HENNY PENNY
Engineered to Last

SERVICE MANUAL

4-Head Electric Pressure Fryer

MODEL 500
MODEL 561

FM06-082A

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Safety and Compliance

Henny Penny fryers have many safety features incorporated. However, the only way to ensure safe operation is to fully understand the proper installation, operation, and maintenance procedures. The instructions in this manual have been prepared to aid you in learning the proper procedures. Where information is of particular importance or is safety related, the words DANGER, WARNING, CAUTION, or NOTICE are used. Their usage is described as follows:

DANGER	**DANGER!** indicates hazardous situation which, if not avoided, will result in death or serious injury.
DANGER!	
WARNING	**WARNING!** indicates hazardous situation which, if not avoided, could result in death or serious injury.
WARNING!	
CAUTION	**CAUTION!** indicates hazardous situation which, if not avoided, could result in moderate or minor injury.
CAUTION!	
NOTICE	*NOTICE* is used for information considered important regarding property damage.

These are the original version controlled Henny Penny instructions for Pressure Fryer Electric (PFE) model 500, 561 (PFE 500, 561).
This manual is available on the Henny Penny Public website (www.hennypenny.com). Read these instructions completely prior to installation and operation of this appliance to ensure compliance to all required installation, operation and safety standards. Read and obey all safety messages to avoid damage to the appliance and personal injury.

WARNING

- **This fryer must be installed and used in a way that water does not contact the oil which can cause splashing and boiling over of oil and steam leading to personal injury; excludes normal product moisture.**
- **Burn risk! Do not move the fryer or filter drain pan while containing hot oil. Personal injury or serious burns can result from splashing hot oil.**

This appliance is intended for commercial use in kitchens of restaurants, bakeries, hospitals, etc. but not for the continuous mass production of food such as in a factory setting. During use the units airborne A-weighted emission sound pressure is below 70 db(A). All repairs must be performed by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

Always use strain relief. The provided power cord must be installed with a strain relief in a way that if the strain relief fails, wires L1, L2, L3 and N must draw taunt and fail first. If the supplied power cord or an existing one becomes damaged, do not use it; rather, replace it with a known good power cord. The power cord must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

Proper daily, weekly, monthly, quarterly and yearly maintenance must be performed on this appliance to ensure safe and continuous operation. This appliance must never be cleaned with a water jet or steam cleaning tool. Cleaning brushes are shipped with the appliance and proper cleaning instructions are included in this manual.

Proper maintenance also increases the usable life of the appliance and oil, which reduces lifetime operating costs. Additionally, old oil increases the possibility of surge boiling and fire due to the reduced flash point of the oil. The oil temperature must never exceed 450º F (230º C).

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a

person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

This appliance is not intended to be operated by means of an external timer or a separate remote control system.

This appliance must be installed in accordance with the manufacturer's instructions and the regulations in force and only used in suitably ventilated location. Read the instructions fully before installing or using the appliance.

This appliance must be installed with suitable ventilation in accordance with the manufacturer's instructions and the regulations in force to prevent the occurrence of unacceptable concentrations of substances harmful to health. Proper air flow is essential to permit efficient removal of the steam exhaust and frying odors. Air flow for this model is 33.3 cfm (56.6 m3/h) of air flow.

WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE) As of August 16, 2005, the Waste Electrical and Electronic Equipment directive went into effect for the European Union. Our products have been evaluated to the WEEE directive. We have also reviewed our products to determine if they comply with the Restriction of Hazardous Substances directive (RoHS) and have redesigned our products as needed in order to comply. To continue compliance with these directives, this unit must not be disposed as unsorted municipal waste. For proper disposal, please contact your nearest Henny Penny distributor.

Chapter 1 Troubleshooting

1.1 Introduction

This section provides troubleshooting information in the form of an easy to read table. If a problem occurs during the first operation of a new fryer, recheck the installation per Section 2 Unpacking/Installation of the Operator's Manual. Before troubleshooting, always recheck the operating procedure per Section 3 Operating Instructions of the Operator's Manual.

1.2 Diagnostics

To isolate a malfunction, proceed as follows:

1. Clearly define the problem (or symptom) and when it occurs.
2. Locate the problem in the troubleshooting table.
3. Review all possible causes. Then, one-at-a-time, work through the list of corrections until the problem is solved.

WARNING!

Refer to the maintenance procedures in Chapter 2 *Maintenance*, page 11. If maintenance procedures are not followed correctly injuries and/or property damage can result.

Table 1-1 Troubleshooting

Problem	Cause	Correction
Cooking Section		
Product Color Not Correct:		
A. Too dark.	Temperature too high.	• Reduce thermostat setting. • Remove and replace defective thermostat per 2.10 *Thermostat Replacement*, page 20.
	Shortening too old.	Change shortening.
	Shortening too dark.	• Filter shortening. • Shortening taste test, see the Operator's Manual. • Change Shortening.

Problem	Cause	Correction
	Dip solution too strong for product.	Use correct dip solution or shorten product immersion time.
	Breading product too far in advance.	Bread product closer to actual frying period.
B. Too light.	Temperature too low.	• Increase temperature. • Remove and replace defective thermostat per 2.10 *Thermostat Replacement*, page 20.
	Dip solution too weak for product.	Correct dip solution.
	Incorrect preheat procedures.	• Allow proper preheat time. • Stir shortening prior to dropping product into vat (frypot).
	Vat (frypot) overloaded with product.	Reduce cooking load.
	Slow fryer heat-up/recovery.	Refer to burner or heating elements in Chapter 2 *Maintenance*, page 11.
C. Product greasy.	Shortening old.	Replace shortening.
	Temperature too low.	• Increase thermostat settings. • Temperature not recovered when product was dropped in vat (frypot) basket. • Replace thermostat if needed.
	Vat (frypot) overloaded.	Reduce cooking load.
	Product not removed from vat (frypot) immediately after depressurization.	Remove product immediately after depressurization of the vat (frypot).
D. Spotted product.	Improper separation of the product.	Refer to Operator's Manual.

Problem	Cause	Correction
	Product was incorrectly dipped in water before breading.	Agitate product during the dipping procedure.
	Breading not uniform on product.	• Sift breading during breading. • Refer to Operator's Manual.
	Burned breading particles on product.	Filter the shortening more frequently.
	Product sticking together.	Separate product prior to pressure cooking, see the Operator's Manual.
E. Dryness of product.	Moisture loss prior to cooking.	• Use fresh products. • Keep product covered with a moist cloth to reduce evaporation.
	Over cooking the product.	• Reduce cooking time. • Reduce cooking temperature.
	Low operating pressure.	Check pressure gauge reading; check for pressure leaks.
	Product load too small.	Increase quantity to obtain correct operating pressure and product quality.
Product Flavor (Taste):		
A. Salty taste.	Breading mixture is too salty.	• Sift breading after each use. • Incorrect breading mixture. • Discard old breading.
	Marination mixture too concentrated.	Reduce the concentration of the marination mixture.
	Incorrect choice of breading.	Use breading designed for the desired product.
B. Burned taste.	Burned shortening flavor.	Replace shortening.

Problem	Cause	Correction
	Shortening needs filtering.	Filter shortening more frequently.
	Vat (frypot) not properly cleaned.	Drain and clean vat (frypot).
C. Bland taste.	Raw product not fresh.	Use fresh raw products.
	Breading mixture incorrect for product (spice content too low).	Use breading designed for desired product.
	Cooking temperature too high (spice flavor lost).	Use correct temperature for breading used.
	Breading does not adhere to product.	Use correct dip and breading, and use correct procedure for the product.
D. Rancid taste.	Shortening too old.	Replace shortening, and follow recommended care and use of shortening, see the Operator's Manual.
	Non-compatible products cooked within the same shortening.	• Replace shortening. • Use compatible products, and follow recommended care and use of shortening; refer to Operator's Manual.
	Infrequent filtering.	Replace shortening and follow recommended care and use of shortening; refer to Operator's Manual.
	Raw product not fresh.	Use fresh product.
General:		
A. Meat separation from bone.	Incorrect meat cut.	Use correct meat cutting procedures.
	Overcooking.	Reduce cooking time.
	Raw product contains too much water.	Allow product to drain after marinating.
	Product not fresh.	Use fresh product.
B. Bone color not proper.	Using frozen product (black bone).	Use fresh product.

Problem	Cause	Correction
	Improper handling of product (black bone).	Use proper handling procedures for product.
	Product not thoroughly cooked (red bone).	Increase cooking time.
C. Breading falls off.	Incorrect breading procedures.	Use correct breading procedure, see the Operator's Manual.
	Product partially frozen during breading.	Thoroughly thaw the product before breading.
	Improper handling of cooked product.	Handle cooked product carefully.
	Excessive stirring of product prior to closing the lid.	Separate the product, see the Operator's Manual.
D. Product sticking together.	Product breaded too long prior to cooking.	Refer to breading & frying instructions.
	Improper separation procedures prior to closing the lid.	Separate the product, see the Operator's Manual.
	Vat (frypot) overloaded with product.	Reduce the cooking load.
	Improper loading procedure.	Load product properly into vat (frypot), see the Operator's Manual.
Power Section		
With switch in POWER position, the fryer is completely inoperative (NO POWER).	Open circuit.	• Check to see that unit is plugged in. • Check breaker or fuse at supply box. • Check control panel fuses per 2.14 *Electrical Components*, page 35 section (electric module only). • Check voltage at wall receptacle. • Check MAIN POWER switch per 2.14 *Electrical Components*, page 35; replace if defective.

Problem	Cause	Correction
		• Check cord and plug per 2.14 *Electrical Components*, page 35. • Check circuit breaker on single phase fryers.
Pressure Section		
Pressure will not exhaust at end of cook cycle.	Exhaust line from solenoid valve to expansion tank clogged.	Release pressure from vat (frypot); clean all pressure lines, exhaust stacks.
	Solenoid valve clogged.	Check and clean solenoid valve per 2.16 *Pressure Regulation/Exhaust*, page 42.
Operating pressure too high.	Deadweight clogged.	Place proper quantity of moist product within vat (frypot) to generate steam.
	Exhaust line to stack clogged.	Clean exhaust line to stack.
Pressure does not build.	Not enough product in fryer or product not moist.	Place proper quantity of moist product within vat (frypot) to generate steam.
	Metal shipping spacer not removed from deadweight.	Remove shipping spacer per Operator's Manual.
	Lid open or not latched.	Close and latch lid.
	Solenoid valve leaking or not closing.	Check and clean solenoid valve per 2.16 *Pressure Regulation/Exhaust*, page 42.
	Deadweight valve leaking.	Repair per 2.16 *Pressure Regulation/Exhaust*, page 42.
	Main timer not closing solenoid.	Check main timer per 2.15 *Timing Control*, page 39.
	Lid gasket leaking.	Adjust lid limit stop; if this does not correct the problem, reverse the lid gasket; if this fails to correct the problem, replace the lid gasket.

Problem	Cause	Correction
	Safety relief valve leaking.	Check and replace, if necessary, per 2.16 *Pressure Regulation/Exhaust*, page 42.
Filter System Section		
Filter motor runs but pumps shortening slowly.	Filter valve not open.	Open filter valve.
	Pump clogged.	Remove and clean pump per 2.17 *Filtering System*, page 60.
	Filter frame not properly assembled.	Handles must put pressure on filter.
	Filter line connections loose.	Tighten all filter line connections.
	Solidified shortening in lines.	Clear all filter lines of solidified shortening.
	Charcoal filter clogged (if applicable).	Change charcoal filter (if applicable).
Pump switch ON, motor does not run.	Defective switch.	Check/replace switch per 2.14 *Electrical Components*, page 35.
	Defective motor.	Check/replace motor per 2.17 *Filtering System*, page 60.
	Motor thermal protector tripped.	Reset thermal switch per 2.17 *Filtering System*, page 60.
Motor hums but will not pump.	Clogged lines or pump.	• Remove and clean pump and lines per 2.17 *Filtering System*, page 60. • Replace pump seal, rotor and rollers per 2.17 *Filtering System*, page 60.
Heating of Shortening Section		
Shortening will not heat.	Blown fuse or tripped circuit breaker at supply box or control panel.	Reset breaker or replace fuse.
	Blown fuse at control panel.	Check fuse per 2.14 *Electrical Components*, page 35.

Problem	Cause	Correction
	Faulty main switch.	Check main switch per 2.14 *Electrical Components*, page 35.
	No power.	Check cord and plug and power at wall receptacle per 2.14 *Electrical Components*, page 35.
	Faulty contactor.	Check contactor per 2.13 *Heating Contactors*, page 30.
	High limit control switch open.	Press red high limit reset per 2.11 *High Temperature Limit Control*, page 23.
	Faulty thermostat.	Check thermostat per 2.10 *Thermostat Replacement*, page 20.
	Faulty high limit control switch.	Check high limit control switch per 2.11 *High Temperature Limit Control*, page 23.
Heating of shortening too slow.	Low or improper voltage.	Use a meter and check the receptacle against data plate.
	Weak or burnt out element (s).	Check heating element(s) per 2.12 *Heating Elements*, page 26.
	Points in contactor bad.	Check contactor per 2.13 *Heating Contactors*, page 30.
	Wire(s) loose.	Tighten.
	Burnt or charred wire connection.	Replace wire and clean connectors.
Shortening overheating.	Check thermostat.	Check faulty thermostat per 2.10 *Thermostat Replacement*, page 20.
	Check faulty contactor per 2.13 *Heating Contactors*, page 30.	Check contactor for not opening.
Shortening Foaming/Draining		
Foaming or boiling over of shortening.	Water in shortening.	At end of cook cycle, drain shortening and clean vat (frypot), add fresh

Problem	Cause	Correction
		shortening, and check procedure for raising lid.
	Condensation line stopped up.	Condensation line stopped up.
	Improper or bad shortening.	Use recommended shortening.
	Improper filtering.	Refer to the procedure covering filtering the shortening.
	Improper rinsing after cleaning the fryer.	Clean and neutralize the vat (frypot); rinse with vinegar to remove alkaline then rinse with hot water, and dry vat (frypot).
Shortening will not drain from vat (frypot).	Drain valve clogged with crumbs.	Open valve - force cleaning brush through drain opening.
	Drain valve will not open by turning handle.	Replace cotter pins in valve coupling.
Main Timer Section		
Timer fails to run.	No power input.	• Check timer switch. • Check timer motor.
Buzzer continues to buzz.	Timer set at zero.	Set timer indicator to a setting other than zero.
	Faulty microswitch.	Check and replace faulty microswitch per 2.14 *Electrical Components*, page 35.
Buzzer will not buzz.	Possible faulty buzzer.	Check buzzer per 2.15 *Timing Control*, page 39.
	Timer indicator not returning to zero.	Replace timer per 2.15 *Timing Control*, page 39.
Timer will not reset.	Faulty timer.	Replace timer.
Timer light out.	Faulty lamp.	Replace lamp per 2.15 *Timing Control*, page 39.
Lid Section		

Problem	Cause	Correction
Gasket coming out of lid liner.	Crumbs under gasket.	• Remove gasket and clean per 2.16 *Pressure Regulation/ Exhaust*, page 42. • Clean top rim of vat (frypot). • Replace worn or damaged gasket per 2.16 *Pressure Regulation/Exhaust*, page 42.
Lid spindle will not turn or turns hard with lid open.	Spindle dry.	Lubricate spindle per 2.16 *Pressure Regulation/Exhaust*, page 42.
	Worn acme nut.	Replace cross arm
Lid will not unlatch from closed position.	Lid gasket not seated properly or idle nut not adjusted.	To check the problem, perform the following procedures: 1. Remove pressure from vat (frypot). 2. Turn main switch to off position. 3. Drain shortening from vat (frypot).**WARNING! The next procedure must be performed while holding the lid closed until the lid latch is free from the cross-arm. failure to hold down the lid will result in the lid springing back to a full open position. personal injury, or damage to the hinge may result.** 4. Remove Tru-Arc ring. Drive latch pin out. Lid will open. 5. Raise lid slowly. 6. Reinstall latch. 7. Adjust limit stop, per 2.16 *Pressure Regulation/Exhaust*, page 42. 8. Lid gasket should be properly seated in lid liner.

Chapter 2 Maintenance

2.1 Introduction

This section provides procedures for the checkout and replacement of the various parts used within the fryer. Before replacing any parts, see Chapter 1 *Troubleshooting*, page 1. It will aid you in determining the cause of the malfunction.

2.2 Maintenance Hints

- You may use two test instruments to check electric components:
  - A continuity light
  - An ohmmeter
- When the manual refers to the circuit being closed, the continuity light will be illuminated or the ohmmeter should read zero unless otherwise noted.
- When the manual refers to the circuit being open, the continuity light will not be illuminated or the ohmmeter will read 1 (one).

NOTICE: A continuity tester cannot be used to check coils or motors.

2.3 Preventative Maintenance Schedule

To ensure a long life of the fryers and their components, regular maintenance should be performed, see the chart below.

Table 2-1 Preventative Maintenance Schedule

Frequency	Action
Daily (3-4 loads)	Filter shortening.
Daily	Clean deadweight valve cap, weight, and orifice.
30 Days	Lubricate spindle threads and ball seat.
90 Days	Reverse lid gasket.
90 Days	Check limit stop adjustment.
90 Days	Check and tighten element spreader bars.
Once A Year	Annual preventative maintenance, see Chapter 6 *Annual Inspection*, page 123.

2.4 Lower the Control

WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

To replace parts inside the fryer, lower the control by doing the following:

1) Place the main power switch to the off position. The switch is labeled POWER/ OFF/PUMP.
2) Remove the two screws from the bottom of the control.

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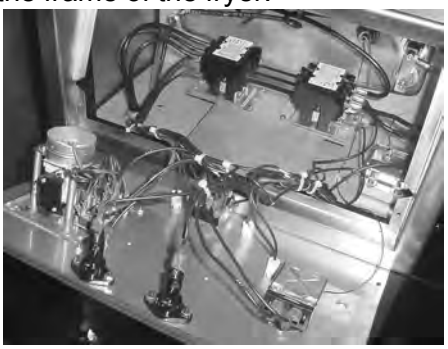
3) Carefully slide the control upward until it lifts off the metal hangers.
4) With the fryer door closed, place the lower edge of the control in the slot between the door and the frame of the fryer.



2.4.1 Raise the Control

1) Raise the control, and then hook it on the metal hangers that hold the top of the control in place.
2) Install the two screws in the bottom of the control.
3) Reconnect power to the fryer.

2.4.2 Replace the Control

Follow the steps outlined in 2.4 *Lower the Control*, page 12 and 2.4.1 *Raise the Control*, page 12.

1) Note the locations of the connectors on the back of the control
2) Remove the connectors, and then swap out the old control for the new.

3) Reconnect the connectors on the back of the control.

2.4.3 Configure the Serial Number

NOTICE: The serial number must be added correctly in to the control or the WiFi module cannot receive or transmit data, including automated software updates.

2.4.3.1 Verify the Serial Number

1) Set the power switch to the OFF position.
2) Locate the machine data plate on the inside of the filter pan door, and then record the serial number displayed on it.

   NOTE: Serial numbers may be one of two formats:

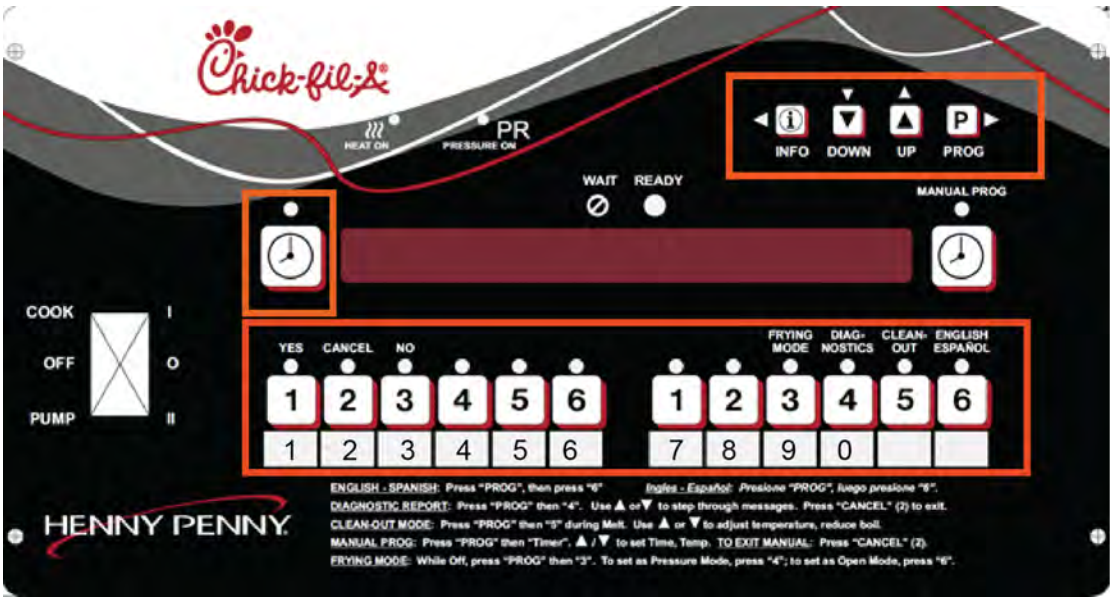
   - AAXXXXXXX (AA followed by seven digits)
   - BCXXXDE (Two letters followed by three digits followed by two more letters)

   The serial number may also be etched in to the rear top left corner of the pot (see image below).

3) Press and hold P ▷ PROG for 7-8 seconds until L-2 LEVEL 2 displays. CFA PROG / ENTER CODE displays.
4) Press P ▷ PROG twice. SETUP / ENTER CODE displays.
5) Using the left product buttons, press 1,2,3. - SETUP MODE - briefly displays.
6) Compare the serial number displayed in SM-1 with the number you recorded.
7) Perform one of the two actions:

   - If the serial number matches, press and hold P ▷ PROG until - OFF - displays. The control resumes normal operation.
   - If the serial number is missing or does not match, follow either the 9 or 7 character serial number correction procedure.

2.4.3.2 Adding or Correcting a 9 Character Serial Number



NOTE: You only need to enter the first four and last three digits; the “AA” is already populated.

1) Press the left-side button.
2) Press the right-side 1 for standard (STD).
3) Press the product keys to enter the first four digits of the serial number you recorded.

   NOTE: The value of each product key is represented by the number below the product key (see above image).

4) Press P PROG ▷ to continue.
5) Press the product keys to enter the last three digits of the serial number recorded in 2.4.3.1 *Verify the Serial Number*, page 13.
6) Press P PROG ▷. SAVE ? YES NO displays.
7) Do one of the following:

   - If the serial number is correct, press the right-side 1 for YES.

   - If the serial number is incorrect, press the right-side 4 for NO, and then repeat steps 2-6 of this procedure.

8) Press and hold P PROG ▷ until - OFF - displays. The control resumes normal operation.

2.4.3.3 Adding or Correcting a 7 Character Serial Number

1) Press the left-side button.
2) Press the 4 on the right side for custom (CUST). EDIT, and then the current serial number display.
3) Press either DOWN UP once. The 1, INFO and PROG LEDs flash rapidly.
4) Press either DOWN UP to find the letters and digits corresponding to the serial number recorded in 2.4.3.1 *Verify the Serial Number*, page 13.
5) Once you have the correct letter or digit displayed, press PROG. To go back to a previous letter or digit, press INFO.

   NOTE: If 1, INFO and PROG LEDs stop flashing, restart at step 2.
6) After entering the 7th character of the serial number, press DOWN UP to find the underscore (_) which acts as a space character. Enter the space character in the last two places.

   EXAMPLE: If your serial number is IB018JC, after entering all nine characters, “IB018JC ” displays. There are two trailing spaces after the serial number.
7) Press PROG until SM-1 and the serial number you entered displays.
8) Press and hold PROG until - OFF - displays. The control resumes normal operation.

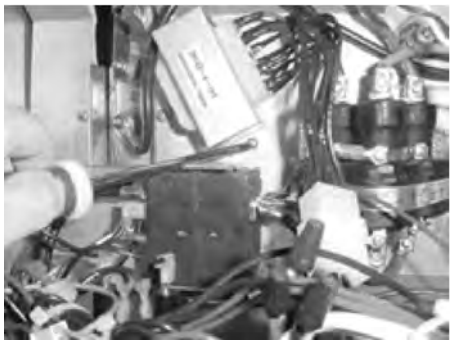
2.5 Transformer Replacement

WARNING! **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

The transformer reduces the voltage down to accommodate those components with low voltage.

1. Remove electrical power supplied to the fryer.
2. Remove the control panel. See 2.4 *Lower the Control*, page 12.
3. Disconnect the white box connector.

4. Remove the two screws securing transformer to the unit and remove transformer.
5. Replace with new transformer in reverse order.



2.6 Temperature Probe Replacement

WARNING! **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

The temperature probe relays the actual shortening temperature to the control. If it becomes disabled, “E-6” shows in the display. Also, if the temperature is out of calibration more than 10° F, or 10° C, the temperature probe should be replaced. An Ohm check can be performed also, see 6.16 *Inspect the Temperature Probe*, page 136.

1. Remove electrical power supplied to the fryer.
2. Drain the shortening from the vat (frypot).
3. Remove the control panel. See 2.4 *Lower the Control*, page 12.
4. Using a 1/2” wrench, remove the nut on the compression fitting.
5. Remove the temperature probe from the vat (frypot).
6. Follow the appropriate instructions below depending upon the type of fryer, gas or electric.

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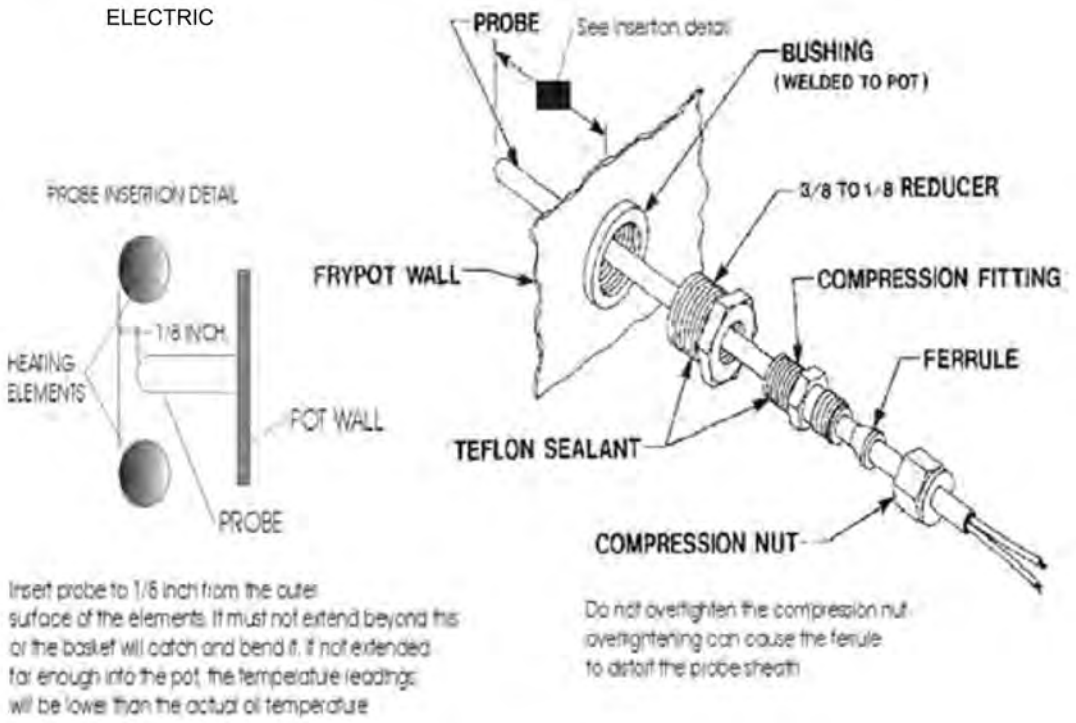
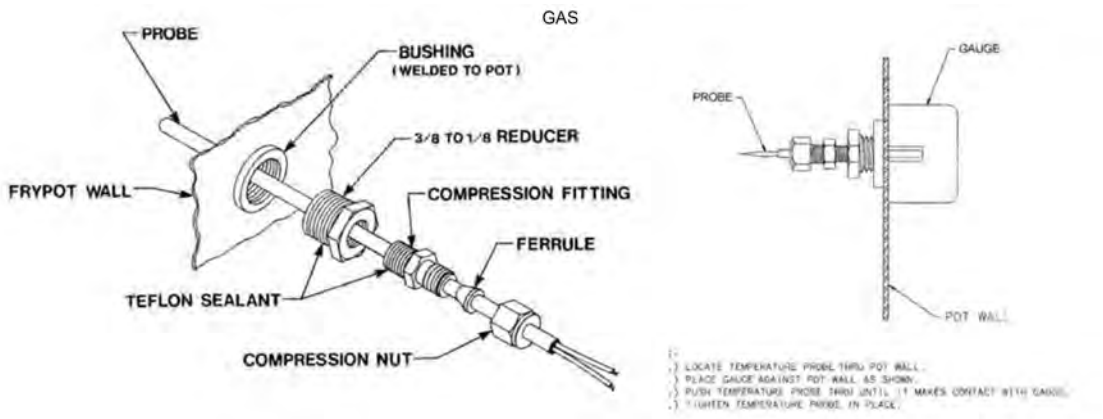


Insert probe to 1/8 inch from the outer surface of the elements. It must not extend beyond this or the basket will catch and bend it. If not extended far enough into the pot, the temperature readings will be lower than the actual oil temperature.

Do not overtighten the compression nut. overtightening can cause the ferrule to distort the probe sheath.



7. Tighten the compression nut hand tight and then a half turn with wrench.

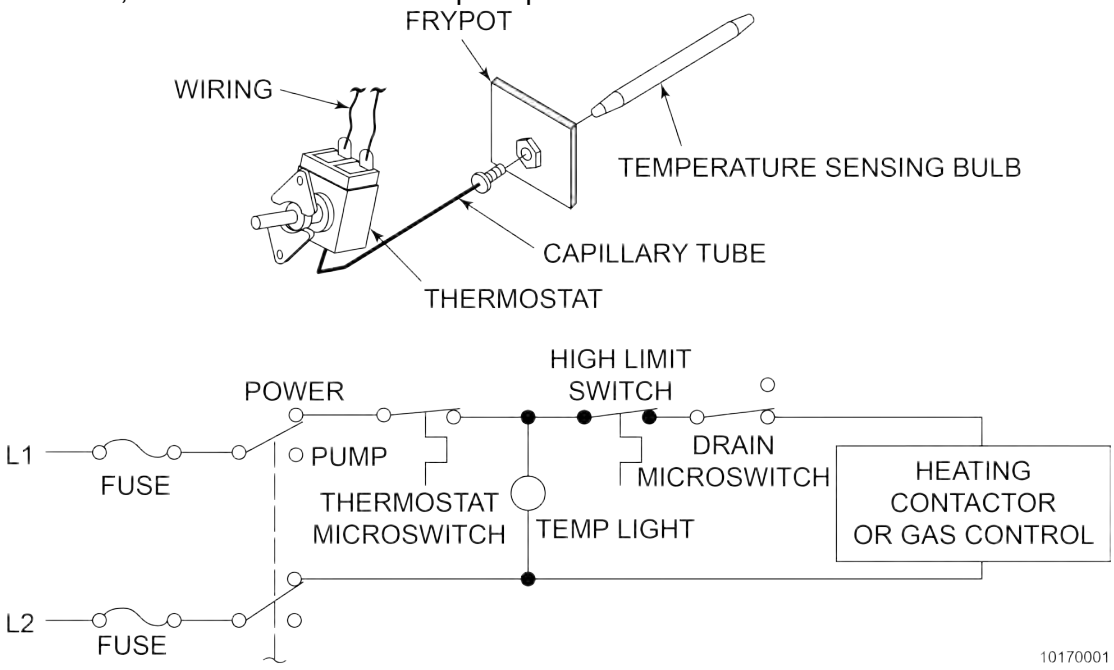
8. Connect new temperature probe to PC board and replace control panel.

9. Replace shortening and turn power on and check out fryer.

2.7 Temperature Regulation (Single Stage)

2.7.1 Front Panel Thermostat

The cooking temperature is controlled by the front panel thermostat and monitored by its sensing bulb mounted just inside the vat (frypot). Various thermostats are available, but all work on the same principle.



2.7.2 Internal Operation

The thermostat bulb is connected to the thermostat by a thin capillary tube. When the temperature rises, the fluid inside the bulb expands (as in a thermometer) and pushes

fluid through the tube into the control panel thermostat. When the vat (frypot) temperature is lower than the thermostat setting, the TEMP light is illuminated and vat (frypot) is being heated. When the temperature setting is reached, a switch inside the thermostat opens the circuit to the heat source and turns off the TEMP light. When the vat (frypot) starts to cool, the switch closes the circuit to the heat source.

2.7.3 Drain Microswitch

This interlock provides protection for the vat (frypot) in the event an operator inadvertently drains the shortening with the switch in the power position. The heat will automatically shut off when the drain valve is opened.

2.7.4 High Limit Temperature Control

The high limit temperature provides the safety feature of interrupting the heat if the temperature ever exceeds the safe operating limits. On electric models it must be manually reset when the vat (frypot) cools, see 2.11 *High Temperature Limit Control*, page 23 for maintenance of the high limit temperature control.

2.8 Calibrating The Standard Single Stage Thermostat

Henny Penny does not recommend that a field calibration be performed on the thermostats mentioned above. The reasons for this are as follows:

- The thermostat is calibrated in a controlled environment from the factory. The thermostat manufacturers do not recommend any adjustments to the thermostat in the field, as this will affect the factory calibration.
- The difference between a hand-held thermometer and an installed thermostat can be quite large due to shortening temperature variation.
- The adjustment of a thermostat is not precise, since the dial reads only in 25°F increments. The accuracy of a thermostat needs to be less than 5°F.

If a thermostat is not reading accurately and suspected to be faulty, Henny Penny suggests that the thermostat be replaced. If you have any questions, please do not hesitate to call the Technical Services Department.

2.9 Testing The Thermostat

WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

2.9.1 Procedure

If the thermostat fails to work properly, perform the following checks before replacing the thermostat:

1) Remove electrical power supplied to the fryer.
2) Remove the control panel.

3) With an ohmmeter or continuity light, check for continuity as follows.

4) On a standard single temperature thermostat (Henny Penny Part No. 14293), check between terminals 52 and 53. Move the temperature knob from off to maximum.

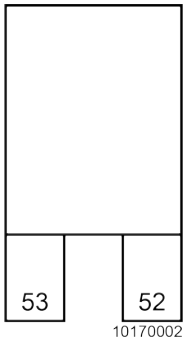


Figure 2-1 Thermostat Test Points

- At off position, the circuit should be open.
- At maximum, the circuit should be closed.

2.10 Thermostat Replacement

WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

1) Remove electrical power supplied to the fryer.
2) Drain the shortening from the vat (frypot).
3) Remove the thermostat sensing bulb from the bulb holder inside the fryer.

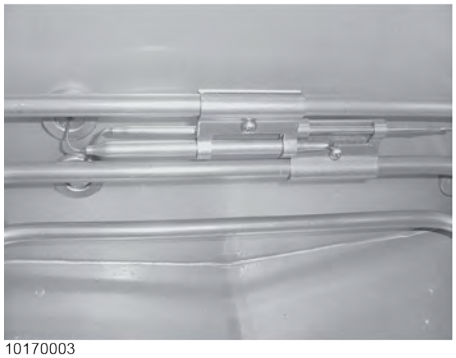


Figure 2-2 Thermostat Sensing Bulb - Electric

4) Place your thumb at the bend in the capillary tube, where it comes into the vat (frypot), and straighten the bulb. The bulb should be extending out into the vat (frypot).

5) Remove the two screws which secure the control panel to the frame of the fryer.

6) Lift the panel up and off the metal flanges.

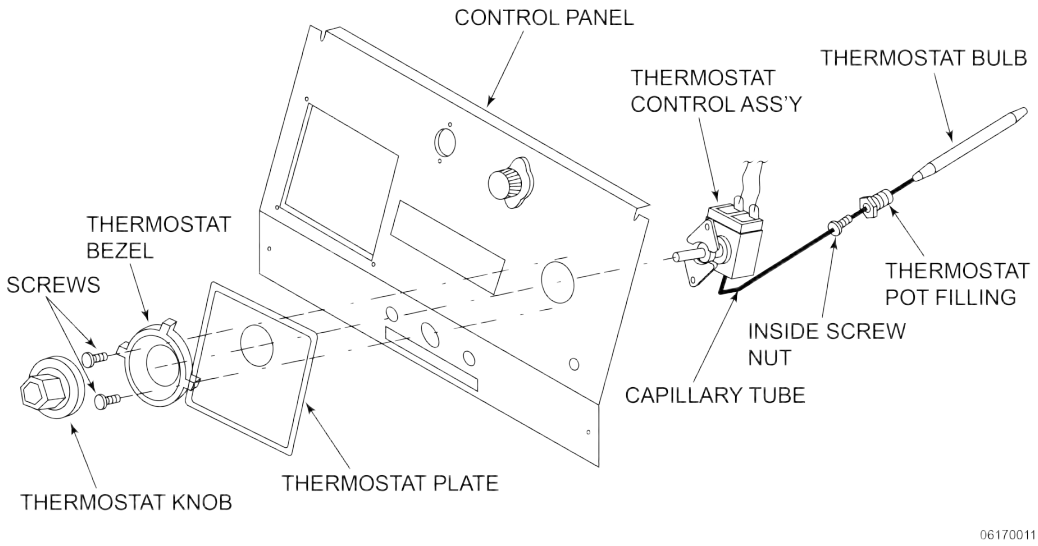


Figure 2-3 Thermostat & Control Panel Diagram

7) With the door of the fryer closed, put the bottom edge of the control panel in the slot between the door and the frame of the fryer.

8) Locate the thermostat on the back of the panel.

9) Remove the thermostat on the back of the panel.

10) Remove the thermostat knob on the front of the control panel.

11) Remove the small inside screw nut (2) which holds the capillary line, see Figure 2-4 *Screw Nut Assembly*, page 22.

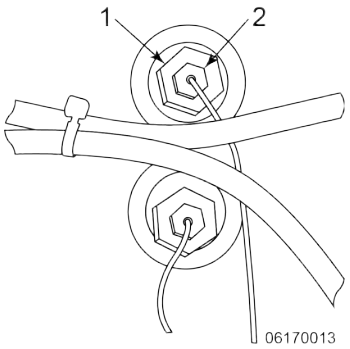


Figure 2-4 Screw Nut Assembly

12) Remove the large screw nut (1).

13) Label the wire connections to the thermostat for correct identification when the new thermostat is installed.

14) Disconnect the wires.

15) Remove the defective thermostat.

16) Install the new thermostat.

17) Connect the wires to the new thermostat.

CAUTION!	**Be careful not to cross the wires or thermostat will not operate properly.**

18) Uncoil the capillary tube.

19) Insert the bulb through the wall of the vat (frypot).

WARNING!	**To avoid electrical shock or other injury, the capillary line must run under and away from all electrical power wires. The tube must never be in contact with the electrical power wires or terminals.**

20) Install the thermostat pot fitting into the wall of the vat (frypot) and tighten.

21) Replace the thermostat sensing bulb into the mounting bracket.

CAUTION!	**Do not bend the capillary tube where it connects to the sensing bulb or damage to capillary will result.**

22) Slip the bulb holder in place. With bulb in place, tighten the clamp screw.

23) Pull the excess capillary tube from the inside of the vat (frypot).

24) Insert and tighten the inside screw nut into the thermostat.

25) Install the two screws on the front of the control panel, which secure the thermostat to the back of the panel. Install the thermostat bezel.

26) Install the thermostat knob.

27) Secure the control panel with the 4 screws.

28) Reconnect power to the fryer.

29) Calibrate the thermostat 2.8 *Calibrating The Standard Single Stage Thermostat*, page 19.

2.11 High Temperature Limit Control

2.11.1 Description

This high temperature control is a manual reset control which senses the temperature of the shortening. If the shortening temperature exceeds the safe operating limit, this control switch will open and shut off the heat to the vat (frypot). When the temperature of the shortening drops to the safe operating limit, the control must manually be reset.

To locate the high limit reset button (1), open the door to the drain pan. Look up under the controls and to the right of the filter handle for a red reset button. On the left for single phase units.

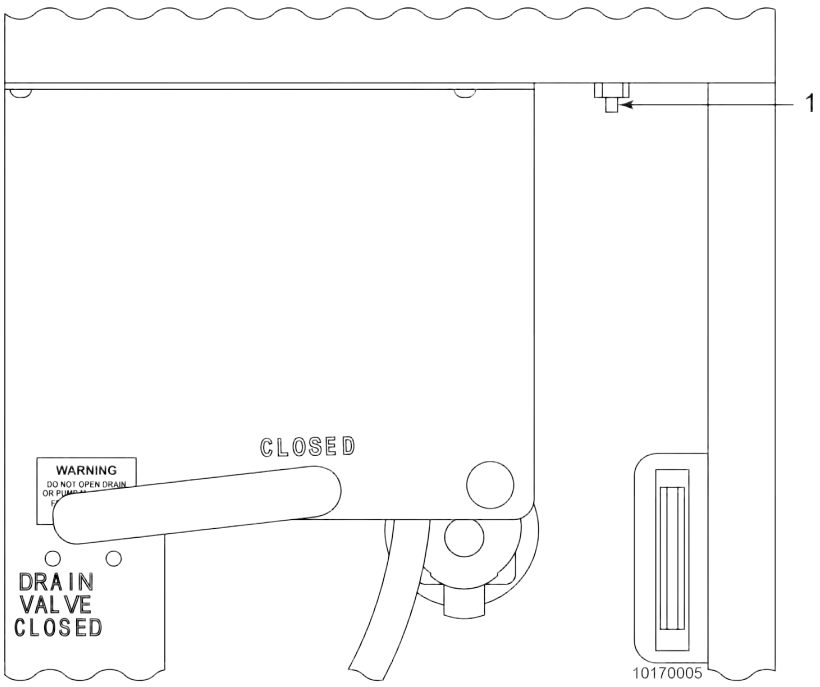


Figure 2-5 High Limit Reset Button - Electric

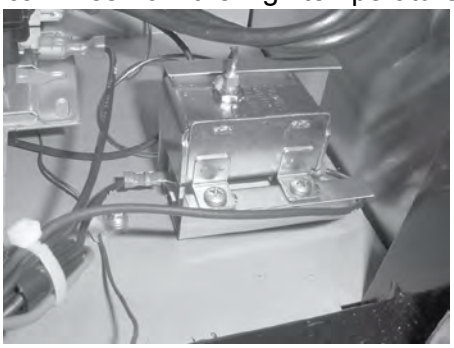
2.11.2 Checkout

WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

NOTICE: The shortening temperature must be below 380º F to accurately perform this check.

