycle and the heat mode indicator  will remain continuously illuminated.
3. The M-100B computer allows the operator to use both sides of the computer if desired. By having both sides of the computer on, the operator can select two products that have the same cooking temperature, but different cooking times. Using a pair of twin baskets, both products can be cooked at the same time.
4. To activate the left side of the computer, press the left ON/OFF switch . A product name will be displayed in the left LED display.
5. Select the product to be cooked by pressing the right product selection switch  (or, if both sides of the computer are ON, the left product selection switch ) until the desired product is displayed.

Once the frypot temperature is above 180°F (82°C), but still 15°F (8°C) or more below the setpoint temperature for the product displayed (for example, french fries), the computer will alternately display **LOW TEMP** and **FR FRIES**, and the right heating mode indicator  will remain continuously illuminated.

The cooking cycle cannot be started until the cooking oil is within ±15°F (8°C) of the programmed setpoint. When the frypot temperature is within ±15°F (8°C) of the programmed setpoint, the product name will be displayed continuously, indicating that the fryer is ready to cook the displayed product.

Operating the Computer on Split-Vat Fryers

1. Turn ON the cooking computer by pressing the ON/OFF switches . Pressing the left switch turns on the left side of the computer; pressing the right switch turns on the right side. A product name (for example, **FR FRIES**) will appear in the LED display corresponding to the switch pressed.
2. If the frypot temperature is below 180°F (82°C), the computer will automatically enter a warm-up cycle (often called a melt cycle). The burners will cycle on and off repeatedly, allowing the vegetable oil to heat gradually, without scorching. During the warm-up cycle, the heating mode indicator  will alternately illuminate and go out as the burners cycle on and off. Within 45 minutes, the computer will exit the warm-up cycle and the heat mode indicator  will remain continuously illuminated.
3. Select the product to be cooked by pressing the left or right product selection switches  , depending upon the vat in which you wish to cook.
4. Once the frypot temperature is above 180°F (82°C), but still 15°F (8°C) or more below the setpoint temperature for the product displayed (for example, french fries), the computer will alternately display **LOW TEMP** and **FR FRIES**, and the heating mode indicator  will remain continuously illuminated.
5. The cooking cycle cannot be started until the cooking oil is within ±15°F (8°C) of the programmed setpoint. When the frypot temperature is within ±15°F (8°C) of the programmed setpoint, the product name will be displayed continuously, indicating that the fryer is ready to cook the displayed product.

Viewing the Frypot Temperature (Actual or Setpoint)

To display the actual frypot temperature, press the temperature check switch  once. To display the setpoint temperature, press the switch twice.

Cooking Product (Full-Vat or Split-Vat)

1. Fill basket(s) with product, lower the basket into the vegetable oil, then press the cook switch (① or ②) that corresponds to the full- or split-vat to be used. This will activate the cooking cycle of the product.

Example 1: In a full-vat fryer, press cook switch ① when the first basket of twin baskets of fries is dropped. Halfway through the first cooking cycle, drop the second basket and press cook switch ②.

Example 2: The M-100B is programmed to cook Crispy Chicken (CSPY) and Chicken McNuggets (NUG) in the same side of a split-vat arrangement. Cook switch ① corresponds to Crispy Chicken, and cook switch ② corresponds to Chicken McNuggets.

2. The display will show the number of minutes and seconds of cooking time remaining.
3. At the programmed shake time, an audible alarm will sound and the display will flash **SHAKE**. After shaking the basket, press the corresponding cook switch, ① or ②, to cancel the alarm.
4. After the completing the cooking time, an audible alarm will sound and the display will flash **pull**. Remove the indicated basket and press the corresponding cook switch, ① or ②, to cancel the alarm. If no other products are being cooked in the frypot, the display shows **7:00 QA** indicating that the quality timer is counting down. If the quality time is set for some time other than 7:00 minutes, the display starts counting down from that time. (QA is not available for McChicken, Crispy Chicken or Filet-o-Fish).
5. When the quality time expires, an audible alarm will sound, and the display will flash **QA**. Cancel the alarm by pressing the corresponding cook switch, ① or ②.

NOTE: When you initiate a new cook cycle, the quality time will automatically reset.

3.5 M-100B™ Computer Problem Condition Indicators

Recovery Out of Range (REC LOCK)

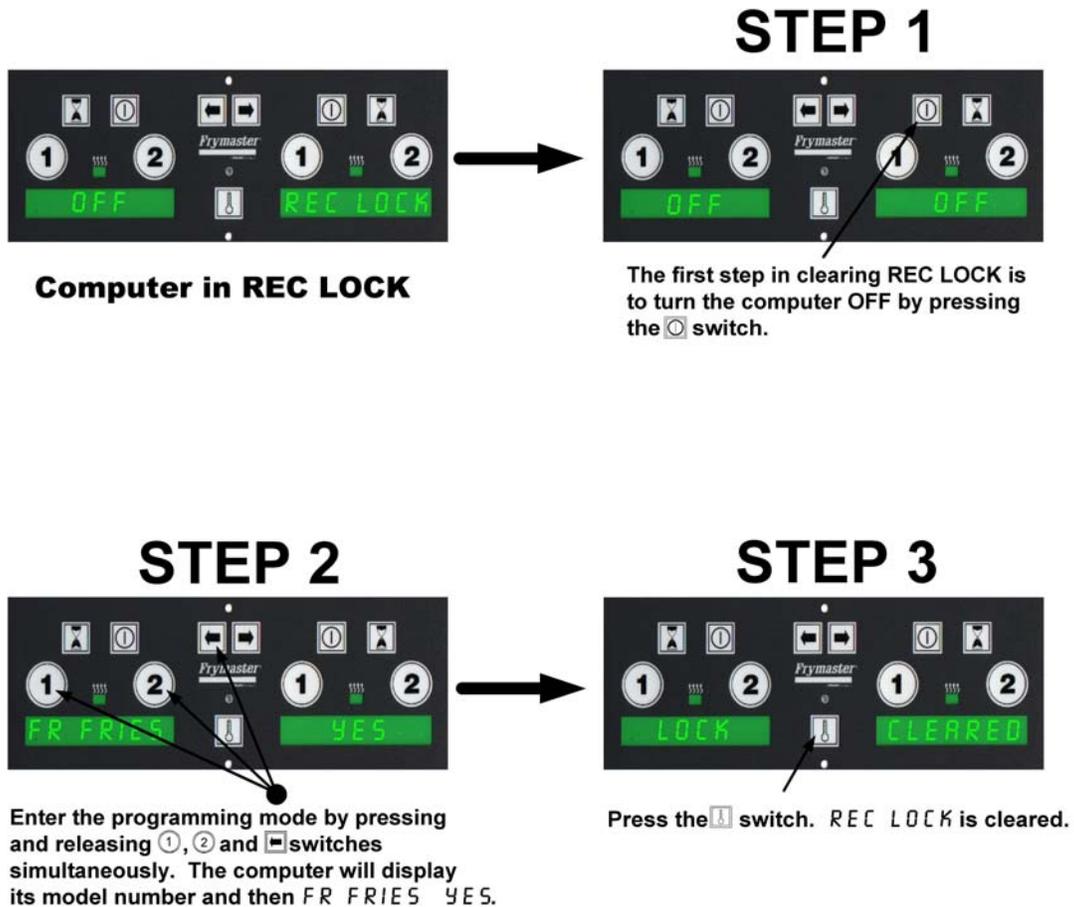
Recovery time is an indication of the condition of the fryer. When the fryer is first turned on, the computer records the amount of time it takes to heat the cooking oil from 270°F (132°C) to 320°F (160°C). Also, anytime the temperature of the oil drops below 250°F (121°C), such as when cold oil is added, the computer will check the recovery time. If the fryer takes longer than 2 minutes and 35 seconds to recover, the display will show **REC LOCK** and the computer will lock out.

To clear the **REC LOCK** condition, enter the program mode (see *How to Enter the Program Mode* on Page 3-10) and push the temperature check switch  (see diagram on following page).

It is easy to view the currently recorded recovery time with the computer ON. Press the recovery recall switch  for the frypot you wish to check. On full-vat units, press the right switch.

If **REC LOCK** occurs three or more times within a week, verify that oil is not being added while the fryer is heating (that is, while a heat mode indicator  is illuminated) and that the fryer's power cord is fully plugged in. If oil is not being added while the fryer is heating, and the power cord is fully plugged in, have the fryer checked by a qualified service agent.

