

SECTION 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, refer to Section 1, Troubleshooting. It will aid you in determining the cause of the malfunction.

2-2. MAINTENANCE HINTS

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

NOTICE

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

2-3. PREVENTIVE MAINTENANCE SCHEDULE

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

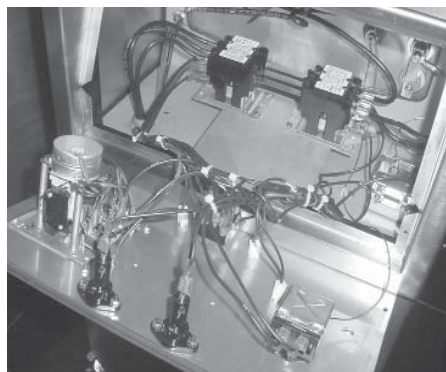
Frequency	Action
Daily (3-4 loads)	Filter shortening
Daily	Clean deadweight valve cap, weight, and orifice
30 Days	Lubricate spindle threads and ball seat
90 Days	Reverse lid gasket
90 Days	Check limit stop adjustment
90 Days	Check and tighten element spreader bars
Once a year	Remove and clean safety relief valve

2-4. REMOVING THE CONTROL PANEL

To replace parts inside the fryer you will often need to remove the control panel. The following steps provide the correct procedure:



Step 3



Step 4

Removal

1. Place the main power switch to the OFF position.
(This switch is labeled POWER/OFF/PUMP.)



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

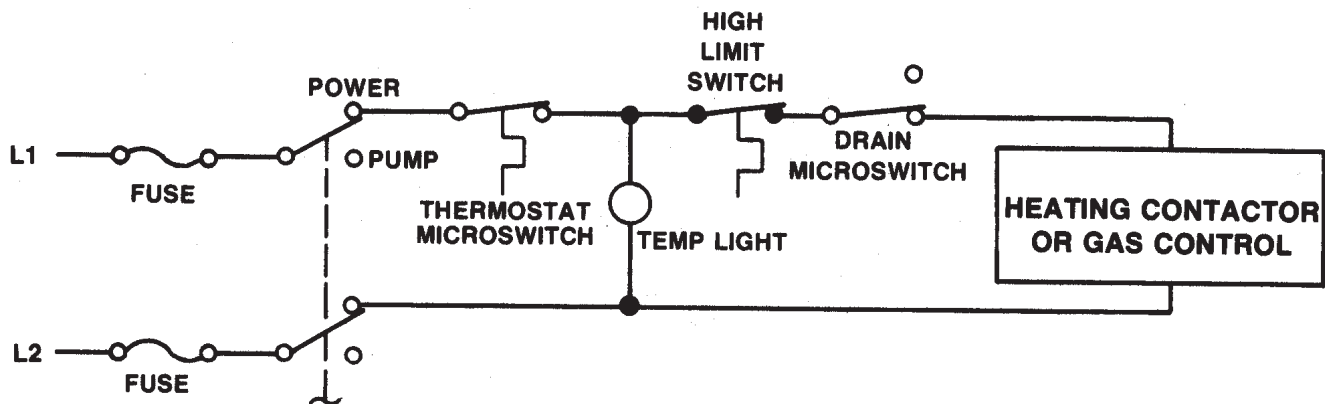
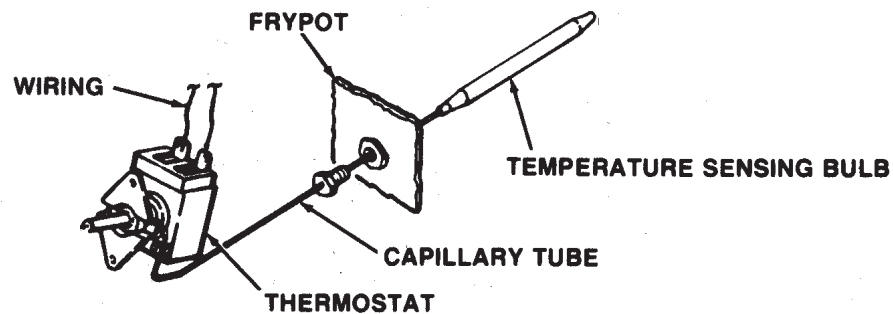
Installation

1. To install the control panel, hook it on the metal hangers that hold the top of the panel in place.
2. Install the two screws in the bottom of the panel.
3. Reconnect power to the fryer.

2-5. TEMPERATURE REGULATION (SINGLE STAGE)

Description

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



2-5. TEMPERATURE

REGULATION

(SINGLE STAGE)

(Continued)

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 frypot temperature is lower than the thermostat setting, the TEMP light is illuminated and 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 frypot starts to cool, the switch closes the circuit to the heat source.

Drain Microswitch

This interlock provides protection for the 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.

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 frypot cools. Refer to High Temperature Limit Control section for maintenance of the high limit temperature control.

2-6. 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 degrees F increments. The accuracy of a thermostat needs to be less than 5 degrees 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.