Before replacing a high temperature limit control, check to see that its circuit is closed.

1) Remove electrical power supplied to the fryer.
2) Remove the control panel and insert it in the slot above the door, see 2.4 *Lower the Control*, page 12.
3) Remove the two electrical wires from the high temperature limit control.



4) Check for continuity between the two terminals after resetting the control. If the circuit is open, replace the control, then continue with this procedure. If the circuit is closed, the high limit is not defective. Reconnect the two electrical wires.

2.11.3 Replacement

WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

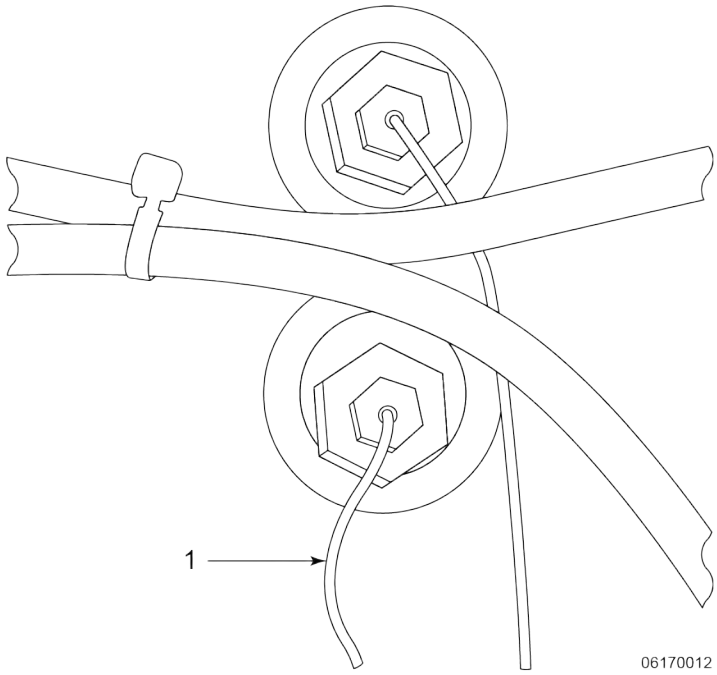


Figure 2-6 High Limit Capillary Tube - Electric

1) If the capillary tube (1) is broken or cracked, the control will open, shutting off electrical power. The control cannot be reset.

2) Drain shortening from the vat (frypot).

3) Remove control panel.

4) Loosen small inside screw nut on capillary tube.

5) Remove capillary bulb from bulb holder inside the vat (frypot).

6) Straighten the capillary tube.

7) Remove larger outside nut that threads into pot wall.

8) Remove the two screws that secure the high limit to the high limit bracket.

9) Remove defective control from control panel area.

10) Insert new control and replace screws.

11) Uncoil capillary line, starting at capillary tube, and insert through vat (frypot) wall.

WARNING!

To avoid electrical shock or other injury, the capillary line must run under and away from all electrical power wires. The tube must never be in contact with the electrical power wires or terminals.

12) Carefully bend the capillary bulb and tube toward the bulb holder on the heating elements.

13) Slip the capillary bulb into the bulb holder located on the heating elements. Pull excess capillary line form pot and tighten nut into vat (frypot) wall, see Figure 2-2 *Thermostat Sensing Bulb - Electric*, page 20 for proper installation.

CAUTION! **Be sure capillary bulb of high limit is located behind capillary bulb of thermostat. Both capillary bulbs and bulb holders should be positioned as not to interfere with basket or when cleaning the vat (frypot) wall, or damage to capillary tube could result.**

14) With excess capillary line pulled out, tighten smaller nut.

15) Replace front panel.

16) Refill with shortening.

2.12 Heating Elements

2.12.1 Description

Each fryer uses three heating element assemblies. Heating elements are available for 208, 220/240, or 440/480 voltage. Check the data plate inside the door to determine the correct voltage.

2.12.2 Maintenance Hint

If the shortening's temperature recovery is very slow, or at a slower rate than required, this may indicate defective heating element(s). An ohmmeter will quickly indicate if the elements are shorted or open.

2.12.3 Checkout

WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

1) Remove electrical power supplied to the fryer.

2) Remove the control panel and insert it in the slot above the door, see 2.4 *Lower the Control*, page 12.

3) Perform ohm check on one heating element at a time, with wires disconnected from element. If the resistance is not within tolerance, replace the element.

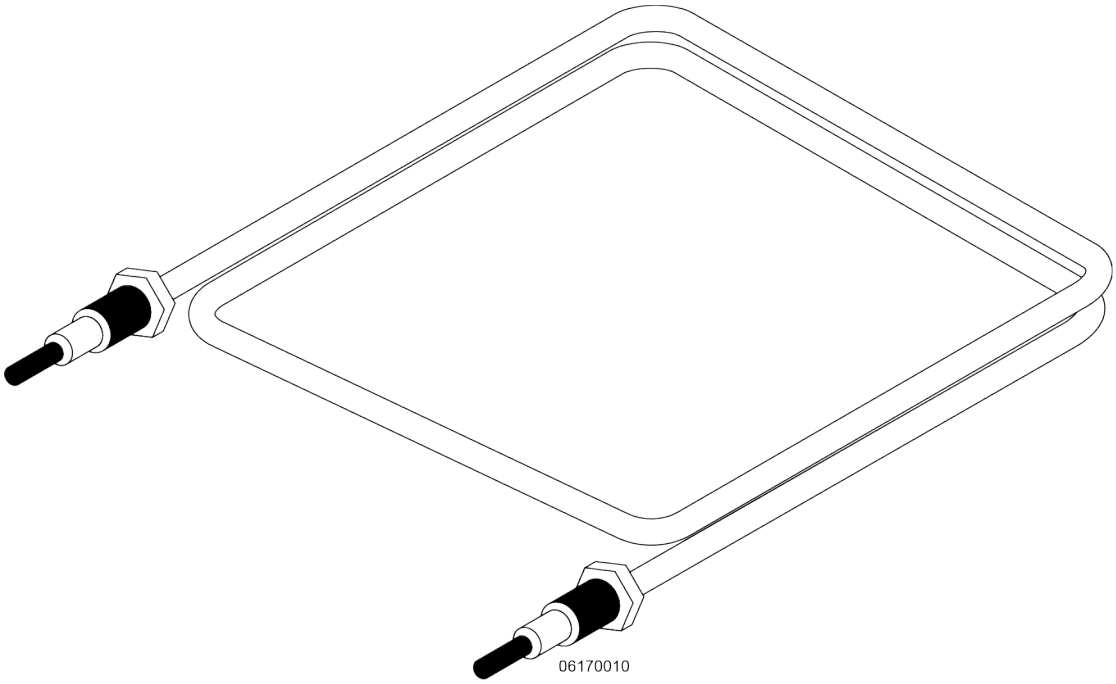


Table 2-2 Heating Element Ohm Checkout

Heater P/N	Power	Voltage	Resistance in Ohms (Cold)
18233-1	4500W	208VAC	9±1
18233-2	4500W	230VAC	11±1.5
18233-4	3750W	208VAC	11±1.5
18233-5	3750W	220VAC	12±2
18233-6	3750W	480VAC	60±5
18233-7	4500W	480VAC	50±4
18233-8	4500W	380VAC	32±3.5

2.12.4 Replacement

1) Drain the shortening.
2) Remove the thermostat bulb holder from the heating element inside the vat (frypot).
3) Remove the heating element wires from the terminals by removing nuts (5) and washers (6 and 7). Label each so it can be replaced in the same position on the new element, see Figure 2-7 *Heating Element Assembly*, page 28.

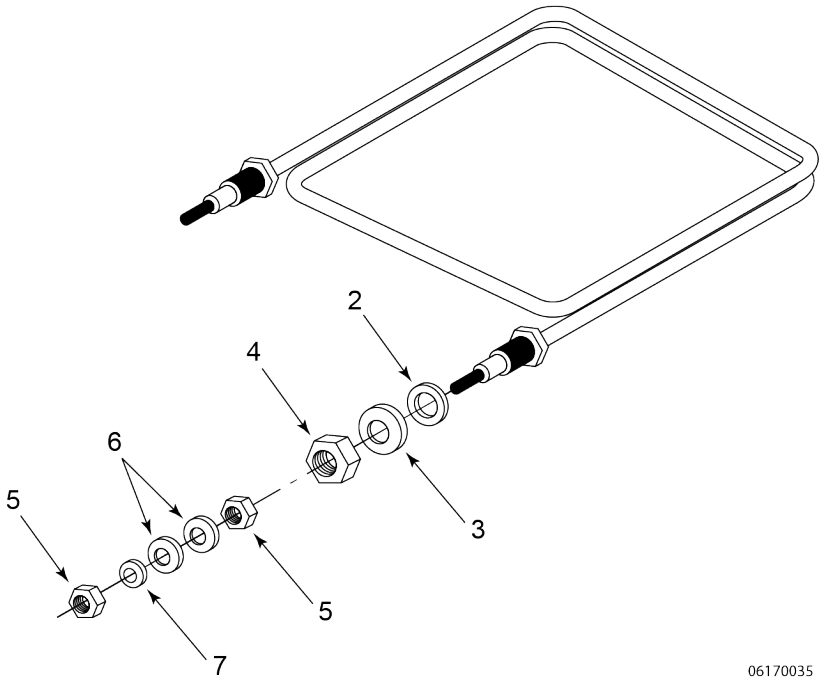


Figure 2-7 Heating Element Assembly

4) Loosen the bolts on the four element spreaders (1), see Figure 2-8 *Heating Element Spreaders*, page 29.

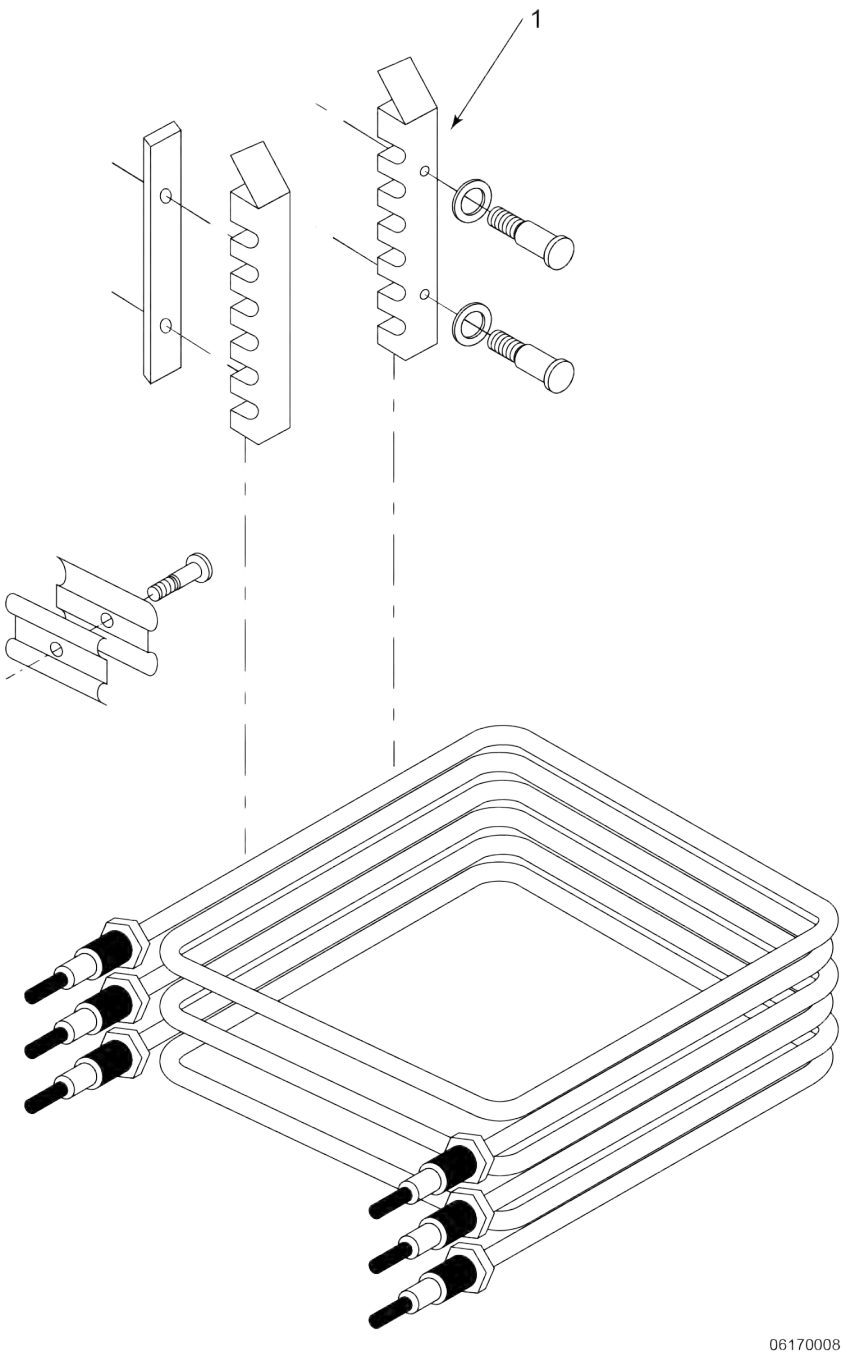


Figure 2-8 Heating Element Spreaders

5) Slide the elements spreaders (1) to the center of the heating element.

6) Remove the brass nuts (4) and washers (3), which secure the ends of the elements through the vat (frypot) wall, see Figure 2-7 *Heating Element Assembly*, page 28.

7) Remove the heating elements from the vat (frypot) as a group by lifting the far end and sliding them up and out toward the rear of the vat (frypot).

NOTICE: Always install new rubber O-rings (2) when installing heating elements.

8) Install new heating elements with new rubber O-rings (2) mounted on terminal ends, and spreaders loosely mounter in the center of the stacked elements.

9) Replace the heating elements, terminal end first at approximately 45º angle, slipping the terminal ends through the front wall of the vat (frypot).

10) Replace the brass nuts (4) and washers (3) on the heating element terminals. Tighten the brass nuts to 30 foot lbs. of torque.

11) Move the element spreaders from the center of the element, into a position which will spread each element apart evenly on all four sides, and tighten.

12) Replace the thermostat bulb holder on the top element, and position the bulb between the top and second element midway from side to side, and tighten screw which holds the bulb in place.

13) Reconnect the wires to the appropriate terminal as labeled when they were removed.

14) Replace the front control panel.

15) Connect the power cord to the wall receptacle or close wall circuit breaker.

CAUTION! **Heating elements should never be energized without shortening in the vat (frypot), or damage to elements could result.**

16) Check the heating elements as described in Operator's Manual.

17) Replace the shortening in the vat (frypot).

2.13 Heating Contactors

2.13.1 Description

Each electric fryer requires two switching contactors. One is the primary contactor and the second in line is the heat contactor. When open, the primary contactor allows no power to flow to the heat contactor. When closed, the primary contactor completes the timer circuit and the high limit (heat) circuit. It also supplies power to the heat contactor which is controlled by the thermostat.

2.13.2 Checkout (Power Removed)

WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

1) Remove electrical power supplied to the fryer.
2) Remove the control panel and insert it in the slot above the door, see 2.4 *Lower the Control*, page 12.
3) Perform a check on the contactor as follows:

Test Points	Results
from 23 to 29	open circuit
from 24 to 28	open circuit
from 25 to 27	open circuit
from 30 to 34	open circuit
from 31 to 35	open circuit
from 32 to 36	open circuit
from 22 to 26	ohm reading 415
from 33 to 37	ohm reading 415

See Figure 2-9 *Primary Contactor Test Points*, page 31 and Figure 2-10 *Heat Contactor Test Points*, page 32 for test point locations.

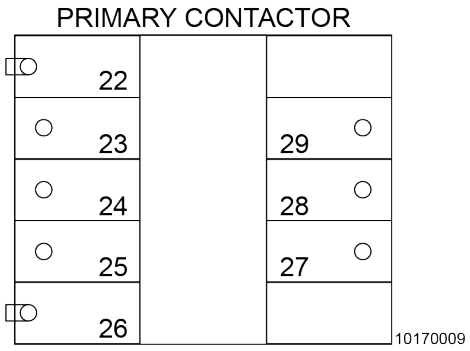


Figure 2-9 Primary Contactor Test Points

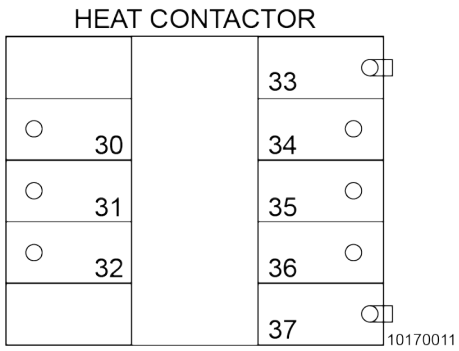


Figure 2-10 Heat Contactor Test Points

2.13.3 Checkout (Power Supplied)

WARNING **To avoid electrical shock, make connections before applying power, take reading, and remove power before removing meter leads. The following checks are performed with the wall circuit breaker closed and the main power switch in the on position.**

1) With power re-applied, set the thermostat to its maximum temperature.
2) On fryers using single phase power, check voltage as follows:

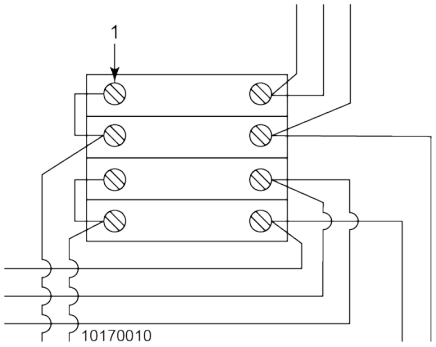


Figure 2-11 Circuit Breaker

- From pin D (1), see Figure 2-11 *Circuit Breaker*, page 32. On circuit breaker to terminal 34, see Figure 2-10 *Heat Contactor Test Points*, page 32.
- From pin D (1) on circuit breaker to terminal 35, see Figure 2-10 *Heat Contactor Test Points*, page 32.
- From pin D (1) on circuit breaker to terminal 36, see Figure 2-10 *Heat Contactor Test Points*, page 32.

The voltage should read the same at each terminal. It should correspond to the voltage rating stated on the data plate, see Figure 2-9 *Primary Contactor Test Points*, page 31.

NOTICE: If voltage is not present, check output of primary contactor at terminals 27, 28, and 29.

3) On fryers using three-phase power, check voltage as follows:

Heat Contactor:

- from terminal 34 to 35, see Figure 2-10 *Heat Contactor Test Points*, page 32.
- from terminal 35 to 36, see Figure 2-10 *Heat Contactor Test Points*, page 32.
- from terminal 24 to 36, see Figure 2-10 *Heat Contactor Test Points*, page 32.

The voltage should read the same at each terminal. It should correspond to the voltage rating stated on the data plate, see Figure 2-9 *Primary Contactor Test Points*, page 31.

Primary Contactor:

- from terminal 27 to 28, see Figure 2-9 *Primary Contactor Test Points*, page 31.
- from terminal 28 to 29, see Figure 2-9 *Primary Contactor Test Points*, page 31.
- from terminal 27 to 29, see Figure 2-9 *Primary Contactor Test Points*, page 31.

The voltage should read the same at each terminal. It should correspond to the voltage rating stated on the data plate, see Figure 2-9 *Primary Contactor Test Points*, page 31.

2.13.4 Replacement Square D

WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

If either contactor is defective, it must be replaced as follows:

1) Remove only those wires directly connected to the contactor being replaced. Label the wires.
2) Remove the two mounting screws on the base plate and remove contactor.
3) Install the new contactor and tighten the two mounting screws.
4) Connect the labeled wires to their respective positions.
5) Install the control panel per 2.4.1 *Raise the Control*, page 12.
6) Reconnect power to the fryer and test the fryer for proper operation.

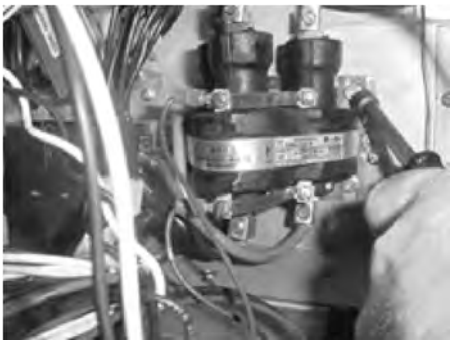
2.13.5 Replacement Mercury

WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

NOTE: Mercury contactors were used on all fryers until 2011. Replacement contactors cannot be shipped to states where regulations forbid use.

Replace contactor as follows:

1) Remove only those wires directly connected to the contactor being replaced. Label the wires.
2) On the mercury heat contactor, use a 5/16” socket or nut- driver and loosen four nuts securing contactor to shroud. Slide contactor up and then pull out through the slotted holes in the base of the contactor.
3) On the primary contactor, remove two mounting screws on the base plate and remove contactor.
4) Install the new contactor and tighten the two mounting screws.
5) Connect the labeled wires to their respective positions.
6) Install the control panel.
7) Reconnect power to the fryer and test the fryer for proper operation.



2.14 Electrical Components

WARNING

Do not disconnect the ground (earth) plug. This fryer must be adequately and safely grounded (earthed) or electrical shock could result. Refer to local electrical codes for correct grounding (earthing) procedures or in absence of local codes, with The National Electrical Code, ANSI/ NFPA No. 70-(the current edition). In CANADA, all electrical connections are to be made in accordance with CSA C22.1, Canadian Electrical Code Part 1, and/or local codes.

NOTICE: Electric motor bearings are permanently lubricated and do not require attention during normal service life of this fryer.

2.14.1 Drain Switch

WARNING

To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.

2.14.1.1 Electric Models

All fryer models have a drain microswitch in line with the gas control valve or heat contactor and thermostat. When the drain valve is opened to drain the shortening, this causes drain switch to open, shutting off electrical power to the heating elements.

1) The following check should be made to determine if the drain switch is defective. All checks should be made with the drain valve in the closed position, with the actuator pushed in.
   - Fryers with standard thermostat part number 14293, the continuity check must be made between terminal 52 on the thermostat, and terminal 33 on the heat contactor. if circuit is open, the drain switch is bad and needs to be replaced, see Figure 2-1 *Thermostat Test Points*, page 20 and for terminal locations.
2) To replace the drain switch, remove the two screws and nuts (1) securing switch and switch cover, see Figure 2-12 *Drain Switch Assembly*, page 36.

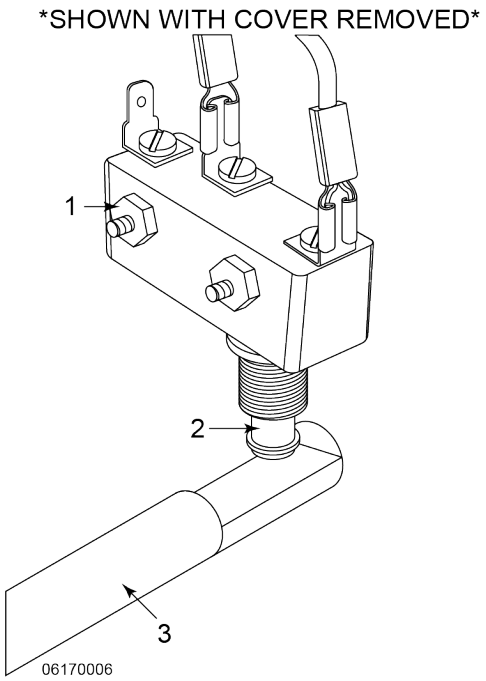


Figure 2-12 Drain Switch Assembly

3) Label and disconnect wires.
4) Connect wires to new drain switch.
5) Position actuator (2) and attach drain switch and switch cover with two screws and nuts. Tighten nuts to 3-4 inch-pounds of torque.
6) Test to see if drain valve extension and rod (3) actuates the switch.

NOTICE: Listen for an audible click of switch while rotating drain valve extension rod (3).

2.14.2 Main Power Switch

WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

The Main Power switch is a three way switch with a center OFF position. With the switch in POWER position, the fryer will operate. With the switch in the PUMP position, the filter pump will operate but the heating unit will not.

2.14.3 Continuity Check Procedure

Figure 2-13 Continuity Check Test Points

Table 2-3 Continuity Check Procedure - Off Position

Test Points	Results
#60 to #59 then #60 to #67	Open circuit
#61 to #58 then #61 to #66	Open circuit
#62 to #57 then #62 to #65	Open circuit
#63 to #56 then #63 to #64	Open circuit
#60 to #61	Closed circuit
#62 to #63	Closed circuit

Table 2-4 Continuity Check Procedure - Power Position

Test Points	Results
#60 to #59	Closed circuit
#61 to #58	Closed circuit
#62 to #57	Closed circuit
#63 to #56	Closed circuit

Table 2-5 Continuity Check Procedure - Pump Position

Test Points	Results
#60 to #67	Closed circuit
#61 to #66	Closed circuit
#62 to #65	Closed circuit
#63 to #64	Closed circuit

2.14.4 Replacement

1) Remove control panel per 2.4 *Lower the Control*, page 12.
2) Label wires at the Main Power switch and disconnect wires at switch.
3) Remove faulty switch and install new switch.

4) Reconnect wires to switch in the same position as noted on the labels.
5) Replace control panel per 2.4.1 *Raise the Control*, page 12.

2.14.5 Indicator Lights

WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

The indicator lights for HEAT-PUMP-POWER, are identical assemblies consisting of a neon light and mounting clip, and are replaced as assemblies.

1) Remove control panel per 2.4 *Lower the Control*, page 12.
2) Disconnect indicator light wires from the individual power source.
3) Squeeze the retaining clip while removing the indicator light and discard the light.
4) Install the new indicator light.
5) Connect the wires from the new indicator light.
6) Replace control panel per 2.4.1 *Raise the Control*, page 12.

2.14.6 Fuse Holder

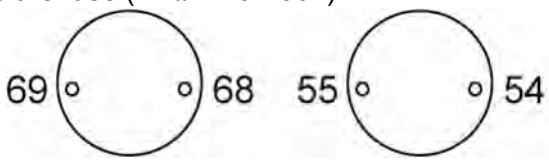
WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

There are two fuse holders on each model of the electric fryers.

2.14.7 Checking Procedure For Fuses

CONTROL PANEL FUSES 3 Phase:

Check from #54 to #55 and #68 to #69 on fuse assembly. The circuit should be closed. If not, replace the fuse (HP# EF02-007).



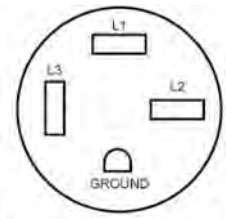
2.14.8 Cord & Plug Check

Perform a check on the cord and plug as follows:
Test from each plug prong to the corresponding wire lead on the other end of the cord at junction box. The result should be a closed circuit on each line tested.

2.14.9 Wall Receptacle (Voltage Check)

2.14.9.1 Electric Models

Check the voltage across the following lines: L1-L2; L2-L3; L1-L3.



ELECTRIC FRYER

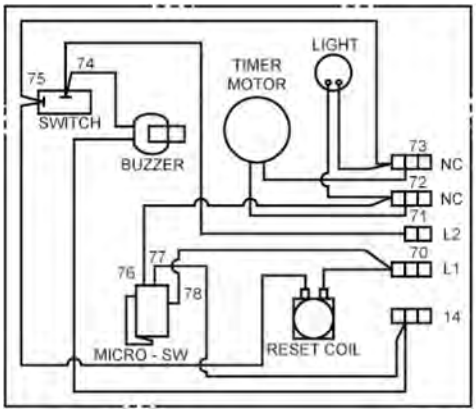
The voltage should read the same for each line test. It should correspond to the voltage shown on the data plate.

2.15 Timing Control

WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

2.15.1 Description

The TIMER CONTROL consists of a microswitch, indicator light, buzzer, reset timer, and timer motor.



2.15.2 Checking Procedure

Table 2-6 Checking Procedure - ON/OFF Switch

Test Points	Results
Switch in OFF Position	
Check from #74 to #75	Open circuit
Switch in ON Position	
Check from #74 to #75	Closed circuit

Table 2-7 Checking Procedure - Buzzer Coil

Test Points	Results
Switch in OFF position	
Check from #14 to #75	
• 120 volt 50/60 Hz	1550 ohms
• 208-240 volt 50/60 Hz	5880 ohms

Table 2-8 Checking Procedure - Microswitch

Test Points	Results
Timer Set At 10 Min.	
Check from #70 to #72	Closed circuit
Check from #70 to #14	Open circuit
Timer Set At 0 Min.	
Check from #70 to #72	Open circuit
Check from #70 to #14	Closed circuit

Table 2-9 Checking Procedure - Motor

Test Points	Results
Check from #70 to #75	
120 volt 50/60 Hz	290 ohms
208-240 volt 50/60 Hz	3990 ohms

Table 2-10 Checking Procedure - Reset Coil

Test Points	Results
Check from #70 to #75	
120 volt 50/60 Hz	280 ohms
208–240 volt 50/60 Hz	3950 ohms

2.15.3 Replacement

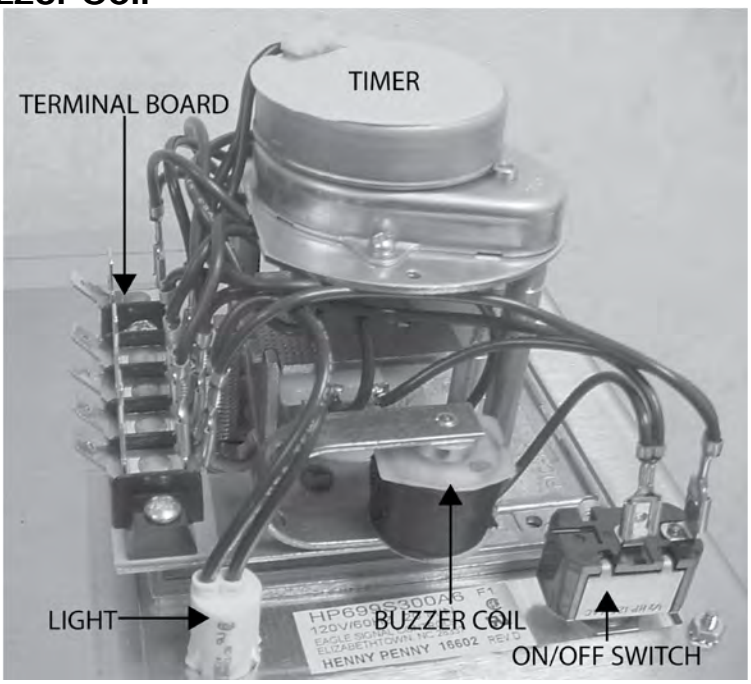
1) Remove control panel per 2.4 *Lower the Control*, page 12.
2) Label the wires and remove them from the timer.
3) Remove four screws securing the timer to the control panel.

NOTICE: Replacement of timer may not be necessary if lamp is burned out, if buzzer coil is burned open, or if ON/OFF switch is bad, timer motor and timer microswitch can be replaced separately.

2.15.4 Timer Light

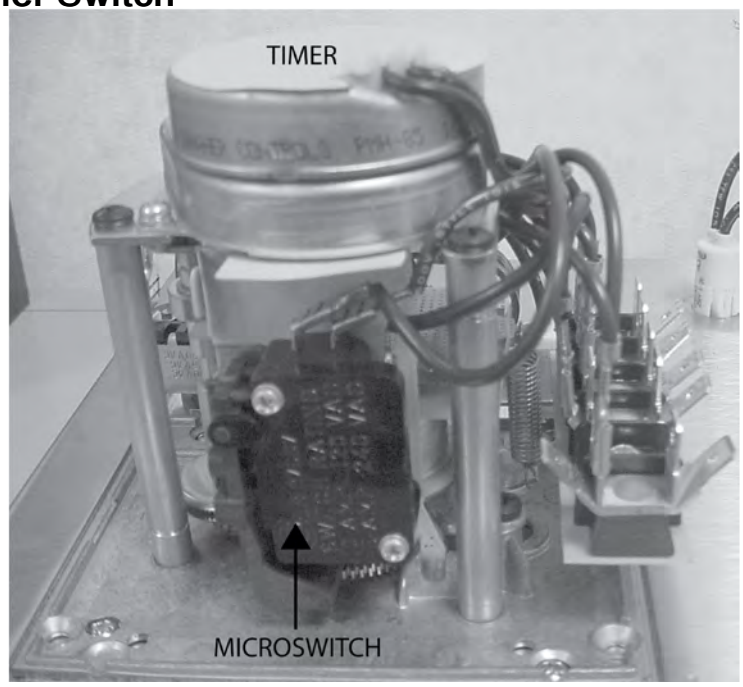
1) Disconnect light wires from terminal board.
2) Remove and discard the bad light assembly.
3) Install new light assembly allowing retainers to snap into place.

2.15.5 Buzzer Coil



1) Remove buzzer and coil from timer.
2) Disconnect buzzer coil wires from terminal board of timer.
3) Install new buzzer and coil to timer.
4) Connect coil wires to terminal board of timer.
5) Install new or repaired timer on control panel and secure with four screws.
6) Attach wires to the timer in accordance with the labels attached.
7) Install control panel per 2.4.1 *Raise the Control*, page 12.

2.15.6 Timer Switch



1) Connect light leads to terminal board of timer.
2) Remove switch nuts and remove switch from panel.
3) Disconnect switch wires from terminal board.
4) Install new switch on panel and secure with switch nut.
5) Connect switch wires to the terminal board of timer.

2.16 Pressure Regulation/Exhaust

WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

2.16.1 Solenoid Valve

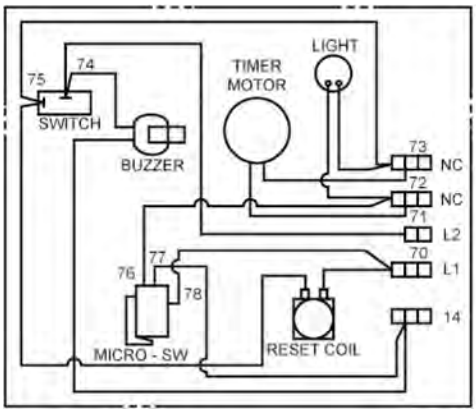
This is an electromechanical device that causes pressure to be held in the vat (frypot). The solenoid valve closes at the beginning of the cook cycle and is opened automatically by the timer at the end of the cook cycle. If this valve should become dirty or the Teflon seat nicked, pressure will not build up. The fryer uses a 208/240 volt 60 Hz coil. The 440/480 volt electric model uses a transformer to drop voltage to 220/240 volts.

2.16.2 Coil Check Procedure

1) Remove wires from terminals 73 and 72 and check across solenoid wires.

Table 2-11 Coil Check Procedure

Test Volts/Phase	Results
24 volt	2.2 Ohms
120 volt 60 Hz	50 Ohms
208-240 volt 60 Hz	150 Ohms
208-240 volt 50 Hz	245 Ohms



2.16.3 Replacement

Figure 2-14 Solenoid Valve Assembly

1) Remove Tru-Arc retaining clip on top of the coil housing.
2) Remove the nameplate and cover.
3) If only the coil is replaced, disconnect two coil wires at the wire nuts in the coil housing, and remove the coil from the housing. Then replace nameplate, cover, and Tru-Arc clip. If the complete solenoid or seal are being replaced, continue to step 4.

NOTICE: The wires may be connected in any order.

4) Loosen the nut on the 1/2 inch connector and pull piping conduit form the valve case. Leave enough slack to remove the coil housing and yoke.

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5) If the core-disc assembly is sticking due to buildup of shortening, breading, and food particles, proceed with the following steps.

- Unscrew the solenoid bonnet assembly from the solenoid valve body.

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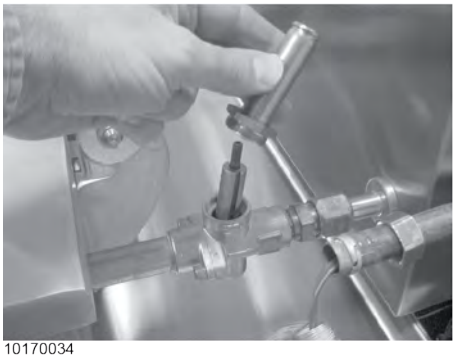
- Remove the solenoid bonnet assembly and the bonnet gasket.



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- Remove the core-disk assembly, core spring retainer, and the core spring.


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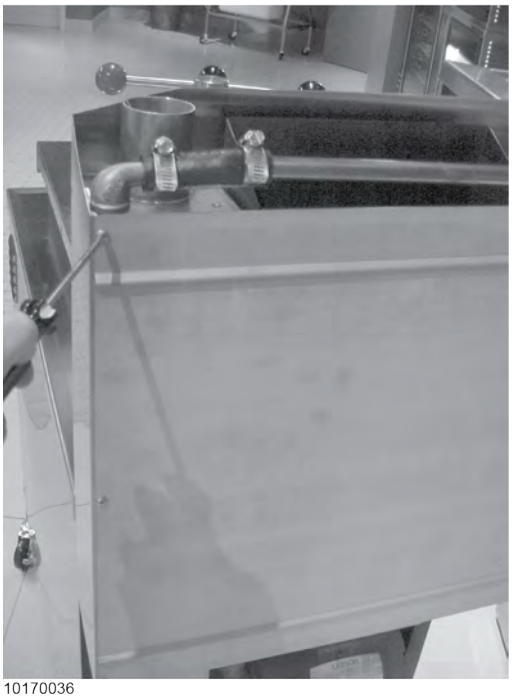
- Wash all parts in soap and hot water.

NOTICE: If replacing Teflon seals, or complete valve, proceed to step 6, otherwise assemble in reverse order of disassembly.
Assemble valve core and blade (6), with the smooth side of the hole towards the disc spring guide (9), see Figure 2-17 *Solenoid Valve Diagram*, page 47.

6) A repair kit, Henny Penny Part No. 17120, is available if any of the seals need to be replaced. If any one seal is defective, all seals should be replaced.

NOTICE: Remove the solenoid body from fryer to replace seals, see Figure 2-17 *Solenoid Valve Diagram*, page 47 to help identify all parts.

- Remove back cover.



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- Loosen both conduit and exhaust fittings.

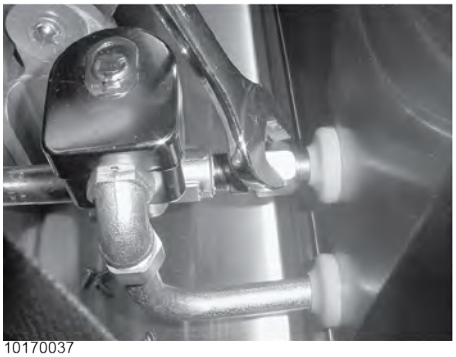

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Figure 2-15 Exhaust Fitting

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Figure 2-16 Conduit Fitting

- Remove nipple from solenoid body.

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- Unthread body from fryer.
- A new solenoid can now be placed on the fryer, and reassembled in reverse order of previous steps, or continue onto step 7 to change the seals.

7) To change seals:

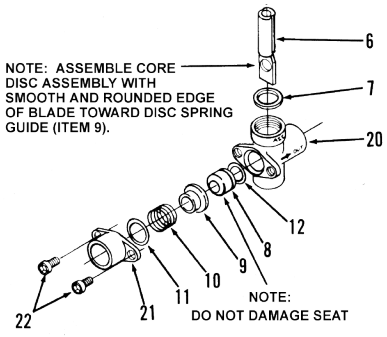


Figure 2-17 Solenoid Valve Diagram

- Remove the two adapter screws (22) which attach the pipe adapter (21) to the solenoid body (20).
- Remove the disc spring (10), guide (9), and seat (8).
- Clean the valve body.
- Wet O-ring (12) around seat with water and insert O-ring assembly (flat side first) in valve, through IN side of body. Use a pencil eraser, and press in Teflon seat until it snaps into place. Be careful not to mark or nick the seat.

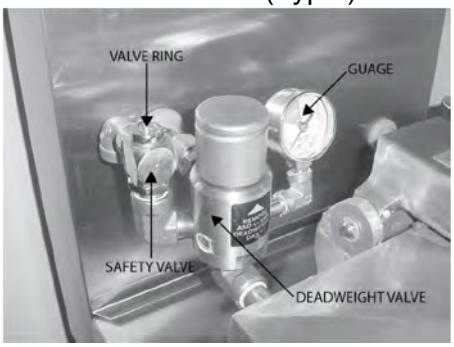
NOTICE: The smallest nick can cause a pressure leak. Replace all O-ring seals, found in the parts kit, and reassemble valve.

2.16.4 Deadweight Valve

DANGER

- **Do not attempt to remove the valve cap while the fryer is operating, severe burns, or other injuries could result.**
- **Do not manually activate the safety relief valve. Hot steam releases from the valve when the ring is pulled. Keep body parts away from safety valve exhaust, or severe burns could result.**

The deadweight valve and safety relief valve are located side-by-side at the back of the unit. The valve next to the pressure gauge is the operating control valve, and the other valve is a 14 1/2 lb. safety relief valve. Valves are working properly, when OPERATING ZONE is indicated on the gauge by the pointer. The gauge pointer should not normally exceed the operating zone. At 14 1/2 psi, the safety relief valve opens to release steam pressure from the vat (frypot).



2.16.5 Cleaning Steps

1) Clean the deadweight valve, at the end of each day. Turn the fryer OFF and release all the pressure. Open the lid and then remove the deadweight valve cap and deadweight.
2) Place both the cap and weight in hot detergent water and clean. Make certain to thoroughly clean inside cap, the weight seat, and around the deadweight orifice.
3) Rinse thoroughly with hot water. Dry parts and replace immediately to prevent damage or loss.

2.16.6 Removal & Cleaning of Safety Relief Valve

DANGER **Do not attempt to remove valve while fryer is operating, severe burns or other injuries could result.**

The safety relief valve should be cleaned once a year.

1) Open the lid and then remove the deadweight valve cap and deadweight.

NOTICE: Do not use a pipe wrench. Use thread sealant sparingly.

2) Use a wrench to loosed the valve from the pipe elbow, turn counterclockwise to remove.
3) Clean the inside of the pipe elbow with hot detergent.
4) Immerse the safety relief valve in a soap water solution for 24 hours. Use a 1:1 dilution rate. The valve cannot be disassembled. It is factory preset to open at 14 1/2 pounds of pressure. If it does not open or close it must be replaced.