Clearing REC-LOCK



Open Drain Valve Indication

If, when the ON/OFF switch is pressed to the ON position, the display reads **IGNITION FAILURE**, verify that the drain valve is fully closed. A drain safety switch built into the drain valve assembly prevents the coil of the gas valve(s) from being energized if the drain valve is not completely closed. After verifying that the valve is fully closed, turn the computer OFF* for at least 5 seconds, then turn it back on. If the message reappears, there is a problem in the electrical circuitry of the fryer or the computer. Contact your Frymaster Factory Authorized Service Center (FASC).

* On early-version M-100B split-vat units, BOTH computers must be turned off, even though the problem condition may be associated with only one vat.

Low Temperature Indication

If the frypot temperature drops to more than 45°F (25°C) below the programmed setpoint temperature during the cooking cycle, the cook switches will lock, the display will flash **LOW TEMP** and an audible alarm will sound. If the frypot temperature returns to a range between 45°F (25°C) to 15°F (8°C) of setpoint, the audible alarm will stop, but the cook switches remain locked and the display

alarm continues flashing. All functions return when the frypot temperature is within 15°F (8°C) of the programmed setpoint.

Probe Failure Indication

If the temperature probe fails, the display will flash **PROBE FAILURE** and an audible alarm will sound. To cancel the alarm, turn the computer OFF. In split-vat fryers, turn off the side in which the failure occurred. If a probe fails during the high-limit test, **PROBE FAILURE** is displayed.

NOTE: If the temperature probe fails in the left side of a split-vat, that side cannot be turned back ON once it has been turned OFF.

3.6 M-100B™ Computer Set-Up and Programming Instructions

The M-100B computer has three modes of operation. In addition to the ***Cooking Mode***, which was discussed in Sections 3.3 and 3.4, there is a ***Setup Mode*** and a ***Programming Mode***. (The cooking mode is the computer's default mode – when the computer is turned on, it comes up in the cooking mode.)

In the Setup Mode, the operator can:

- change the computer's display language
- configure the computer for use on gas fryers
- configure the computer for use on either a full-vat or a split-vat fryer
- specify how the computer displays product names and temperatures
- calibrate computer temperature to actual frypot temperature
- activate or deactivate the frypot BOIL OUT feature

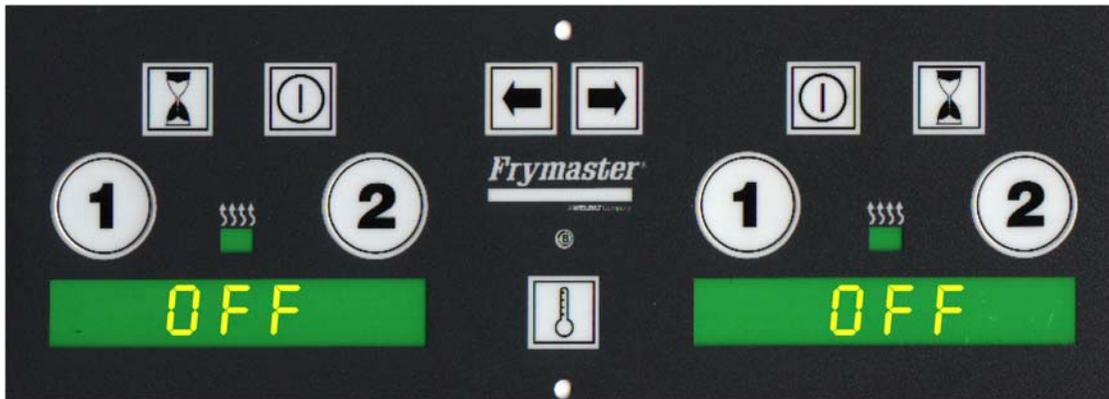
In the Program Mode, the operator can:

- reset the computer to the factory default settings
- change the shake, pull, and QA (hold) times for menu items
- change the cooking temperature setpoints for menu items
- add products and cooking parameters to the two test menus
- suppress a duty function in a menu item
- turn the display of a menu item in the factory-programmed menu on or off
- display usage information that is automatically recorded by the computer

3.6.1 M-100B™ Computer Setup Mode

How to Enter the Setup Mode

1. Turn both sides of the computer OFF by pressing the  switches. OFF will appear in both LED displays.



2. Press the right ,  and  switches simultaneously.
3. Release all 3 switches at the same time. M100B, then **SETUP** will appear briefly in the left display, then **BOIL-OUT** will appear in the left display and **YES** or **NO** will appear in the right display.

How to Change the Computer's Display Language

1. Enter the setup mode. See *How to Enter the Setup Mode* above.
2. Press and release the  switch until the word **language** appears in the left LED display.
3. Press the right  or  switch until the desired language (English, French, French-Canadian, Spanish, or Portuguese) is displayed in the right LED display.
4. When the desired language is displayed, press either ON/OFF switch  to lock in the selection. The right display will show **loading** for about 5 seconds, indicating that the computer's display language is being changed, then both displays will change to **OFF**.

How to Configure the Computer for Use on a Gas Fryer

1. Enter the setup mode. See *How to Enter the Setup Mode* above.
2. Press and release the  switch until **GAS Yes** or **GAS no** appears in the LED displays.
3. **Gas no** indicates the computer is configured for use on an electric fryer; **Gas YES** indicates the computer is configured for use on a gas fryer. Press the right  or  switch to change the configuration.

4. Press the  switch to save the settings.
5. Press either ON/OFF switch  to save the setting and exit the setup mode. Both displays will change to OFF.

How to Configure the Computer for Use on Either a Full-Vat or a Split-Vat Fryer

1. Enter the setup mode. See *How to Enter the Setup Mode* on Page 3-8.
2. Press and release the  switch until **1 vat** appears in the left display.
3. Press the right  or  switch to toggle back and forth between full-vat (**yes**) or split-vat (**NO**).
4. Press the  switch to save the settings.
5. Press either ON/OFF switch  to exit the setup mode. Both displays will change to OFF.

How to Change Computer Product/Temperature Displays

1. Enter the setup mode. See *How to Enter the Setup Mode* on Page 3-8.
2. Press and release the  switch until the word **DISPLAY** appears in the left display.
3. Press the right  or  switch to toggle back and forth between constant product display (**CONSTANT**) or alternating temperature and product display (**ALT**).
4. Press the  switch to save the settings.
5. Press either ON/OFF switch  to exit the setup mode. Both displays will change to OFF.

How to Calibrate Computer Temperature to Actual Frypot Temperature

NOTE: For this procedure, *actual frypot temperature* refers to the temperature of the oil in the frypot as measured with a good-grade thermometer or pyrometer. The computer's temperature can only be adjusted $\pm 5^{\circ}\text{F}$ ($\pm 3^{\circ}\text{C}$). The computer cannot be adjusted to a temperature greater than 375°F (191°C).

1. Enter the setup mode. See *How to Enter the Setup Mode* on Page 3-8.
2. Press and release the  switch until **CALIB** appears in the display.
3. Press the temperature check switch . The frypot temperature sensed by the computer will be displayed. In split-vat units, the temperatures for each side will be displayed.
4. ***For the left side of a split-vat:*** Press the left  switch to go UP a degree (maximum of 5 for Fahrenheit or 3 for Celsius). Press the left  switch to go DOWN a degree (maximum of 5 for Fahrenheit or 3 for Celsius).

For the right side of a split-vat or for a full-vat: Press the right ① switch to go UP a degree (maximum of 5 for Fahrenheit or 3 for Celsius). Press the right ② switch to go DOWN a degree (maximum of 5 for Fahrenheit or 3 for Celsius).

5. Press the  switch to save the settings.
6. Press either ON/OFF switch  to exit the setup mode. Both displays will change to OFF.

How to Activate or Deactivate the Frypot BOIL-OUT Feature

1. Enter the setup mode. See *How to Enter the Setup Mode* on Page 3-8.
2. Press and release the  switch until BOIL-OUT appears in the display.
3. Press the right ① or ② switch to toggle the boil-out mode ON or OFF.
4. Press the  switch to save the settings.
5. Press either ON/OFF switch  to exit the setup mode. Both displays will change to OFF.

3.6.2 M-100B™ Computer Programming Mode

How to Enter the Program Mode

1. Press the ON/OFF  switches until both displays of cooking computer indicate OFF. Press the *left* product selection switch  and the *left* ① and ② cook switches simultaneously. Release all three switches at the same time.
2. When the program mode has been entered, the display will flash M-100B computer briefly, followed by the software version number. After a few seconds, Fr fries yes or Fr fries no will be displayed, depending upon previous program settings.