2-7. TESTING THE THERMOSTAT

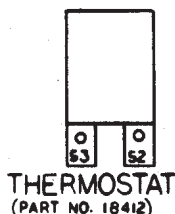
Procedure

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

1. Remove electrical power supplied to the fryer.



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. Remove the control panel.
3. With an ohmmeter or continuity light, check for continuity as follows.
4. On a standard (single temperature) thermostat, check between terminals 52 and 53. Move the temperature knob from OFF to maximum.
 - At OFF, the circuit should be open.
 - At maximum, the circuit should be closed.

**2-8. THERMOSTAT
REPLACEMENT
(ALL MODELS)**

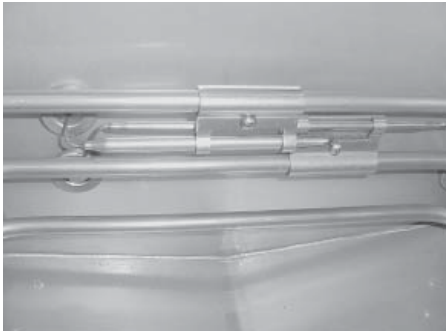
1. Remove electrical power supplied to the fryer.



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. Drain the shortening from the frypot.

ELECTRIC



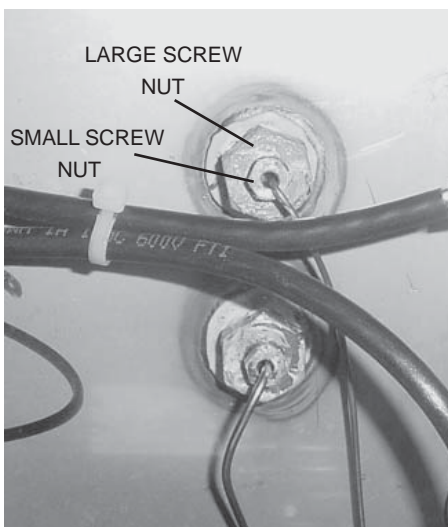
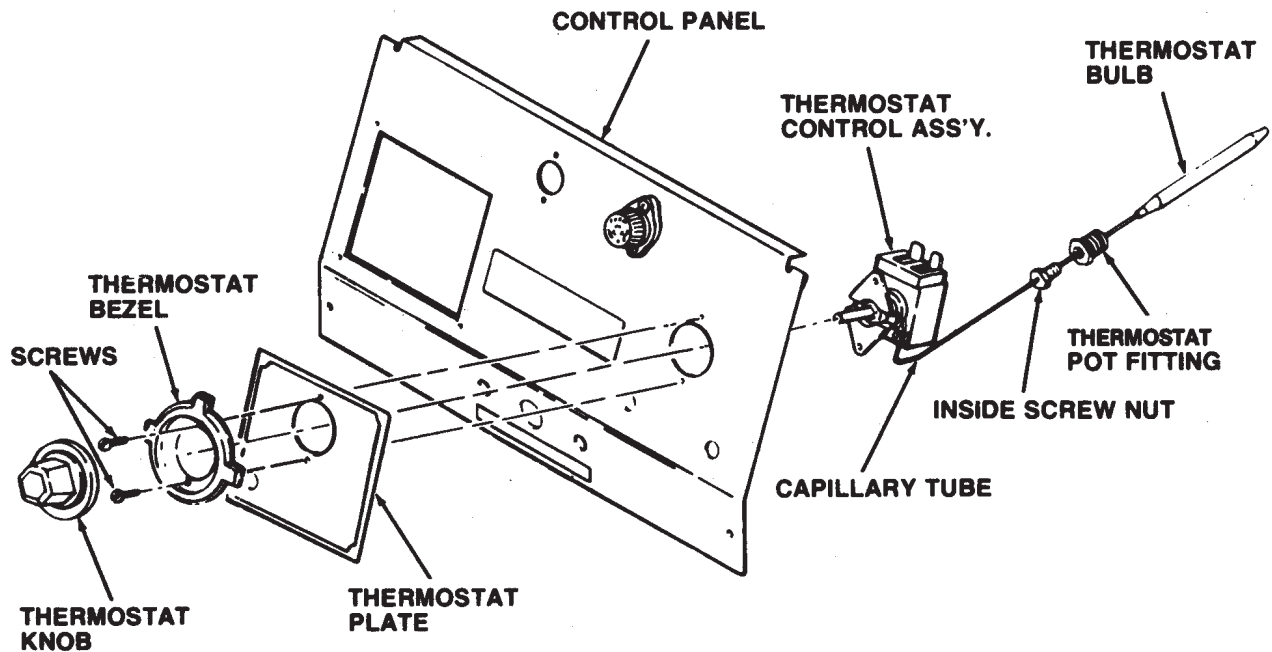
GAS



Step 3

3. Remove the thermostat sensing bulb from the bulb holder inside the frypot.
4. Place your thumb at the bend in the capillary tube, where it comes into the frypot, and straighten the bulb. The bulb should be extending out into the 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.

**2-8. THERMOSTAT
REPLACEMENT
(ALL MODELS)
(Continued)**



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 knob on the front of the control panel.
10. Remove the two screws which secure the thermostat to the back of the panel. Remove the thermostat bezel.
11. Remove the small inside screw nut which holds the capillary line.
12. Remove the large screw nut.
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.

**2-8. THERMOSTAT
REPLACEMENT
(ALL MODELS)
(Continued)**

17. Connect the wires to the new thermostat.



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 frypot.