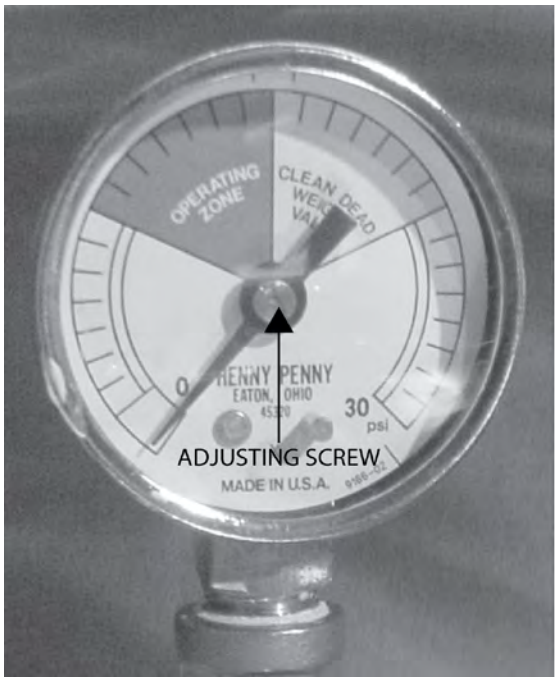
DANGER **To avoid personal injury, do not disassemble or modify this valve. Tampering with this valve will void agency approvals and the appliance warranty, and could cause serious injuries.**

2.16.7 Pressure Gauge

The pressure gauge can be re-calibrated should it be out of adjustment.

2.16.7.1 Calibration Steps

1) Remove the rim and glass.
2) If the indicating hand shows a pressure or vacuum reading when it should stand at “0”, turn the re-calibrator screw in the same direction in which the indicating hand is to be moved until the hand stands at proper “0) position.



3) Replace rim and glass.

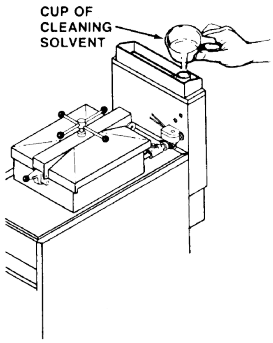
2.16.7.2 Cleaning Steps

1) Remove gauge and check inside the pipe fittings from deadweight body. Make certain fittings are clean and open.
2) Clean and reinstall gauge.

2.16.8 Condensation Box Assembly

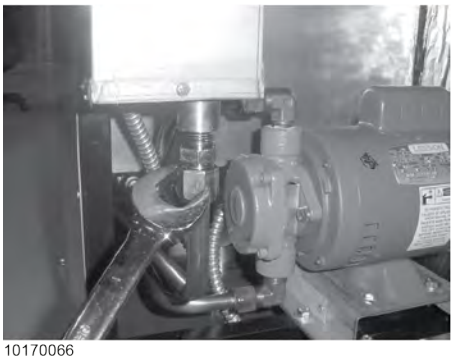
The deadweight valve and solenoid exhausts are directed into a condensation box, located in the rear of the fryer. Should this box become clogged, water would spew from the top of the box. The box can be cleaned by running a wire or long brush from the top of the box, through the hole in bottom of the box, or the bottom of the box can be removed to clean.

NOTICE: When cleaning the vat (frypot), pour a cup of cleaning solution into the large exhaust hose at the top of the exhaust tank. This helps prevent the box from getting clogged.



2.16.9 Condensation Box Bottom Removal

1) Loosen fitting at the bottom of the box.



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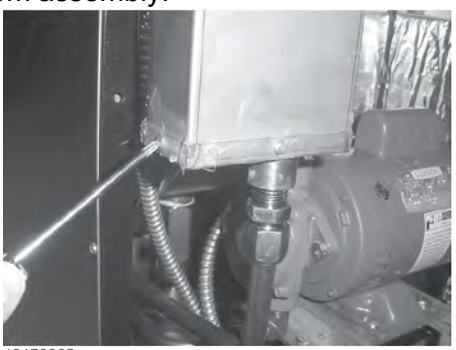
2) Using Phillips head screwdriver, remove 4 screws securing the bottom of the box and pull bottom from assembly.



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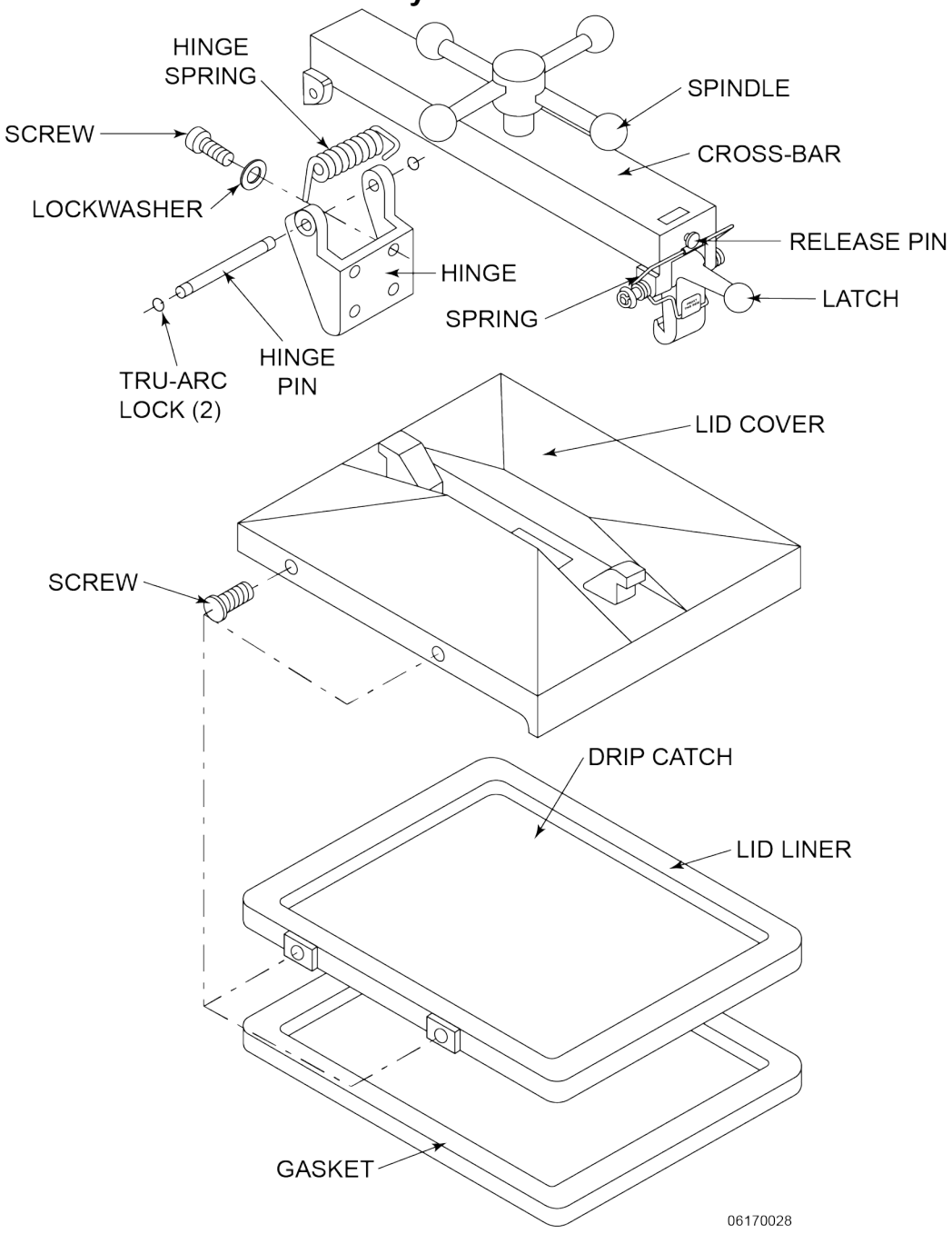
3) Clean outlet hole in box bottom and check condensation tube for clogs, and clean, if necessary.

4) Reinstall box bottom and condensation line.

5) Seal box bottom with silicone sealant and unit is now ready for operation.

2.16.10 Lid Cover Assembly



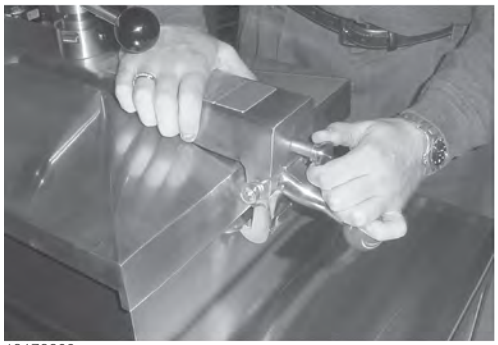
2.16.10.1 Description

In general, the spindle, the limit stop, the cover, the hinge, the inner and the reversible gasket comprise the lid cover assembly.

2.16.10.2 Lid Cover Removal

The lid cover is easily removable for cleaning or service.

1) Close the lid cover and turn spindle counterclockwise until it stops.
2) Pull the lid release pin on front of crossbar, lift the latch, and raise the crossbar.



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3) The cover can now be removed from vat (frypot).

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2.16.10.3 Lid Cover Installation

1) Place the lid cover on the vat (frypot).
2) Thread the spindle counterclockwise until it is completely extended.
3) Align the rear retaining hook on lid cover in the center slot of the crossbar. Push the crossbar down and pull out on lid release pin.
4) Push the lid to rear of vat (frypot) and latch the crossbar to the lid cover. Release the pin.
5) Check that lid cover is fastened properly before raising.

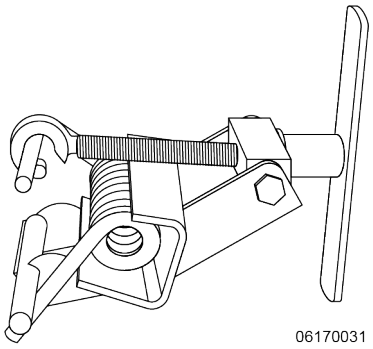
2.16.11 Lid Hinge Spring

The hinge spring needs to be replaced if it is broken, cracked or otherwise loses its tension. A special spring installation tool which greatly simplifies this procedure is available from the factory. (Henny Penny part number 14960)

1) Pull out on the retaining pin knob on the front of the crossbar to release lid cover.
2) Lift the cross bar up and away from the lid.
3) Remove Tru-Arc locks and hinge pin if the spring is broken. If the spring is not broken, use spring tool as described in steps 5, 6, and 7, then remove Tru-Arc lock and hinge pin.

4) Remove the broken spring.

5) The new spring is placed in the loading tool so that the spring coil is laying in the u-shaped center of the tool. The perpendicular shaft is placed in the stationary hook of the tool, and the parallel shaft is placed so the adjustable hook will tighten it down.



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6) Tighten the handle on the tool as far as it will go.

7) Place the spring (loaded in the tool) into position so that the u-shaped center of the tool is towards the front of fryer and the tool handle is toward the top of the fryer.

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8) Replace hinge pin and Tru-Arc locks. Loosen and remove the tool.

9) Reinstall the lid, see 2.16.10.3 *Lid Cover Installation*, page 53.

2.16.12 Latch Spring Installation

WARNING **To avoid severe burns and injuries make sure the lid is secure during a cook cycle. The latch spring must be in good working order and properly installed, see illustrations below. If the latch spring is weak, broken, or mounted backwards, it will provide little force against the latch.**

The latch on the crossbar must have the external coil-type latch spring mounted on latch pin. If a latch spring is weak or broken, it must be replaced with a new spring, part number 33480.

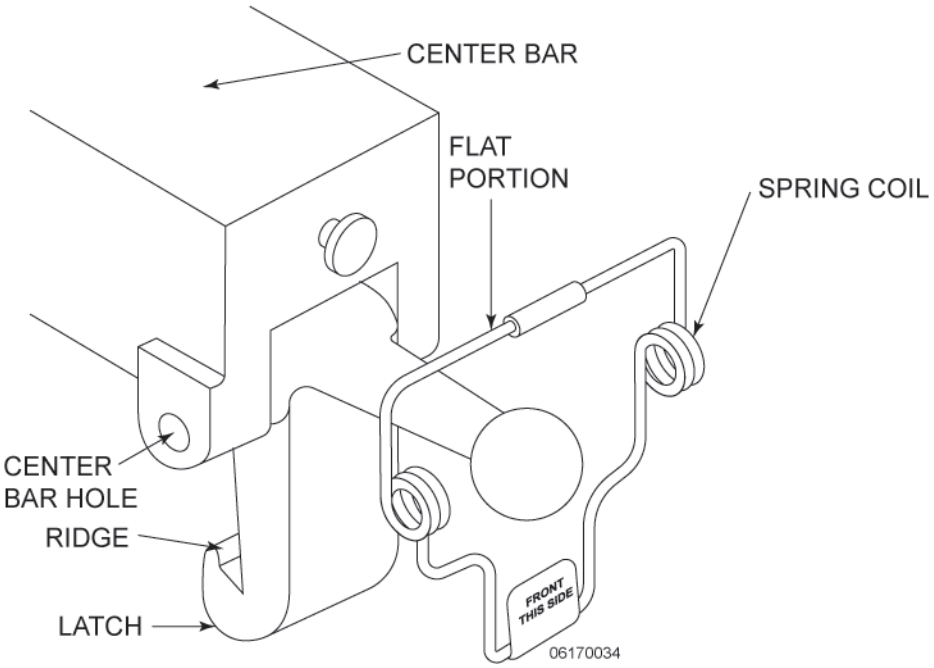
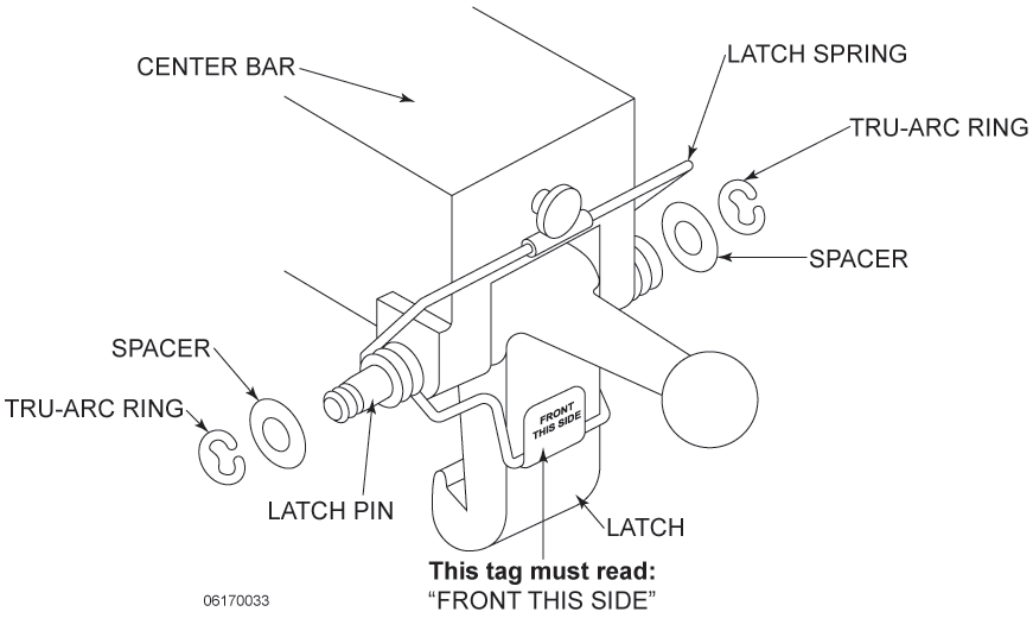


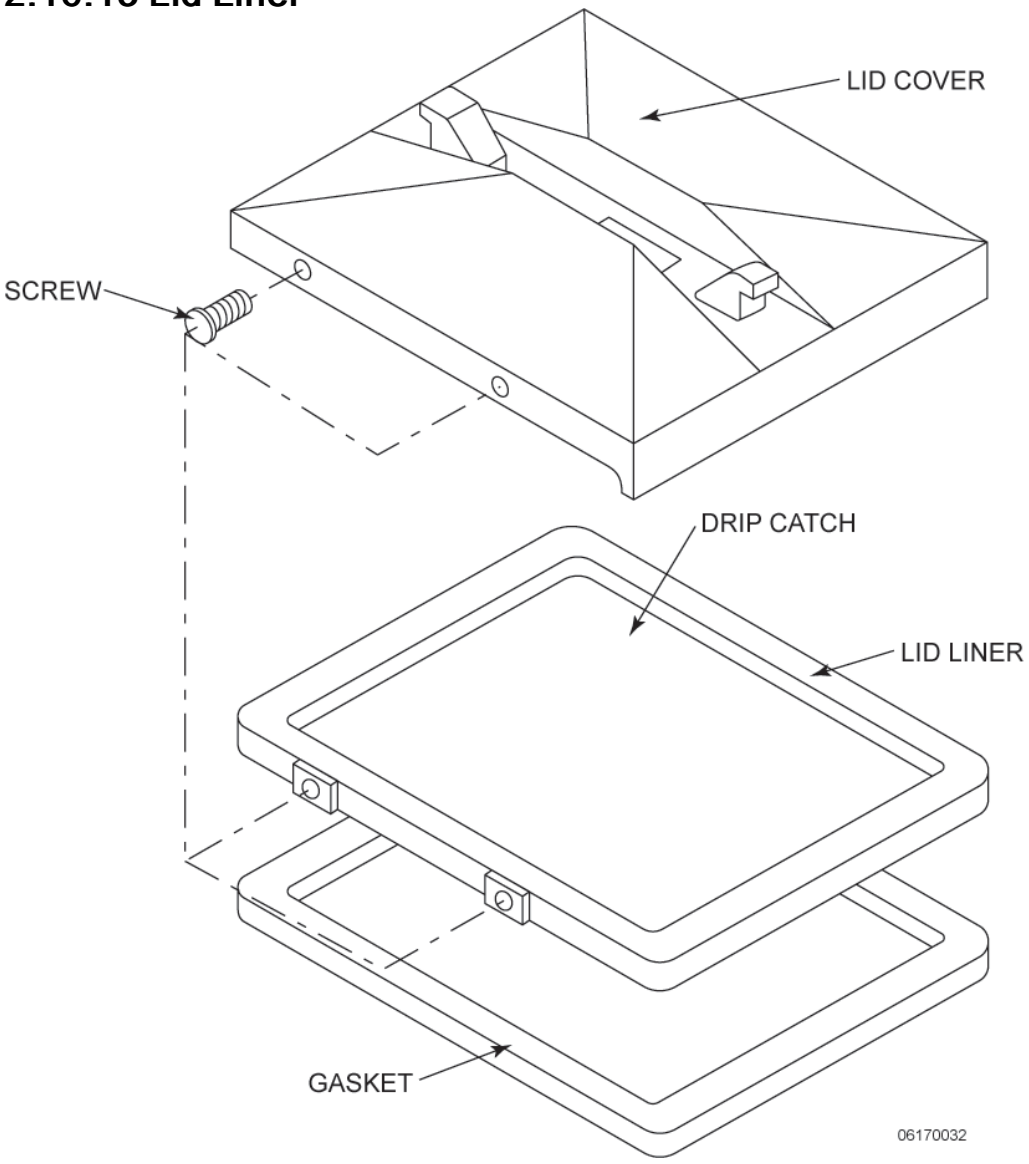
Figure 2-18 Latch Spring Assembly

1) Replace the crossbar from the lid.
2) With the crossbar in the upright position, remove one of the two Tru-Arc rings from latch pin.
3) Tap out pin from latch while grasping latch, and remove latch and latch spring.
4) Install new latch spring with the coils of spring extending forward.



5) Secure spring in place with Tru-Arc ring.

2.16.13 Lid Liner



1) Remove the four lid liner screws.
2) Use a thin blade screwdriver to pry lid from the cover.
3) Clean the liner and the inside of the cover. Replace the liner and screws.

2.16.14 Reversing The Lid Gasket

The gray rubber gasket surrounding the inside of lid is designed to be reversed. Henny Penny recommends that this be done on a quarterly basis.

2.16.14.1 Purpose

Because of heat expansions and the pressure used for the cooking process, the gasket is constantly under extreme stress. Reversing the lid gasket on a quarterly basis will help to assure that the fryer will not lose pressure through leakage.

2.16.14.2 Process

1) There are two lid liner screws (2) on either side of the lid cover (1), see Figure 2-19 *Lid Cover Screws*, page 58. Back these four screws out about 1/2 inch.

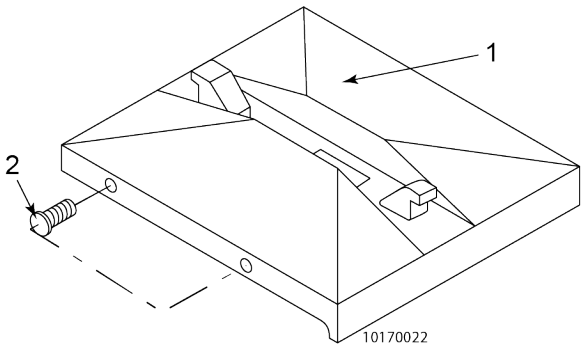


Figure 2-19 Lid Cover Screws

2) Open lid and, using a thin blade screwdriver, pry out the gasket at the corners. Remove the gasket.

3) Clean the gasket and gasket seat with hot water and cleaning detergent. Rinse with clean hot water.

4) Install the gasket with the good side facing out. Tighten the four screws.

NOTICE: Begin the installation by installing the four corners of the lid gasket.

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2.16.15 Lid Limit Stop Adjustment

The lid limit stop, with proper adjustment, prevents unnecessary overtightening of the spindle, and as a result, extends the life of the lid gasket.

1) Loosen the Allen set screws on the bottom of the collar of the limit stop assembly.

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2) Turn the inner collar of the limit stop clockwise as far as possible. Find the small hole in the inner collar and use a small Allen wrench or Phillips head to help in turning the collar.

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3) Close lid and turn spindle until lid gasket meets the top of the vat (frypot) rim.

4) From this position, turn spindle at least 3/4 of a turn, but not over one full turn.

5) After rotating spindle to this point, slightly extend the spindle past this position. The spindle should then be at the seven o'clock position. It may be necessary to remove knobs and change their position in order to align the red knob with the

red knob on the lid cover latch. When in the normal operating position, both red knobs should be aligned.

NOTICE: The seven o'clock position is only to allow slight additional turning of the spindle to relieve any side pressure that could hold the locking pin in the locking collar after all pressure has been released from the vat (frypot).

6) Adjust the limit stop by turning it clockwise until it stops against the bottom hub of the spindle.
7) Tighten Allen set screws.
8) If the lid cover fails to seal properly, steam will escape around the gasket during the frying operation. The limit stop should be readjusted. This time turn the spindle screw one full turn after the initial contact of the lid gasket against top of the vat (frypot) rim.

2.17 Filtering System

2.17.1 Filter Rinse Hose

DANGER **Shortening with temperature in excess of 200ºF flows through this filter rinse hose. Heat causes the rubber hose to age and deteriorate. Severe burns will result if this rinse hose assembly leaks or ruptures. The hose and fittings should be checked daily. If aging or discoloration is seen, the hose should not be used.**

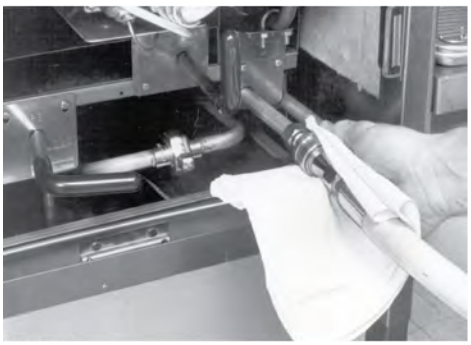
The filtering system consists of the filter valve, motor and filter pump assembly, filter screen assembly, and tubing.

2.17.2 Removal

DANGER **The hose and fitting will be hot. Use protective gloves or cloth when following this procedure or severe burns could result.**

NOTICE: This hose is not connected to fryer during normal operation.

1) Close the filter valve.
2) Turn the pump switch to the OFF position.
3) Detach the hose.



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2.17.3 Installation

1) Attach the filter rinse hose with its quick disconnect female fitting to the other half male fitting inside the door, next to the filter valve handle.

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2) To do this slide back the spring ring on the female end of the quick disconnect fitting and let it snap into place over the other half male fitting.
3) With a quick tug on the hose, insure the quick disconnect is locked into position.

2.17.4 Filter Valve Description

WARNING **The hose and fitting will be hot. Use protective gloves or cloth when following this procedure or severe burns could result.**

The filter valve is 3/8 inch two-way stainless steel ball valve. If this valve should develop leaks the entire valve must be replaced.

2.17.5 Removal

1) Drain the shortening from the vat (frypot).
2) Remove the filter drain pan from the fryer.
3) Remove the cotter pin, handle, and extension rod.
4) Remove the pipe from between the filter pump and valve.

NOTICE: If fryer is equipped with optional filter rinse hose attachment, disconnect pipe from filter valve.

5) Use an adjustable wrench and remove the valve.

6) Replace the valve and reassemble in reverse order.

2.17.6 Filter Pump Repair

WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

The two most common causes for a fryer's inability to pump shortening is that the pump is clogged with breading or solid shortening has cooled and solidified in the lines and pump.

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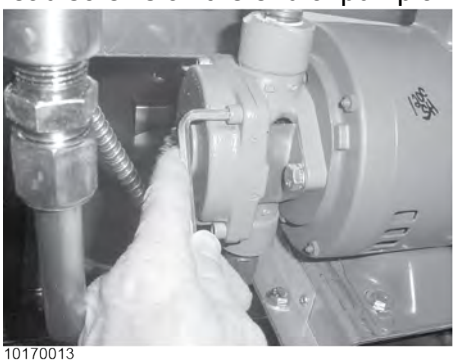
2.17.7 Cover Removal

1) Loosen the four Allen head screws on the end of pump and remove the cover.



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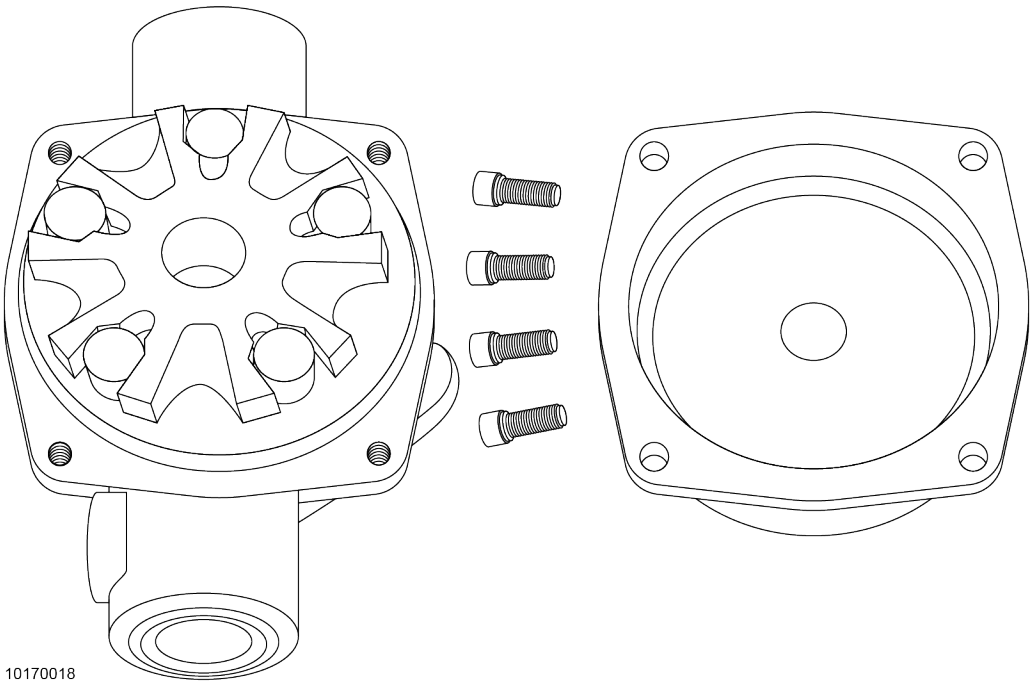
2) The inside is now exposed leaving a rotor and five Teflon rollers. Clean the rotor and rollers.



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3) To reassemble, place rotor on drive shaft, and place roller into rotor.

NOTICE: A small amount of grease might be needed to hold the bottom roller into place until cover plate is put on. Make sure O-ring is in proper position on plate.

2.17.8 Pump Removal

1) If the pump needs to be replaced, loosen one inch nuts from the outflow and inflow lines. Then remove the two bolts holding the pump to the motor with a 1/2 inch wrench.

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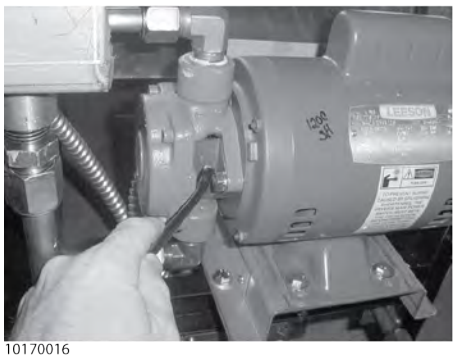
2) Shaft seal should remain on the motor shaft, or if leaking, could be replaced at this time.



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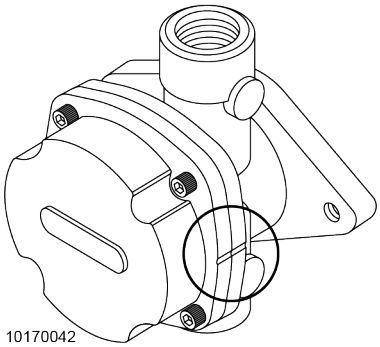
3) To replace the pump, remove the four Allen screws, front plate, rotor, and rollers from pump. Place the pump onto shaft and against the seal shaft. Place the 1/2 inch bolts through the pump and into the motor and tighten. Then replace rotor, rollers, front plate, and tight Allen screws.

CAUTION!

When removing a pump from a motor; note the positions of the inlet and outlet parts. Installation of the pump on the motor in any other position could cause damage to the fryer. There is an indicator on the side of the two halved of the pump, this mark must be together and face to the front of the fryer.



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4) To replace the pump and motor assembly, insure the main power has been removed from the fryer.

WARNING!

To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.

5) Remove the cover from the junction box and remove the wire nuts attaching wires leading into the flexible conduit going to the motor.

6) Loosen the two screws securing the flexible conduit to the 90º conduit connector (8), see .

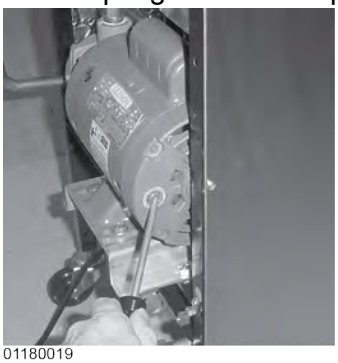
7) Remove tubing to the pump, see and .

8) Remove hardware attaching the motor to the motor base bracket and remove motor and pump assembly.

2.17.9 Filter Pump Motor Protector - Manual Reset

WARNING **To prevent burns caused by splashing shortening, the unit's main power switch must be in the off position before resetting the filter pump motor's manual reset protection device.**

The filter pump motor is equipped with a manual reset button in the event the motor's thermal protector actuates. This reset button is located on the rear of the motor. Wait approximately 5 minutes before attempting to reset this protector device.



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2.18 Electrical Conversions

On occasion, it may be necessary to make electrical conversion to a fryer. Factory conversion kits are available and should be used. The following procedures describe these conversions.

2.18.1 Procedures

208 Volts to 220/240 Volts:

The only change necessary is to remove the 208 volt heating elements and replace them with 220/240 volt heating elements. Delay timers must be changed on variable temperature models.

220/240 Volts to 208 Volts:

The only change necessary is to remove the 220/240 volt heating elements and replace them with 208 heating elements. Delay timers must be changed on variable temperature models.

Single Phase to Three Phase:

A factory conversion it (Part No. 14034) is available for this conversion. This kit includes all necessary components and a wiring diagram.

Three Phase to Single Phase:

A factory conversion kit (Part No. 14033) is available for this conversion. This kit includes all necessary components and a wiring diagram.

Refer to the proper figure in the illustrated parts listing (Section 3), and Section 2 for maintenance assistance for the fryer being converted to and from.

2.19 Wiring Diagrams

Illustrations of the wiring diagram for Henny Penny Models 500, 561, and 600 Pressure Fryers are found in Chapter 5 *Wiring Diagrams*, page 81.
If there is any doubt about which wiring diagram to use, please contact your distributor. As with all contacts to the distributor, include the model number and serial number form the data plate on your unit.

NOTICE: Refer to to explain the wire naming system for April 1, 2006 and after.

2.20 Caster Replacement Procedure

Casters on the fryer cannot be adjusted. Replace any damaged or broken casters by doing the following:

1) Discard oil from the fryer.
2) Using two floor jacks, position jacks near casters under the frame at point A. Both jacks must be positioned near casters on the same side of the fryer. For example, lift both the front casters off of the ground if replacing a front caster.
3) Block the casters on the opposite side of the fryer with small wheel chocks.
4) Raise fryer approximately 2.5” (63mm).
5) Use an adjustable wrench at point B. to remove the existing caster.
6) Install the new caster in reverse order.

2.21 Solenoid Valve

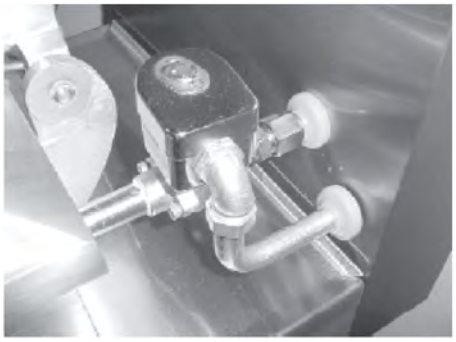
WARNING **To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.**

NOTE: Most Controls use 24 volt solenoids. The C1000 & C2000 Controls use line voltage

This is an electromechanical device that causes pressure to be held in the vat (frypot). The solenoid valve closes at the beginning of the cook cycle and is opened automatically by the timer at the end of the cook cycle. If the valve should become dirty or the te-Aon seat nicked, pressure will not build up. The solenoid valve used on all models is the same with the exception of the coil. The gas model fryer uses a 120 volt, 60 Hz, coil. The electric model fryer uses a 208/240 volt 60 Hz coil. The 440/480 volt electric model uses a transformer to drop voltage to 220/240 volts.

2.21.1 Replace Solenoid Valve Assembly

1. Remove Tru-Arc retaining clip on top of the coil housing.



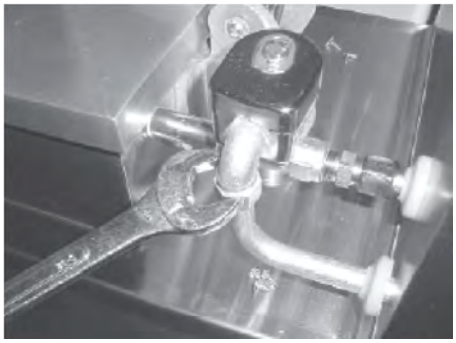
2. Remove the nameplate and cover.

3. Do one of the following:

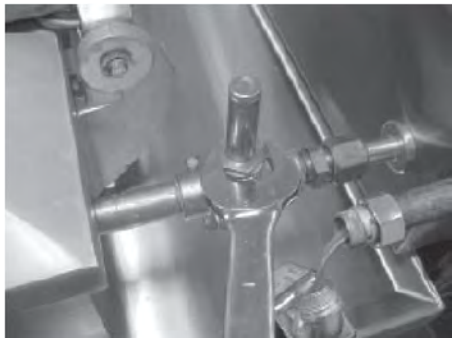
A. If only the coil is replaced, disconnect two coil wires at the wire nuts in the coil housing, remove the coil from the housing, and then replace with the new coil. Then replace nameplate, cover, and Tru-Arc clip.

B. If the complete solenoid, or seals are being replaced, continue on to step 4.

NOTICE: The wires may be connected in any order.



4. Loosen the nut on the 1/2 inch connector and pull piping conduit from the valve case. Leave enough slack to remove the coil housing and yoke.



5. If the core-disc assembly is sticking due to buildup of shortening, breading and food particles proceed with the following steps.

A. Unscrew the solenoid bonnet assembly from the solenoid valve body.

B. Remove the solenoid bonnet assembly and the bonnet gasket.

C. Remove the core-disc assembly, core spring retainer, and the core spring.

D. Wash all parts in soap and hot water.

A

B

C

6. Do the following:

A. If replacing Teflon seals, or complete valve, proceed to step 7.

B. If not, assemble the core-disc in reverse order of disassembly. Assemble valve core and blade (6), with the smooth side of the hole towards the disc spring guide (9). Refer to step 8.

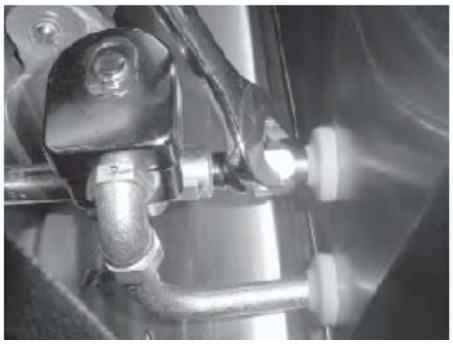
7. A repair kit (Part No. 17120) is available if any of the seals need to be replaced. If any of the seals are defective, all seals should be replaced.

NOTICE: Remove the solenoid body from the fryer to replace seals. Refer to exploded view of solenoid in figure 3-14 to help identify all parts.

A. Remove back cover.

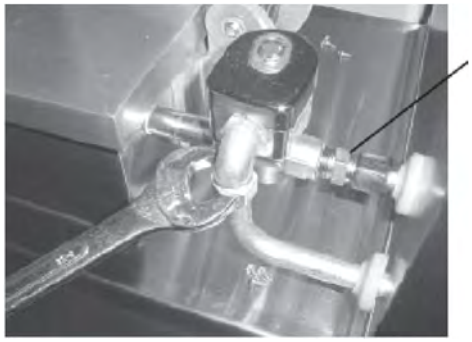
B. Loosen both conduit and exhaust fittings.

C. Remove nipple from solenoid body.



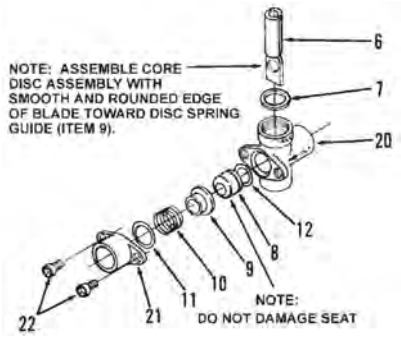
D. Unscrew body from fryer.

E. Install a new solenoid, and then reassembled in reverse order. Or continue onto step 8 to remove and replace the seals.



8. To replace the seals, do the following:

A. Remove the two adapter screws (22) which attach the pipe adapter (21) to the solenoid body (20).



B. Remove the disc spring (10), guide (9), and seat (8).

C. Clean the valve body.

D. Wet O-ring (12) around seat with water and insert O-ring assembly (flat side first) in valve, through IN side of body. Use a pencil eraser, and press in Teflon seat until it snaps into place. Be careful not to mark or nick the seat.

NOTICE: The smallest nick can cause a pressure leak. Replace all O-ring seals, found in the parts kit, and reassemble valve.

Chapter 3 Pressure Assist Features and Function

Pressure Assist is an optional, purchasable feature that allows operators to cook small loads and still maintain the required vat pressure necessary for pressure cooking. In the past, full loads were required in order for the fryer to build the required vat pressure. Pressure Assist adds additional pressure, as needed, to raise the vat pressure to the required 12 PSI cooking pressure. Low vat pressure will not allow the food to cook properly and consistently. But with Pressure Assist, small loads can be cooked with the same consistency as full loads. This feature provides the operator with more flexibility in meeting both customer and business needs by reducing waste and providing fresh cooked, high quality product in smaller amounts as needed.

3.1 Software

3.1.1 C8000 Controller

Access the Pressure Assist settings by doing the following:

1. Access Tech Mode T-2A, HAS PR ASSIST and set to YES. PRESSURE ASSIST: YES/NO displays when the fryer is initially powered on.
   NOTE: If NO is selected, the fryer's cook cycle operates as normal. The air pump stays off for the entire cook cycle.
2. Select YES, the setting 2. PR ASSIST DELAY SECONDS: 0 ... 120 seconds displays in Product Programming mode. A delay can be set between when the pressure solenoid valve turns on and the pressure assist pump also turns on:

- Delay = 0: As soon as the pressure solenoid valve turns on, the pressure assist pump also turns on. The air pump cycles on and off as needed to maintain pressure for the rest of the cook cycle.
- Delay = 1: During a cook cycle, when the pressure solenoid valve is first closed, the control initiates the programmed delay period. As soon as the delay expires, the pressure assist pump turns on. The air pump cycles on and off as needed to maintain pressure for the rest of the cook cycle.

3. Select desired delay. If 1 or more seconds of delay are chosen, the setting 3. PR ASSIST NOT NEEDED IF 'X' PSI: 0.0 ... 12.0 psi. 0.0 shown as "- - -" displays in Product Programming mode.
4. Select desired P.S.I. During a cook cycle, when the pressure solenoid valve is first closed, the control initiates the programmed delay period. As soon as the delay expires, the control assesses the naturally achieved pressurization level. If the pressure reading is at or above the "Not Needed" psi threshold, no pressure assist is performed at all for that cook cycle; otherwise, the pressure assist pump turns on and runs as needed to maintain pressure for the rest of the cook cycle.

EXAMPLE: (PrAssist = YES) and (Delay >= 1 second) and (NotNeededPSI >= 0.1 psi)

Air Pump Constraints:

1. The air pump is always off during the first (10) seconds of the cook cycle, because the user might still be trying to close the lid.
2. The air pump is always off if the pressure solenoid valve is off (open). The solenoid valve cycles on and off according to the programmed cook cycle.

Chapter 4 Programming

Programming information is provided in this section. Operator menus are described in the Operator's manual and are not included in this manual. All menus that pertain to maintenance are described in this section. To enter the menus, perform the following steps:

1) Press and hold the PROGRAM button for five seconds.
2) Release the PROGRAM button as soon as "LEVEL 2" shows in the display.
3) Press the PROGRAM button until "TECH" is displayed (you are in tech mode now).
4) Enter the code 11221122.

The only menu used for maintenance for the Computron 8000 control is Tech Mode.

Table 4-1 Programming

Menu Step	Description
T-1 Software ID's	View software ID's Press and hold [1]: HP P/N = 32609J (HP part number for software.) Press and hold [2]: ID = HP C8000 (The specific customer or model number, etc.) Press and hold [3]: SRL = 1.50 (Software Release Level (version) for this software.)
T-2 Fryer Type	Auto-detected by the controller, based on I/O board and wiring harness connections. (This is not a setting you can adjust.) Auto-detection can complete only if the fryer is turned ON and the high-limit and drain switch interlocks are closed. If the display indicates "NEED VHDS", then one of the interlocks is not satisfied and the auto-detect routine is unable to proceed.
T-3 Push-Button Test	Push-button test mode. Press and release buttons (starting with any button other than INFO or PROG) to activate test mode. Main display shows an indicator letter for each button that is pressed: Number buttons 1-0, Info, Down, Up, Prog, Left-side (Idle), Right-side (Timer)
T-4 All-On Display Test	Press and hold any number button to cause all display digit segments, decimal points, LED's, and light bars to be lighted. Release button to return to normal mode.
T-5 Segments Test	Tests each individual display segment (all digits simultaneously) in order to assess whether any segments might be bridged together. Press and release any number button to step through the test sequence manually, or press and release the Timer button to run the test sequence automatically one time through.
T-6 Digits Test	Tests each individual display digit (all segments on, one digit at a time) in order to assess whether any solder bridges between digits exist.