How to Reset the Computer to the Factory Defaults

While in the program mode, press all 4 cook switches (left and right ① and ②) simultaneously to reset the computer to the factory defaults. See *How to Enter the Program Mode* above. Updating menu will flash in the display, followed by epra cleared and cooks cleared. After a few seconds, Fr fries yes will be displayed, indicating that the computer has been reset to the factory defaults.

How to Change the Shake, Pull, Or Quality Times for Menu Items

1. Enter the program mode. (See *How to Enter the Program Mode* above.)
2. Press and release the  switch until the product to be changed appears in the left display.

- Press and release the  switch until the function to be changed (**SHAKE**, **PULL**, or **QA**) appears in the left display. The current time setting and automatic (**AUTO**) or manual (**MAN**) alarm cancel mode options appear in the right display.

NOTE: *Shake Time* refers to the programmed time at which the operator will be prompted by an audible alarm to shake the basket, but not stop the cooking process. *Pull Time* refers to the programmed time at which the product is fully cooked and at which the operator will be prompted by an audible alarm to remove the basket from the cooking oil. *QA Time* refers to the maximum time that a product may be held after the cooking cycle has completed.

NOTE: When the programmed time has elapsed, the automatic alarm-cancel mode (**AUTO**) audible alarm will sound three times and then stop. When the programmed time has elapsed, the manual alarm cancel mode (**MAN**) audible alarm will sound until the operator presses the cook switch (① or ②) that was pressed to start the cooking cycle.

- Press the right ② switch to toggle between automatic alarm cancel mode (**AUTO**) and manual alarm cancel mode (**MAN**).
- To change the times, use the following switches:

Left		Minutes (in increments of ten)
Left	①	Minutes (in increments of one)
Left	②	Seconds (in increments of ten)
Right	①	Seconds (in increments of one)

- Press the  switch to lock in the new settings, and either ON/OFF switch  to exit the programming mode. Both displays will show **OFF**.

How to Change the Cooking Temperature Setpoint

- Enter the program mode. See *How to Enter the Program Mode* on Page 3-10.
- Press and release the  switch until the menu item to be changed is displayed.
- Press the  switch to show the cooking temperature setpoint, displayed as **SET-TEMP** in the left display. The current setpoint temperature is in the right display (for example-**350F**). The temperature will be in Fahrenheit (**F**) or Celsius (**C**). Pressing the right ② switch toggles the computer between Fahrenheit (**F**) and Celsius (**C**).
- To change the temperature, use the following switches:

Left	①	Hundreds
Left	②	Tens
Right	①	Ones

NOTE: The computer cannot be programmed for a temperature greater than 375°F (191°C).

- Exit the program mode by pressing either ON/OFF switch .

How to Enter a Product Name in a Test Menu

1. Enter the program mode. See *How to Enter the Program Mode* on Page 3-10.
2. Press the  switch to select Test Menu 1 or 2.
3. Press the  switch to enter the edit mode. The right display will show **EDIT** and a blinking cursor will appear in the left display.
4. To enter a letter, use the left  switch to go UP in the alphabet. Use the left  switch to go DOWN in the alphabet.

NOTE: Characters available are the letters A-Z and the numbers 0-9. Special characters *, , -, ?, and / are also available, as is a blank space.

NOTE: Pressing the left  switch will reset the product name to the factory defaults.

5. To move to a different character position, use the  or  switches.
6. To EXIT and SAVE the product name entry, press the  switch. **SAVE** will flash in the right display, followed by **YES** or **NO**, indicating whether the menu item is active or not. Press the right  or  switch to toggle between yes and no.
7. Press the  switch to cycle through the Duty Times, Pull Time, QA (hold) Time, and Cooking Temperature Setpoint settings. Program the times and the set point in accordance with the section that follows.

How to Program Duty Times, Pull Time, QA Time, and Setpoint for a Test Menu Item

NOTE: *Duty Time* refers to an operator-specified time within a cooking cycle when the computer will sound an alarm to prompt a particular duty such as shaking the basket.

1. Enter the program mode. See *How to Enter the Program Mode* on Page 3-10.
2. Press the  switch to select the desired test menu.
3. Press the  switch. **DUTY1** will appear in the left display. The currently programmed time appears in the right display. To program the time, use the following switches:

Left		Minutes (in increments of ten)
Left		Minutes (in increments of one)
Left		Seconds (in increments of ten)
Right		Seconds (in increments of one)

Press the right  switch to toggle between the manual alarm cancel mode (**MAN**) and the automatic alarm cancel mode (**AUTO**).

NOTE: In the automatic alarm cancel mode (**AUTO**), when the programmed time has elapsed, an audible alarm will sound three times and then stop. In the manual alarm cancel mode (**MAN**),

an audible alarm will sound when the programmed time has elapsed until the operator presses the cook switch (① or ②) that was pressed to start the cooking cycle.

4. Press the  switch, **DUTY2** appears in the left display. The currently programmed time appears in the right display. Program the time in the same manner as Duty1 time.

NOTE: Enter a time of **OO:OO** to bypass this option.

NOTE: In the steps that follow, **Pull Time** refers to the programmed time at which the product is fully cooked and an audible alarm will prompt removal of the basket from the cooking oil. **QA Time** refers to the maximum time that a product may be held after the cooking cycle has completed.

5. Press the  switch to display **PULL** in the left window. Program the pull time in the same manner as the duty times.
6. Press the  switch to display **QA** in the left window. Program the QA time in the same manner as the duty times.
7. Press the  switch to show the cooking temperature setpoint, displayed as **SET-TEMP** in the left display. The current setpoint temperature is in the right display (for example-**350F**). The temperature will be in Fahrenheit (**F**) or Celsius (**C**). Pressing the right ② switch toggles the computer between Fahrenheit (**F**) and Celsius (**C**). To change the temperature, use the following switches:

Left	①	Hundreds
Left	②	Tens
Right	①	Ones

NOTE: The computer cannot be programmed for a temperature greater than 375°F (191°C).

8. Press the  switch to show the status of the Test Menu Cook Time Compensation feature. The display will show **PROBE** in the left window and **YES** or **NO** in the right window. With the feature set to **YES**, the cooking time of the product will be temperature-compensated; with the feature set to **NO**, the product cooking time will not be compensated. Press the right ① or ② switch to toggle between **YES** or **NO**.
9. Exit the program mode by pressing the right  switch. Both displays will show **off**.

How to Suppress a Shake, QA, or Duty Function

1. Enter the program mode. See *How to Enter the Program Mode* on Page 3-10.
2. Press and release the  switch until menu item to be modified is displayed in the left window.
3. Press and release the  switch until the function to be suppressed is displayed in the left window.

4. Use the cook switches ①, ②, ① from left to right to set the time display to read **000**. This will suppress the function during the cooking cycle. To reactivate the function, follow steps 1 through 3 to enter a time for the function.
5. Exit the program mode by pressing the right  switch.

How to Turn the Display of a Factory-Programmed Menu Item On and Off

1. Enter the program mode. See *How to Enter the Program Mode* on Page 3-10.
2. Press and release the  switch until the menu item to be turned on or off is displayed in the left window.
3. The right display will show **YES** or **NO**. To turn the menu item OFF, press either of the right ① or ② switches to set the option to **NO**. To turn the menu item ON, change the option to **YES**.
4. Exit the Program Mode by pressing the right  switch. Both displays will read **OFF**.

How to Display “Use Time” Information

NOTE: This feature is used to determine the total amount of time that a fryer has been cooking.

1. Enter the program mode. See *How to Enter the Program Mode* on Page 3-10.
2. Press the left  switch to display use time for the left side of a dual-vat unit. Press the right  switch to display use time for a full-vat unit or the right side of a dual-vat unit.
3. To reset use time data to zero, while pressing one of the  switches, press the same side's ① and ② switches, then release them simultaneously.

NOTE: The simultaneous release of these three switches is critical. If not done correctly, data will not reset.

How to Display the Product Cycle Accumulator Information

NOTE: This feature keeps a running total of cooking cycles per product.

1. Enter the program mode. See *How to Enter the Program Mode* on Page 3-10.
2. Press the left or right  switch.
3. For the left vat, press the  switch. For the right or for a full-vat, press the  switch. A running total of cooking cycles per product will be displayed.
4. To clear the accumulated times from computer memory, press either  switch, then the  switch.