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 frypot and tighten.
21. Replace the thermostat sensing bulb into the mounting bracket.



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

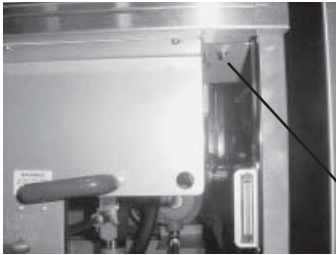
22. ELECTRIC only: slip the bulb holder in place. With bulb in place, tighten the clamp screw.
23. Pull the excess capillary tube from the inside of the frypot.
24. Insert and tighten the inside screw nut into the thermostat pot fitting.
25. Install the two screws on the front of the control panel which secure the thermostat to the back of the panel. Install the thermostat bezel.
26. Install the thermostat knob.

**2-8. THERMOSTAT
REPLACEMENT
(ALL MODELS)
(Continued)**

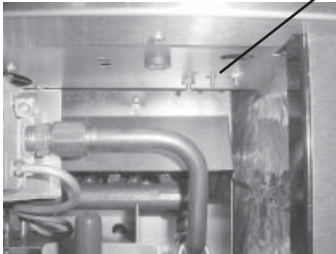
27. Secure the control panel with the 4 screws.
28. Reconnect power to the fryer.
29. Calibrate the thermostat per paragraph 2-6.

**2-9. HIGH TEMPERATURE
LIMIT CONTROL
(ELECTRIC AND
GAS MODELS)**

Electric



Gas



Red Reset
Button

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 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, 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.)

Checkout

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

NOTICE

The shortening temperature must be below 380° F to accurately perform this check.

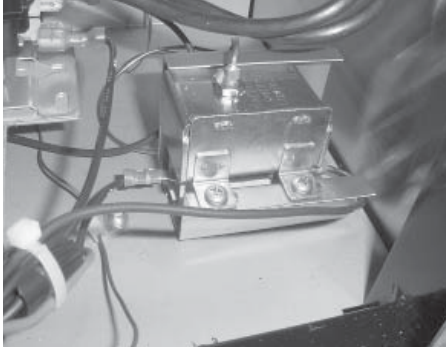
1. Remove electrical power supplied to the fryer.



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

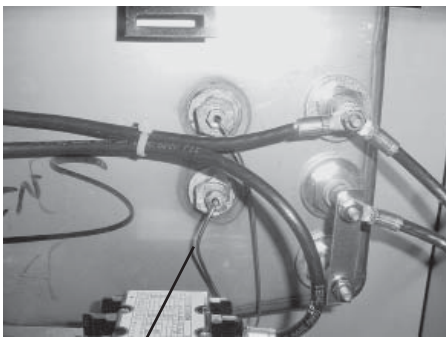
2. Remove the control panel and insert it in the slot above the door. Refer to paragraph 2-4.

**2-9. HIGH TEMPERATURE
LIMIT CONTROL
(ELECTRIC AND
GAS MODELS)
(Continued)**



Step 3

Electric



High Limit Capillary Tube

Gas



Step 1

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.)

Replacement



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

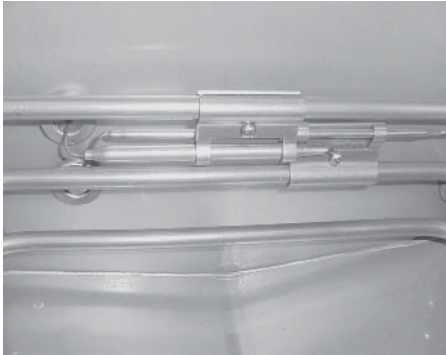
1. If the capillary tube is broken or cracked, the control will open, shutting off electrical power. The control cannot be reset.
2. Drain shortening from the frypot.
3. Remove control panel.
4. Loosen small inside screw nut on capillary tube.
5. Remove capillary bulb from bulb holder inside the frypot.
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 frypot wall.



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.

2-9. HIGH TEMPERATURE
LIMIT CONTROL
(ELECTRIC AND
GAS MODELS)
(Continued)

Electric



Gas



Step 13

12. Carefully bend the capillary bulb and tube toward bulb holder on heating elements, and on electric units, toward the welded clips on gas units.
13. Slip capillary bulb into bulb holder located on heating elements, on electric units, and snap the bulb in place in the welded clips, on gas units. Pull excess capillary line from pot and tighten nut into frypot wall.

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 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.

2-10. HEATING ELEMENTS **(ELECTRIC MODELS)**

Description

Each electric fryer uses three heating element assemblies.

NOTICE

Heating elements are available for 208, 220/240, or 440/480 voltage. Check the data plate inside the door to determine the correct voltage.

Maintenance Hint

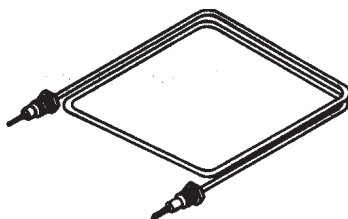
If the shortening's temperature recovery is very slow, or at a slower rate than required, this may indicate defective heating element(s). An ohmmeter will quickly indicate if the elements are shorted or open.