Menu Step	Description
	Press and release any number button to step through the test sequence manually, or press and release the Timer button to run the test sequence automatically one time through.
T-7 Decimal PTS Test	This step tests each individual display digit decimal point. Press and release any number button to step through the test sequence manually, or press and release the Timer button to run the test sequence automatically one time through.
T-8 LED's Display Test	This step tests each individual discrete LED. The test pattern is as follows: Wait, Ready, Idle, Heat, Pressure, Info, Down, Up, Prog, Timer, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0. Press and release any number button to step through the test sequence manually, or press and release the Timer button to run the test sequence automatically one time through.
T-9 Oil Temp - Calib/Offset/ Highest	View/set calibration offset for oil temperature probe. Also, view/reset max recorded oil temperature. Press and hold [1]: CALIB ADJ 327°F - UP/DOWN to adjust calibration viewed as a temp. Press and hold [2]: OFFSET ADJ+2°F - UP/DOWN to adjust calibration viewed as an offset. Press and hold [3]: HIGHEST 341°F - View highest recorded oil temperature. Reset max temp by pressing the DOWN button while viewing.
T-9A Aux Temp - Calib/Offset/ Highest	View/set calibration offset for auxiliary (dry-fire) temperature probe. Also, view/reset max recorded aux temperature. Press and hold [1]: CALIB ADJ 418°F - UP/DOWN to adjust calibration viewed as a temp. Press and hold [2]: OFFSET ADJ+0°F - UP/DOWN to adjust calibration viewed as an offset. Press and hold [3]: HIGHEST 463°F - View highest recorded aux temperature. Reset max temp by pressing the DOWN button while viewing.
T-10 CPU Temp - Calib/Offset/ Highest	View/set calibration offset for CPU board temp. Also, view/reset max recorded CPU board temp. Press and hold [1]: CALIB ADJ 87°F - UP/DOWN to adjust calibration viewed as a temp. Press and hold [2]: OFFSET ADJ +0°F - UP/DOWN to adjust calibration viewed as an offset. Press and hold [3]: HIGHEST 121°F - View highest recorded CPU temperature. Reset max by pressing the DOWN button while viewing.
T-11 View A-D Channels	This feature allows direct viewing of any channel of the analog-to-digital converter chip. This is mainly useful for troubleshooting. The channel can be selected using the UP or DOWN buttons. <0> CPU temperature (thermistor) <1> Safety Circuit Comparator Ref. <2> Safety Circuit Comparator Output <3> Aux. RTD input (unused) <4> Oil Tmp RTD input

Menu Step	Description
	<5> Transformer secondary (P6-14) <6> Amp Sensor auto-detect (P10-6) <7> unused (P10-5) <8> Amp sensor #3 (P10-4) <9> Amp sensor #1 (P10-2) < A > Amp sensor #2 (P10-3) < B > 1/2 Scale (2.5v) < C > Neg Vref (0.0v) < D > Pos Vref (5.0v) The displayed value can be toggled between Volts and Bits by pressing the number 0 button. If the displayed value has a decimal point and is followed by a “V” it is voltage (0 to 5 VDC). If no decimal point is shown, the value is a-to-d bits (0 - 4095).
T-12 View The Status Of The 24v Interlock Circuit Digital Inputs:	Each interlock input has an associated indicator digit. If the input signal is currently detected, an identifying letter is displayed. If the signal is not detected, an underscore (“_”) is displayed. **4-Hd Elec**: F & M are hard-wired on. P is hard-wired off. **4-Head Electric Fryers**: DIGITAL INPUTS - AB VHDSFPM Normal Display: A_ VHDSF_M **4-Hd Gas**: F & P are hard-wired on. M is hard-wired off. **4-Head Gas Fryers**: DIGITAL INPUTS - AB VHDSFPM Normal Display: A_ VHDSFP_  The “C” (pressure solenoid) input can only be read when the pressure output is turned OFF. When the pressure output is turned ON, the “C” input normally disappears. **A =** Power switch “COOK” (ON) position input signal. There are two “power switch on” input signals, ‘A’ and ‘S’. The ‘A’ one is not dependent on the interlock chain, so the controller is always able to read the On/Off status of the power switch even if the high limit is tripped or the drain is open. **B =** Power switch “PUMP” position input signal. Should not have A and B at the same time*. Note that this continuity signal can only be read when the pressure output is OFF. The “C” signal disappears whenever the pressure solenoid output is turned ON. **V =** VOLTS – 24v detected at start of interlock chain. If “V” is missing, the 24v current limiter (fuse) might be tripped. This “fuse” device (located on the I/O board) automatically resets as soon as the short condition is fixed.

Menu Step	Description
	H = HIGH LIMIT – If “H” is present, the high limit is good. If “H” is missing, the high limit is tripped out (overheated) or disconnected. **D =** DRAIN SWITCH – If “D” is present, the drain handle is closed. If “D” is missing, the drain switch is open or disconnected. **S =** Power switch “on” interlock circuit: If “S” is present, the power switch is in the ON position. If the “S” is missing, the power switch is either off, failed, or wired incorrectly. **4-Head Electric and 4-Head Gas Fryers**: **F =** The “F” input is always hardwired ON. (These fryers do not have fan vacuum sensors.) **P =** “Gas” auto-detect jumper. • 4-Hd Gas Fryers: This signal is hardwired ON. • 4-Hd fryers: This signal is hardwired OFF and should never be present. **M =** “Electric” auto-detect jumper. • 4-Hd fryers: This signal is hardwired ON. • 4-Hd Gas Fryers: This signal is hardwired OFF and should never be present. The two sets of P & M signals are interlocked by relays on the I/O board inside the controller. The controller cannot turn on the gas pilot valve unless both PV signals are present. The controller cannot turn on the gas main valve (main burners) unless both MV signals are present. **F =** FAN - This is the Fan sensor (vacuum switch) interlock input. When ‘F’ is present, the vacuum sensor is closed (continuity). When ‘F’ is missing, the vacuum switch is open or is disconnected. **P =** The PV (Pilot Valve) output from the ignition module. The ignition module turns PV on when it is trying to establish or maintain the pilot flame. **M =** The MV (Main Valve) output from the ignition module. The ignition module turns MV on only when the module has a confirmed “flame sense” of its pilot flame. Keep in mind that the MV signals are simply “enabling” signals for the gas burners – the burners are not actually activated unless the controller turns the Heat output on.
T-13 Outputs	View/set the status of the controller outputs. If an output is currently on, a “star” follows the ID letter. If an output is currently off, a line follows the letter. F = FAN OUTPUT I = IGNITION MODULES OUTPUT H = HEAT OUTPUT P = PRESSURE OUTPUT The outputs may be manually controlled using the lighted number buttons. The #1 button toggles the first output on and off, the #2 button toggles the second output on and off, etc.

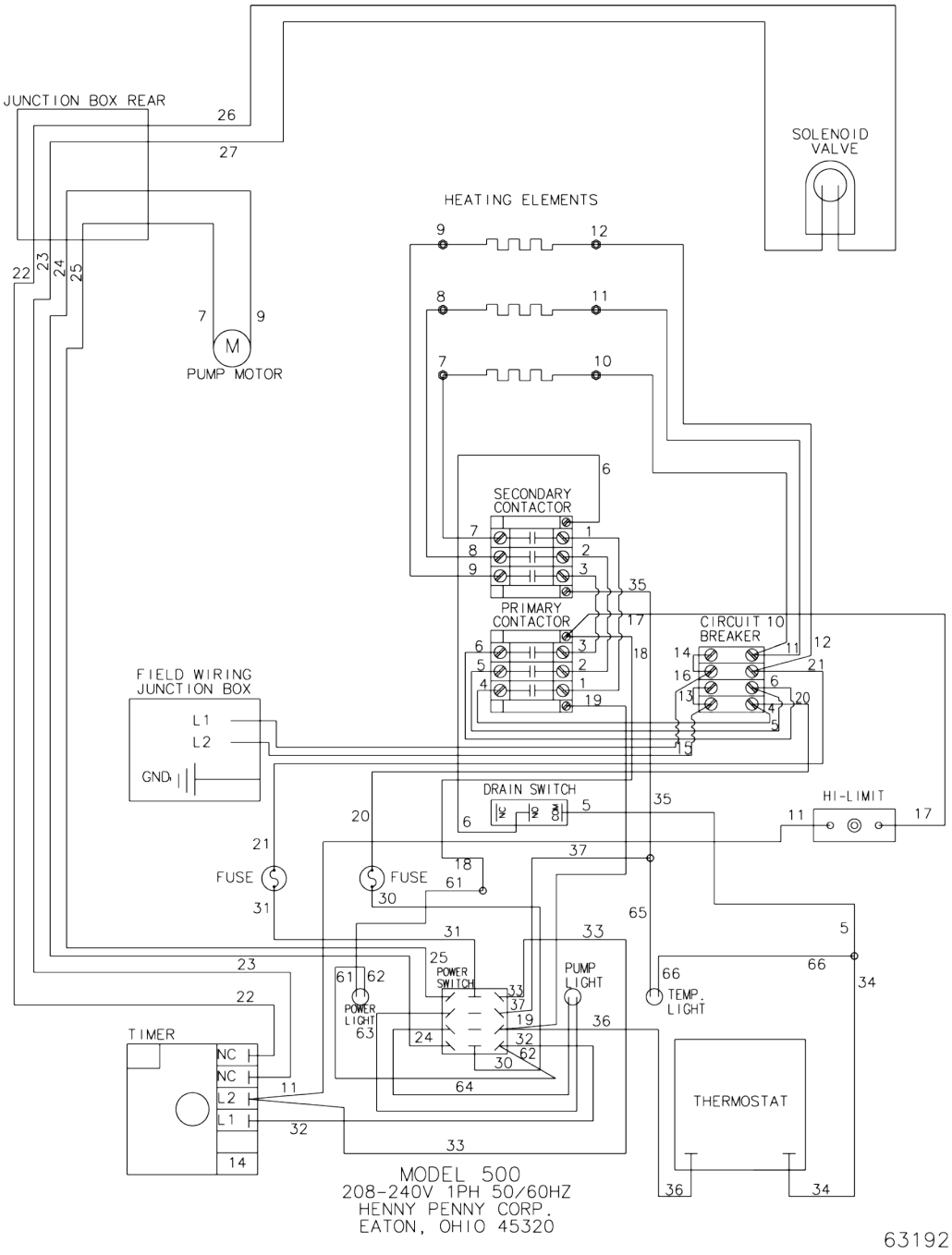
Menu Step	Description
	For example, on a Gas 4 Head fryer the #1 button toggles the Fan output on and off, while on an Electric 4 Head fryer, the #1 button toggles the Heat on and off. Under manual control, the Heat output will shut off automatically if no buttons are pressed for 30 seconds. **4-Head Electric Fryers**: OUTPUTS - F* H * P _ (Fan output only used on PVS fryers) 4-Head Gas Fryers: OUTPUTS - F* H * P _ (Fan output is for cooling fan)
T-13A Outputs	View/set the status of the Pump and Air Valve outputs. If an output is currently on, a “star” follows the ID letter. If an output is currently off, a line follows the letter. PMP = PUMP OUTPUT AIR = AIR VALVE OUTPUT The outputs may be manually controlled using the lighted number buttons. The #1 button toggles the Pump output on and off, and the #2 button toggles the Air Valve output on and off.
T-14 Amps Calibrate	If the Amp Sensor Detect Jumper in the amp sensors assembly is not detected, the controller shows “XX XX XX “ / “ -NOT- DETECTED” and all Amp Sensor warnings and errors are disabled. **Electric 4 Head Fryers**: The amp sensors monitor the current (amperes) in the heating elements. Depending on the fryer wiring, each amps reading corresponds to either the current in one leg of the supply lines, or to the current to one heating element coil. Consequently, the amps readings here don’t necessarily match the amps readings of an individual heater, since each leg on the line cord normally drives two elements (120° out of phase). Press the DOWN button to view the present Nominal, Low Limit, and High Limit settings for amps. (These values are programmed in Special Program mode.) This step allows manual control of the heat output by pressing the #1 button. The heat is turned on unconditionally, so make sure there is oil in the vat (frypot) and take care to not overheat it. Press the #0 button to view the un-calibrated readings. **Calibration**: Press the TIMER button to perform the calibration sequence, which allows each of the three readings to be adjusted to match reference amp readings. This calibration requires a meter with an amp clamp to take readings at each of the three amp sensors in the fryer. During the calibration sequence, one of the readings is blinking. Use the UP and DOWN buttons to adjust that reading as necessary. Press the PROG button to advance to the next reading. The displayed values, left to right, match the amp sensor order black, red, and orange. For each amp sensor, the displayed value should be adjusted to match a reading taken with an amp clamp on the same wire the amp sensor is on.

Menu Step	Description
	When done calibrating, press the TIMER button to cancel the calibration sequence, or press the PROG button repeatedly until the calibration sequence is exited.
T-15 Change Tech Code?	1 = YES This step lets you change the “Tech Mode” access code (password). This code is used only to access Tech Mode and Stats Mode. **IF THE PASSWORD IS CHANGED & FORGOTTEN**: There is a way to “unlock” a controller whose password has been forgotten. Contact Tech Services for details. To change the selected code, press the ‘1’ button (i.e.1=”YES”). The display shows: “ENTER NEW CODE” _ _ _ _ _ _ _ _ “P=DONE” “I = QUIT” Enter the new code sequence - comprised of one to eight keystrokes – using the number buttons 1 through 0. When the new code sequence is complete, press the [P] (PROG) button. The display now shows: “REPEAT NEW CODE” _ _ _ _ _ _ _ _ “P=DONE” “I = QUIT” Enter the new code sequence a second time in the same manner as the first. Again, press the [P] (PROG) button when the entry is complete. If the same key sequence is entered both times, the controller responds “*CODE CHANGED*”. From this point on, the new code sequence is required for access to Tech Mode functions. The previous code is erased and is no longer valid. If the first and second entries do not match exactly, the controller indicates “DID NOT MATCH”, “NOT CHANGED”. In this case, the access code will not be changed – the previous value remains in effect. The code entry process may be abandoned at any point by pressing the “I” (INFO) button. The display immediately shows “X CANCELLED X” and returns to the initial “Change Code?” display. The previous code remains in effect. If no keys are pressed for 30 seconds, the entry process is automatically abandoned. The display shows “X CANCELLED X” and the previous code value remains in effect.

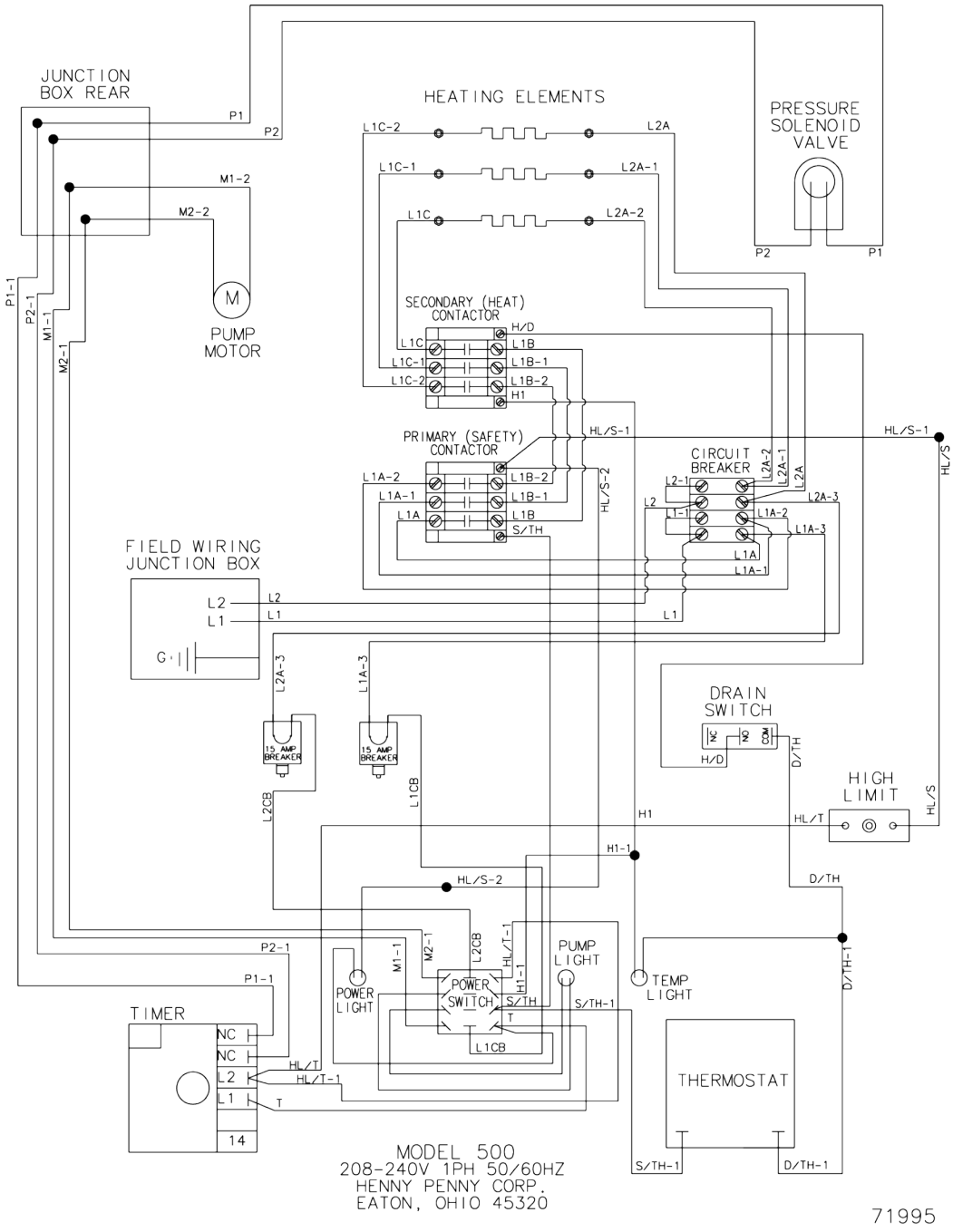
Menu Step	Description
T-16 Do Total Init	This step allows all programmable settings, all product settings, and all statistics values to be initialized to factory preset values. (The Activity Log, however, is not reset by this initialization, and in fact will log a record of the “init” function itself.) To totally initialize the controller – including all cook settings – back to factory default values, press and hold the DOWN button for about 2 seconds. Calibration data will not be affected by this initialization, unless values are found to be outside of acceptable limits. **NOTICE** Statistics values, the Error Log, Review Usage data, etc., will be reset by this “total” initialization. All of the operating history data will be lost. For this reason, the normal “Init” step in Special Program mode is generally recommended, unless one specifically intends to completely reset all the statistics data.

Chapter 5 Wiring Diagrams

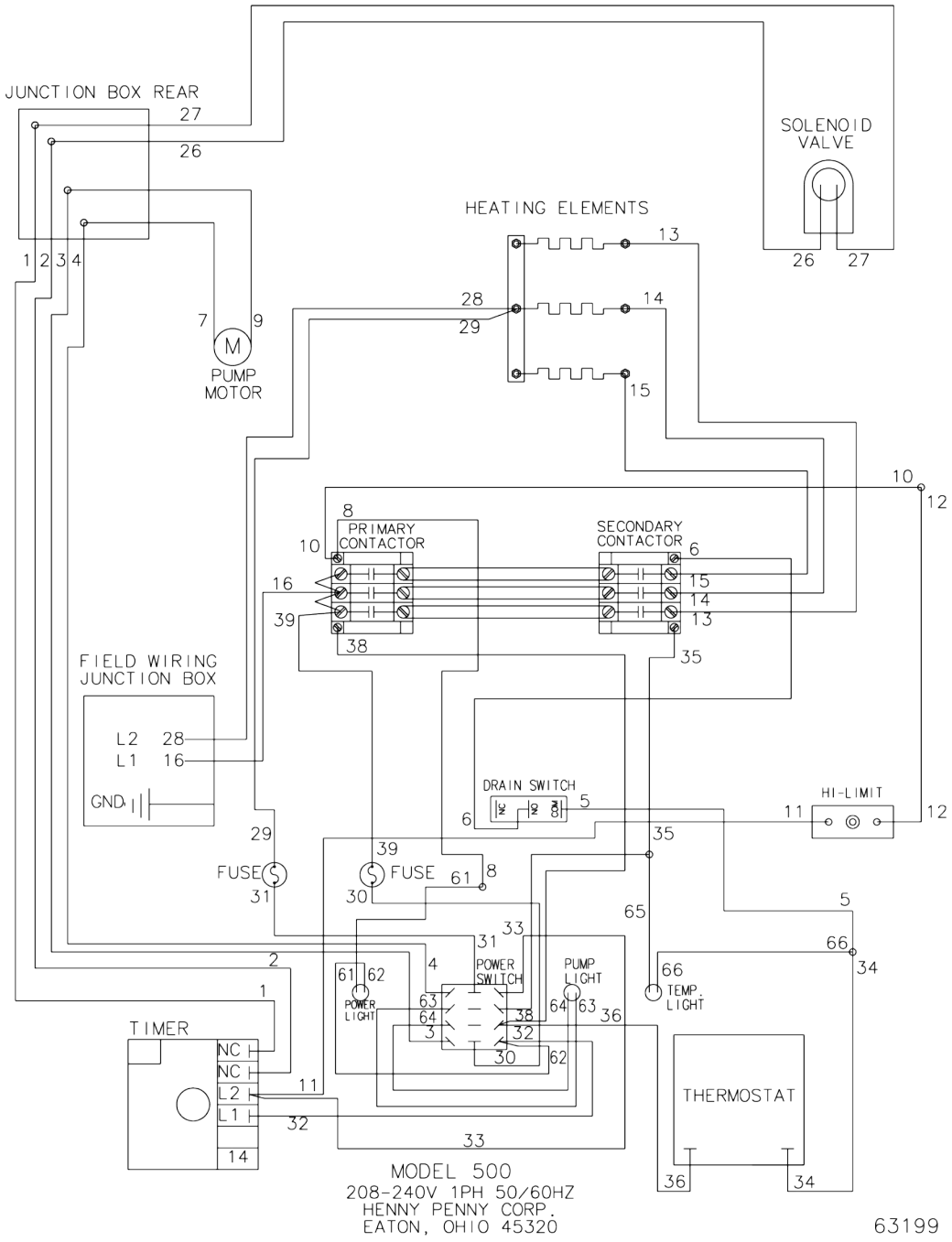
5.1 500 EF, 208-240v, 50/60Hz, 1P (63192E) (Before 04/01/06)



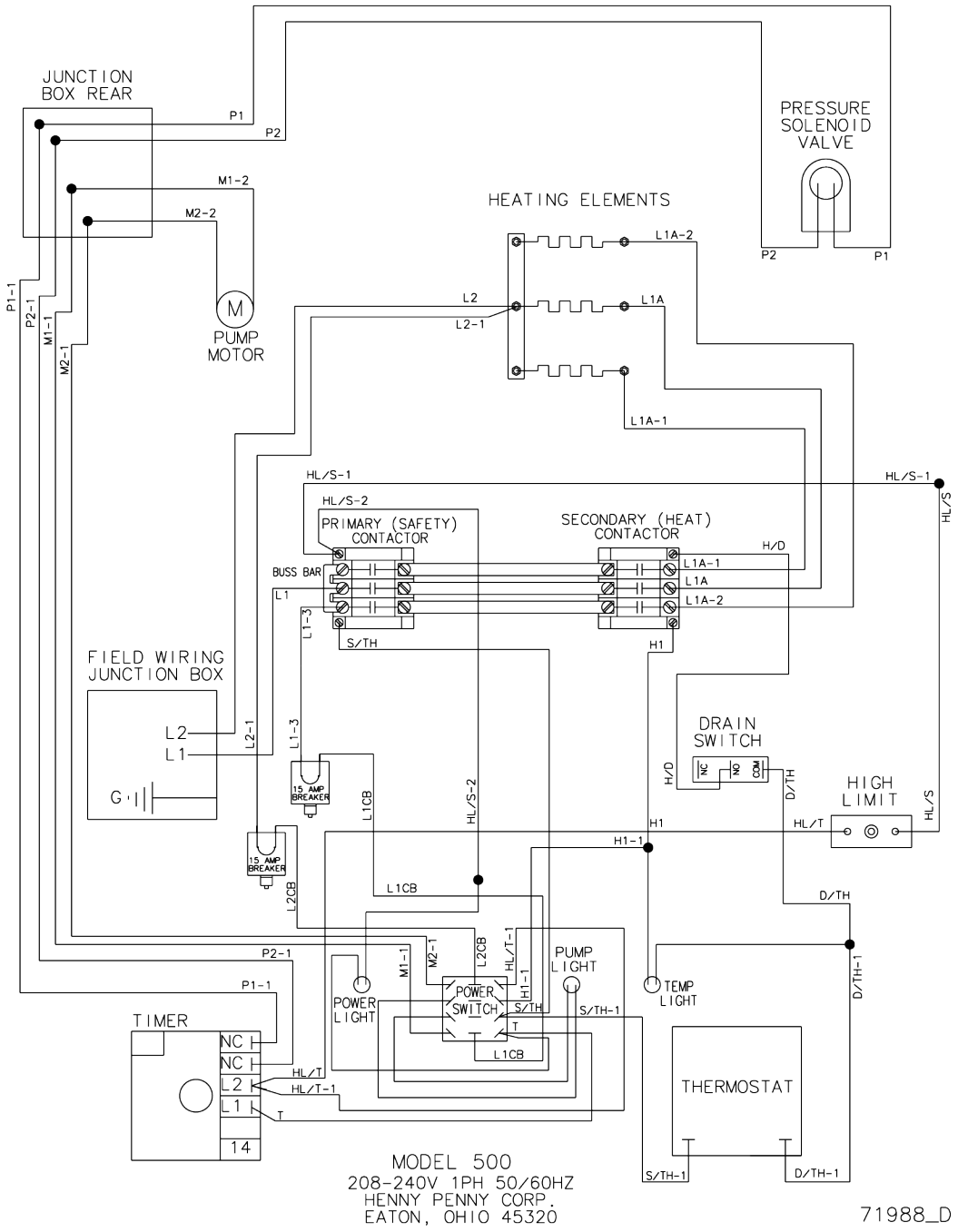
5.2 500 EF, 208-240v, 50/60Hz, 1P (71995C) (After 04/01/06)



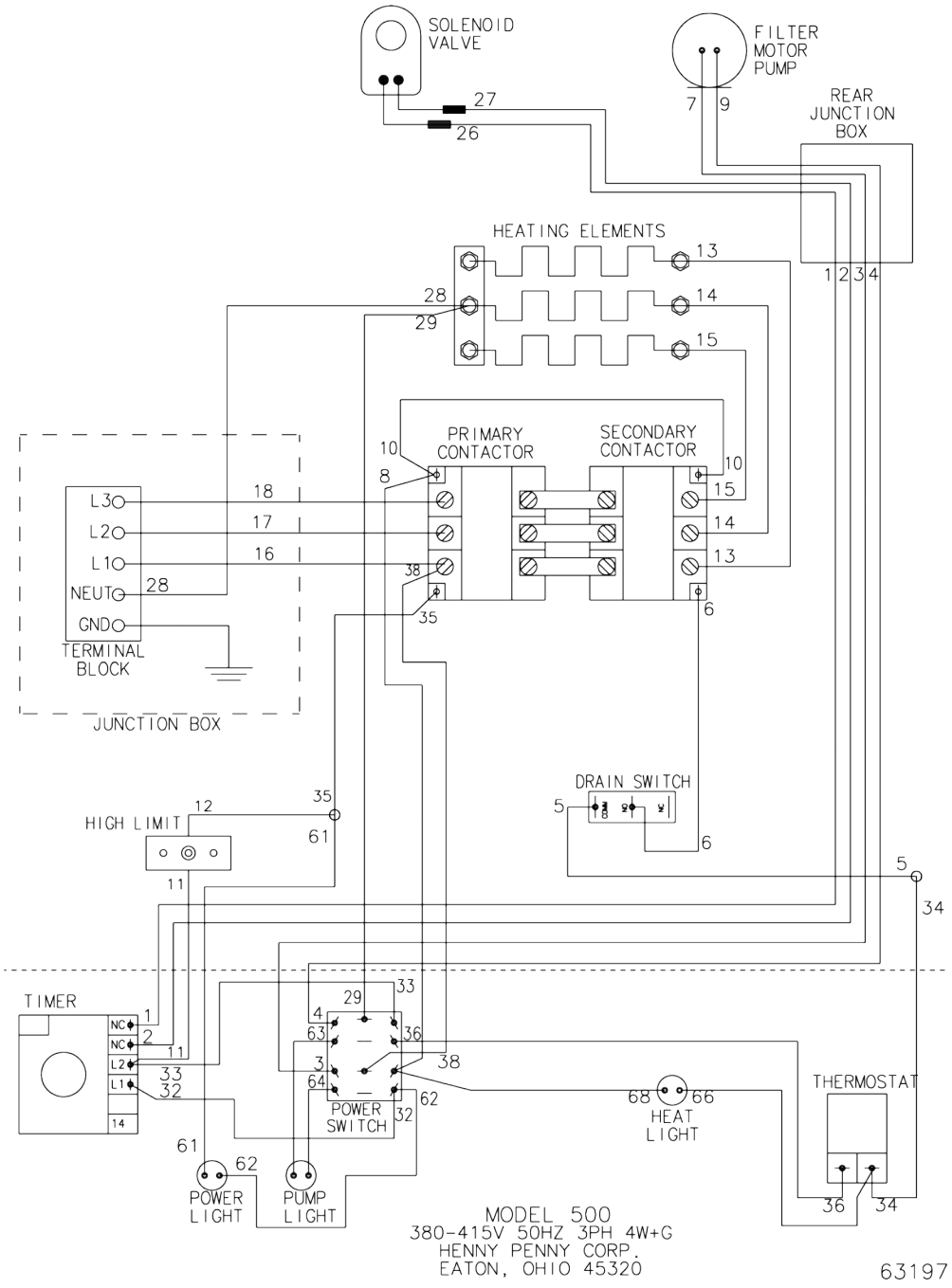
5.3 500 EF, 208-240v, 50/60Hz, 1P (63199F) (Before 04/01/06)



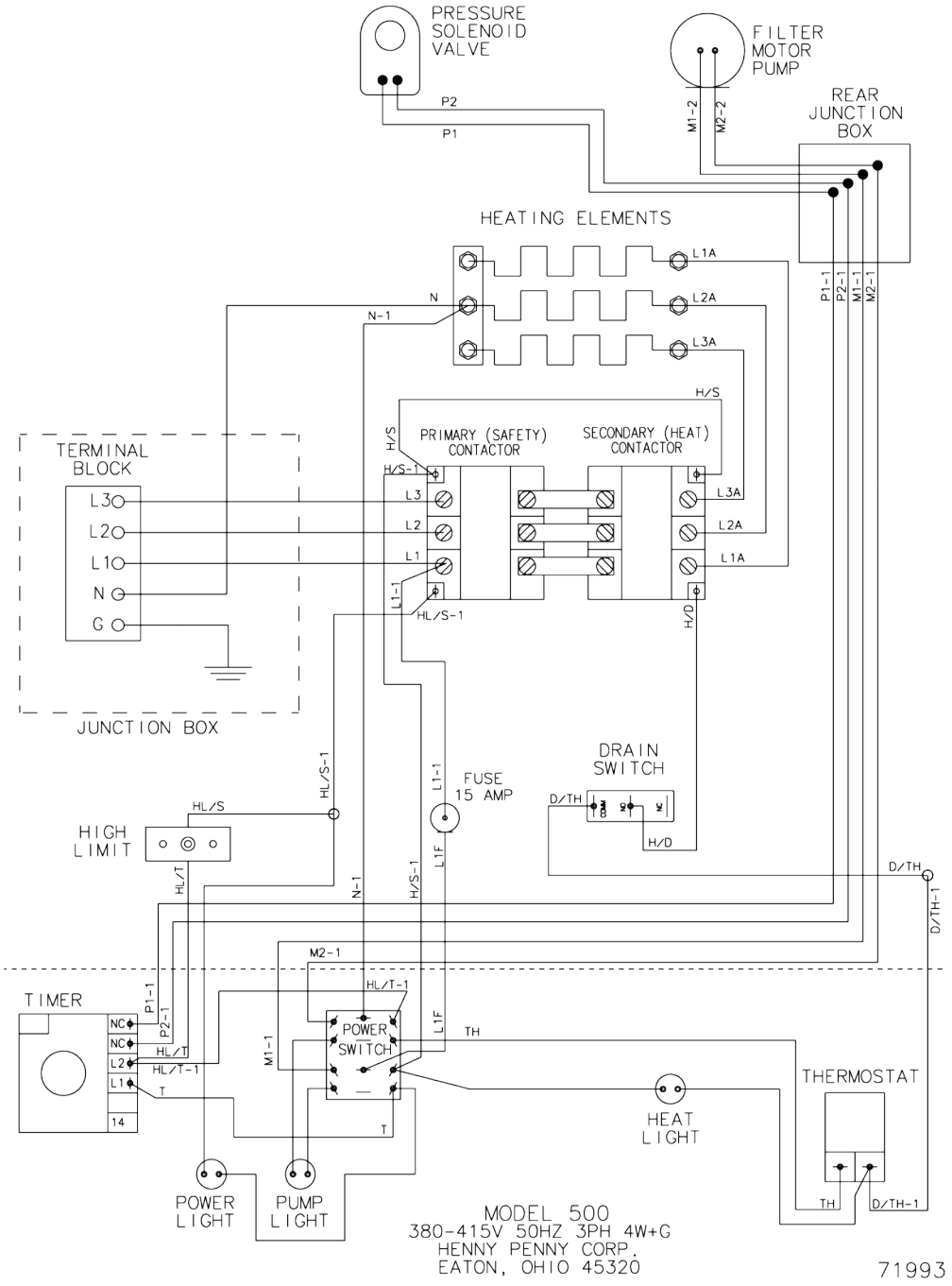
5.4 500 EF, 208-240v, 50/60Hz, 1P (71988D) (After 04/01/06)



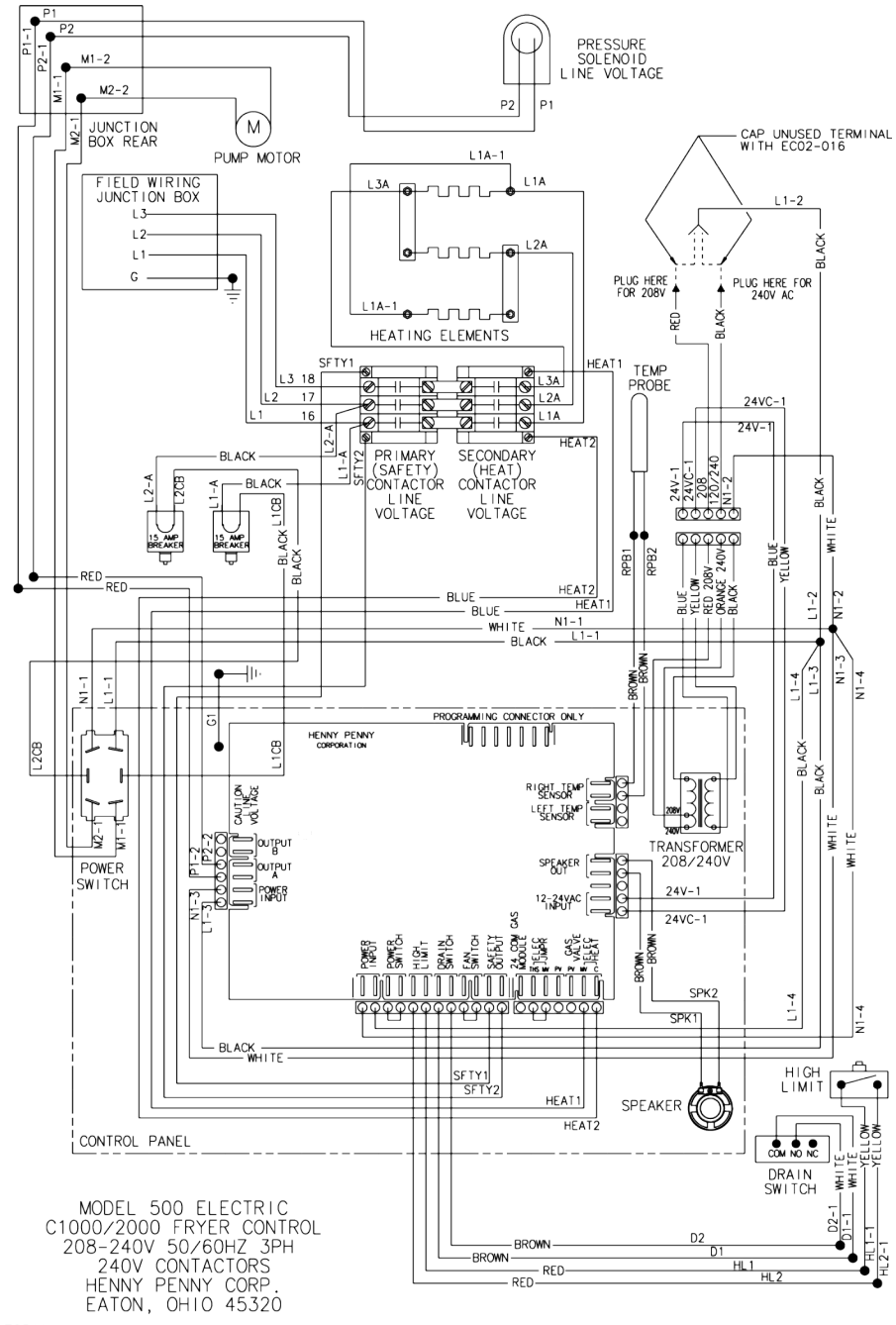
5.5 500 EF, 380-415v, 50Hz, 3P, (63197E) (Before 04/01/06)



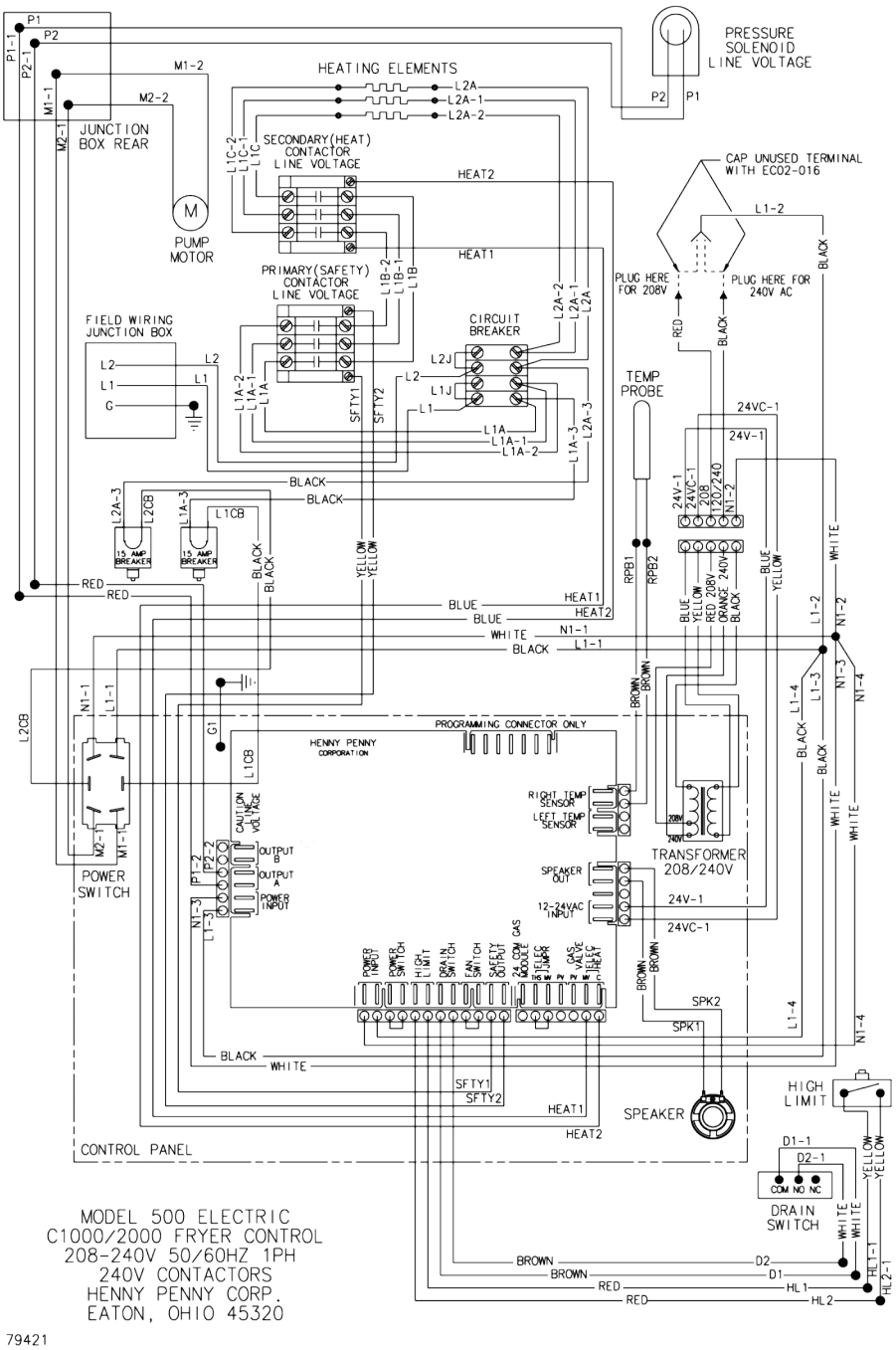
5.6 500 EF, 380-415v, 50Hz, 3P, (71993B) (After 04/01/06)