How to Use the Filter Countdown Timer

NOTE: This feature starts a five-minute countdown timer to time the polishing of vegetable oil during the filtering process. ***Polishing*** refers to circulating the vegetable oil through the filtration system for a specified time. This feature does not have any direct control over the filtration process; it is only a timer.

1. With the computer ON, press and release the  switch until **FILTER** appears in the display. (For split-vat units, press and release the  switch for the left vat.)
2. Press either of the right ① or ② switches. The computer will begin to countdown from five minutes to zero. (For split-vat units, press either of the left ① or ② switches for the left vat.)

CHAPTER 4: OPERATING FRYERS WITH ANALOG CONTROLLERS

4.1 Equipment Setup and Shutdown Procedures

Setup

 **WARNING**

Fill the frypot to the bottom oil level line with vegetable oil before pressing the power switch to the ON position. Failure to do so could damage the frypot.

Fill the frypot with vegetable 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.

Ensure that the power cord(s) is/are plugged into the appropriate receptacle(s). Verify that the face of the plug is flush with the outlet plate, with no portion of the prongs visible.

Set the thermostat knob to the desired frying temperature.

Ensure that the vegetable oil level is at the *top* OIL LEVEL line when it *is at its intended cooking temperature*. It may be necessary to add vegetable oil to bring it up to the proper level.

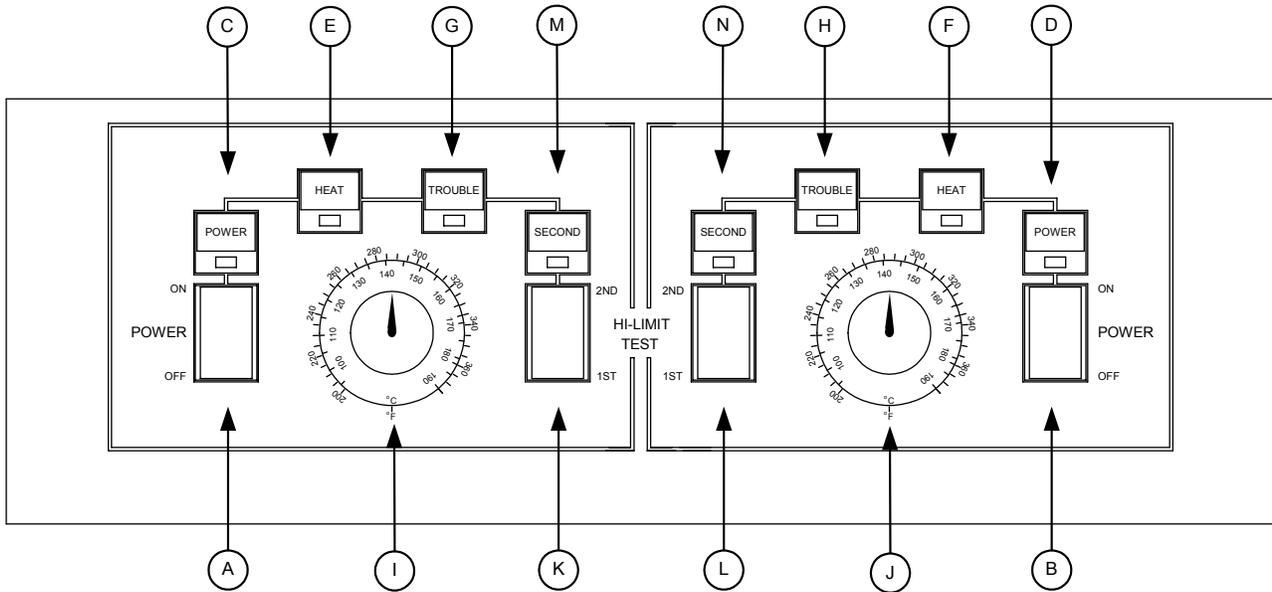
Shutdown

1. Press the POWER switch to the OFF position (the POWER light will go out).
2. Filter vegetable oil and clean fryers.
3. Place the frypot covers on the frypots.

4.2 Introduction to the Analog Controller

The analog controller, illustrated on the following page, is used to adjust and maintain vegetable oil at the temperature indicated by the thermostat knob. The fryer has two built-in high-limit protection features. If the temperature in the frypot reaches approximately 410°F (210°C), the computer opens the heat relay circuit, turning the elements off. If the temperature in the frypot reaches 450°F (232°C), a mechanical high-limit shuts off electrical power to the elements. The operator should periodically test each of the high-limit protection features to verify that they are operating correctly. Refer to page 4-3, Analog Controller High-Limit Check, or the Grills/Fryers Maintenance Requirement Card (MRC) 15 for the procedure.

The analog controller has no timing features. Shake, pull, and QA (hold) times must be monitored by the operator.



**SPLIT VAT CONTROLLER ILLUSTRATED
FULL VAT CONTROLLER HAS ONLY LEFT SET OF CONTROLS**

ITEM	DESCRIPTION
A	Power Switch, Left or Full-Vat - Controls electrical power to fryer.
B	Power Switch, Right Vat - Controls electrical power to fryer.
C	Power-On Light, Left or Full-Vat - Indicates when electrical power to fryer is ON.
D	Power-On Light, Right Vat - Indicates when electrical power to fryer is ON.
E	Heating Mode Light, Left or Full-Vat - Indicates when burner is firing.
F	Heating Mode Light, Right Vat - Indicates when burner is firing.
G	Trouble Light, Left or Full-Vat - Indicates over high-limit or problem in heat control circuitry.
H	Trouble Light, Right Vat - Indicates over high-limit or problem in heat control circuitry.
I	Thermostat Control Knob, Left or Full-Vat - Sets desired frying temperature.
J	Thermostat Control Knob, Right Vat - Sets desired frying temperature.
K	Hi-Limit Test Switch, Left or Full-Vat - Tests high-limit thermostat for left vat (or full-vat).
L	Hi-Limit Test Switch, Right Vat - Tests high-limit thermostat for right vat.
M	Second Hi-Limit Test Light, Left or Full-Vat - Indicates fryer is in second high-limit test mode.
N	Second Hi-Limit Test Light, Right Vat - Indicates fryer is in second high-limit test mode.

4.3 Analog Controller Operating Instructions

 **WARNING**

Before pressing the power switch to the ON position, ensure that the frypot is properly filled with vegetable oil. See Section 4.1.

1. Verify that the thermostat knob is set to the desired cooking temperature. For split-vat units, set both knobs.
2. Press the power switch to the ON position. The POWER light will illuminate. For split-vat units, both power switches must be placed in the ON position if both vats are to be used.
3. 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 vegetable oil to heat gradually, without scorching. During the warm-up cycle, the heating mode light will alternately illuminate and go off as the elements cycle on and off. Within about 45 minutes, the controller will exit the warm-up cycle and the heating mode light will remain continuously illuminated.
4. When the vegetable oil temperature reaches the thermostat knob setpoint, the elements will cycle OFF and the heating mode light will go off, indicating that the fryer is ready for the cooking process to begin.

4.4 Analog Controller High-Limit Check

Tools needed: Maple Paddle, Fry Vat Probe.

NOTE: Conduct this test when fryer will not be needed for about one hour, and when the vegetable oil is due to be changed. Discard the vegetable oil after completing this check

NOTE: Check high-limit on only one vat at a time.

 **CAUTION**

Grease filters must be in place and exhaust fans MUST be ON during entire high-limit control-check procedure.

1. The vegetable oil should be at the normal/shortening level line. Add vegetable oil if necessary.
2. Remove the computer probe from the probe holder and replace it with fry vat probe.
3. Turn the vat power switch to “ON” and set thermostat knob to its highest setting. Wait for heating light to go OFF.

NOTE: You must agitate the vegetable oil with a maple paddle during the entire high-limit control-check procedure.

 **CAUTION**

If after completing both high-limit tests you find only the second high-limit operates properly, the vat can be used if it is absolutely necessary, but with extreme care. The controller must be replaced immediately after this period of necessity. If the second high-limit does not work the vat must not be used until the second high-limit has been replaced. If the first high-limit feature activates at less than 400°F (204°C), do not replace the controller unless it interferes with proper cooking. If the second high-limit activates at less than 425°F (218°C), do not replace it unless it prevents you from checking the first high-limit feature.

4. Press and hold the vat high-limit test switch in the "first high-limit" position.

Expected Result: Gas burner turns OFF and "TROUBLE" light comes ON. Vegetable oil temperature should be between 400° and 425°F (204° and 218°C).