Checkout

1. Remove electrical power supplied to the fryer.



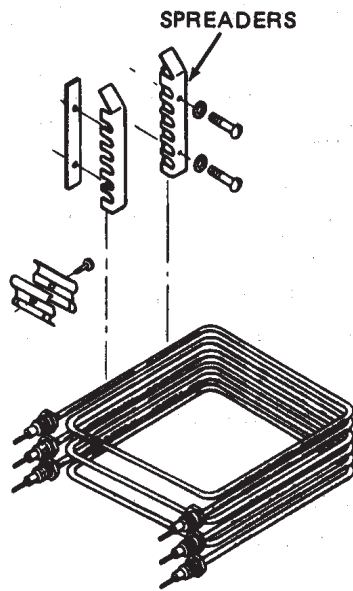
To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.



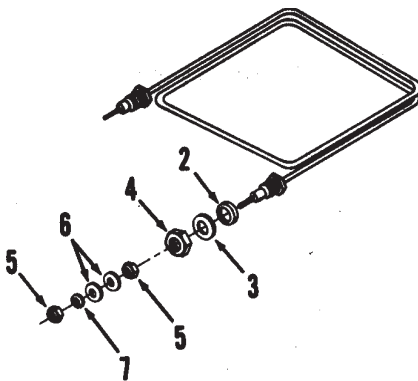
2. Remove the control panel and insert it in the slot above the door. Refer to paragraph 2-4.
3. Perform an ohm check on one heating element at a time, with wires disconnected from element. If the resistance is not within tolerance, replace the element.

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

2-10. HEATING ELEMENTS **(ELECTRIC MODELS)** **(Continued)**



(Reference Figure 3-16)



Replacement

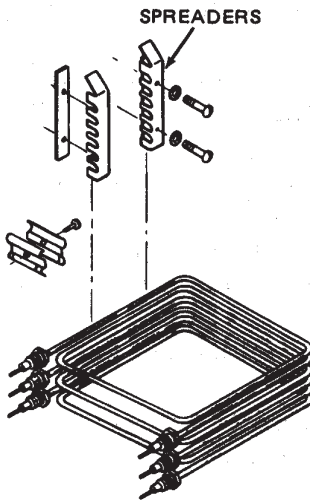
1. Drain the shortening.
2. Remove the thermostat bulb holder from the heating element inside the frypot.
3. Remove the heating element wires from the terminals by removing nuts (5) and washers (6 and 7). Label each so it can be replaced in the same position on the new element.
4. Loosen the bolts on the four element spreaders.
5. Slide the element spreaders 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 frypot wall.
7. Remove the heating elements from the frypot as a group by lifting the far end and sliding them up and out toward the rear of the 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 mounted in the center of the stacked elements.
9. Replace the heating elements, terminal end first at approximately 45° angle, slipping the terminal ends through the front wall of the frypot.

2-10. HEATING ELEMENTS
(ELECTRIC MODELS)
(Continued)



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 frypot, or damage to elements could result.

16. Check the heating elements as described in paragraph 2-17 of Operator's Manual.
17. Replace the shortening in the frypot.

2-11. HEATING

CONTACTORS

(ELECTRIC MODELS)

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.

Checkout (power removed)

1. Remove electrical power supplied to the fryer.



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

PRIMARY CONTACTOR

22		
23		29
24		28
25		27
26		

HEAT CONTACTOR

		33
30		34
31		35
32		36
		37

2. Remove the control panel and insert it in the slot above the door. Refer to Removing the Control Panel section.
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

2-11. HEATING
CONTACTORS
(ELECTRIC MODELS)
(Continued)

Checkout (power supplied)



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.

PRIMARY CONTACTOR

22	
23	29
24	28
25	27
26	

HEAT CONTACTOR

30	33
31	34
32	35
	36
	37

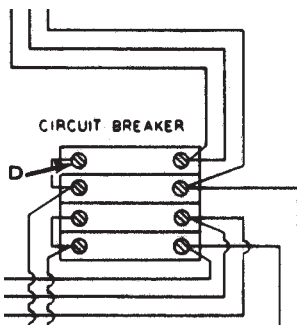
1. With power re-applied, set the thermostat to its maximum temperature.
2. On fryers using single phase power, check voltage as follows:

Test Points

Results

from pin D on circuit breaker to:
terminal 34
terminal 35
terminal 36
(If voltage is not present, check output of primary contactor at terminals 27, 28, and 29.)

The voltage should read the same at each terminal. It should correspond to the voltage rating stated on the data plate.



2-11. HEATING
CONTACTORS
(ELECTRIC MODELS)
(Continued)

PRIMARY CONTACTOR

22	
23	29
24	28
25	27
26	

HEAT CONTACTOR

33	
34	
35	
36	
37	

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

<u>Test Points</u>	<u>Results</u>
Heat contactor from terminal 34 to 35 from terminal 35 to 36 from terminal 34 to 36	The voltage should read the same at each terminal.
Primary contactor from terminal 27 to 28 from terminal 28 to 29 from terminal 27 to 29	It should correspond to the voltage rating stated on the data plate.