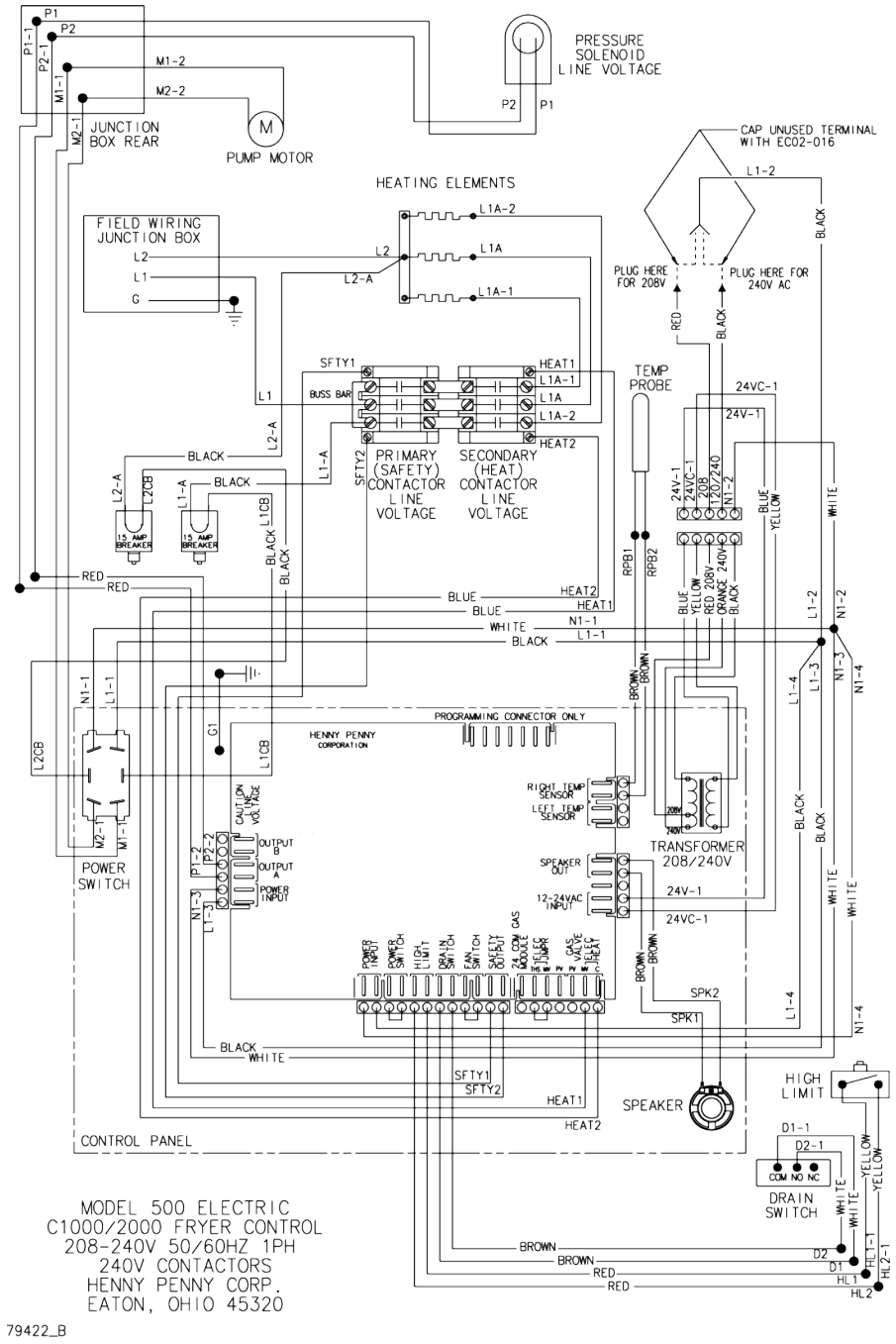
5.7 500 EF, C1000 & 2000, 208-240v, 50/60Hz, 3P, 240v Con. (78541C)



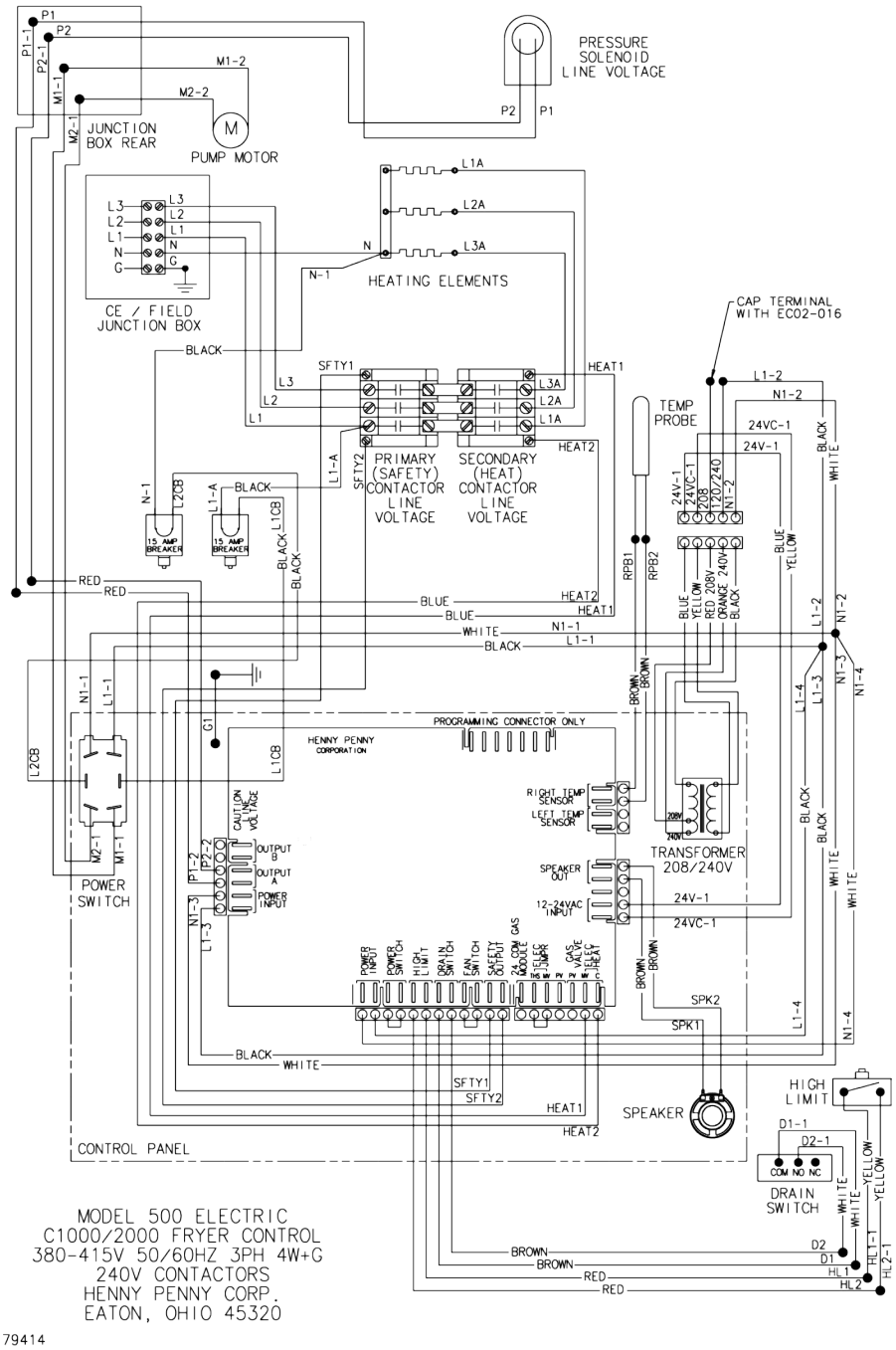
5.8 500 EF, C1000 & 2000, 208-240v, 50/60Hz, 1P, 240v Con. (79421B)



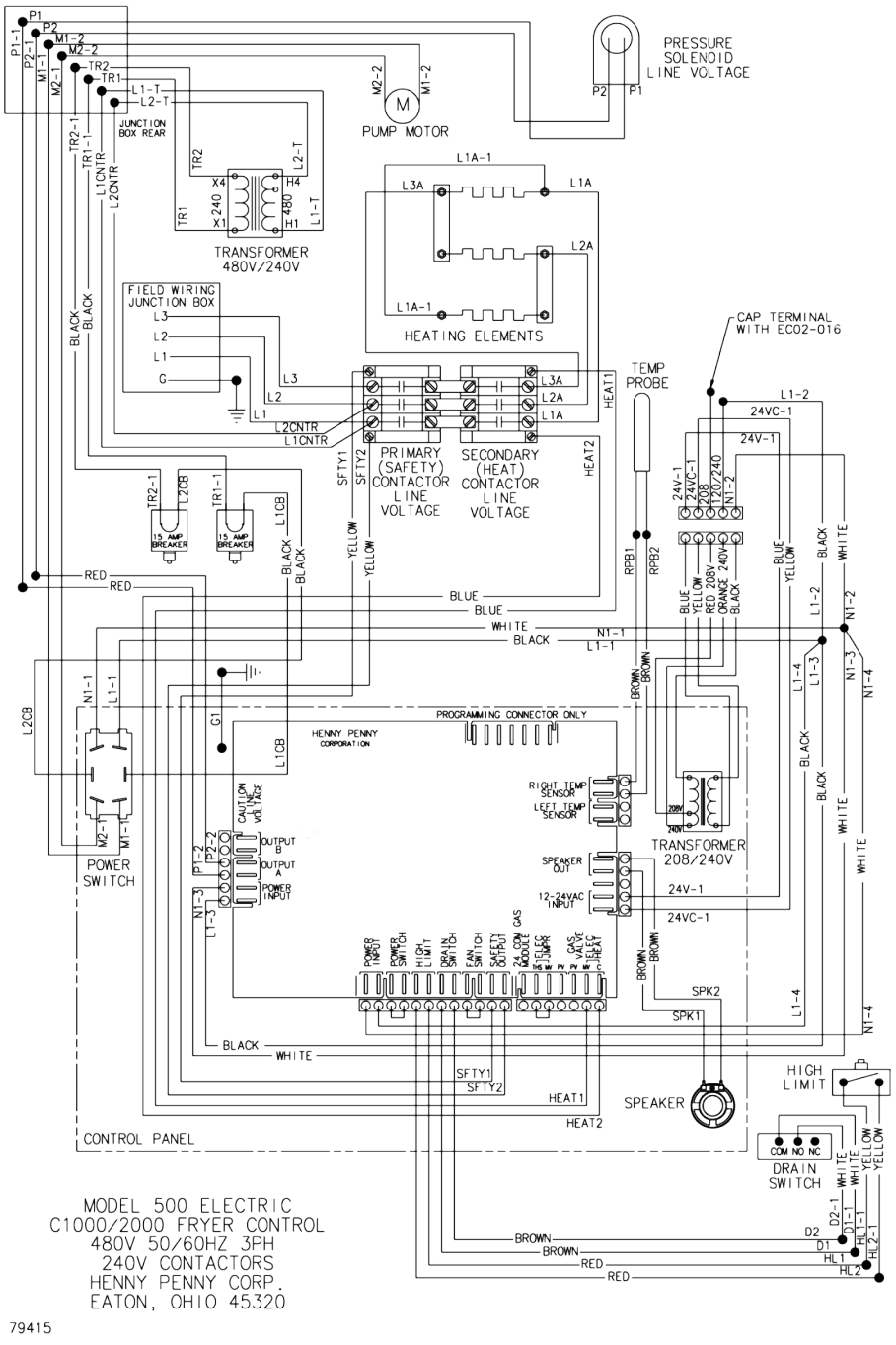
5.9 500 EF, C1000 & 2000, 208-240v, 50/60Hz, 1P, 240v Con. (79422B)



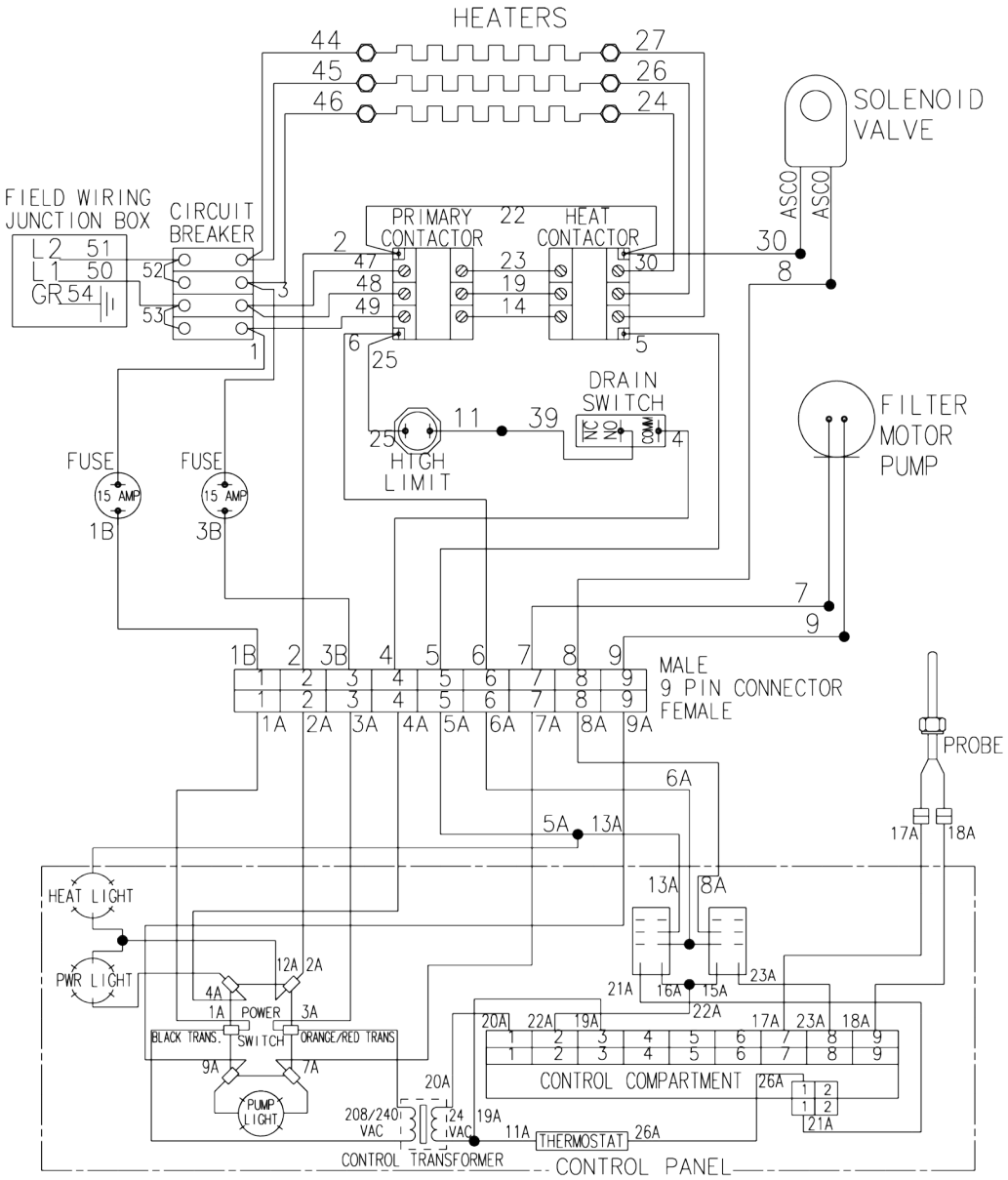
5.10 500 EF, C1000 & 2000, 380-415v, 50/60Hz, 3P, 240v Con. (79414C)



5.11 500 EF, C1000 & 2000, 480v, 50/60Hz, 3P, 240v Con. (79415A)



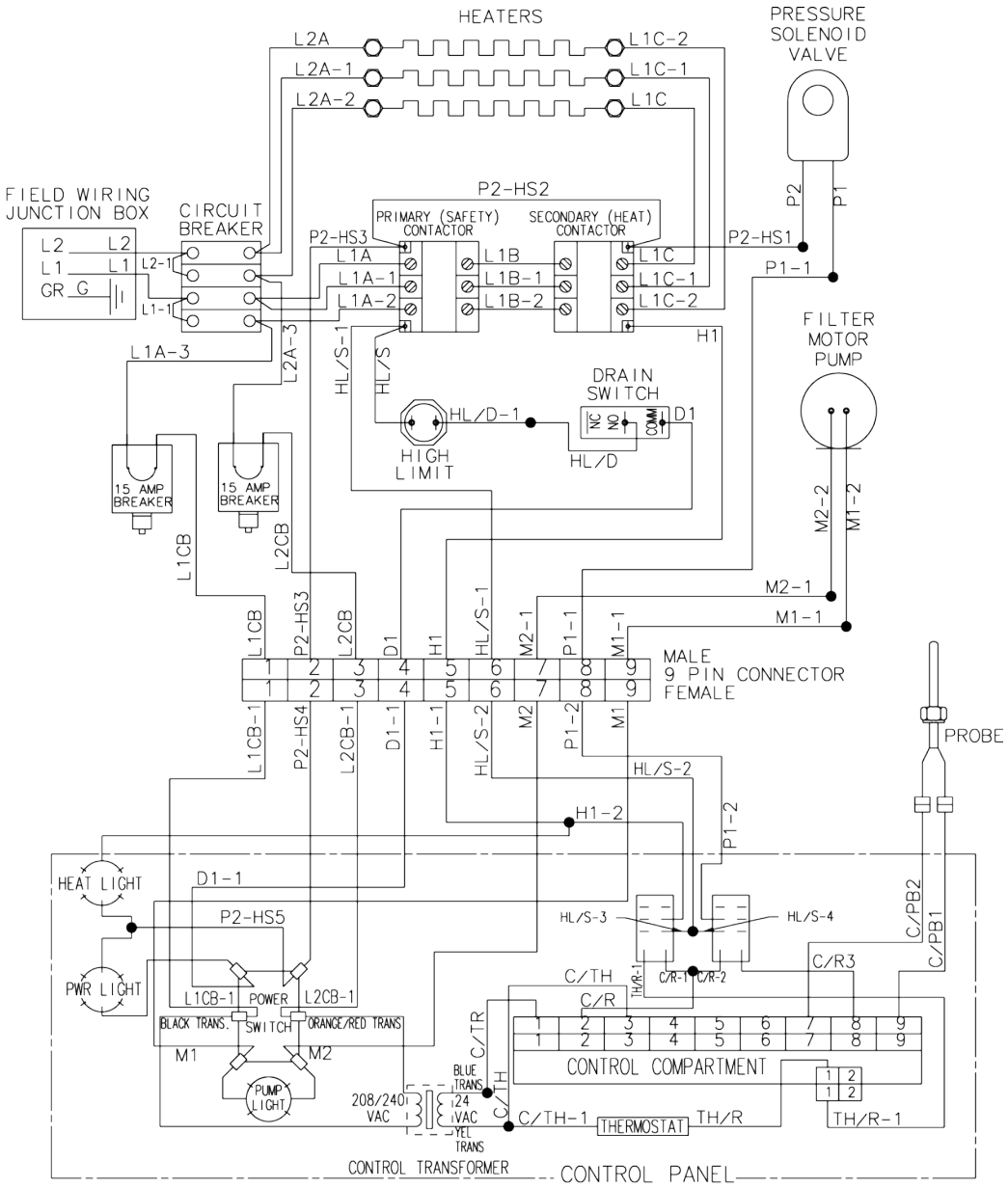
5.12 500 EF, 208-240v, 50/60Hz, 1P (51672N) (Before 04/01/06)



MODEL 500F
208-240V 50/60HZ 1PH
HENNY PENNY CORP.
EATON, OH 45320

51672

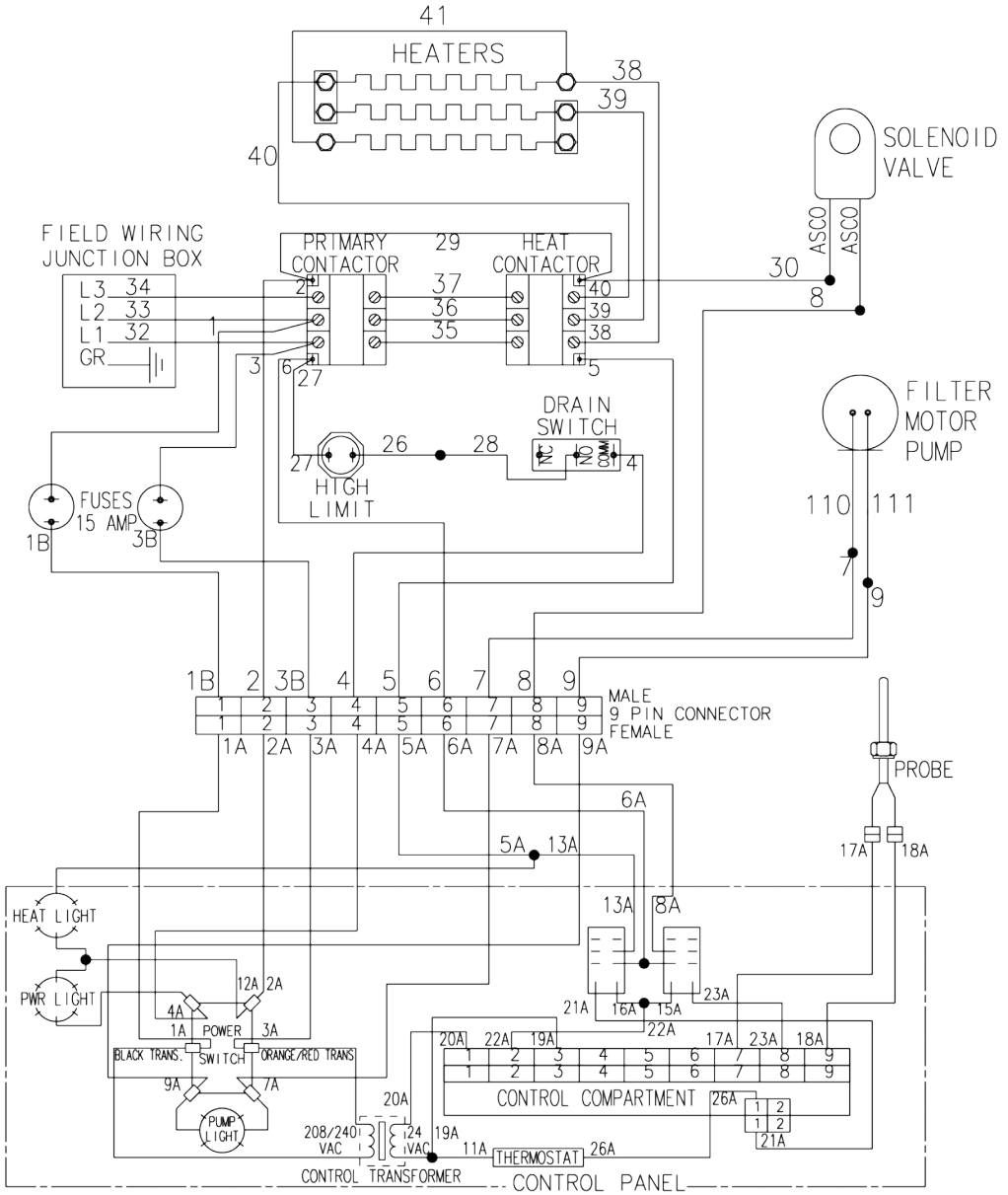
5.13 500 EF, 208-240v, 50/60Hz, 1P (69647C) (After 04/01/06)



MODEL 500F
208-240V 50/60HZ 1PH
HENNY PENNY CORP.
EATON, OH 45320

69647

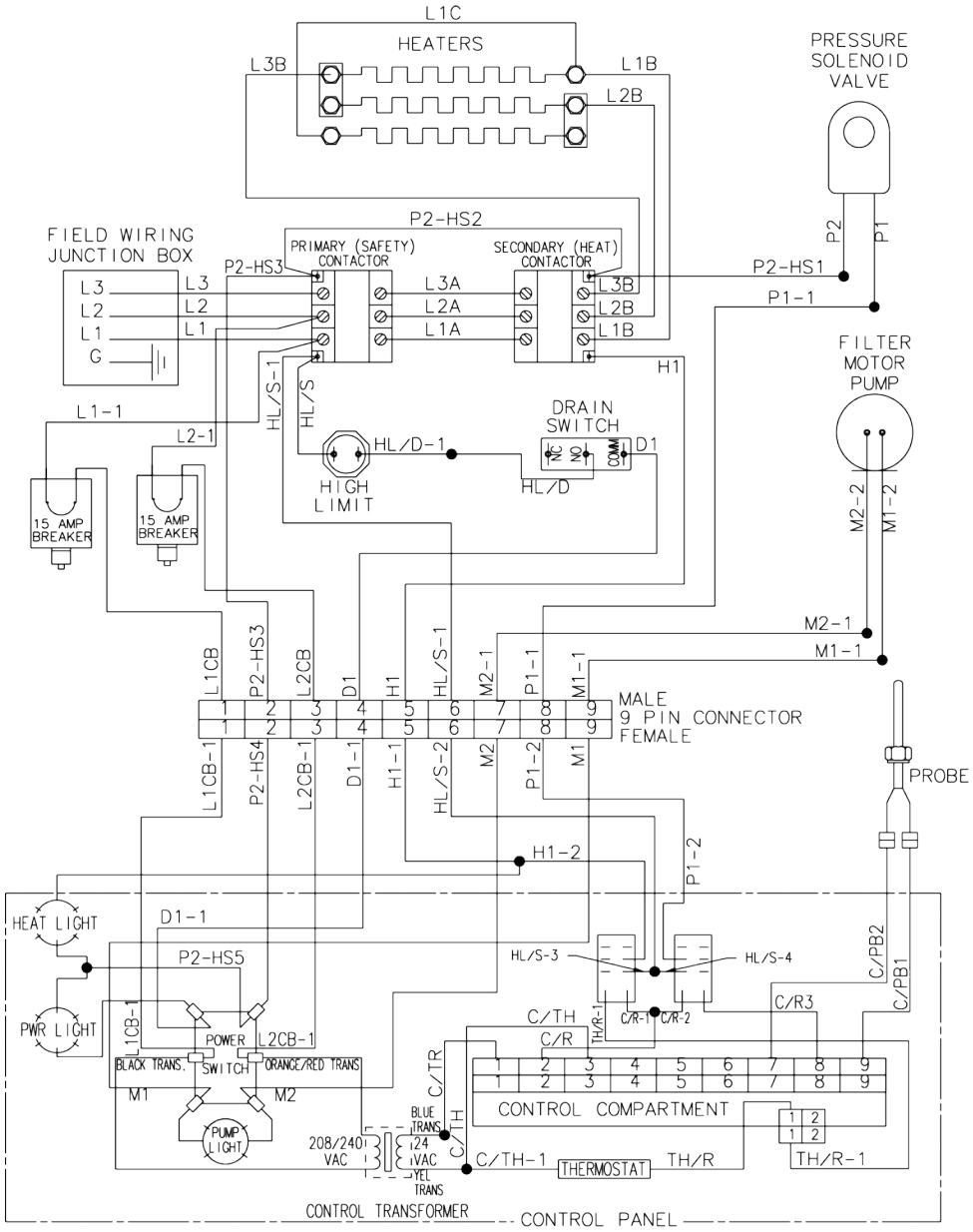
5.14 500 EF, 208-240v, 50/60Hz, 3P (63596K) (Before 04/01/06)



MODEL 500F
208-240V 50/60HZ 3PH
HENNY PENNY CORP.
EATON, OHIO 45320

63596

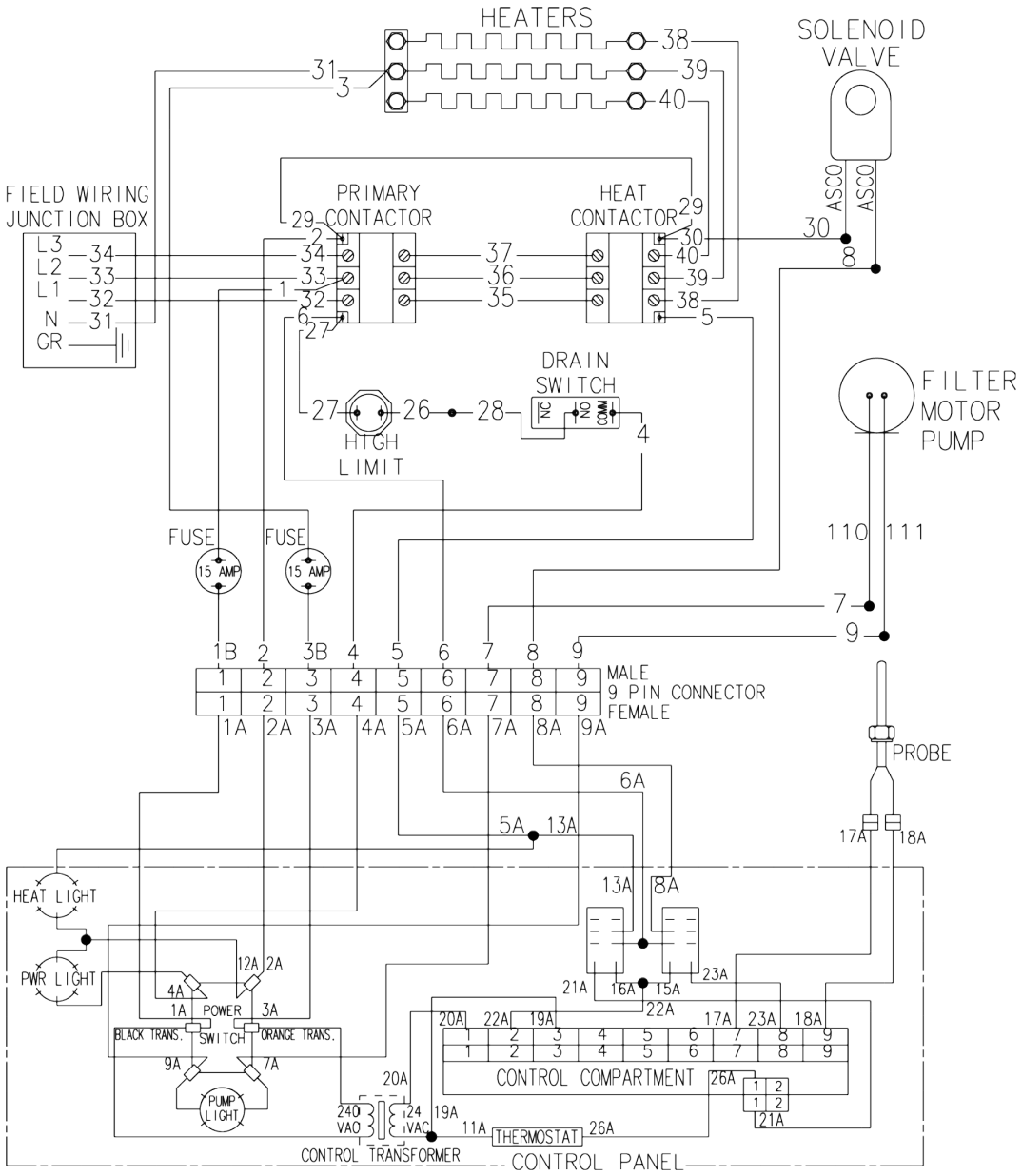
5.15 500 EF, 208-240v, 50/60Hz, 3P (69624C) (After 04/01/06)



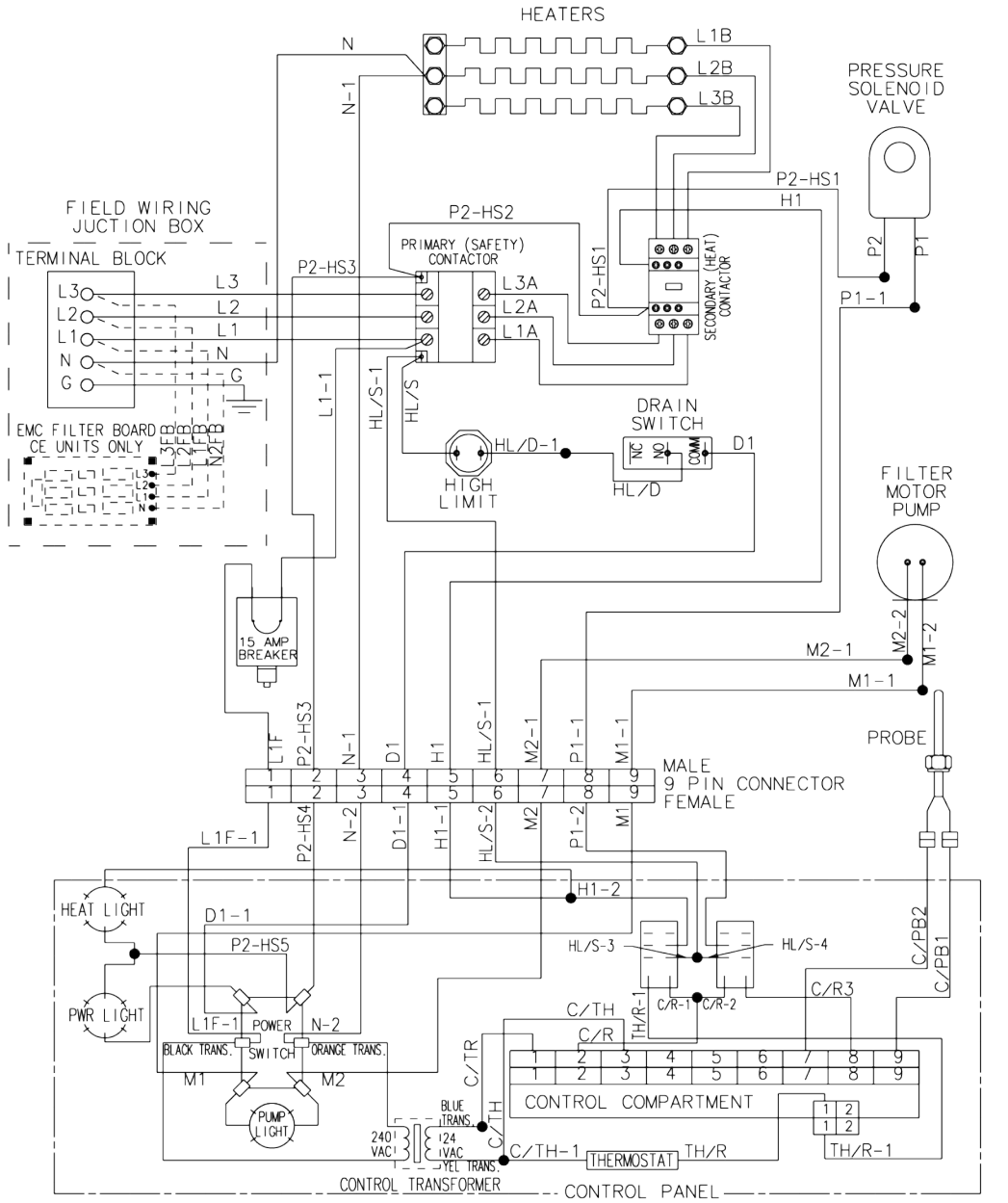
MODEL 500F
208-240V 50/60HZ 3PH
HENNY PENNY CORP.
EATON, OHIO 45320

69624

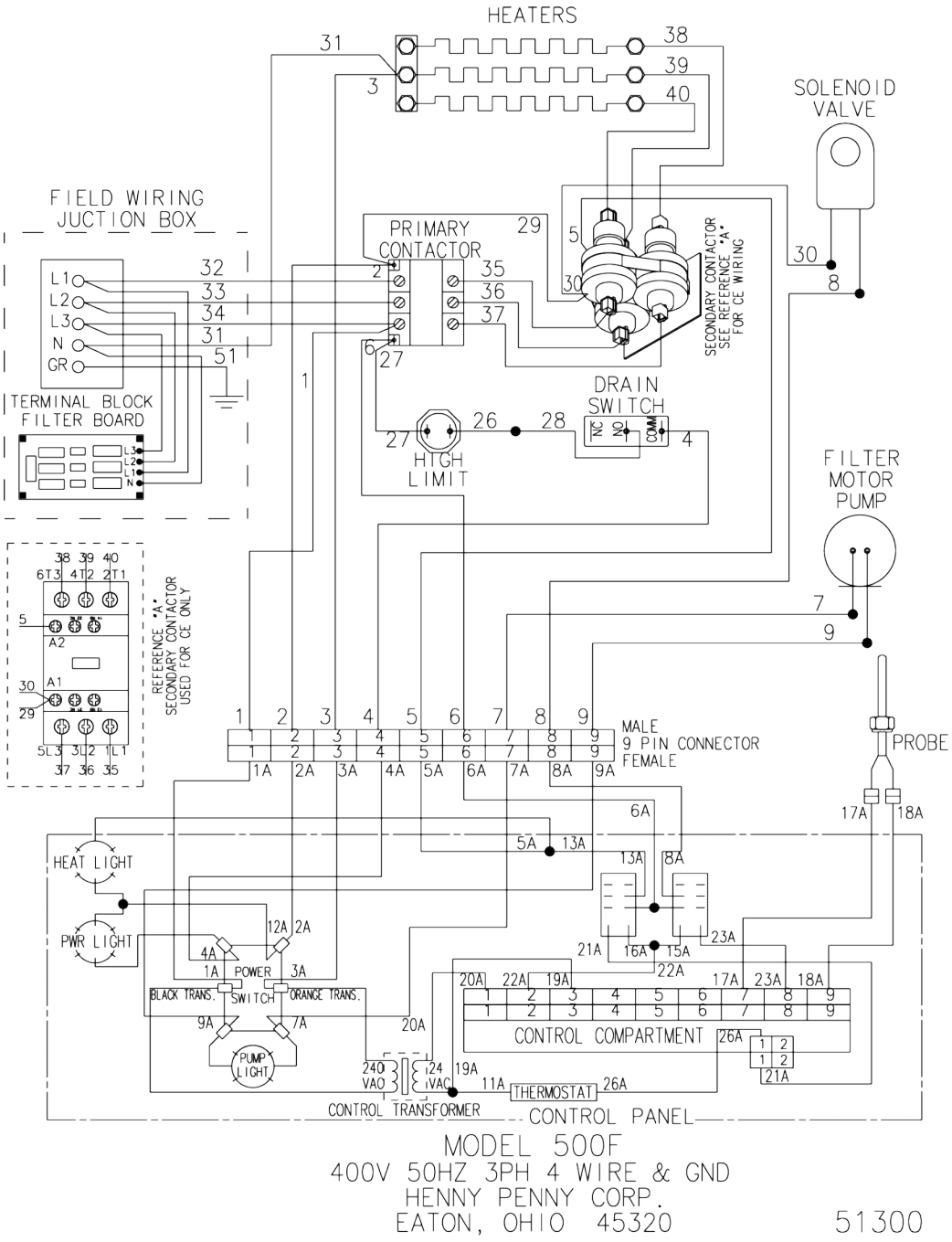
5.16 500 EF, 380-415v, 50/60Hz, 3P (63355M) (Before 04/01/06)



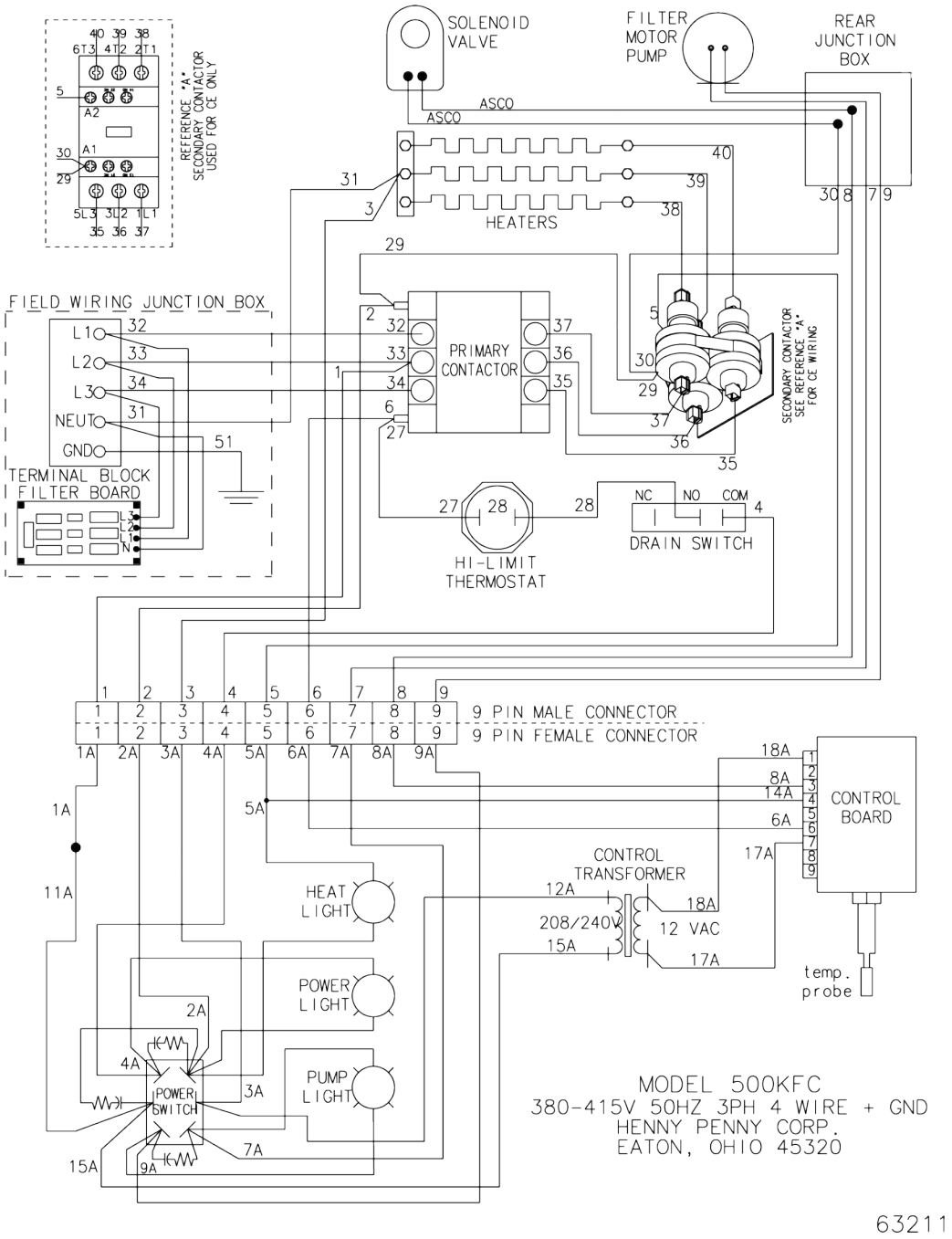
5.17 500 EF, 380-415v, 50/60Hz, 3P (69449D) (After 04/01/06)