5. Press and hold the vat high-limit test switch in the "second high-limit" position.

NOTE: When the trouble light comes ON, or the temperature exceeds 425°F (218°C), release the switch.

Expected Result: Gas burner turns OFF and the second high-limit comes ON. The vegetable oil temperature should be between 425° and 450°F (218° and 232°C).

 **CAUTION**

When the second high-limit light comes on, or the temperature exceeds 450°F (232°C), release switch.

6. Turn the power switch to the "OFF" position. One vat must remain ON to ensure hood fan remains ON.

7. Remove the fry vat probe and reinstall the computer probe into the vat.

8. Allow vegetable oil to cool for one hour before discarding. See statement on discarding oil (Chapter 5).

NOTE: Hot oil must not be transported until it cools to 100°F (38°C) or less.

High-Limit check is complete. Repeat procedure for each remaining vat.

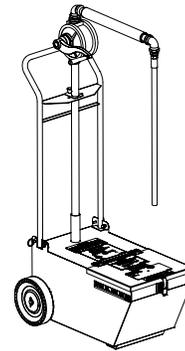
CHAPTER 5: FILTERING

5.1 Draining and Manual Filtering

⚠ DANGER

Always wear appropriate protective gloves when draining or filtering. Allow cooking oil to cool to 100°F (38°C) or lower before draining to an appropriate container for disposal.

NOTE: If your fryer is not equipped with a built-in filtration system, the cooking oil must be drained into another suitable container. For safe, convenient draining and disposal of used cooking oil, Frymaster recommends using the *Vegetable Oil Disposal Unit*, illustrated at right.



1. Turn the fryer controller OFF. Screw the drainpipe (provided with your fryer) into the drain valve. Make sure the drainpipe is firmly screwed into the drain valve.

2. Position the Vegetable Oil Disposal Unit (or a metal container with a sealable cover) under the drainpipe.

NOTE: The metal container must be able to withstand the heat of the cooking oil and hold hot liquids. If you intend to reuse the oil, Frymaster recommends that a Frymaster filter cone holder and filter cone be used when a filter machine is not available. If you are using a Frymaster filter cone holder, be sure that the cone holder rests securely on the metal container.



3. Open the drain valve slowly to avoid splattering. If the drain valve becomes clogged with food particles, use the Fryer's Friend (poker-like tool) to clear the blockage from the frypot side.

⚠ DANGER

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

⚠ WARNING

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

4. After draining the oil, clean all food particles and residual oil/shortening from the frypot. BE CAREFUL, this material may still cause severe burns if it comes in contact with bare skin.

5. Close the drain valve securely and fill the frypot with clean cooking oil to the bottom OIL-LEVEL line.

5.2 Operating the Built-In Filtration System

The FootPrint III (FP III) filtration system allows the cooking oil in one frypot to be safely and efficiently filtered while the other frypots in a battery remain in operation.

Most reported problems with these systems are caused by improper operation. Careful attention to the step-by-step instructions that follow will ensure that your system operates as intended.

PREPARING THE FILTER UNIT FOR USE and CHANGING THE FILTER PAPER

1. Turn the controller OFF.
2. Pull the filter unit from the cabinet, open the cover, remove the crumb tray, and remove the paper hold-down ring.



3. If changing the filter paper after filtering, remove and discard the used paper (or optional filter pad). **Be careful, the oil-soaked paper or pad may be very hot and can cause severe burns.**

After removing the filter paper (or pad), remove the metal filter screen and pan, and clean them thoroughly with a solution of hot water and detergent. Ensure that all breading and food particles are removed from the pan.

Dry the pan thoroughly with a soft cloth or paper towels.

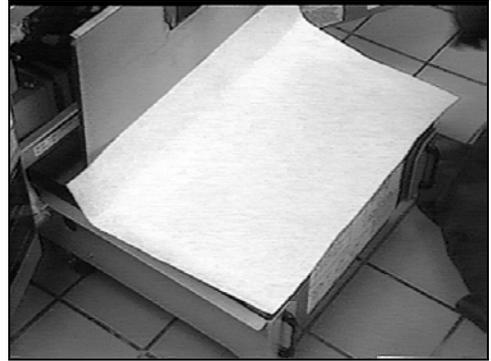
Allow the filter screen to dry completely, then reinstall it in the filter pan.



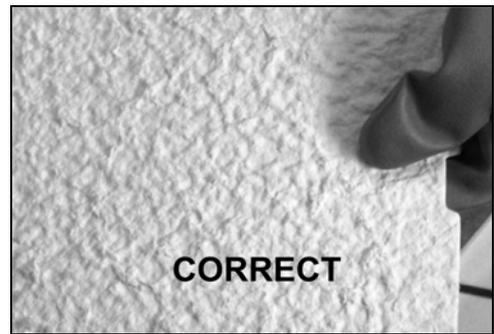
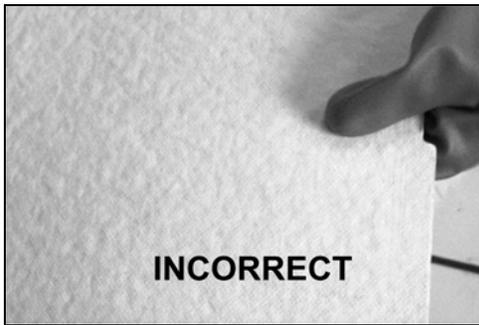
⚠ DANGER

Always wear appropriate protective gloves when changing the filter paper.

- Verify that the filter screen is flat in the bottom of the pan. Lay a sheet of filter paper over the top of the pan, overlapping on all sides (or place an optional filter pad in the bottom of the pan.)

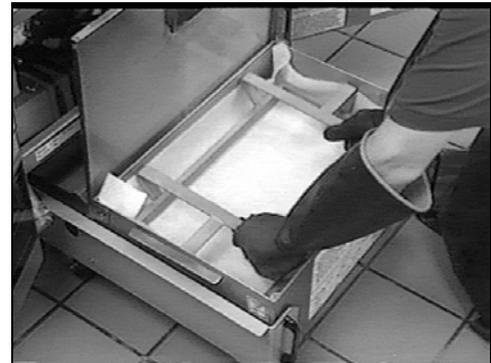


NOTE: If using the optional filter pad, ensure that the rough-textured side of the pad is up.



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

If using the optional filter pad, place the ring over the pad.



- If using filter paper, sprinkle 8-ounces of filter powder over the paper. Replace the crumb tray in the filter pan and close the cover.



NOTE! *DO NOT* use filter powder if using the optional filter pad!

7. Push the filter pan back into the fryer, positioning it all the way to the back of the cabinet.

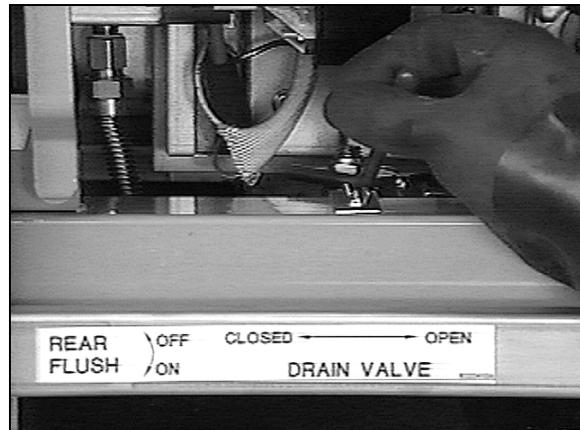


OPERATING THE FILTER UNIT

⚠ CAUTION

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

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



⚠ DANGER

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

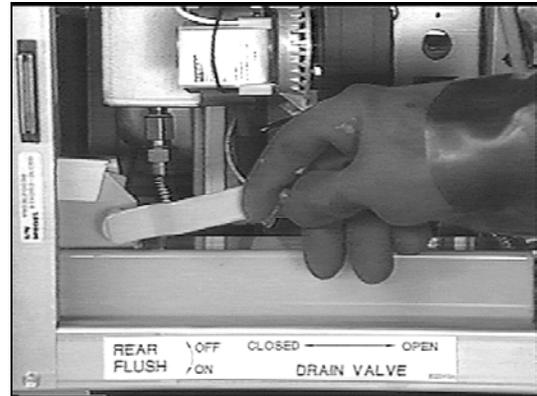
⚠ WARNING

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

⚠ WARNING

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

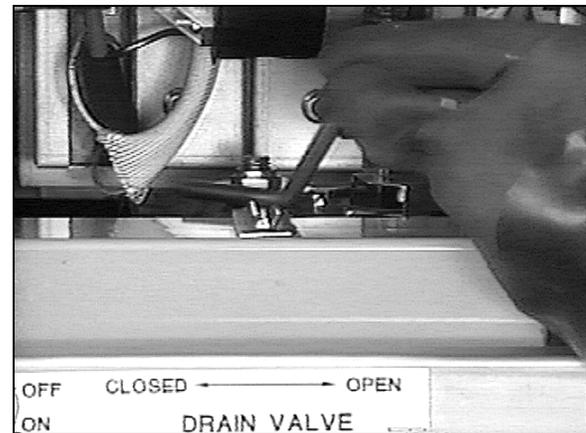
2. After all oil has drained from the pot, rotate the Rear Flush handle to the ON position to activate the pump. There may be a slight delay before the pump activates.