Replacement

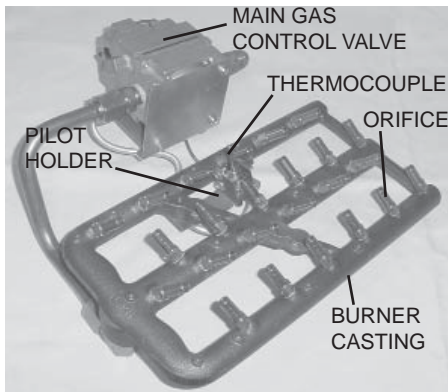
If either contactor is defective it must be replaced as follows:



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

- Remove only those wires directly connected to the contactor being replaced. Label the wires.
- Remove the two mounting screws on the base plate and remove contactor.
- Install the new contactor and tighten the two mounting screws.
- Connect the labeled wires to their respective positions.
- Install the control panel per paragraph 2-4.
- Reconnect power to the fryer and test the fryer for proper operation.

2-12. GAS BURNER ASSEMBLY (GAS MODELS)



Description

The gas model fryer has a gas burner assembly consisting of a burner casting, orifices, thermocouple, pilot holder, and main gas control valve.

Safety Precautions

NOTICE

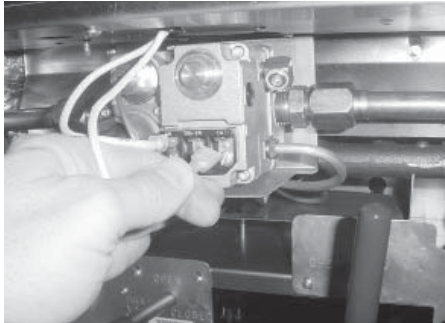
If converting from natural gas to propane gas or from propane gas to natural gas, conversion must be done by a qualified service technician.

! DANGER EXPLOSION RISK

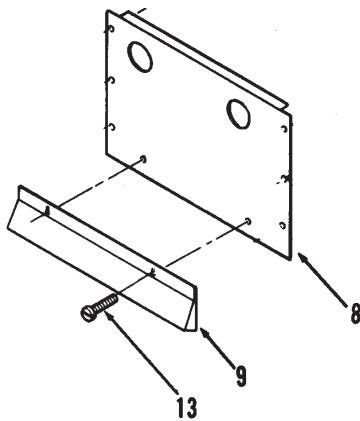
TO AVOID PERSONAL INJURY OR PROPERTY DAMAGE, BEFORE STARTING THIS PROCEDURE, MOVE THE MAIN POWER SWITCH TO THE OFF POSITION. DISCONNECT THE MAIN CIRCUIT BREAKERS AT THE CIRCUIT BREAKER BOX OR UNPLUG SERVICE CORD FROM WALL RECEPTACLE. TURN OFF THE MAIN GAS SUPPLY TO THE FRYER AND DISCONNECT AND CAP THE MAIN SUPPLY LINE TO FRYER, OR POSSIBLE EXPLOSION COULD RESULT.

1. Remove the control panel per paragraph 2-4.
2. Place the control panel back in upright position, in the metal flanges.

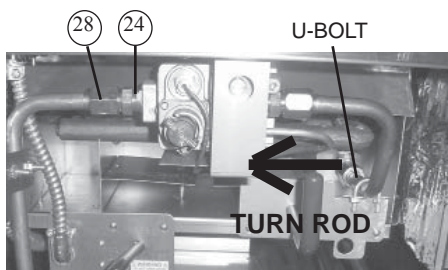
2-12. GAS BURNER
ASSEMBLY
(GAS MODELS)
(Continued)



Step 4



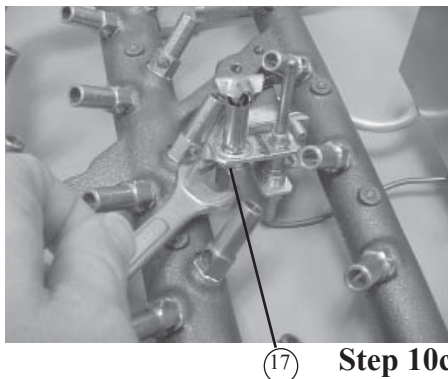
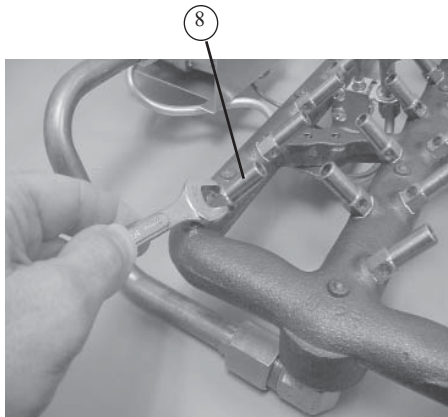
Step 6 and 7



Step 5, 8 and 9

3. Remove wires from the gas control valve.
4. Disconnect gas supply line (28) from the connector (24) at control valve. (Refer to photo below.)
5. Loosen the two screws (13) on the heat shield deflector (9), on the firebox and flue assembly and raise the deflector to its highest position.
6. Retighten screws (13) to hold the heat shield deflector in the high position.
7. Turn the filter valve rod to the OPEN position.
8. Remove u-bolt from rinse hose bracket.