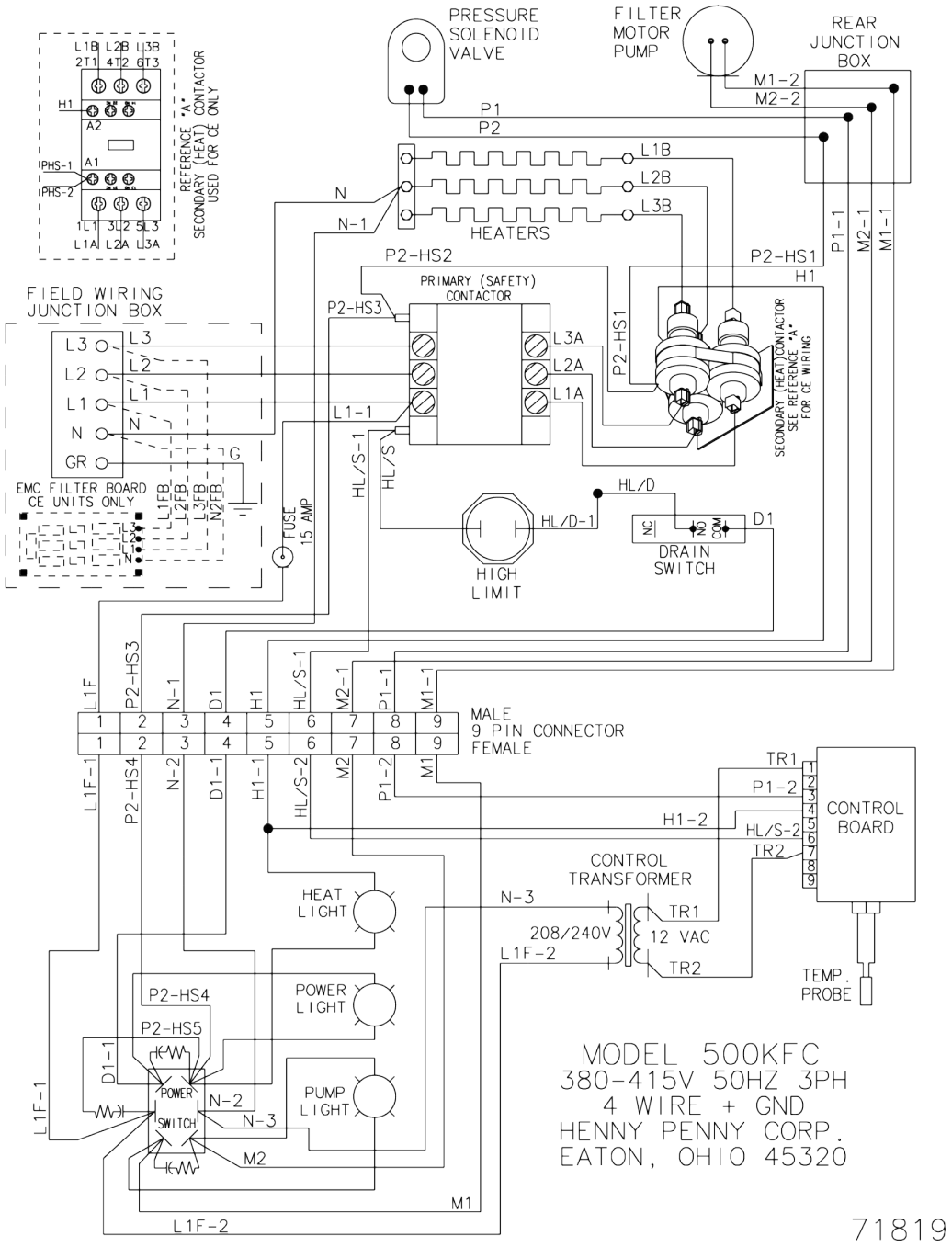
5.18 500 EF, 400v, 50Hz, 3P (51300N) (Before 04/01/06)



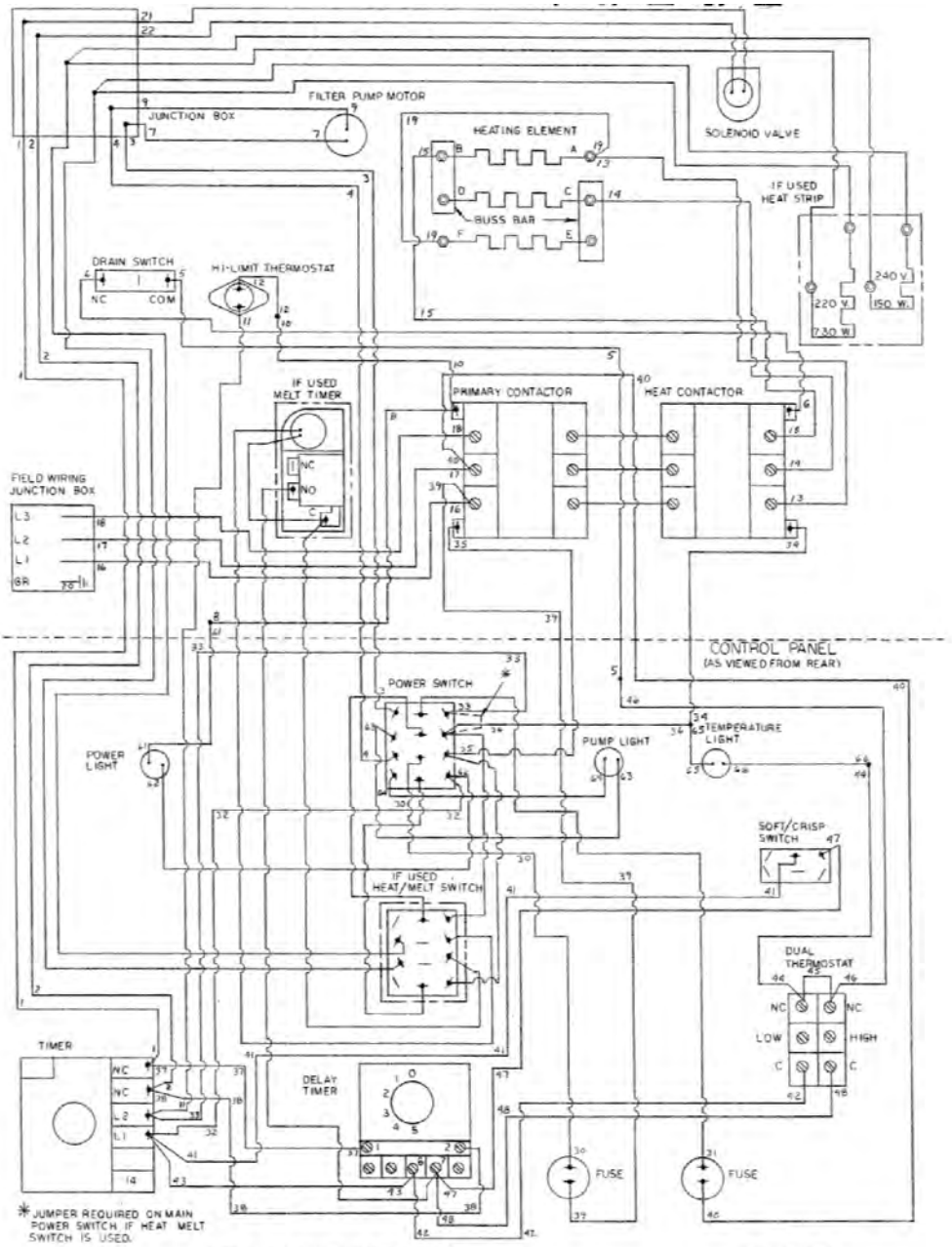
5.19 500 KFC EF, 380-415v, 50Hz, 3P (63211K) (Before 04/01/06)



5.20 500 KFC EF, 380-415v, 50Hz, 3P (71819B) (After 04/01/06)



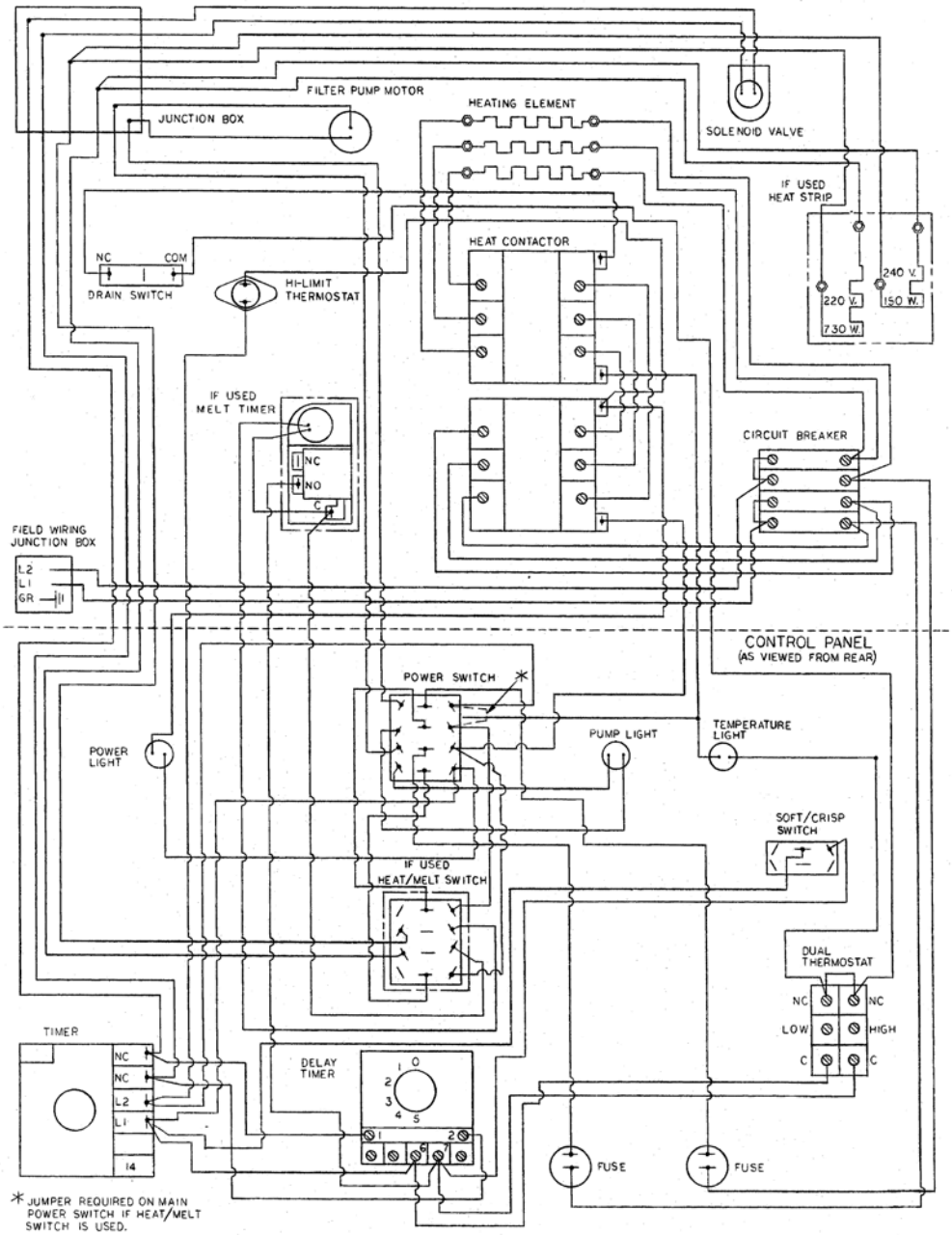
5.21 500 SC EF, 208/240v, 50/60Hz, 3P (18311F)



MODEL 500 FRYER SC VARIABLE
208/240 VOLT 50/60 HZ 3 PHASE E55

18311

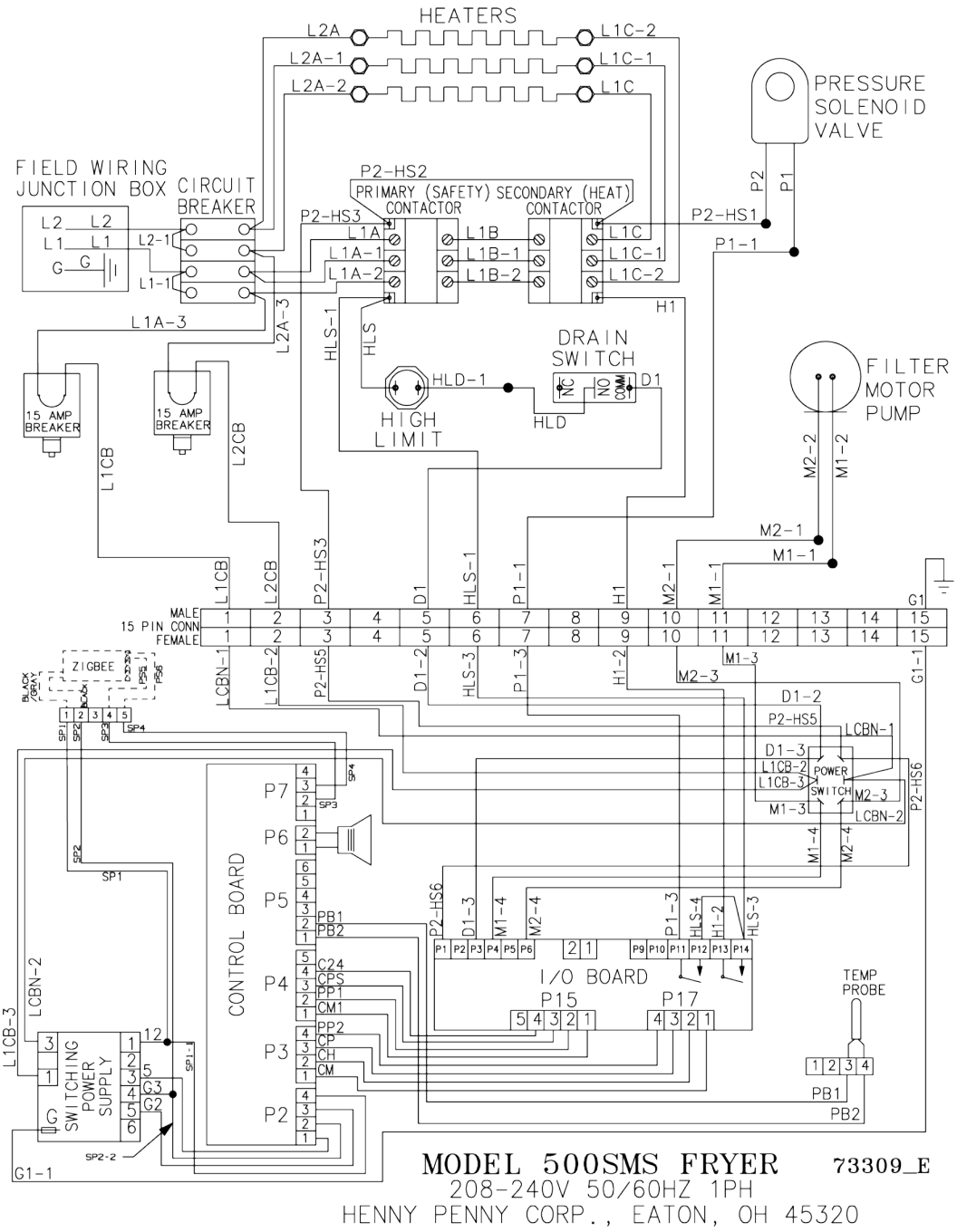
5.22 500 SC EF, 208/240v, 50/60Hz, 1P (18309D)



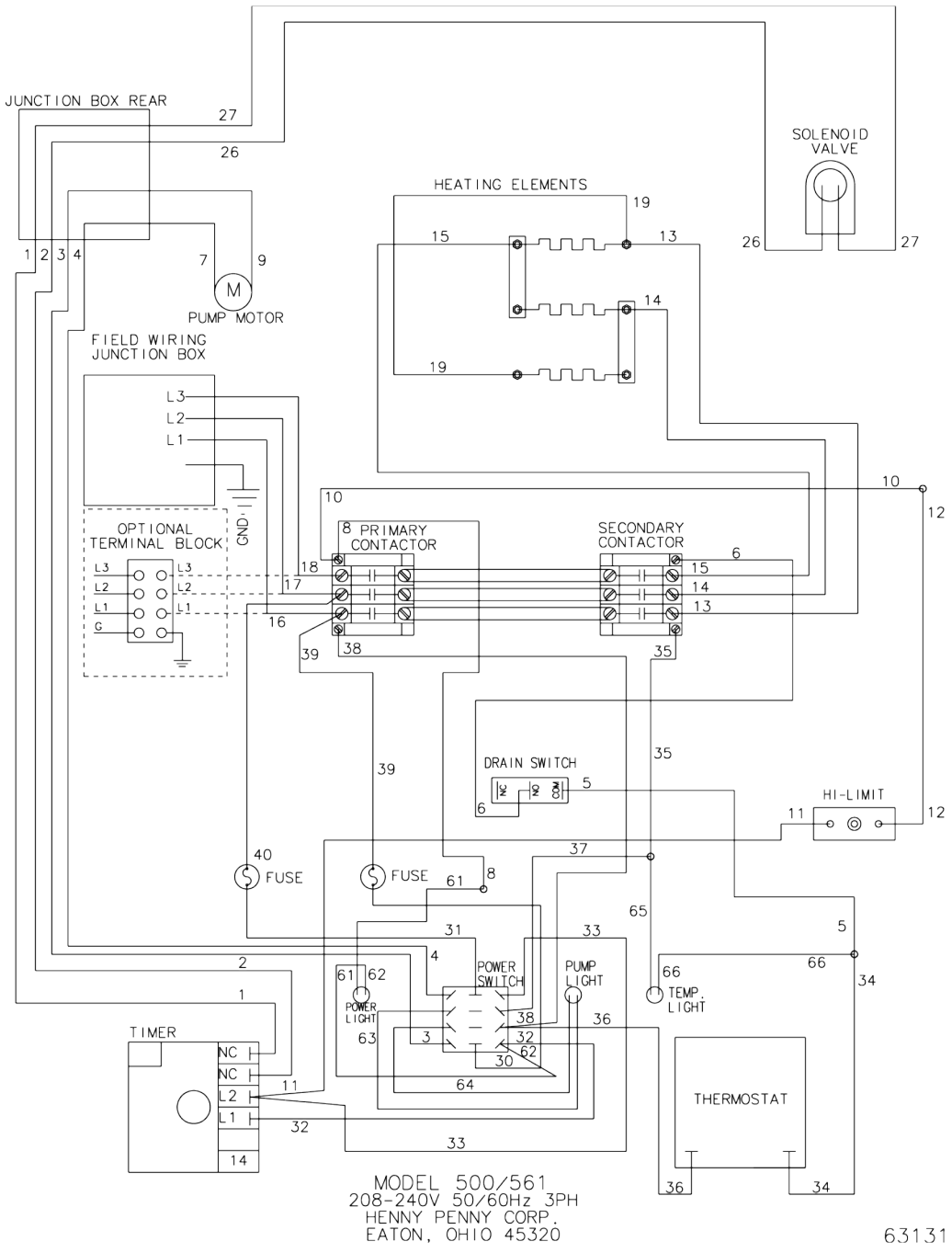
MODEL 500 FRYER SC VARIABLE TEMPERATURE
208/240 VOLT 50/60 HZ SINGLE PHASE E55 THERMOSTAT

18309

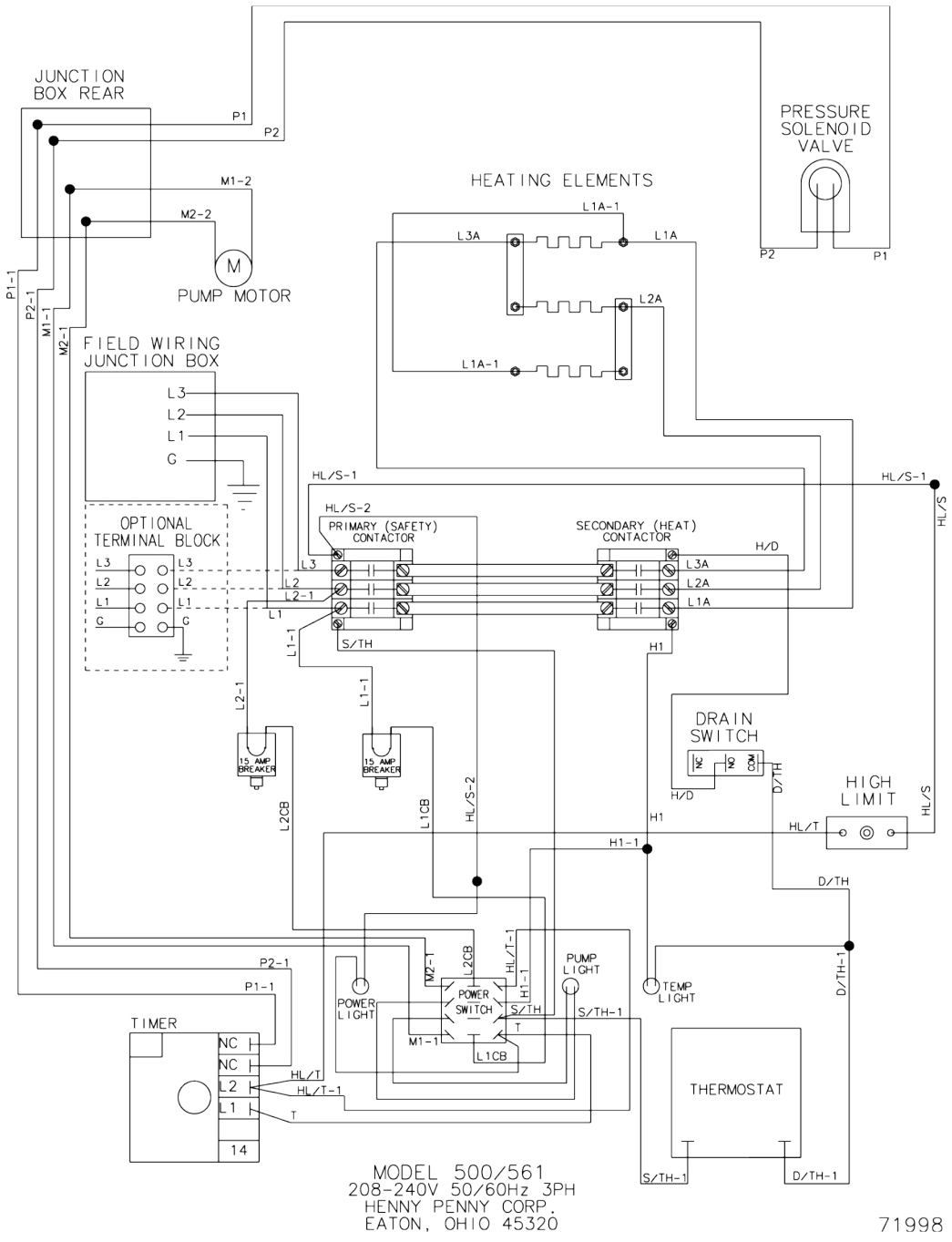
5.23 500 SMS EF, 208-240v, 50/60Hz, 1P (73309E)



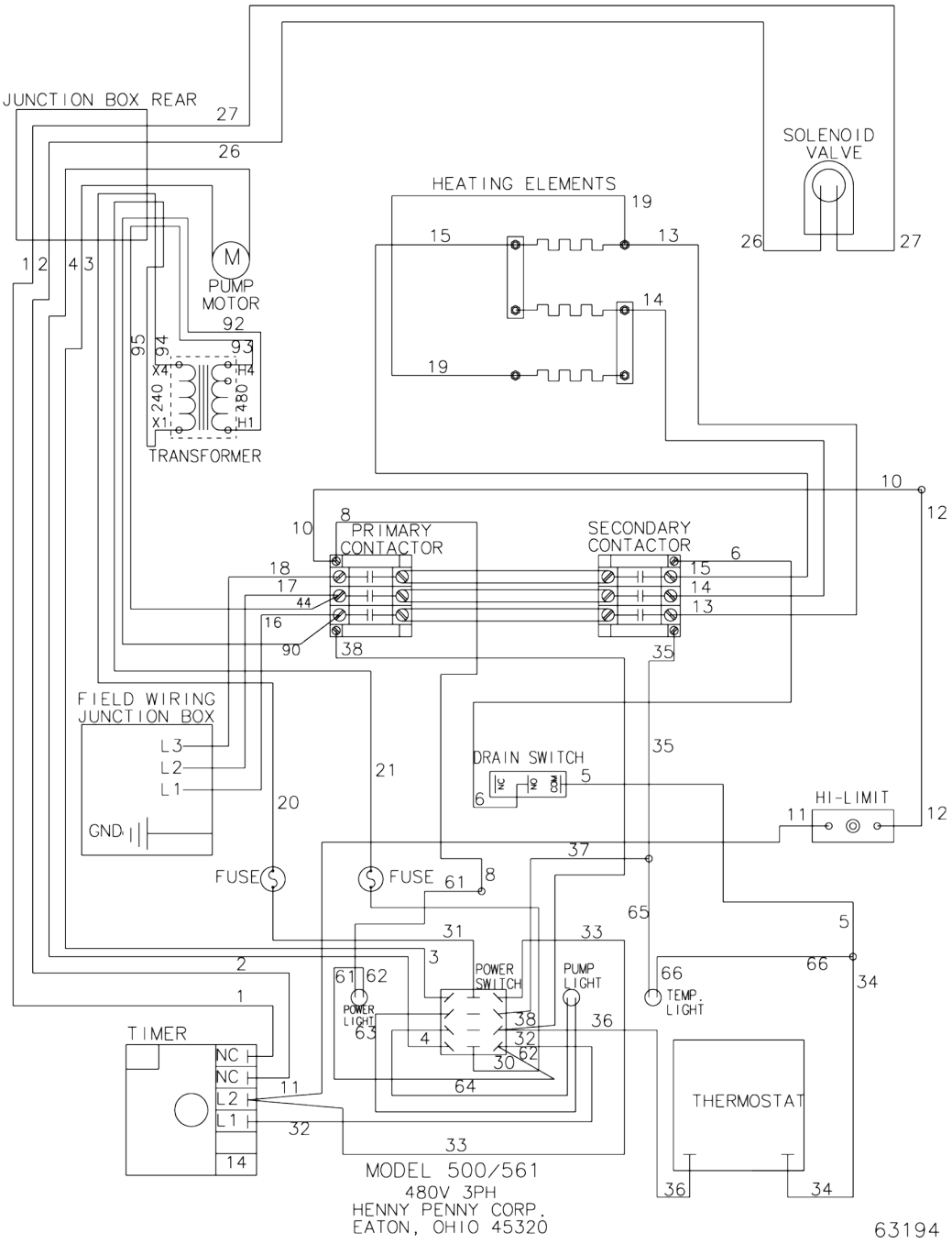
5.24 500/561 EF, 208-240v, 50/60Hz, 3P (63131F) (Before 04/01/06)



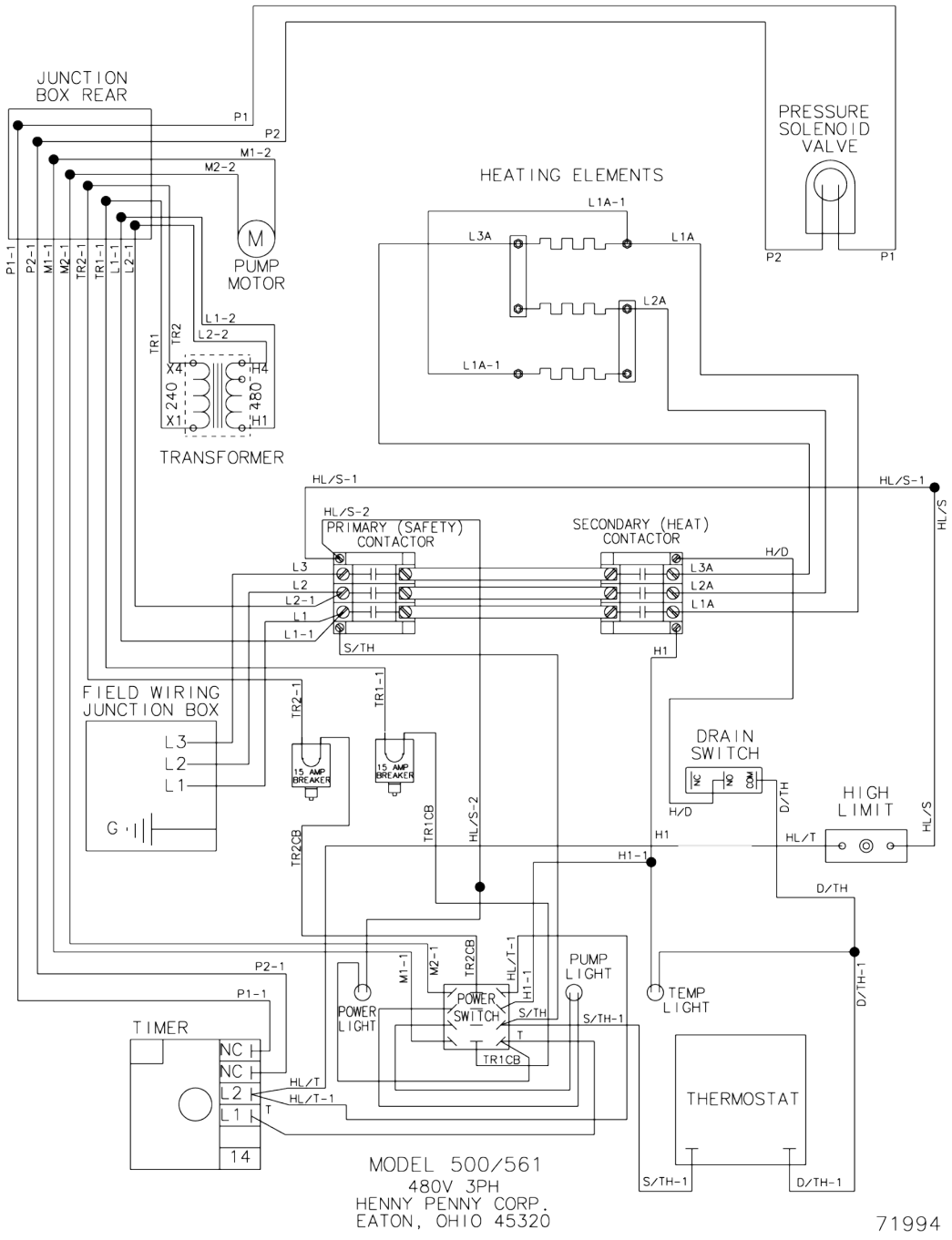
5.25 500/561 EF, 208-240v, 50/60Hz, 3P (71998C) (After 04/01/06)



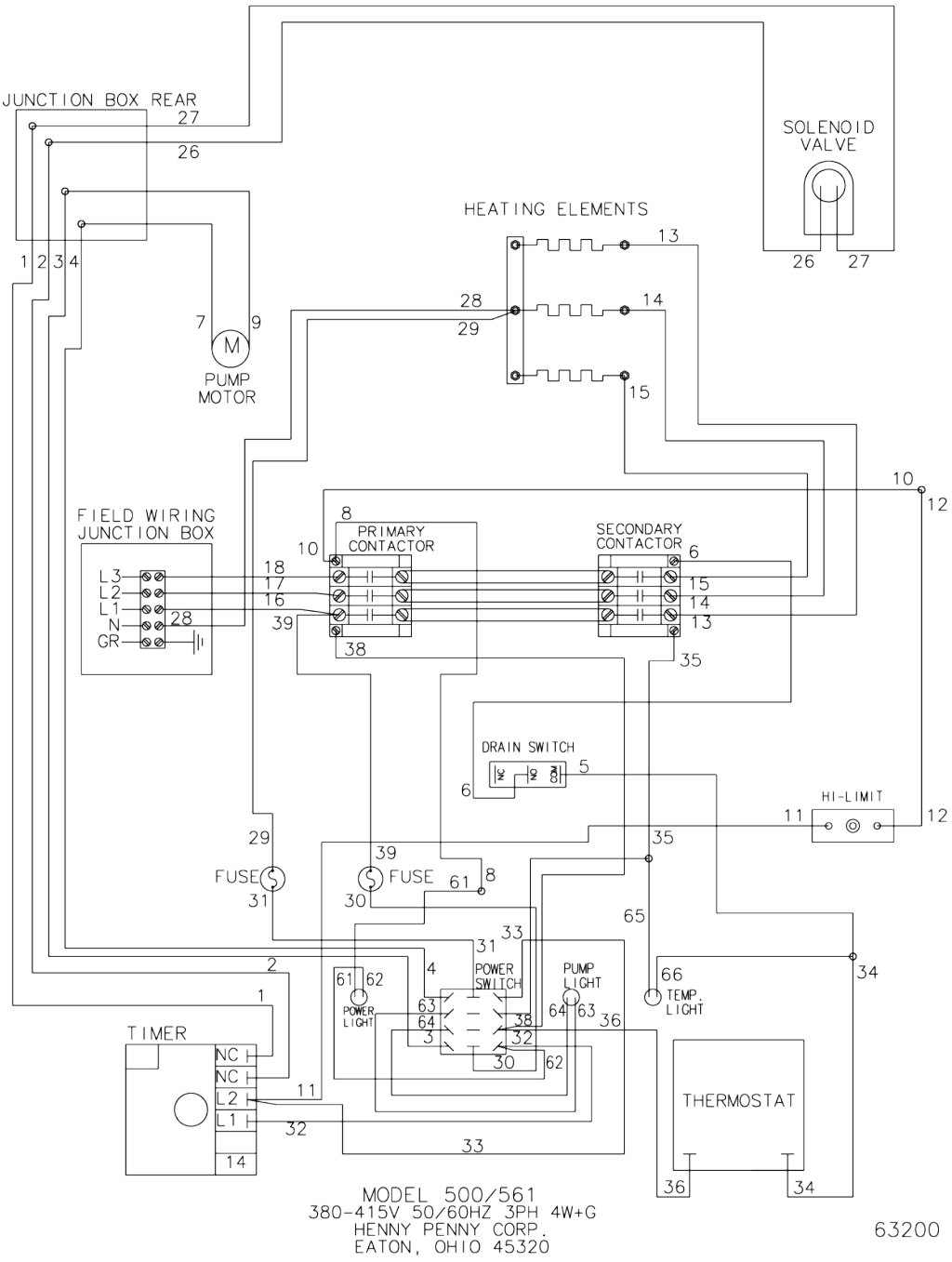
5.26 500/561 EF, 480v, 50/60Hz, 3P (63194G) (Before 04/01/06)



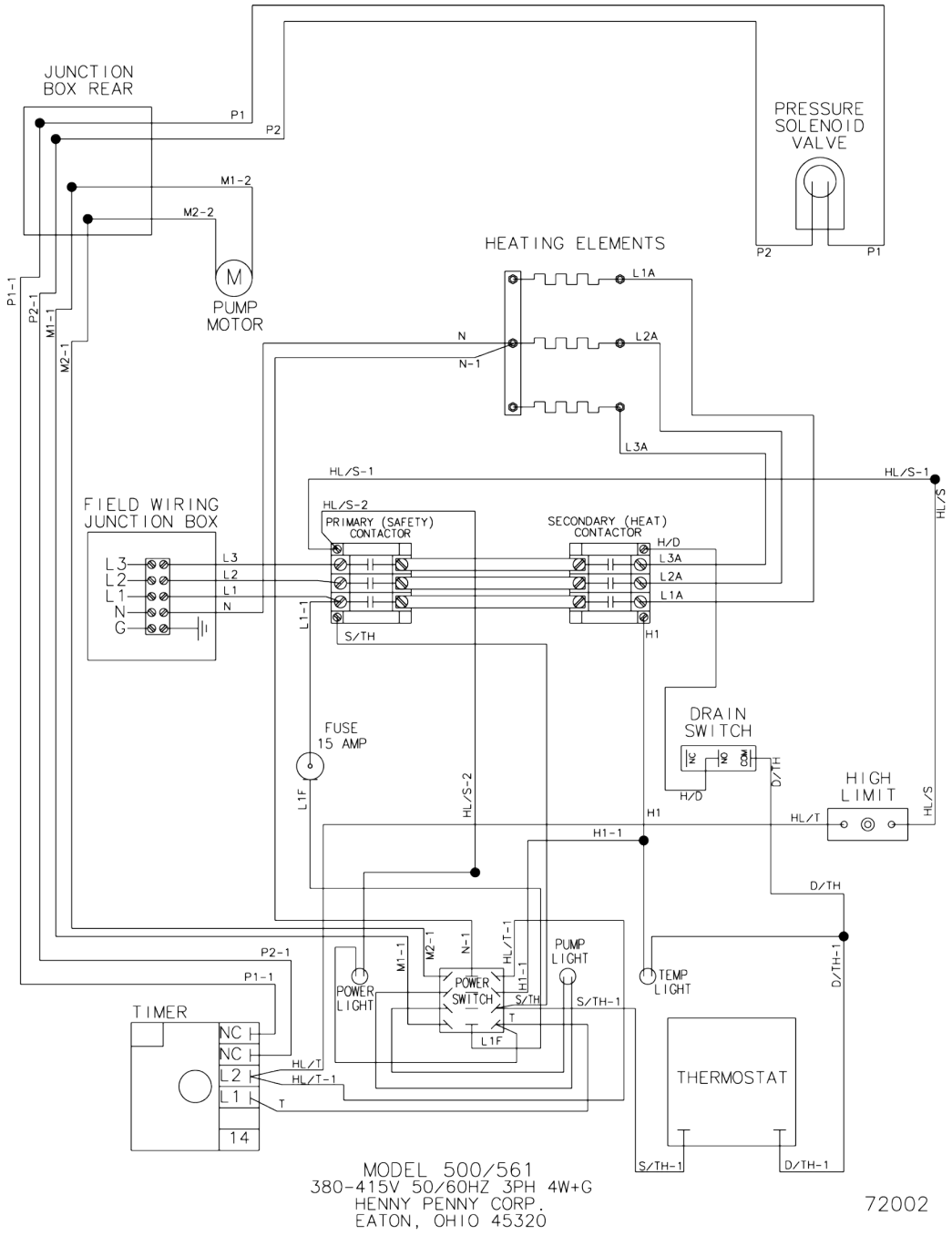
5.27 500/561 EF, 480v, 50/60Hz, 3P (71994C) (After 04/01/06)



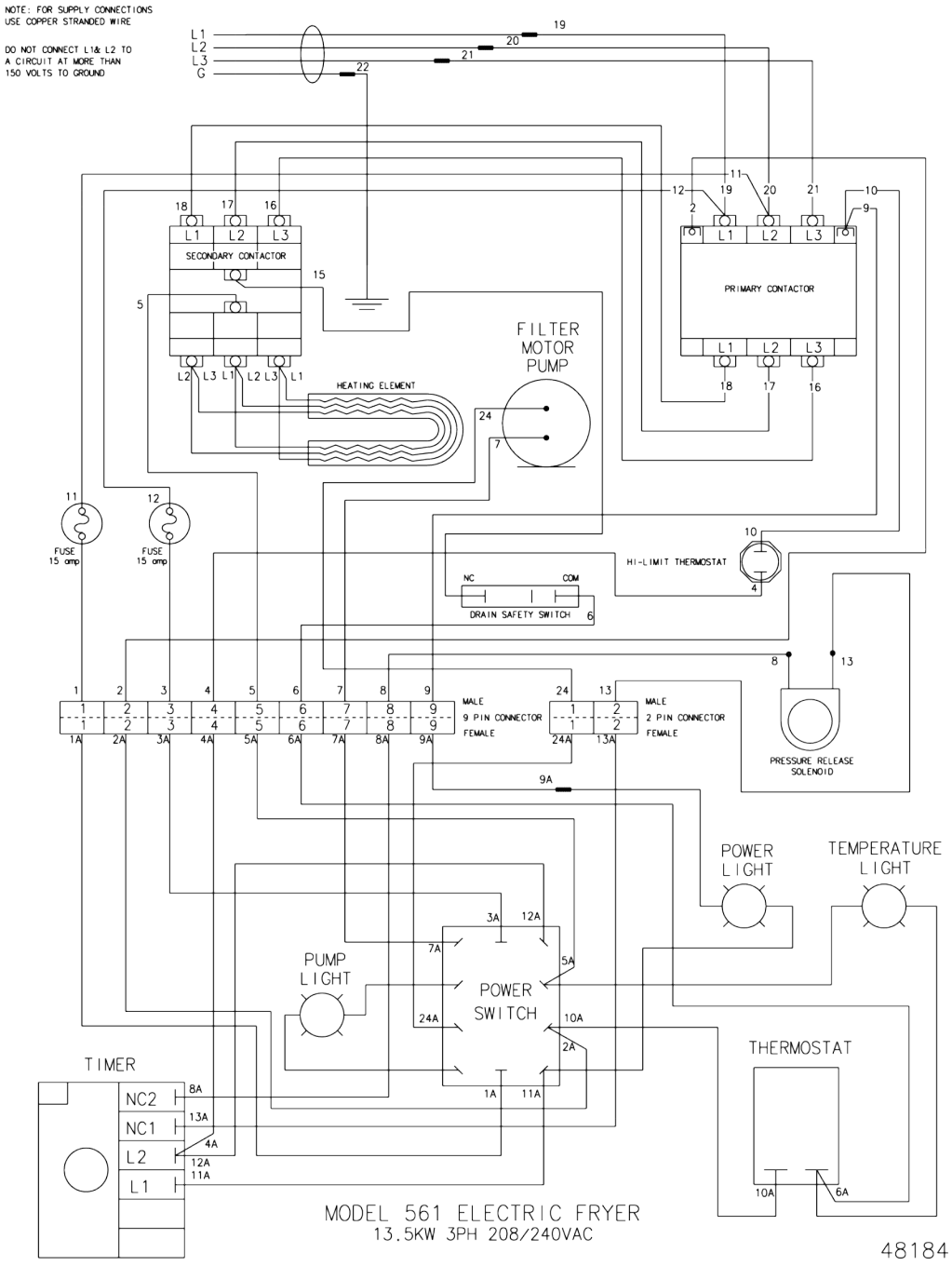
5.28 500/561 EF, 380-415v, 50/60Hz, 3P (63200F) (Before 04/01/06)