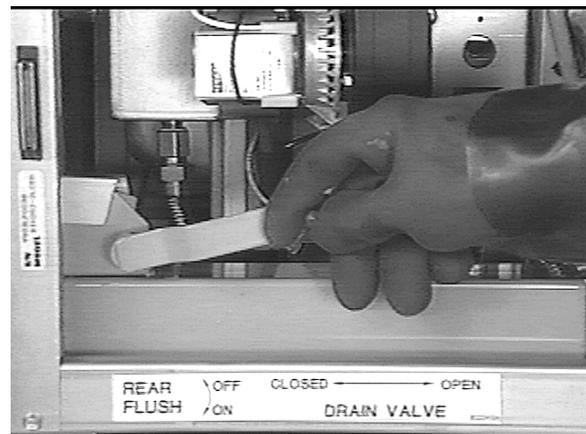
3. As the filtering progresses, the computer will display the time remaining. When the filtering time has elapsed, FILTER will flash in the display.



4. When FILTER flashes in the display, close the drain valve and allow the frypot to refill.



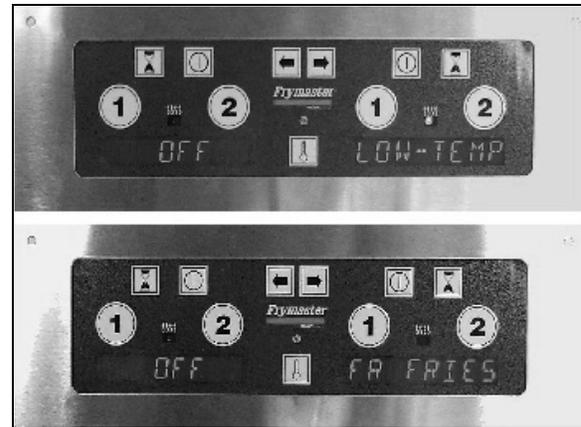
5. When the filter pan has emptied, bubbles will appear in the frypot. Allow the bubbling to continue 15-20 seconds to purge all cooking oil from the oil return lines, then rotate the Rear Flush handle to the OFF position to stop the pump.



6. Turn the filter alarm OFF by pressing the  button.



NOTE: During the filtering process, the temperature of the cooking oil may drop below the programmed operating temperature. In that case, the computer will display LOW-TEMP and go into the heat mode when it is turned on again. When the cooking oil reaches the programmed operating temperature, the product programmed for that frypot will again be displayed, indicating that the unit is ready for cooking again.



5.3 Getting the Most Out of Your Filter

1. Filter vegetable oil as often as needed. If a heavy volume of breaded food is fried, filter as often as every hour. Filtering often increases the life of the vegetable oil and produces a better-tasting product. The best rule to follow is to ***"filter before you think it is needed"***. Even with a product such as french fries, you should filter two to three times per day for best results.
2. Periodically clean the frypot. Cleaning the frypot, combined with disposing of old vegetable oil enhances the flavor of the food product. After the fryer is empty, drain the frypot and close the drain valve. Fill the frypot to the OIL LEVEL line (or the bottom line for fryers equipped with two oil-level lines) with water and the correct amount of **McD All Purpose Concentrate (APC) Cleaner HSC**. Place the baskets into the frypot and bring the solution to a simmer at 195° F (90.5° C) for 1 hour. Turn OFF the fryer, drain the solution and wipe the frypot clean and dry.

NOTE: Do not drain water into the filter pan. Water will damage the filter pump enough to require replacement. Use a stockpot or bucket.

3. The filter pan and filter base assembly must be cleaned on initial start-up and periodically thereafter.
 - a. To clean the filter pan, lift the pan from the filter base. Take the filter pan to a sink filled with warm water and grease-cutting detergent.
 - b. Scrub the filter pan with the frypot brush shipped with the fryer.

- c. Rinse the filter pan thoroughly to remove the detergent. Wipe dry with a clean, dry cloth or paper towels.
- d. To clean the filter base assembly, use a sponge or cloth soaked with a water and grease-cutting solution. Be careful not to get water on the pump/motor assembly.
- e. Wipe the filter base assembly dry with a clean, dry cloth or paper towel.

 **CAUTION**

All water *MUST* be removed from the suction tube before inserting filter pan.

- f. Wipe the inside and outside of the tube with clean, dry cloths or paper towels.
- g. Insert filter pan into the filter base assembly.

 **WARNING**

The filter pan *MUST* never be used to dispose of or transport spent cooking oil to the disposal area. Cooking oil *MUST* always be allowed to cool below 100°F (38°C) before transporting to the disposal area. An oil disposal unit is available and highly recommended for safety.

CHAPTER 6: PREVENTIVE MAINTENANCE AND TROUBLESHOOTING

6.1 Preventive Maintenance

Preventive Maintenance (PM) procedures are contained in McDonald's Preventive Maintenance System Maintenance Requirement Cards (MRC) 12, 14, 14A, and 15. The cards are distributed with this manual, but are not an integral part of the manual. A replacement card set may be ordered using part number 819-5432. To order both the card set and the Operator's Manual, use part number 819-5404.

6.2 Troubleshooting

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 (1-800-24FRYER):

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

 **DANGER**

Never attempt to move a fryer containing hot cooking oil or to transfer hot cooking oil from one container to another.