2-12. GAS BURNER
ASSEMBLY
(GAS MODELS)
(Continued)



Step 10c

9. Remove entire gas burner assembly, by lifting and pulling toward front of fryer.
 - a. Replace thermocouple (19) as required, per paragraph 2-13.
 - b. Repair or replace gas control valve (20) as required, per paragraph 2-14.
 - c. Replace orifices (8 and 17) as required.

NOTICE

There are 23 brass orifices and 1 stainless steel orifice. The stainless steel orifice is to be mounted adjacent to the pilot light.

10. Make other repairs or replacements as required.
11. Install entire gas burner assembly.
12. Install u-bolt to rinse hose bracket and gas line.
13. Turn the filter valve handle to the CLOSED position.
14. Loosen the two screws (13) which are holding the heat shield deflector (9) in the high position, and lower it to the normal operating position.
15. Tighten the two screws (13) on the heat shield.
16. Connect gas supply line (28) to the gas control valve connector (24).
17. Install the wires onto gas control valve.

2-12. GAS BURNER
ASSEMBLY
(GAS MODELS)
(Continued)

19. Remove control panel and install it in the slot above door.
20. Connect the gas control valve wires to the thermostat and high temperature limit control as labeled.
21. Install control panel per paragraph 2-4.
22. Uncap and reconnect the main gas supply line to the fryer.
Turn on the main gas supply



**LEAKING GAS MAY CAUSE AN EXPLOSION.
CHECK FOR LEAKS PER OPERATOR'S MANUAL
PARAGRAPH 2-8.**

23. Connect the service cord to the wall receptacle, or close circuit breakers.
24. Relight the gas pilot per the instructions in paragraph 2-10 of the Operator's Manual.

2-13. THERMOCOUPLE
(GAS MODELS)

The thermocouple controls the gas control valve. It generates voltage in the millivolt. This voltage signals the gas control valve to remain open to the pilot and burner. When the voltage is not generated, the gas control valve will shut off, not allowing gas to the pilot and main burner.

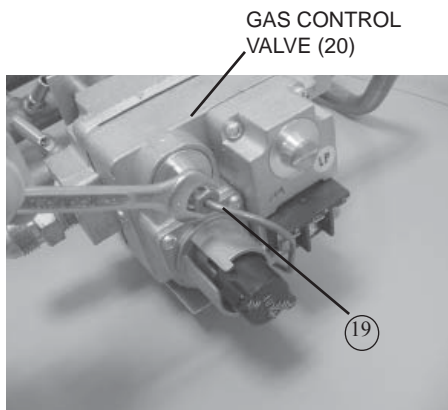


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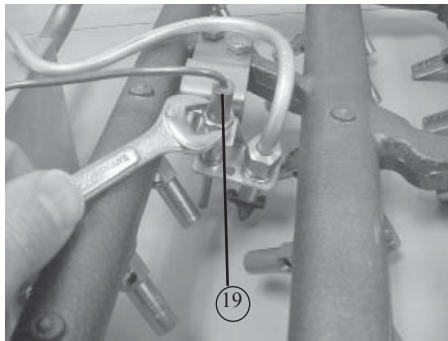


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2-13. THERMOCOUPLE
(GAS MODELS)
(Continued)

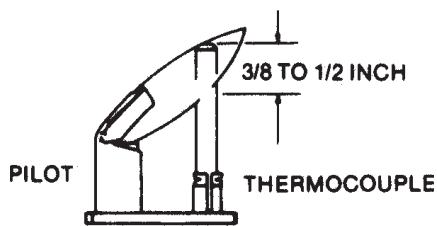


Step 1



Step 2

(Refer to exploded view,
Figure 3-30)



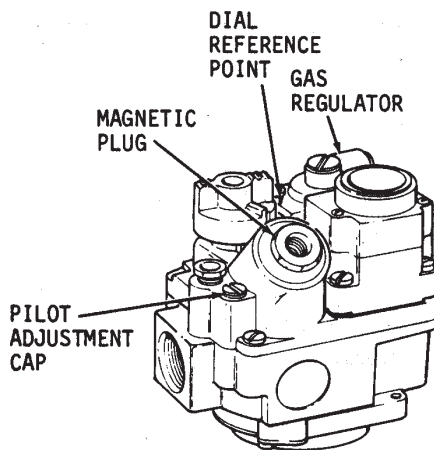
Step 3

Replacement of Thermocouple

Removal of the thermocouple is accomplished with the main gas supply shut off. The main burner may remain inside the fryer, but the work is more easily performed with the burner removed.

1. Using a 3/8" wrench, remove the nut securing the thermocouple (19) in the gas control valve (20).
2. Remove the nut securing the thermocouple in the pilot holder.
3. Install the new thermocouple, being careful not to create sharp bends in the tubing. When the pilot is lit, the flame must surround the top of the thermocouple.
4. Turn on the main gas supply and reconnect the electrical power.
5. Light the pilot per paragraph 2-10 of the Operator's Manual and test the fryer for proper operation.

2-14. GAS CONTROL VALVE



Description

The gas control valve regulates the flow of gas to the pilot and the main burner. The valve consists of: gas regulator, magnetic plug, pilot gas tube, gas valve knob, pilot adjustment cap and screw, gas outlet and inlet ports, thermocouple connector, and electrical connection. The gas control valve also has a dial reference point - OFF/PILOT/ON.