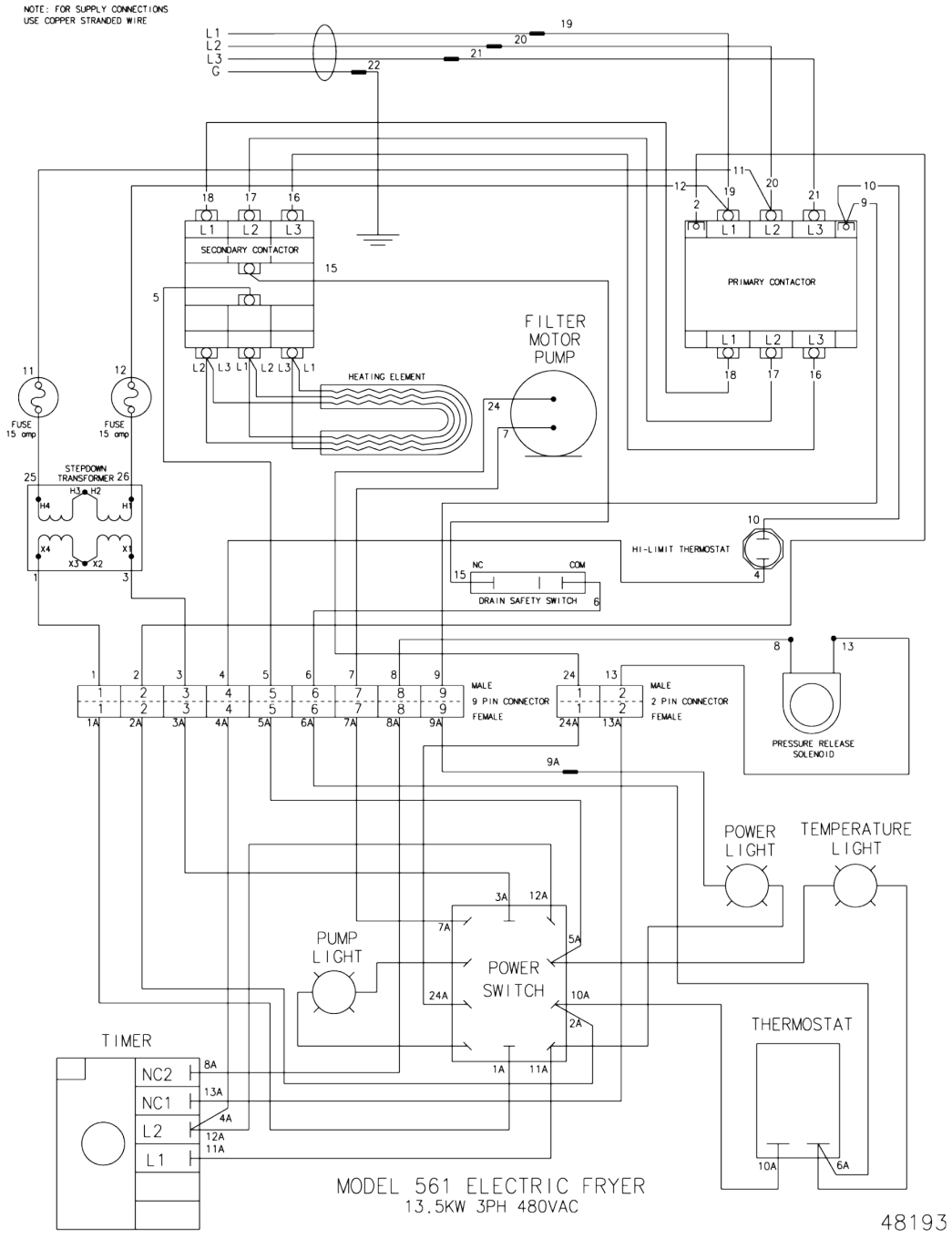
5.29 500/561 EF, 380-415v, 50/60Hz, 3P (72002B) (After 04/01/06)



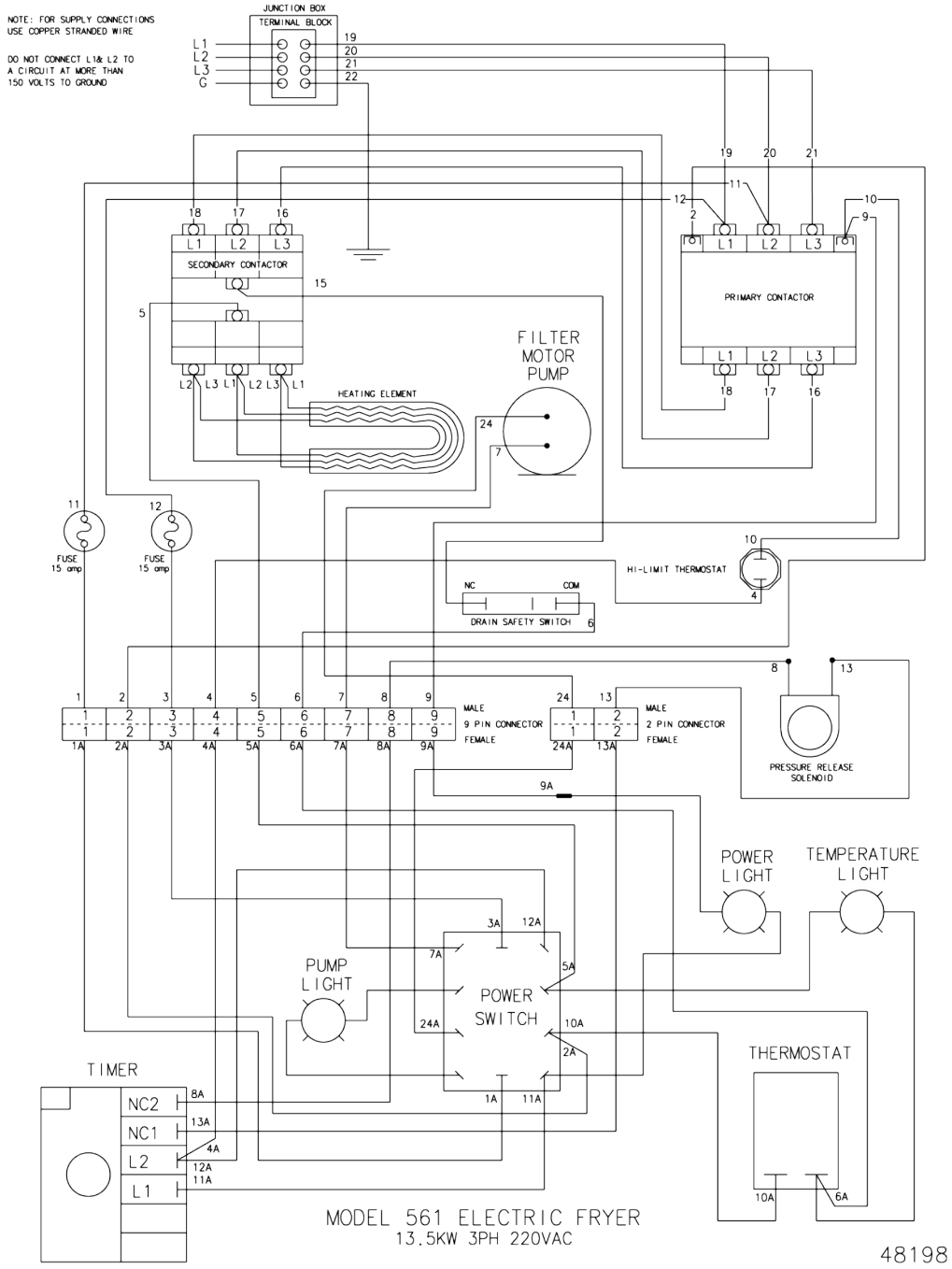
5.30 561 EF, 13.5kW, 3P, 208/240v (48184E)



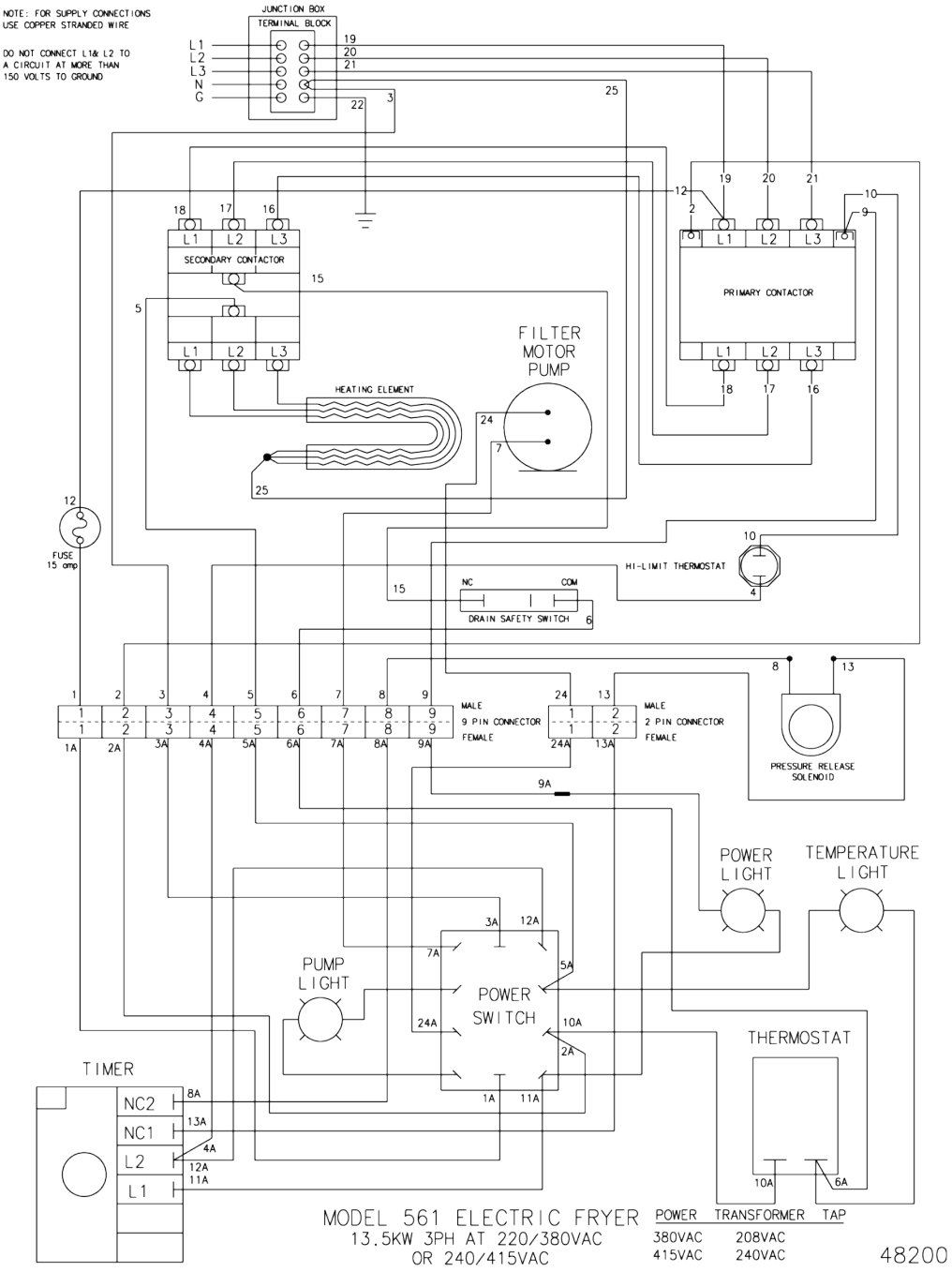
5.31 561 EF, 13.5kW, 3P, 480v (48193E)



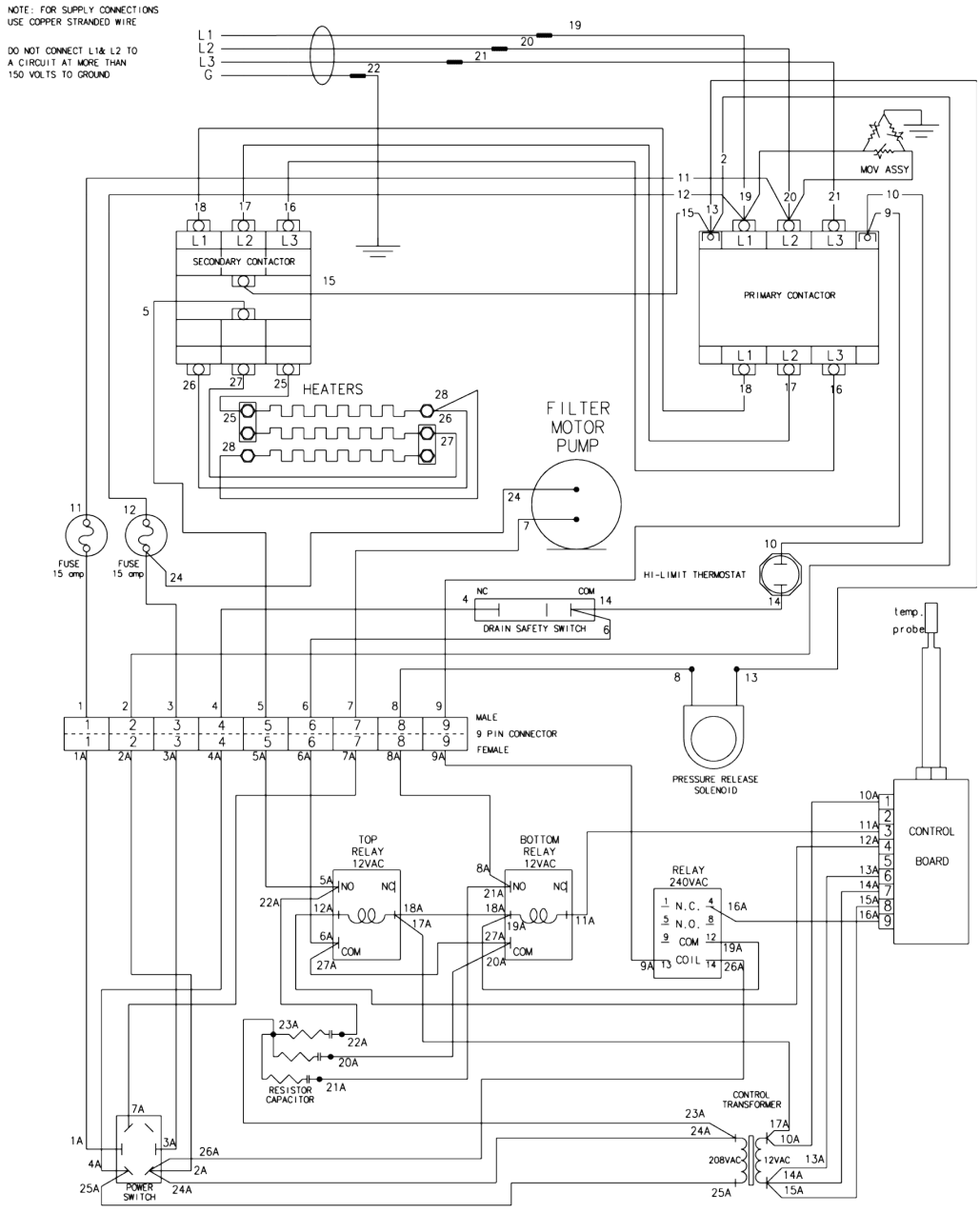
5.32 561 EF, 13.5kW, 3P, 220v (48198E)



5.33 561 EF, 13.5kW, 3P, 220/380v or 240/415v (48200E)



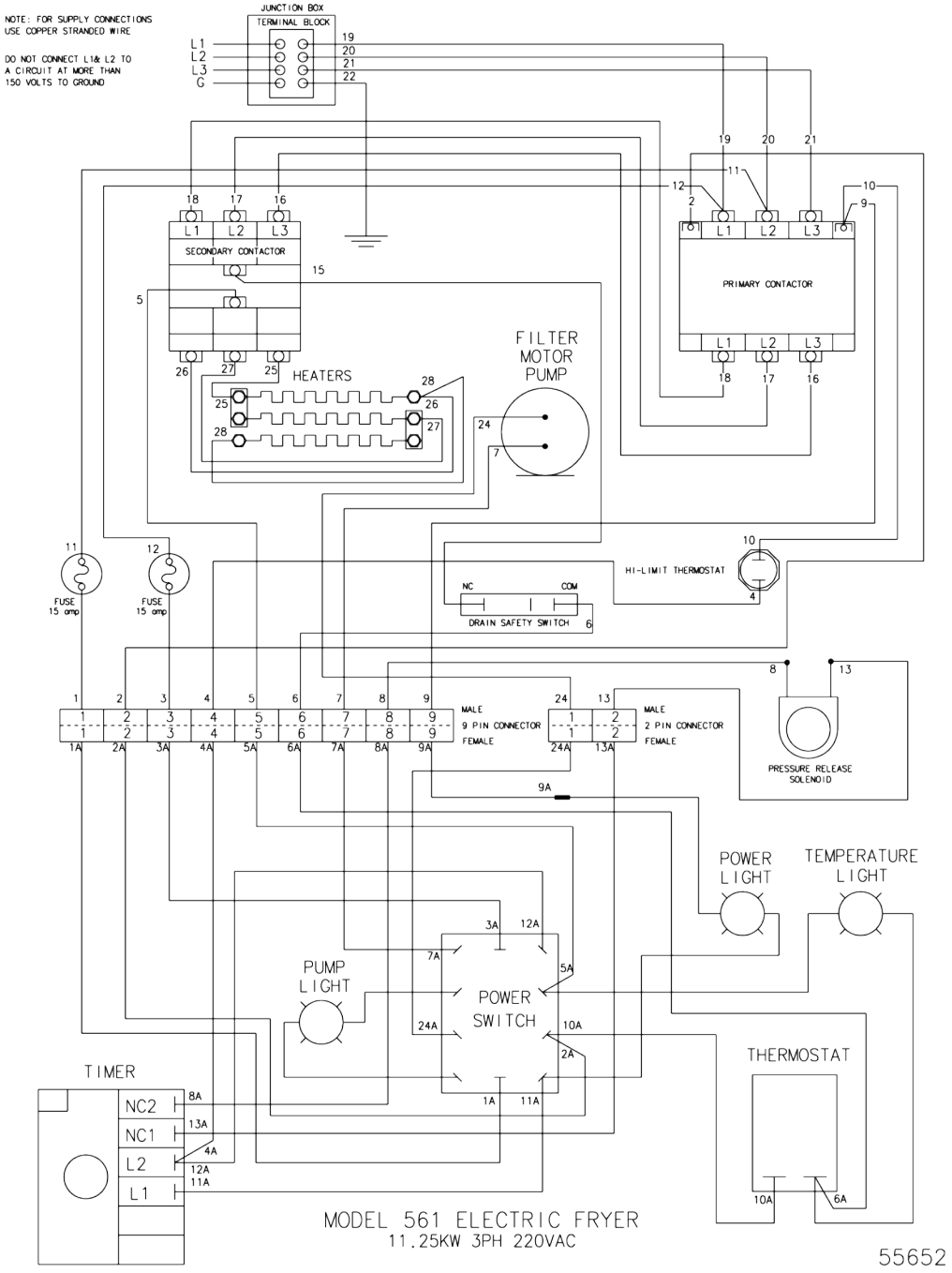
5.34 561 EF, 11.25kW, 3P, 208/240v (55653B)



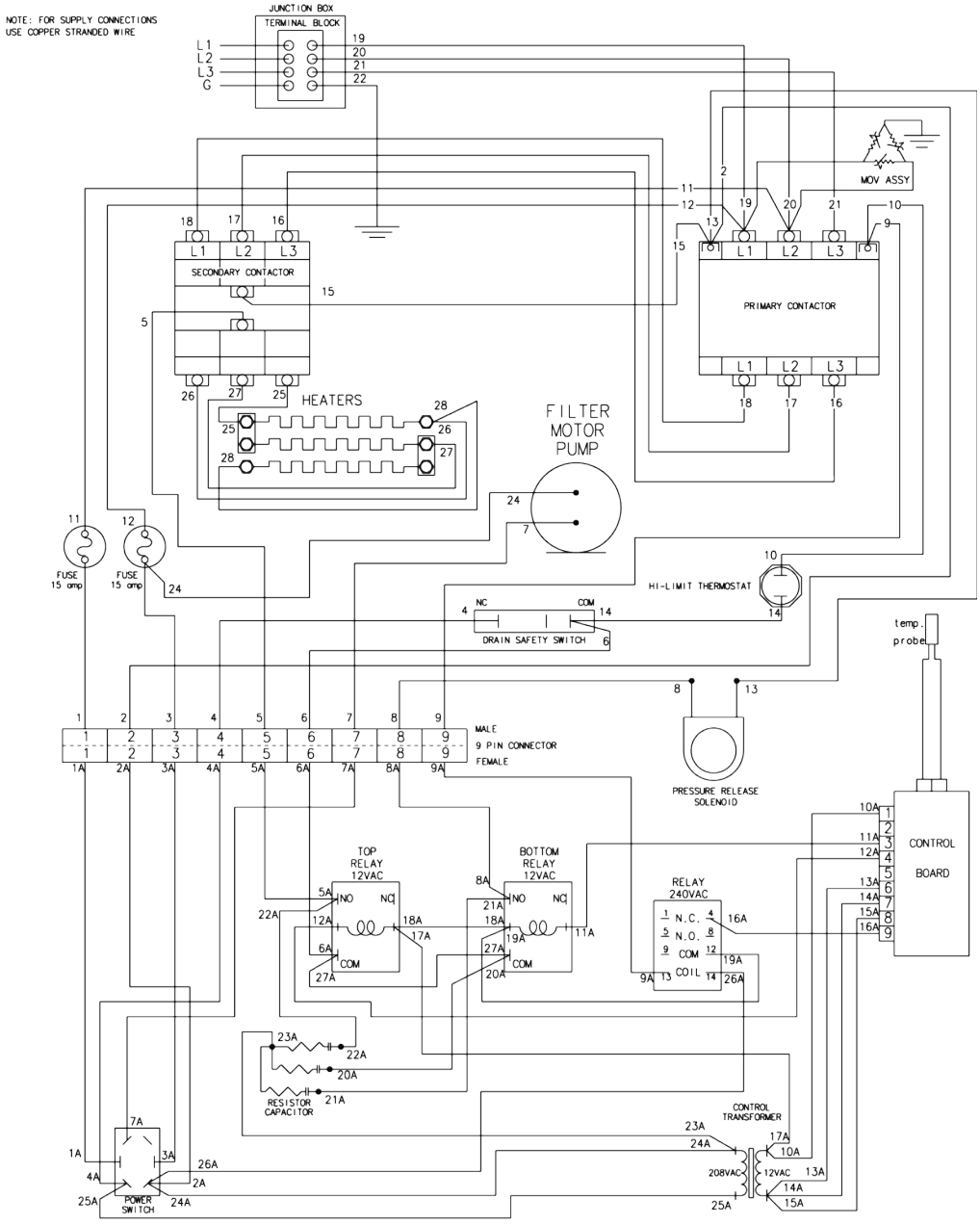
MODEL 561 ELECTRIC FRYER
11.25KW 3PH 208/240VAC

55653

5.35 561 EF, 11.25kW, 3P, 220v (55652B)



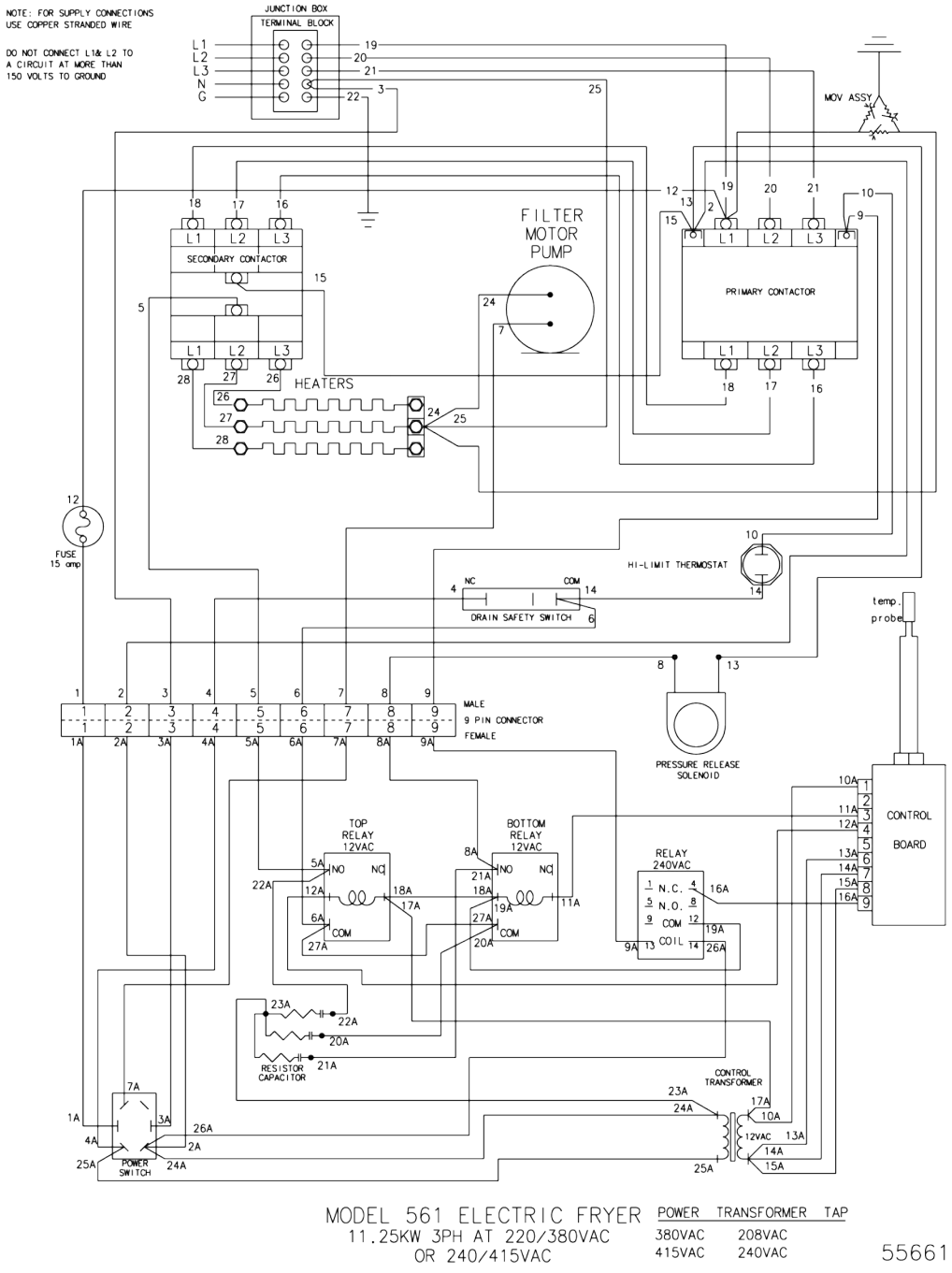
5.36 561 EF, 11.25kW, 3P, 220v (55650B)



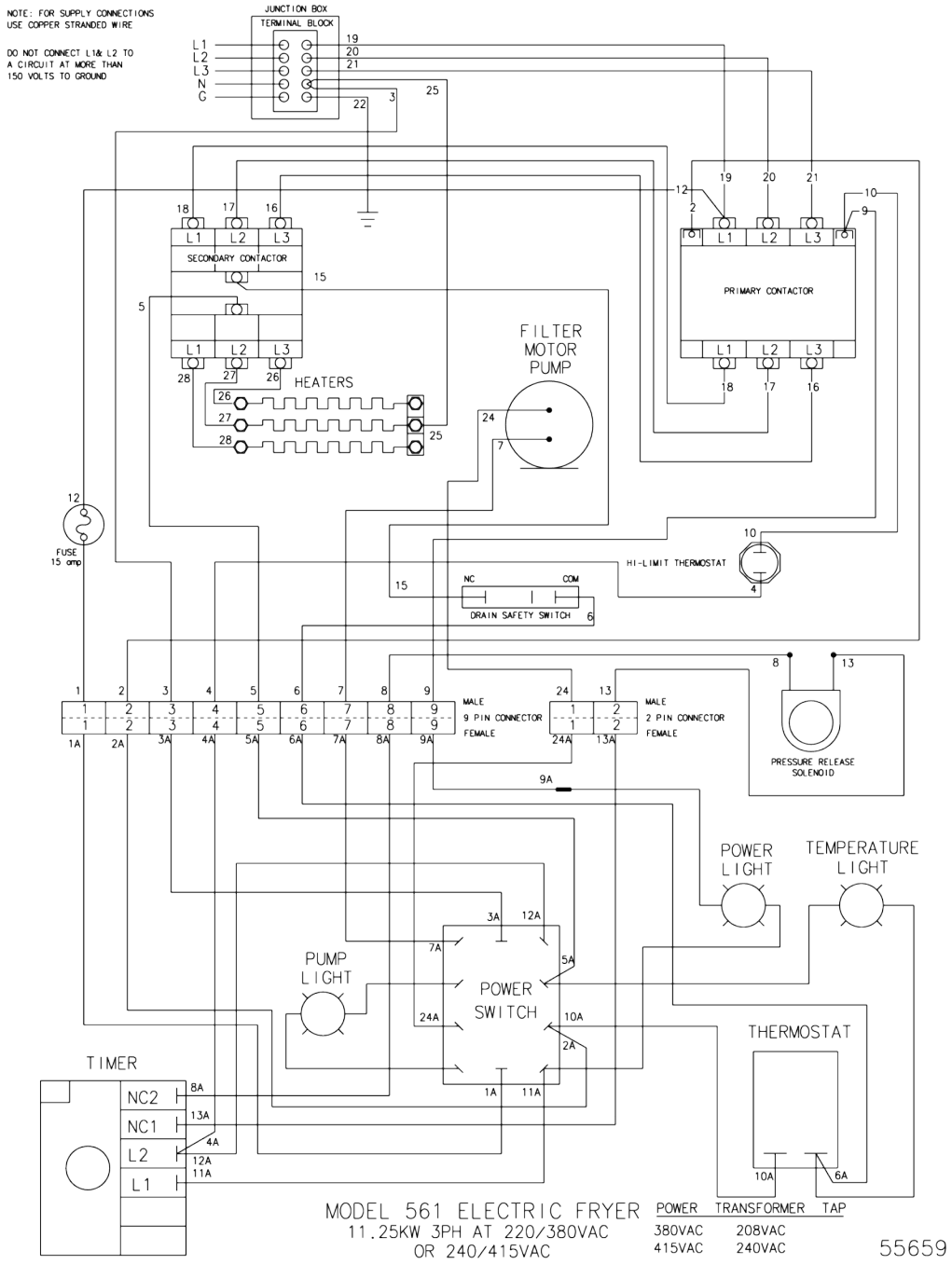
MODEL 561 ELECTRIC FRYER
11.25KW 3PH 220VAC

55650

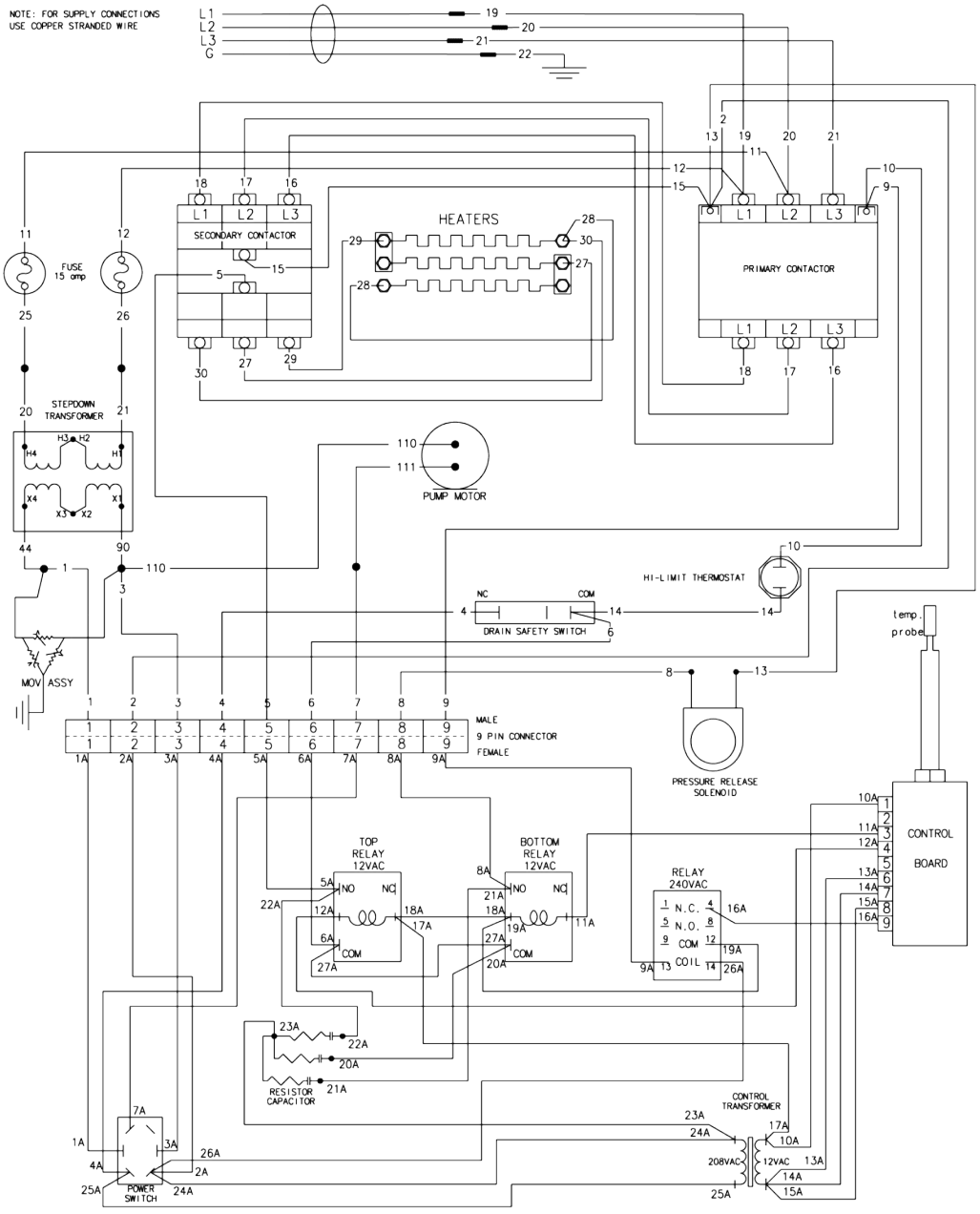
5.37 561 EF, 11.25kW, 3P, 220/380v or 240/415v (55661B)



5.38 561 EF, 11.25kW, 3P, 220/380v or 240/415v (55659B)



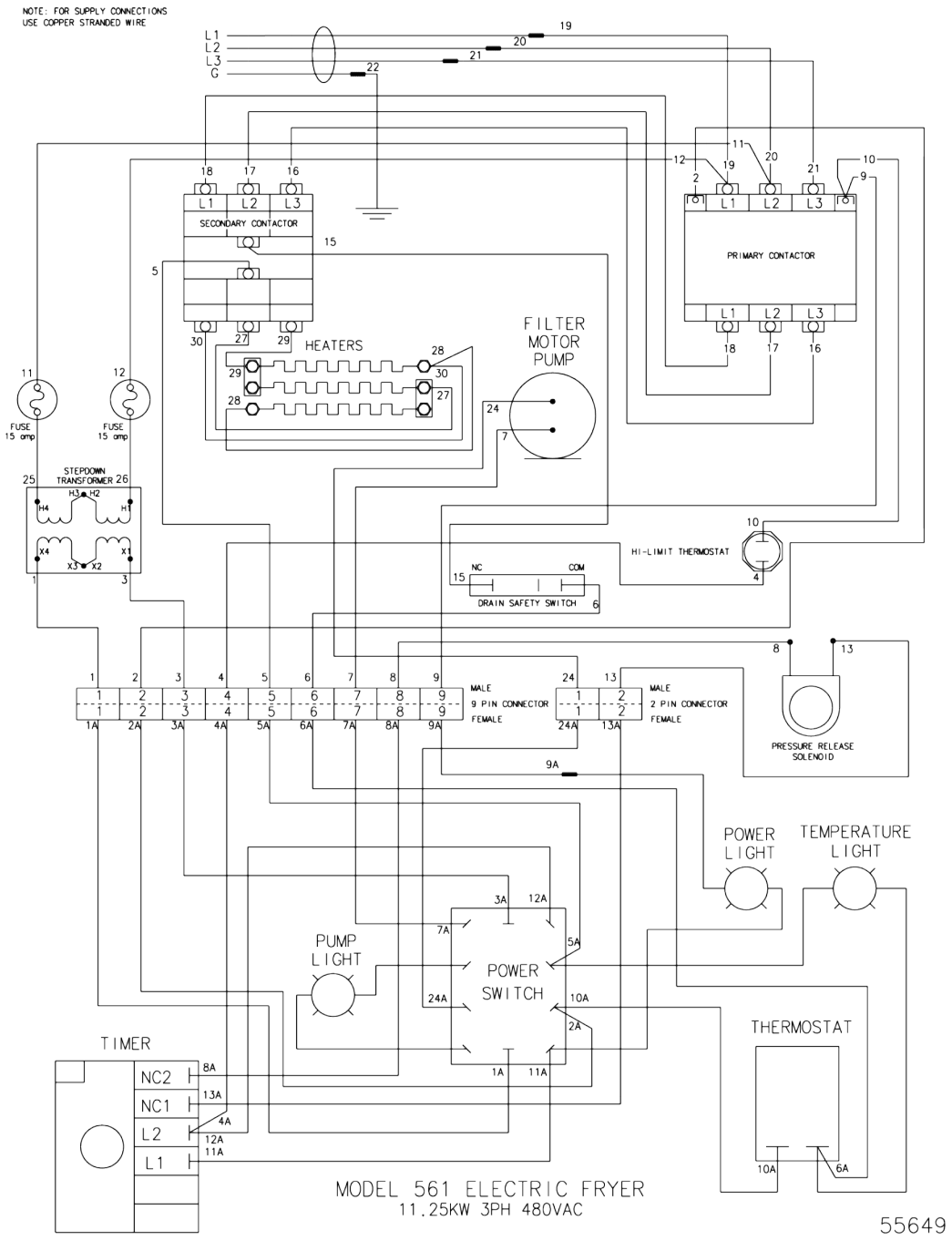
5.39 561 EF, 11.25kW, 3P, 480v (55651C)



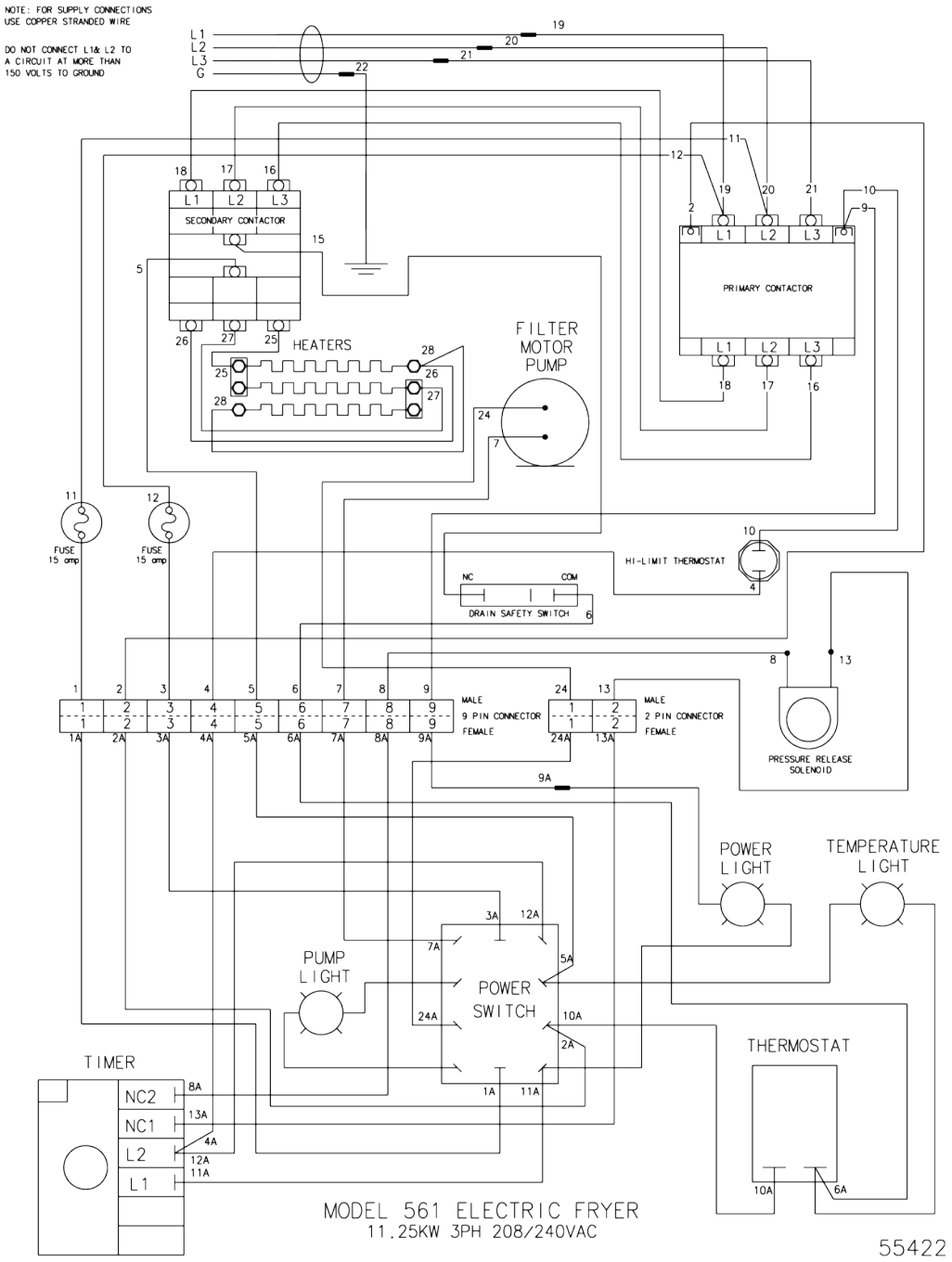
MODEL 561 ELECTRIC FRYER
11.25KW 3PH 480VAC

55651

5.40 561 EF, 11.25kW, 3P, 480v (55649B)



5.41 561 EF, 11.25 kW, 3P, 208/240v (55422B)



Chapter 6 Annual Inspection

6.1 Henny Penny Start-Up Provider Information

Company:	Company Phone:
Address:	City:
State / Province:	Postal Code:
Country:	Store E-mail:

6.2 Store Information

Store ID Number:	Store Phone:
Address:	City:
State / Province:	Postal Code:
Country:	Store E-mail:

6.3 Equipment Information

Model:	Serial Number:

6.4 Signatures

Trainer- I have completed all steps of the start-up and training checklist to the customer's satisfaction.		
Signature:	Printed Name:	Number of Attendees / Date:
Comments:		
Store Manager - I am satisfied with the start-up and training received.		
Signature:	Printed Name:	Date:
Comments:		

6.5 Checklist

Use the following checklist to rate the fryers operation.