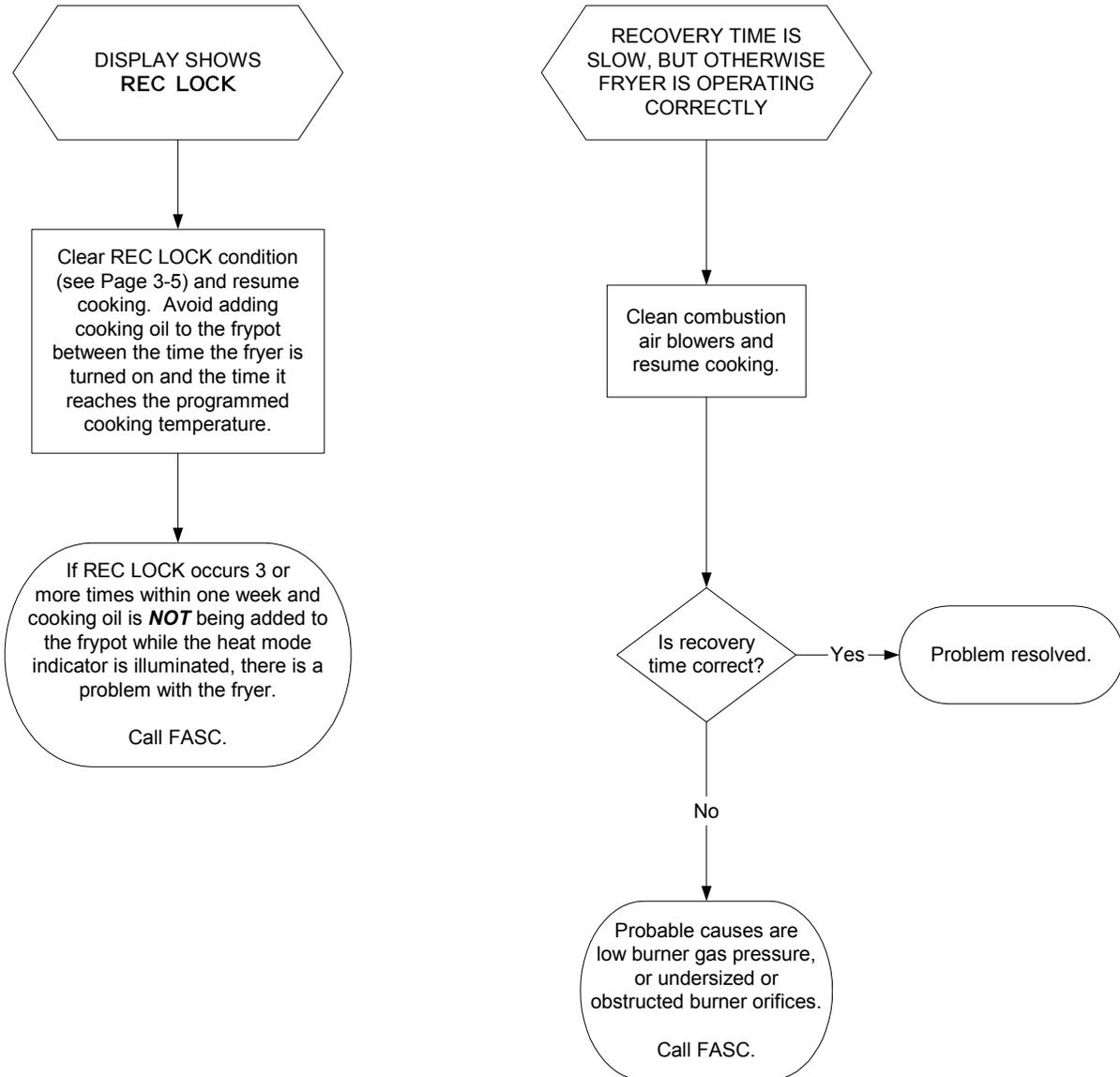
 **DANGER**

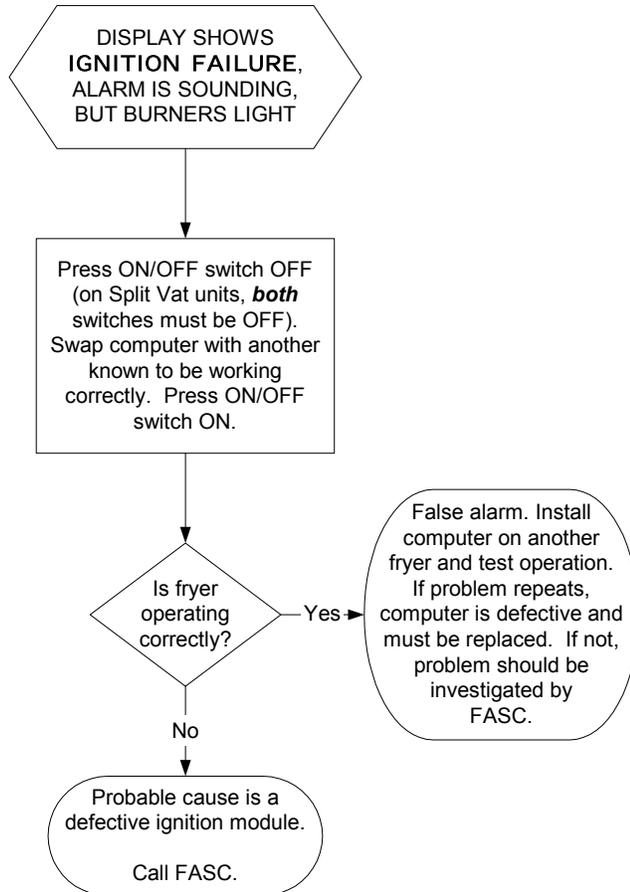
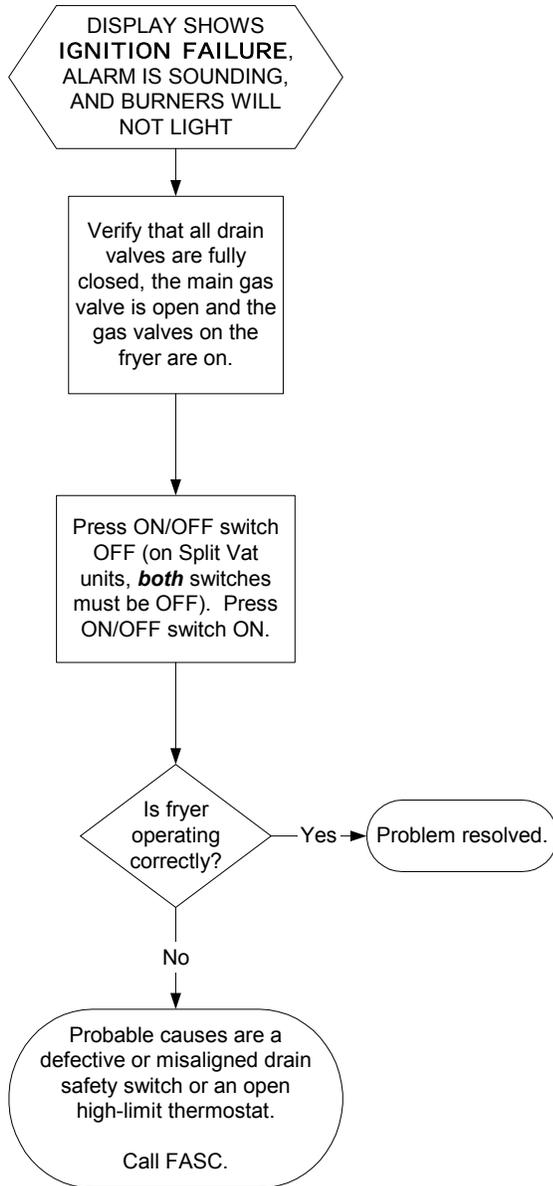
Use extreme care when testing electrical circuits. Live circuits will be exposed.