The components of the gas control valve can be serviced without removing the complete valve from the fryer.

Safety Precautions

NOTICE

If converting from natural gas to propane gas or from propane gas to natural gas, conversion must be done by a qualified technician.



DANGER

EXPLOSION RISK

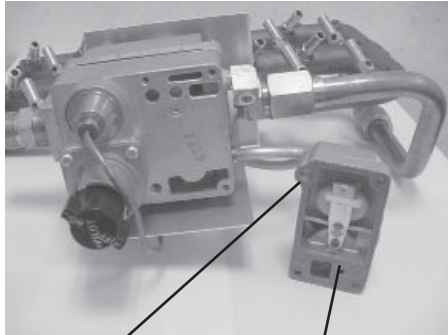
TO AVOID INJURY OR PROPERTY DAMAGE, BEFORE STARTING THIS PROCEDURE, MOVE THE MAIN POWER SWITCH TO THE OFF POSITION. DISCONNECT THE MAIN CIRCUIT BREAKER AT THE CIRCUIT BREAKER BOX OR UNPLUG THE SERVICE CORD AT THE WALL RECEPTACLE. TURN OFF THE MAIN GAS SUPPLY LINE TO FRYER. DISCONNECT AND CAP THE SUPPLY LINE TO FRYER, OR EXPLOSION COULD RESULT.

If the gas control valve must be replaced, remove per para. 2-12.

Operator Replacement

1. Depress the gas valve knob and turn to the OFF position.
2. Remove control panel per paragraph 2-4.
3. Label and remove the gas control valve wires.

2-14. GAS CONTROL **VALVE (Continued)**



Step 5

Gasket

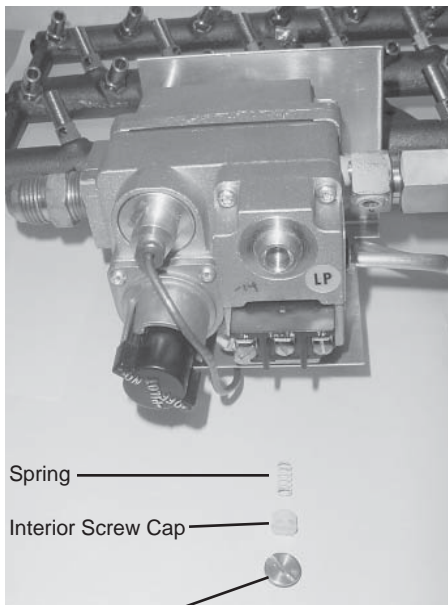
Operator

Operator Replacement (continued)

4. Using a T20 “star” screwdriver, remove the four screws securing the operator and gasket.
5. Secure the new operator and gasket with the four screws provided.
6. Reconnect the gas control valve wires.
7. Install the control panel per paragraph 2-4.

Check Procedures:

120 volt - 50/60 Hz	2350 ohms
208-240 volt - 50/60 Hz.....	880 ohms
24 volt - 50/60 Hz	7 ohms



Spring

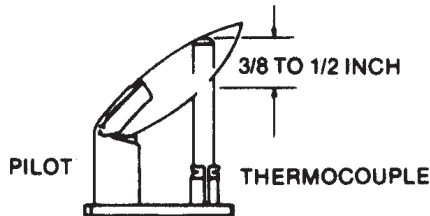
Interior Screw Cap

Exterior Screw Cap

Regulator Spring Replacement

1. Remove the screw cap to the regulator.
2. Remove the plastic interior screw cap and spring.
3. Use the gas control valve manufacturer’s instructions from the envelope containing the regulator spring, and follow the directions.

2-14. GAS CONTROL **VALVE (Continued)**



Adjusting Pilot Burner

NOTICE

The following two procedures must be performed with the gas supply reconnected and turned on. The service cord must be plugged into the receptacle and the circuit breaker on.

1. The pilot burner is preset at the factory. It may require resetting at the time of installation.
 - a. Remove the pilot adjustment cap.
 - b. Use a small flat screwdriver and rotate the adjustment screw counterclockwise to increase the size of the flame. Rotate clockwise the adjustment screw to decrease the size of the flame.

NOTICE

The flame should be set high enough to surround the top of the thermocouple.

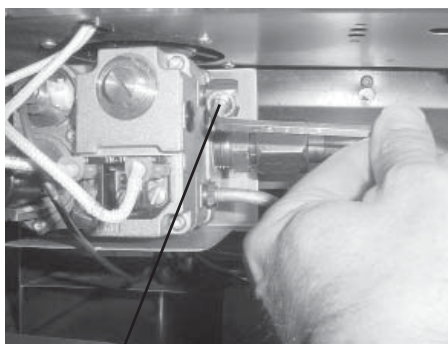
Adjusting Regulator

1. The pressure regulator is preset at the factory. It may require resetting at the time of installation.
 - a. Turn gas valve knob to OFF position.
 - b. Attach a manometer to the gas control valve at the pressure tap.
 - c. Turn gas valve knob to PILOT, light, and turn to ON.
 - d. Remove the regulator adjustment screw cap.
 - e. Rotate the adjustment screw counterclockwise to increase the column indicated on the manometer or rotate clockwise to lower the column indicated.
 - f. Turn gas valve knob to OFF and remove manometer.
 - g. Replace the regulator adjustment screw cap.
 - h. Turn gas valve knob to PILOT and relight. Leak test with soap and water solution.