Red Flag / Op. No.	Remove Side Panel and Rear Cover	OK	CLEAN	REPLACE
1	Inspect vat (frypot) for any signs of leakage.			
2	Inspect that the fryer sits level. Inspect casters and ensure fryer frame is not cracked or bent.			
Rear of Fryer				
3	Inspect electrical cord and plug.			
4	Inspect gas line, quick disconnect and tether (600 only).			
5	Perform a flue inspection (600 only).			
6	Disassemble condensation box and clean, seal seams w/silicone.			
7	*Rear of Fryer and front of the fryer* - Check that the condensation box drain line, dead weight tube, pressure release tubing is free and clear from clogs. Also that each is not damaged or leaking.			
Inspect drain pan, filter motor and drain oil				
8	Verify the drain valve handle microswitch is in working condition.			
9	Inspect that drain pan is empty, all components present (filter screen, clips, crumb catcher, standpipe, lid) and it is assembled correctly.			
10	Test filter pump motor to ensure operation.			
11	Drain oil to drain pan. Ensure no drain obstructions.			
Heat System				
12	Tighten heating element spreader bars and high limit bracket (500 only).			
13	Inspect temperature probe, verify it is not bent or damaged. Check the insertion depth of the probe with a gauge – adjust if necessary.			
14	Inspect Burner Jets (600 only).			

Red Flag / Op. No.	Remove Side Panel and Rear Cover	OK	CLEAN	REPLACE
15	Inspect and clean pilot assembly. Adjust pilot if necessary (600 only).			
16	Inspect for excessive oil migration behind the control board.			
17	Following all instructions, inspect the high limit.			
Pump Oil / Fill Fry Pot				
18	Test filtration system when pumping oil back up – no obstructions, leaks or excessively slow pumping.			
19	Check amp draw of heating elements are consistent and when added up, match the amp draw listed on the data plate (500 only).			
20	Check that manifold pressure matches the data plate and gas type of the fryer (600 only).			
Pressure System (front of fryer)				
21	Inspect deadweight including orifice, O-ring, cap, and weight) ensure they are in good working condition.			
22	Following all instructions, perform lid latch, catch and latch spring inspection.			
23	Clean and lubricate safety pin, thrust ball, locking collar and spindle.			
24	Lubricate cross arm retaining pin.			
25	Inspect the lid cross arm.			
26	Inspect the lid gasket and reverse if wear is acceptable.			
27	Perform a limit stop adjustment.			
28	Clean safety relief valve.			
29	Remove solenoid valve and clean and reassemble.			
30	Verify the existing pressure gauge rests at zero and is free and clear			

Red Flag / Op. No.	Remove Side Panel and Rear Cover	OK	CLEAN	REPLACE
	from obstructions. (verify during pressure test).			
Pressure Test				
31	Following all instructions, pressure test with at least 2-head OR and verify lid locks at pressures greater than 2 psi and then unlocks only when pressure drops below 2 psi.			
	Verify in this test if pressure is regulating in the green zone. Verify that all pressure releases prior to the timer reaching 0:00. This will help to identify if there is still any pressure release and deadweight tubing obstructions.			
During Pressure Test				
32	Verify pressure gauge is functioning in a similar range as the calibrated test fixture.			
33	Inspect the oil return valve for leaks while under pressure. Verify there is no oil leaking back through the oil return plumbing to the drain pan while under pressure.			
34	Inspect the drain valve for leaks while under pressure.			
General Fryer				
35	Verify all labels are in place and legible on fryer.			
What are the tools required prior to doing this job?				
	• Temperature probe depth gauges • 4-HD latch gauge • Pipe snake • Manometer • Amp Clamp • Imperial size Socket Set • Imperial size set of hex key wrenches			

Red Flag / Op. No.	Remove Side Panel and Rear Cover	OK	CLEAN	REPLACE
• Full range pliers set from needle nose to 12” large slip joint • Phillips and flat blade screwdriver set • Pipe wrenches 8 – 12” • Wire stripping tool • Wire cutter • Crimping tool • Adjustable wrench set 8 - 12” • Open end wrench set (imperial sizes)				
What parts should I take with me prior to doing this job?				
• Safety relief valve (One per fryer) • Latch spring • Latch • Pressure gauge • Lid gasket • Solenoid rebuild kit • Temperature probe • Spindle lube • Pipe thread sealant • Towels • Steel and Teflon sleeve fittings • Dead weight cap O-ring • Pilot assembly • Flame sensor • Power cord for 600 • Plumbing elbows • High limit • Drain switch • Splice connectors				

6.6 Inspect the Fry Pot

WARNING **To avoid fire, if oil accumulation can be seen from a weld, take the fryer out of service until the fry pot is replaced.**

If oil accumulation can be seen from a weld, take the fryer out of service until the fry pot is replaced. Contact Henny Penny with any questions regarding fry pot warranty.

1) Do the following:
   - PFG-600: Remove the heat shield plate above the burner to gain better visibility inside the burner box.
   - PFE-500: Remove side panels of fryer.
2) Do the following:
   - PFG-600: Use a flashlight and inspection mirror to inspect the welds (A and B) of the fry pot and drain stem weld.
   - PFE-500: Use a flashlight to inspect the corner welds, drain stem and the pot to countertop welds.

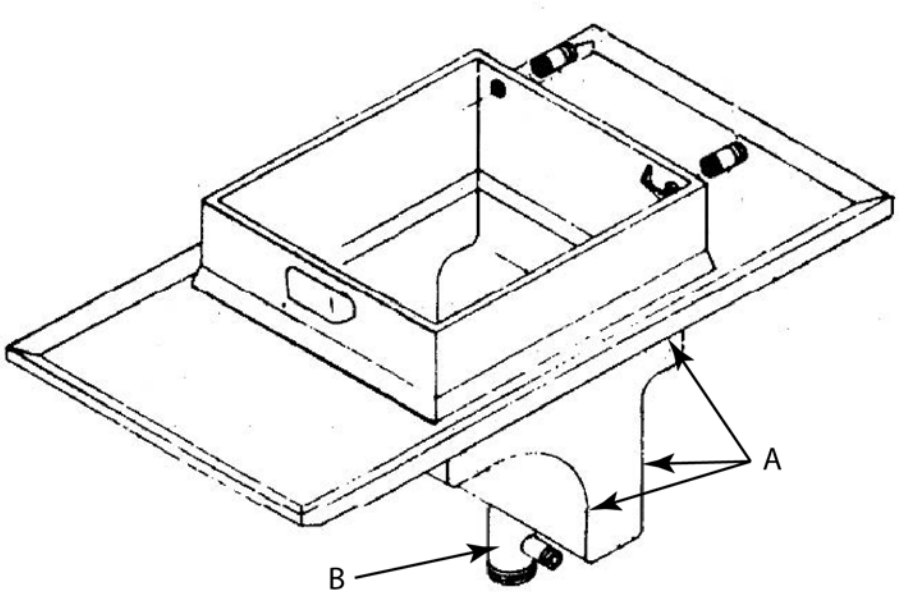


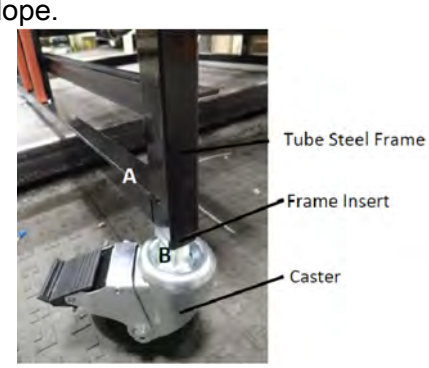
Figure 6-1 PFG 600 Weld Locations

6.7 Inspect the Casters and Frame

WARNING **A cracked frame creates a tipping risk. If cracked frame is found, immediate attention is needed to repair the frame by having it professionally repaired by a welder, or having the fryer replaced.**

To inspect the casters and frame do the following:

- Inspect casters and the tube steel frame by removing side panels and using a flashlight to look for cracking or bent frame (Figure 1).
- Inspect that the fryer sits level, casters are mechanically sound to hold the weight of the fryer and the tube steel frame is not cracked or bent.
- If the fryer is sitting out of level, inspect the condition of the floor. Have any missing or cracked tiles replaced.
- If there is a slope due to a floor drain, the fryer may need to be repositioned so the caster is not near this slope.



6.8 Inspect the Power Cord

DANGER **Fire Risk and Electrical Shock Possible. If any of these conditions are found, take the fryer out of service until a new power cord or plug can be installed. Always adhere to local electrical code upon installation of the power cord.**

Replace any power cord with torn or damaged sheathing, exposed wire or fraying. Replace the plug if there are any signs of damage, cracking, loose wires, burnt connections.

- Check the data plate mounted just above the lid, on the left side of the back shroud, to determine the correct power supply.
- Ensure the appliance is equipped with an external circuit breaker which will disconnect all ungrounded (unearthed) conductors. The main power switch on this appliance does not disconnect all line conductors.

6.9 Inspect the Condensation Box

Clean the condensation box and drain lines, removing all debris. Use a flexible wire brush to remove debris from the condensation drain line.

1) Remove the fryer's rear cover.
2) Disconnect the deadweight tube (A).
3) Disconnect the condensation drain line (C).
4) Disconnect the plumbing from the pressure solenoid (B).
5) Remove the condensation box mounting screws.
6) Cut the silicone, which seals the rear cover.
7) Remove the six screws fastening the interior of the box to the exterior (D).
8) Remove any debris from the inside of the condensation box and clean.
9) Remove any debris in the condensation drain line (not shown) and in the condensation drain outlet.
10) Slide assembly back together and seal with silicone.
11) Reassemble in reverse order.

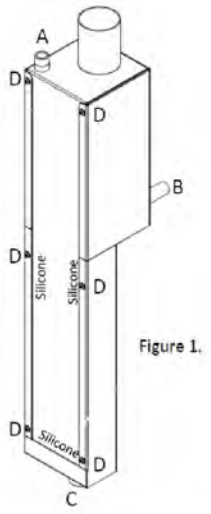


Figure 1.

A	Deadweight Tube
B	From Solenoid
C	Condensation Drain Outlet
D	Screws x6

6.10 Inspect the Solenoid and Deadweight Plumbing

Inspect that the plumbing from the dead weight valve and the pressure solenoid are clean, and free from debris.

- During the lid locking safety inspection if pressure exceeded 14 psi, this would indicate blockage in either the dead weight assembly or in the dead weight plumbing.

- If pressure were slow to release at the end of the lid locking safety inspection, this would indicate that either the solenoid valve needs to be cleaned or there is an obstruction in the pressure solenoid plumbing.

6.10.1 Clean the Dead Weight Plumbing

1) Remove rear cover of fryer.
2) Disconnect deadweight tube from dead weight hose (Figure 1).
3) Disconnect the dead weight tube from the dead weight assembly by loosening the compression nut at the rear of the dead weight assembly.
4) Clean the dead weight tube.
5) Clean the dead weight valve using a small pipe snake.
6) Clean from the outlet in the fry pot to the deadweight valve (Figure 2).
7) Reassemble in reverse order.

Figure 1.

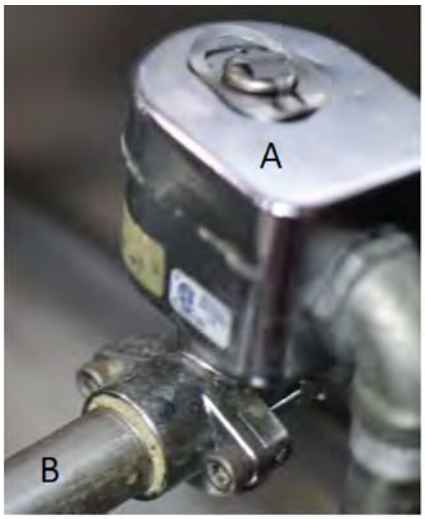
A	Deadweight Tube
B	Deadweight Hose

Figure 2.

A	Deadweight Assembly
B	Outlet from fry pot to deadweight

6.10.2 Clean the Solenoid Plumbing

1) Inspect and clean the plumbing from the outlet in the fry pot to the pressure solenoid.
2) Clean from the solenoid to the condensation box, see instructions for removal and cleaning of the condensation box.



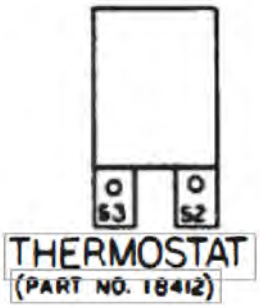
A	Solenoid Assembly
B	Outlet from fry pot to solenoid

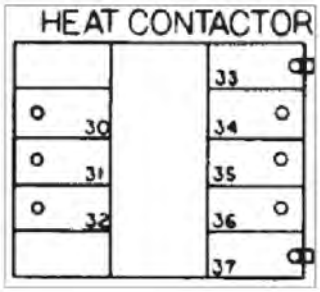
6.11 Inspect the Drain Switch

WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

All fryer models have a drain microswitch in line with the heat contactor and thermostat. When the drain valve is opened to drain the shortening, this causes drain switch to open, shutting off electrical power to the heating elements.

1) Ensure the drain valve and switch are in the closed position, and then remove power from fryer at the wall outlet.
2) Check the continuity between terminal 52 on the thermostat and terminal 33 on the heat contactor. If circuit is open, the drain switch is bad and needs to be replaced.





6.12 Test the Filtration System

WARNING **Close the lid, using it as a shield during the initial surge of oil filling the vat to prevent splashing, preventing personal injury.**

Run a filtration to test the system and ensure:

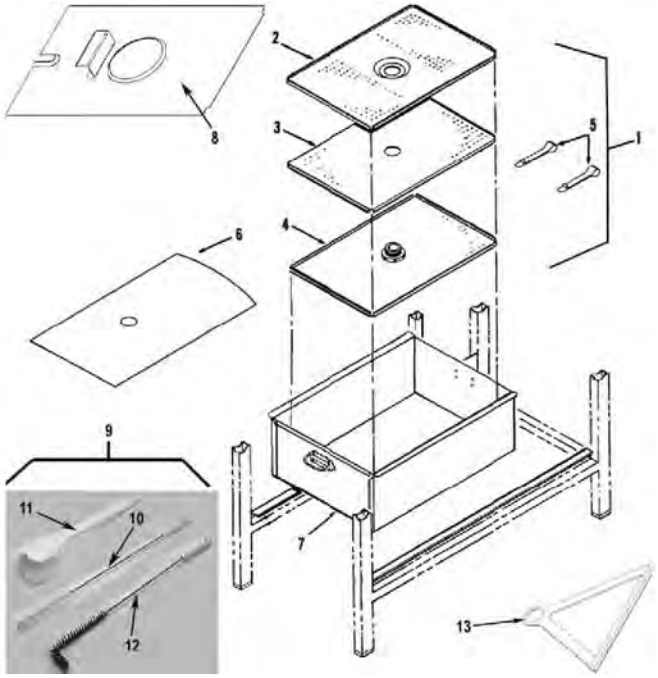
- Plumbing and pump is free of clogs and is working properly.
- Air is not leaking in to the system.
- Test for leaks in the system.

1) With the oil hot, turn the main power switch to the OFF position.
2) Open the drain valve and let the oil drain in to the drain pan.
3) Open the filter valve, and then turn the main power switch to the pump position.
4) Listen to the pump. If the pump is to quiet, this can indicate air in the system. If the pump is to loud, this indicates a clog in the system.
5) Close the filter and drain valve. Ensure oil fills the vat.
6) Empty the condensation pan.

6.13 Inspect the Drain Pan

WARNING **Use Personal Protective Equipment (PPE) such as gloves, face shield, etc. to prevent burns from hot oil.**

1) Turn the main power switch to the OFF position.
2) Open the drain valve and let the oil drain in to the drain pan.
3) Disconnect the filter union, remove the drain pan and discard the oil.
4) Disassemble the drain pan and ensure all the components are present and in working condition.



5) Reassemble the pan and reinstall under the fryer.

6.14 Inspect and Tighten the Spreader Bar and High Limit

The five heating element spreader bars and the high limit bracket loosen through normal heating and cooling of the oil. This heating and cooling of the oil causes the fry vat surfaces to expand and contract. Over time, this expansion and contraction may cause the element spreader bars and high limit bracket loosen. If this loosening is not addressed, the high limit bulb and capillary tube can shift. This can lead to interference with the basket as product is lowered into the oil, or unwanted capillary tube movement during cleaning and brushing the fry vat. Tightening prevents high limit issues and or heating element issues.

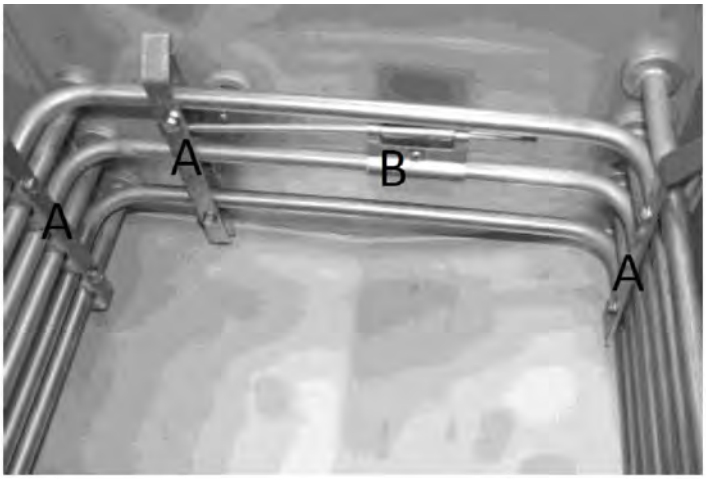


Figure 1.

A	Heating element spreader x5
B	High limit bracket

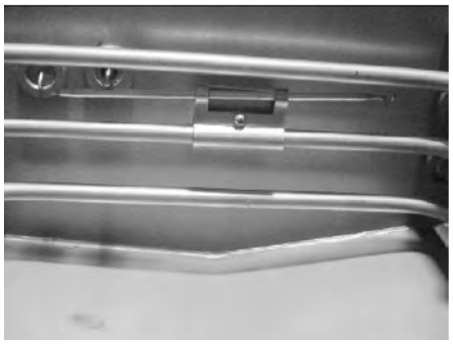
1) Check and tighten as required all 10 spreader bar screws. Do not over tighten.
2) Tighten the high limit bracket screw. Ensure the high limit bulb is seated in the bracket. Do not over tighten.

6.15 Inspect the High Limit

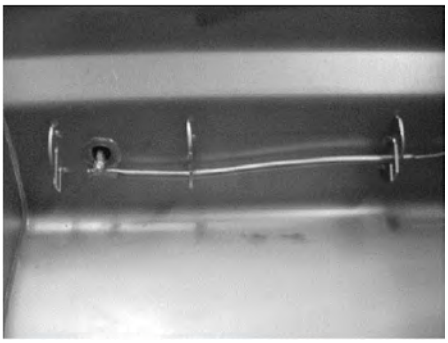
Ensure the high limit is mounted properly and functioning as intended.

1) Visually inspect the high limit probe bulb and capillary tube mounted inside the fry pot. Ensure the bulb is not dented and the capillary tube is not severed. If the capillary tube or bulb is damaged, take the fryer out of service until it is replaced.

PFE-500



PFG-600



2) Press the red reset button on the high limit several times. If this button clicks each time it is pressed, take the fryer out of service until the high limit can be replaced and make sure it gets wired into the circuit upon replacement. Also, note this on the inspection form.

3) Remove power from fryer at the wall outlet.

4) Lower the controls, and then remove the two mounting screws that secure the high limit body to the fryer.

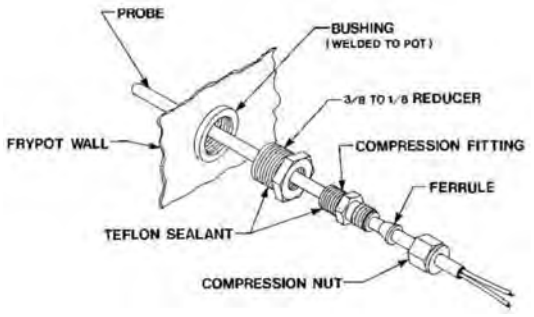
5) Remove the high limit and make sure the high limit wiring is properly connected to the high limit.

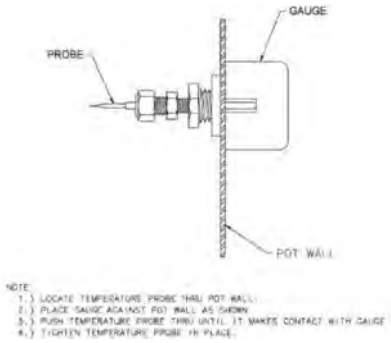
   Inspect that each high limit wire is attached to separate terminals on the high limit. If both wires are attached to the same terminal, or if one or both of the terminals are missing wires, this indicates that the high limit has been bypassed in the circuit. If bypassing is found, take the fryer out of service until the wiring is corrected and high limit replaced if defective.

6.16 Inspect the Temperature Probe

Inspect the temperature probe for damage. If the probe is damaged or broken, replace it with the correct part. A damaged probe can lead to inconsistent cooking issues and intermittent temperature fluctuation.

NOTE: There are two probes for KFC units depending on which control board is installed in the fryer: Fastron or SMS. Fastron probes are not interchangeable with SMS probes.

Inspect the Temperature Probe	
	1. Drain and discard oil from vat. 2. Visually inspect the temperature probe. • The probe should be clean and straight. If not, replace the probe. • If the probe is not bent or damaged continue with the adjustment inspection.

Adjustment Inspection	
	**NOTE**: Fastron probes are set to a fixed depth into the vat (frypot). Use a probe gauge or ruler to set the SMS probe to a depth of: • 500 (Electric) 5/8” • 600 (Gas) 7/8” Adjust the depth if needed by loosening the compression fitting on the probe and sliding the probe either in or out to the correct depth. Then tighten the probe’s compression fitting.

6.17 Inspect for Oil Leaks

WARNING **Use Personal Protective Equipment (PPE) such as gloves, face shield, etc. to prevent burns from hot oil.**

6.17.1 Oil Migration

1) Remove power from fryer at the wall outlet.
2) Remove both side panels and lower the control board.
3) Inspect the area behind the control board, sides and rear of the vat for oil that has seeped through any of the fittings:

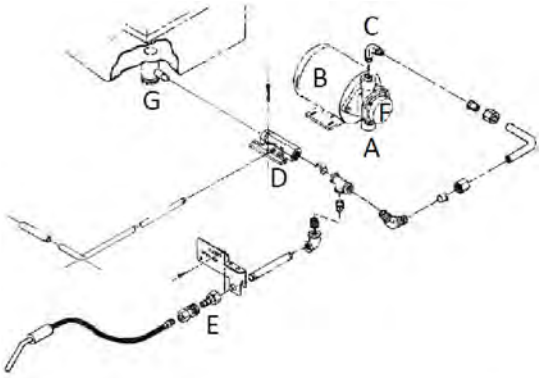
- If oil is seeping through the temperature probe, thermostat fitting, the high limit fitting or any of the heating element fittings (electric only). If oil is found seeping through fittings but not touching contactors, clean as soon as possible.
- If oil is excessive enough that it is touching either contactor (Figure 1 & 2), shut down the fryer until the oil migration issue is taken care of. In this situation, the contactors need to be replaced, the oil needs to be cleaned up and the fittings need to be cleaned and resealed.

A	Electro-Mechanical Contactor
B	Mercury Contactor

A	Electro-Mechanical Contactor
B	Temperature probe / thermostat fitting
C	High limit fitting
D	Heating Element Fittings

6.17.2 Plumbing Leaks in Filtration

1) Remove the right side panel from the fryer.
2) Use a flashlight to inspect the fittings of the filtration plumbing and between the filter pump and motor for oil leaks
3) Drain about half the vat of oil to the drain pan.
4) Turn the power switch to the pump position to pump the oil back up to the fry pot.
5) While the oil is pumping, use a flashlight to inspect for oil leaks.
6) If leaks are detected with plumbing, disassemble, clean, and reassemble the fittings using pipe thread sealant on threaded fittings, or replacing any worn sleeve fittings on compression fittings.
7) If leaks are detected between the filter pump motor and the filter pump, replace the seal kit.



A	Suction Side of Pump
B	Filter Pump
C	Pressure Side of Pump
D	Return Valve
E	Optional Filter Rinse Hose Connection
F	Pump
G	Drain Valve

6.17.3 Plumbing Leaks During Cooking

1) Before test, disconnect the dairy unit where the drain pan connects to the oil return line.
2) While the fryer is pressurized to 12 psi, inspect both the drain valve and the dairy union connection for leakage:

- If there is significant leaking, more that just a drop every now and then detected from the drain valve, then replace it.
- If there is significant leaking, more that just a drop every now and then detected from the oil return line, then replace it.

6.18 Measure AMP Draw

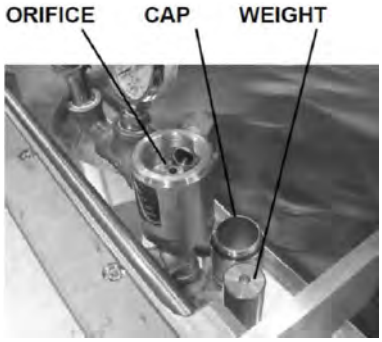
WARNING **To avoid electrical shock or property damage, move the power switch to off and disconnect main circuit breaker, or unplug cord at wall receptacle.**

Ensure that the amp draw of the fryer equals the amp draw listed on the data label. This is important because if amp draw is less than what is listed on the fryer's data label, this is an indication that one of the phases that comes into the fryer may be missing. Additionally, there may be an issue with one of the contactors or there may be an issue in one of the heating elements.

1) Remove power from fryer at the wall outlet.
2) Attach ammeter (amp clamp) to one wire of the upper heater (point A).
3) Connect power to the fryer and turn on the controls to heat. Once the fryer calls for heat, note amp draw from meter.
4) Repeat steps 1 - 3 for point B and C. The amp draw for each wire should be close to the same.
5) Add the amp reading from all three readings. This figure should equal what is on the data label. If the total amp draw is lower than what is on the data label, this signifies there is an issue with either incoming power, a contactor or a heater.
6) If necessary, test each component separately to isolate the issue, then replace the faulty component.

6.19 Inspect Deadweight

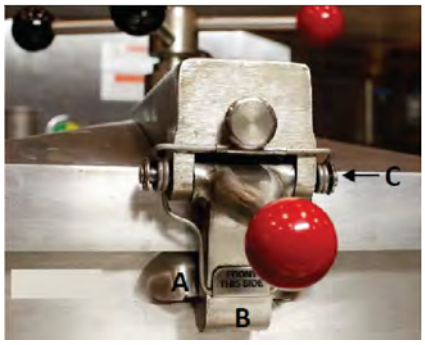
The deadweight assembly allows the fryer to obtain and then maintain proper cooking pressure. If faulty or not properly maintained by the operator the fryer cannot operate within designed specifications. Safety issues and poor product quality can result.



1) Remove the deadweight cap.
2) Inspect and replace the cap's O-ring if necessary.
3) Ensure the deadweight is present and in working condition.
4) Inspect the orifice.
5) Clean and replace components as necessary.

6.20 Inspect Latch, Catch and Spring

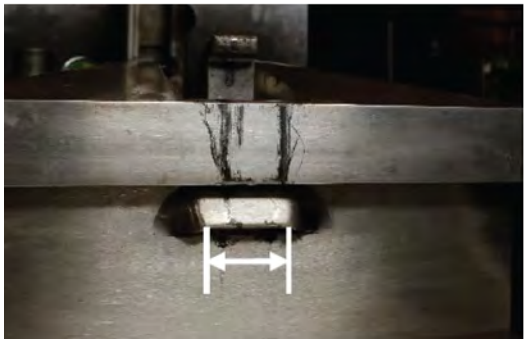
To make sure the latch, catch and latch spring are properly installed and are within tolerances for safe operation. Refer to the Annual Inspection Video on Vimeo.



Objective

To make sure the latch, catch and latch spring are properly installed and are within tolerances for safe operation.

A. Catch
B. Latch
C. Latch Spring



Catch Inspection

1. Slide gauge #162410 along the entire width of the pot catch.

2. If this gauge does not slide over the catch, or the lip of the catch does not match the profile of the gauge as shown, the catch is out of tolerance. Take the pressure fryer out of service until the fry pot has been replaced.

Latch Inspection

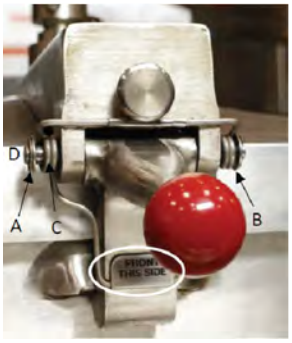
1. Separate the lid and the cross arm. Notice the gap in the middle of the latch.

2. Slide the “GO” side of the gauge over the entire width of the latch. The latch should fit in the groove, except for the gap in the middle.

3. Slide the “NO GO” side of the gauge over the entire width of the latch. If the lip of the latch inserts into the cut out in the gauge, this latch fails inspection and needs to be replaced.

Latch Spring Inspection

Make sure the latch spring and all of its components (latch spring, latch pin, spacers, and C-clip retainer) are not broken, not missing and installed correctly. If any components are broken, damaged, missing or installed incorrectly, this fryer would need to be taken out of service until which time the components can be replaced and installed correctly. The latch spring is installed correctly if the label “FRONT THIS SIDE” is mounted to the front of the latch.



A. C-Clip Retainer

B. Spacers

C. Latch Spring

D. Latch Pin

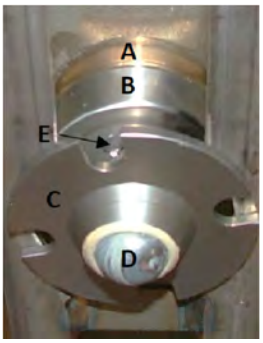
6.21 Inspect Cross Arm Component

Refer to the Annual Inspection Video on Vimeo.

1. Separate the lid and cross arm.
2. Inspect the cross arm. Cracks on the bottom surface of the cross arm are acceptable, but anything rounding the corners, coming up the sides, or found on top would fail inspection.

WARNING!: If any cracks are found in the top or sides of the cross arm, the fryer must be taken out of service until the cross arm assembly is replaced.

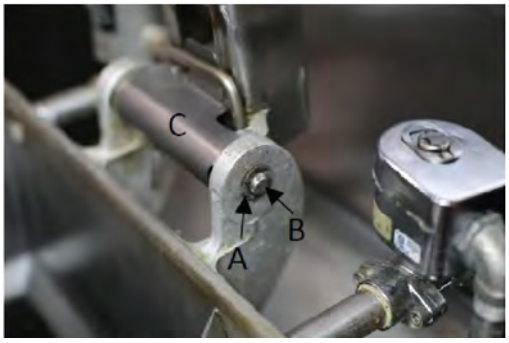
3. Inspect to make sure all of the spindle components are in place: acme nut, idle nut, thrust ball, locking collar. Inspect the gap between the acme nut and the idle nut. These two components should be within 1/16” of each other. If any of these components are excessively worn, damaged or missing, this step of the inspection would fail.



WARNING!: The fryer must be taken out of service until the cross arm assembly is replaced.

WARNING!: The pin should be staked to prevent it from shifting. If this pin is not properly staked, damaged or missing, severe burns could result. The fryer must be taken out of service until the cross arm assembly is replaced.

4. Inspect the locking collar pin. If the pin has shifted, is missing, broken, take the fryer out of service until a new cross arm assembly can be installed.

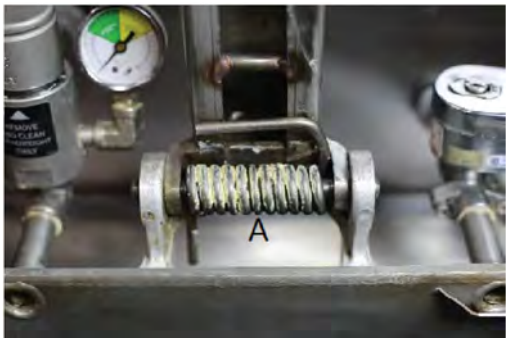


5. Inspect the hinge pin to ensure it is not missing, damaged or broken. Make sure that the retaining clips are securely in place on each side of the pin. If any of these situations are true, take the fryer out of service until the components are replaced.

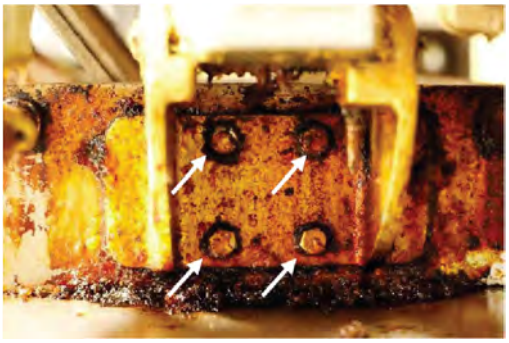
A. Retaining Clip

B. Hinge Pin

C. Spring Cover



6. If the hinge spring is broken. It will not fail the inspection but the spring would need to be replaced ASAP.
A. Retaining Clip

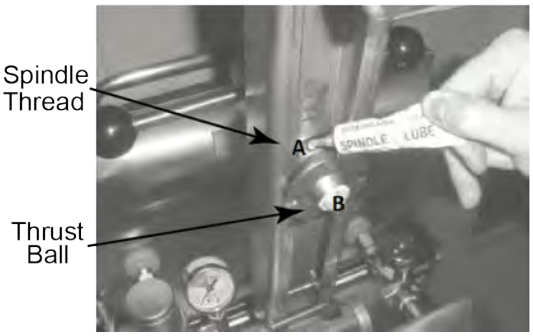


7. Ensure four bolts are installed in the hinge plate at the rear of the fry pot. Check to make sure these bolts are snug. If any bolts are missing, take the fryer out of service until they can be replaced.

6.22 Lubricate Cross Arm Components

Follow these steps to reduce wear on the spindle, thrust ball, ball seat, hinge spring, and locking pin. Refer to the Annual Inspection Video on Vimeo.

Objective: Reduce wear on the spindle, thrust ball, ball seat, hinge spring, and locking pin.

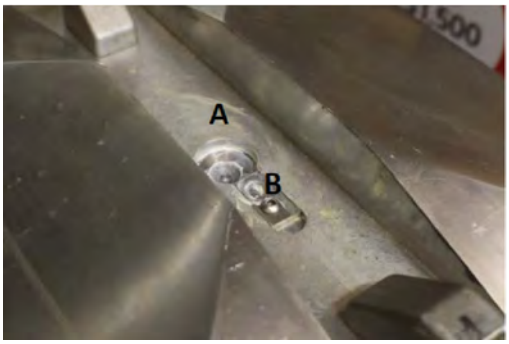


Latch Inspection

1. Separate the lid and the cross arm. Notice the gap in the middle of the latch.
2. Use spindle lube (#12124) to lubricate the threads of the spindle and the thrust ball.

A. Spindle Threads

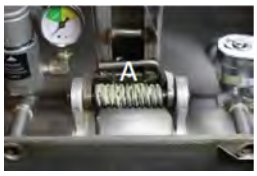
B. Thrust Ball



3. Lubricate the top of the locking pin, and the ball seat.

A. Ball Seat

B. Locking Pin

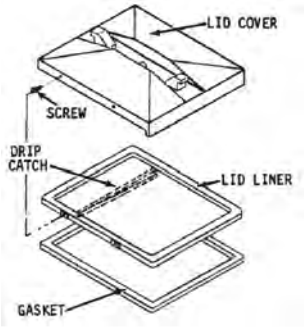


4. Lubricate the coils of the hinge spring by removing and re-installing the spring cover.
5. Engage the lid back to the cross arm.

A. Spring and Spring Cover

6.23 Pressure Regulation and Exhaust System

6.23.1 Clean the Lid Liner



1) Remove the four lid liner screws.

2) Use a thin blade screwdriver to pry lid liner from the cover.

3) Clean the liner and the inside of the cover. Replace the liner and screws.

6.23.2 Reverse the Lid Gasket

Because of heat expansion and the pressure used for the cooking process, the gasket is constantly under extreme stress. Reversing the lid gasket on a quarterly basis will help to assure that the fryer will not lose pressure through leakage. Reverse the gasket by doing the following:

1. There are two lid liner screws on either side of the lid cover. Back these four screws out about 1/2 inch.

2. Open the lid and using a thin blade screwdriver, pry out the gasket at the comers. Remove the gasket.
3. Clean the gasket and gasket seat with hot water and cleaning detergent. Rinse with clean hot water.
4. Install the gasket with the good side (reverse side) facing out.

5. Begin the installation by installing the four comers of the lid gasket. Continue by pressing the gasket in to the channel from the corners outward.
6. Tighten the four screws.

6.23.3 Adjust the Lid Limit Stop

The lid limit stop, with proper adjustment, prevents unnecessary overtightening of the spindle extending the life of the lid gasket.

1. Loosen the Allen set screws on the bottom of the collar of the limit stop assembly.
2. Turn the inner collar of the limit stop clockwise as far as possible.
   Best Practice: Find the small hole in the inner collar and use a small Allen wrench or Phillips head to help in turning the collar.
3. Close the lid and turn the spindle until the lid gasket meets the top of the vat (fry pot) rim.
4. From this position, turn the spindle at least 3/4 of a turn, but not more than one full turn.
5. After rotating the spindle to this point, slightly extend the spindle past this position. The spindle should be at the seven o'clock position.

NOTICE: The seven o'clock position allows slight additional turning of the spindle to relieve any side pressure that could hold the locking pin in the locking collar after all pressure has been released from the vat (fry pot).

6. If necessary, remove the knobs and change their position in order to align the red knob with the red knob on the lid cover lid latch. When in the normal operating position, both red knobs should be aligned.
7. Adjust the limit stop by turning it counterclockwise until it stops against the bottom hub of the spindle.
8. Tighten Allen set screws.
9. Test the lid seal. If the lid cover fails to seal properly, steam will escape around the gasket during the frying operation. Readjust the limit stop by repeating steps 1 through 7, but this time turn the spindle screw one full turn after the initial contact of the lid gasket against top of the vat (fry pot) rim.

6.23.4 Removal and Cleaning of Safety Relief Valve

WARNING

Do not attempt to remove valve while fryer is operating. Severe burns or other injuries could result.

The safety relief valve should be cleaned once a year.

1. Open the lid and then remove the deadweight valve cap and deadweight.
2. Use a wrench to loosen the valve from the pipe elbow, turn counterclockwise to remove.
3. Clean the inside of the pipe elbow with hot detergent.
4. Immerse the safety relief valve in a soap water solution for 24 hours. Use a 1:1 dilution rate. The valve cannot be disassembled. It is factory preset to open at 14 1/2 pounds of pressure. If it does not open or close it must be replaced.

6.23.5 Pressure Gauge Calibration

WARNING

To avoid personal injury, do not disassemble or modify this valve. Tampering with the valve will void agency approvals and the appliance warranty, and could cause serious injury.

The pressure gauge can be recalibrated if out of adjustment.

1. Remove the rim and glass.
2. If the indicating hand shows a pressure or vacuum reading when it should point to "O", turn the calibration screw until the hand stands at the "O" position.
3. Replace the rim and glass.

6.23.6 Coil Check Procedure

WARNING

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Remove power from the fryer by unplugging from the power source.

2. Remove wires from terminals 73 and 72 and check ohms across the solenoid wires.

Volts/Phase:	**Results:**
- 120 volt 60 Hz - 208-240 volt 60 Hz - 208-240 volt 50 Hz	- 50 ohms - 150 ohms - 245 ohms

6.23.7 Locking Pin Test Procedure

Ensure the lid locking pin engages the locking collar of the spindle when the pressure in the fry pot reaches 2 psi and greater and also to ensure the lid locking pin remains engaged as pressure releases at 2 psi. Refer to the Annual Inspection on Vimeo.

Figure 1

1. Remove the reducer from the test fixture (Figure 1).

Figure 2

2. Install the supplied elbow from the test fixture into the t-fitting with pipe thread sealant (Figure 2).

Figure 3

3. Remove the existing safety relief valve (Figure 3).

Figure 4

4. Install the test fixture into the safety relief valve elbow using pipe thread sealant (Figure 4).

Figure 5

5. Insert the existing pressure gauge into the elbow of the pressure test fixture (Figure 5).

7:00 Position

6. Adjust the limit stop so that the red ball reaches the 7:00 position when closing and locking down the lid (Figure 6). See 6.23.3 *Adjust the Lid Limit Stop*, page 148.

Figure 6

6:00 Position

Figure 7

7. Have the store bread and cook at least two head of chicken.

8. When the pressure on the calibrated test gauge reaches 2 psi, gently turn the spindle counter clockwise using two hands so the red ball lines up with the 6:00 position (Figure 7). The locking pin should engage the locking collar causing the spindle to lock in place (red ball at 6:00).

5:00 Position

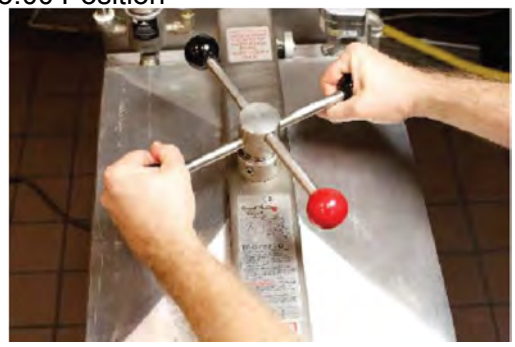


Figure 8

9. If the spindle continues to turn past the 5:00 position (Figure 8), the locking pin test would fail. Take the fryer out of service until the locking pin issue is addressed or the lid replaced.

10. During the cook cycle when pressure reaches the 12 psi range. Compare the existing pressure gauge with the calibrated test gauge. The existing pressure gauge should read in a similar range. If it is not, replace the existing pressure gauge after the test.

11. If pressure during the cook cycle exceeds 14 psi, this does not fail the test as long as the locking pin engagement and disengagement steps pass. However, after the test, the deadweight and all related plumbing would need to be thoroughly cleaned or replaced.

12. When pressure exhausts and nears the 2 psi mark, using two hands, gently turn the spindle counterclockwise. If you are able to turn the spindle to the 5:00 position (Figure 8), this inspection fails. Take the fryer out of service until the lid assembly can be replaced. To pass the inspection, the spindle should remain locked at 2 psi when trying to turn counterclockwise. If the lid is locked, the spindle should remain in the 6:00 position (Figure 7).

13. If the pressure was slow to release during the cook cycle and did not reach 0 psi when the timer reached 0:00, this does not fail the inspection, however this is an indication that the pressure solenoid and/or its related plumbing may be sticking or obstructed. After the test, clean the solenoid and the related solenoid plumbing back to the steam exhaust stack.

14. Remove the test fixture.

15. If the existing safety relief valve passed the inspection, re-install it. If not, install a new valve with pipe thread sealant.

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