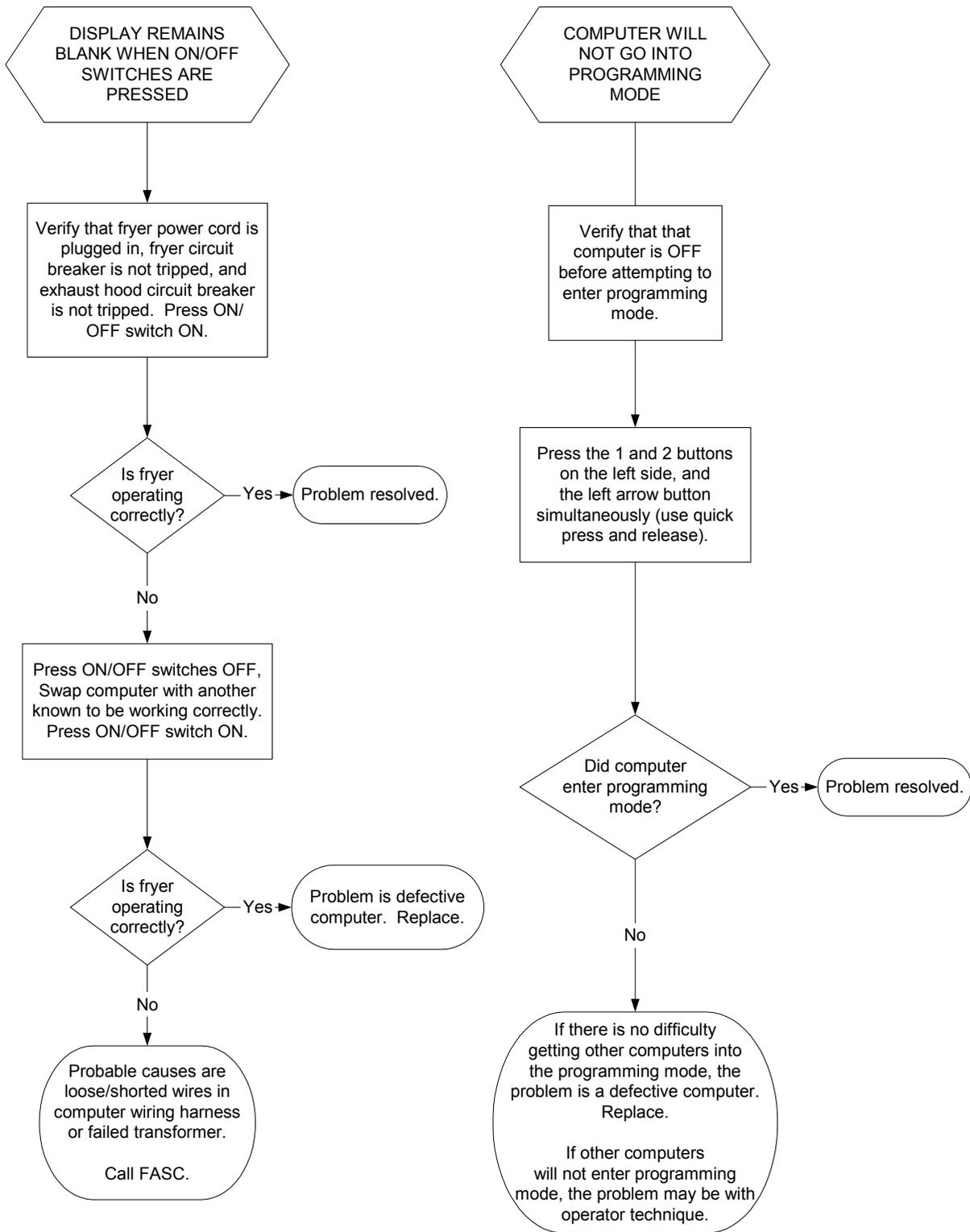
 **WARNING**

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

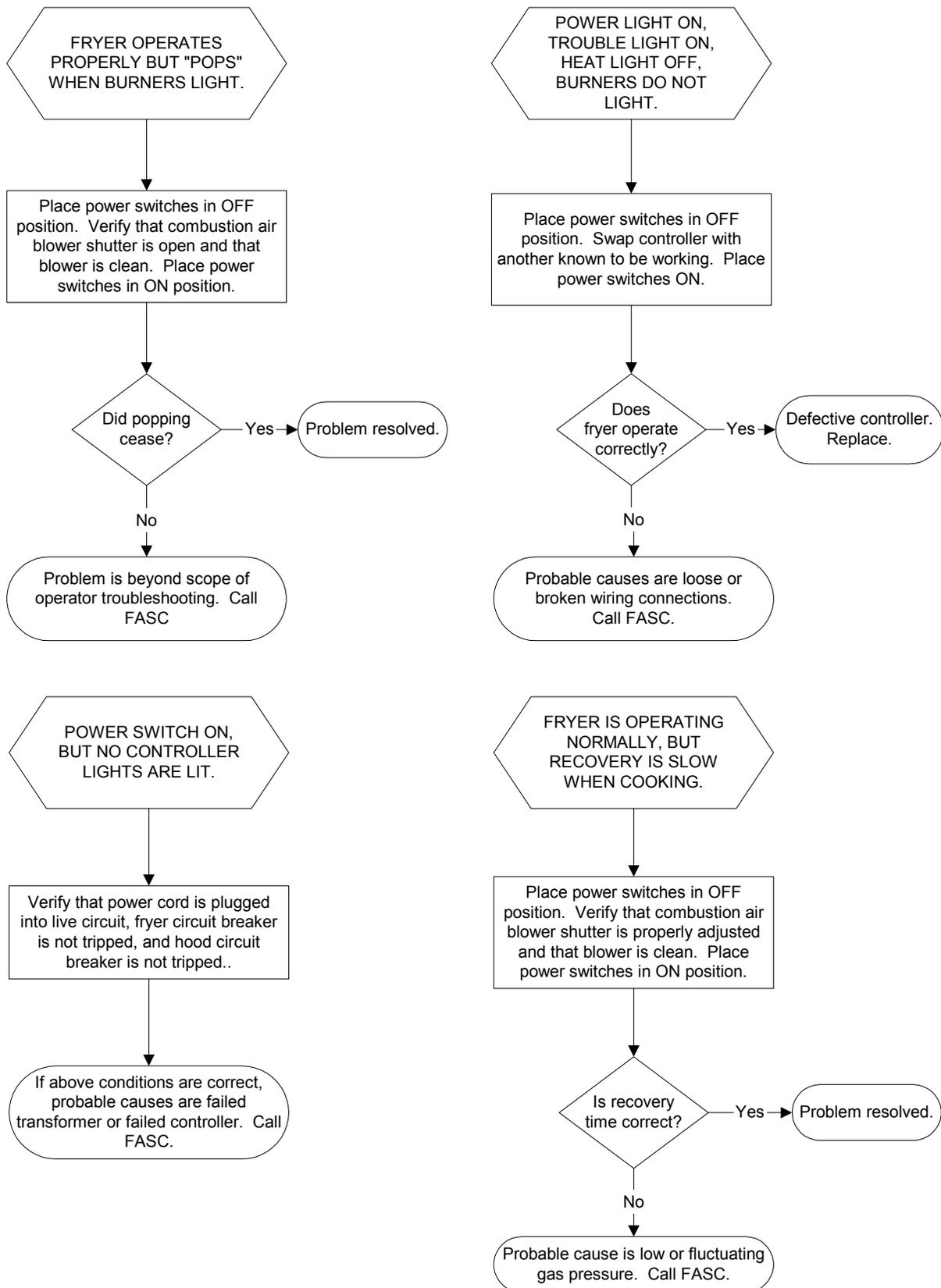
6.2.1 Troubleshooting Fryers with M100B Computers

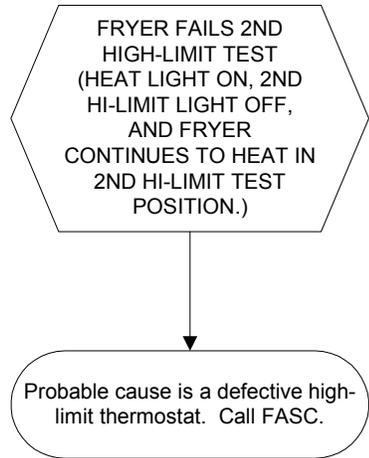
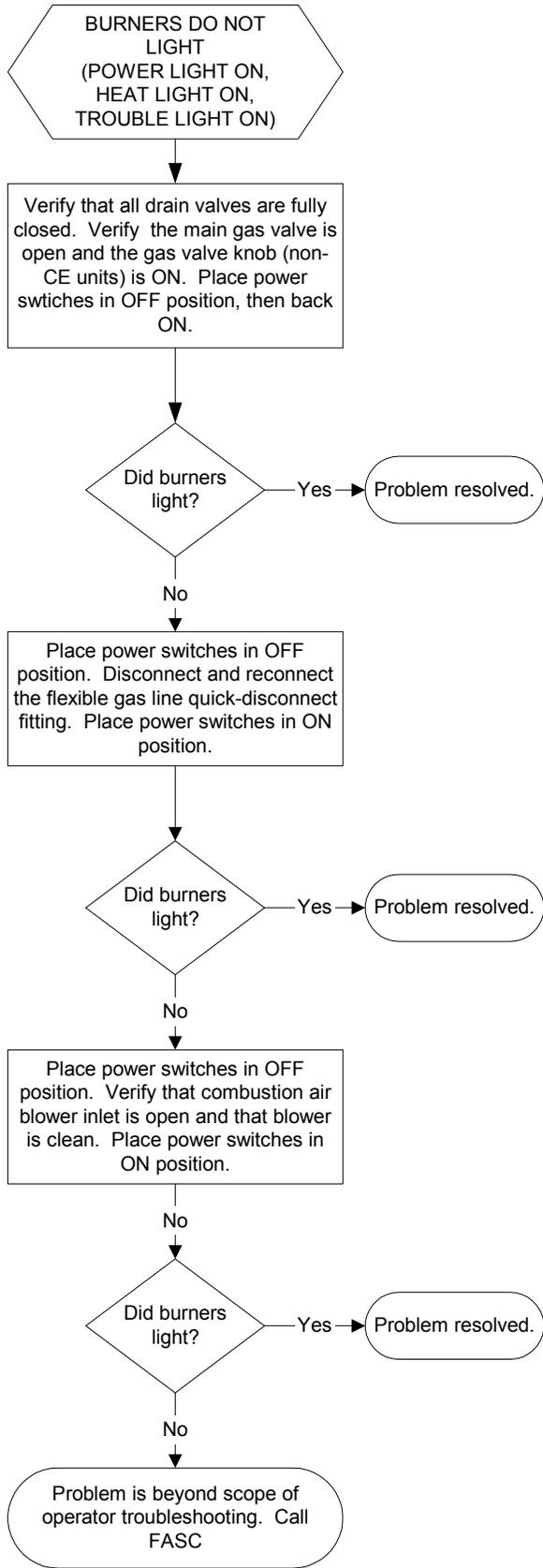






6.2.3 Troubleshooting Fryers Equipped with Analog Controllers





6.2.4 Troubleshooting Built-in Filtration System