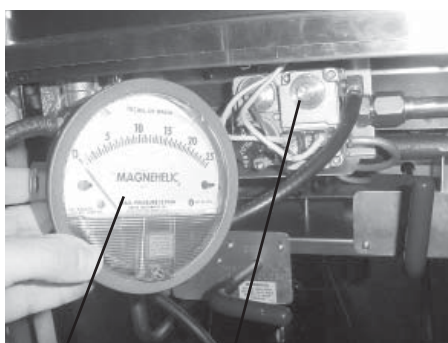
NOTICE

Natural gas regulator is factory preset at 3 1/2 inches water column.

Propane gas regulator is factory preset at 10.0 inches water column.



PRESSURE TAP



MANOMETER
REGULATOR
ADJUSTING
SCREW

Step 1a

2-15. ELECTRICAL COMPONENTS

Safety Precautions

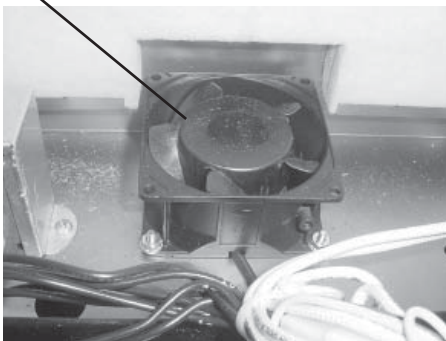


Do not disconnect the ground (Earth) plug. This fryer **MUST** be adequately and safely grounded (Earthed) or electrical shock could result. Refer to local electrical codes for correct grounding (Earthing) procedures or in absence of local codes, with The National Electrical Code, ANSI/NFPA No. 70-(the 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.

FAN



Fan (Gas Models)

The gas model fryers have a fan in the circuit. This fan operates only with the Main Power switch in the ON position. The fan helps keep the control panel cool by pulling out heat, from between the control panel and frypot.

The replacement of a faulty fan is accomplished using the following procedure:

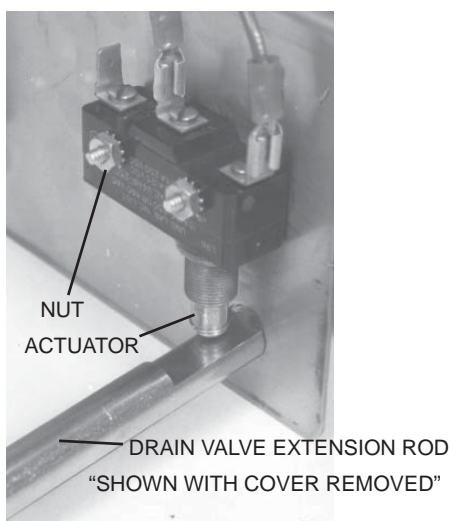
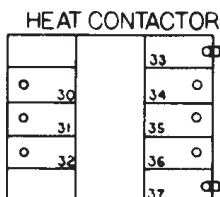
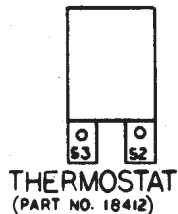


To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Remove control panel per Removing Control Panel section.
2. Label and disconnect fan motor wires.
3. Remove the four cap screws, washers and nuts securing the fan to the heat shield.
4. Remove the fan from the heat shield.
5. Install the new fan on the heat shield and secure with the four screws, washers, and nuts.
6. Reconnect the fan motor wires.
7. Install control panel per Removing Control Panel section.

2-15. ELECTRICAL COMPONENTS **(Continued)**

(See Wiring Diagrams paragraph 2-21)



Step 2

Drain Switch (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.



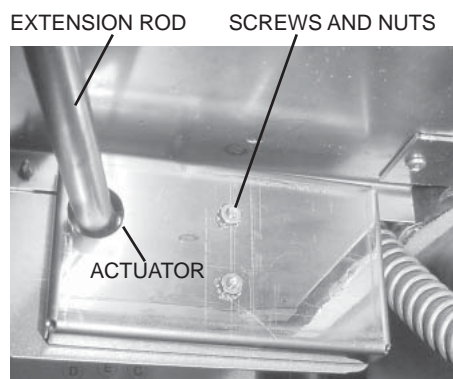
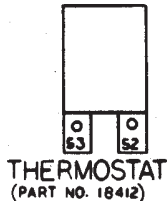
To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. 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.
 - a. Fryers with standard thermostat part number 18412, 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.
2. To replace the drain switch, remove the two screws and nuts securing switch and switch cover.
3. Label and disconnect wires.
4. Connect wires to new drain switch.
5. Position actuator 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 rod actuates the switch.

NOTICE

Listen for an audible click of switch while rotating drain valve extension rod.

2-15. ELECTRICAL COMPONENTS **(Continued)**



"SHOWN WITH COVER IN PLACE" **Step 3**

Drain Switch (gas models)

1. The following check should be made to determine if drain switch is defective. All checks should be made with drain switch in the closed position and the power off.



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

- a. For fryers with standard thermostat part number 18412, continuity check shall be made between terminal 52 on thermostat and wire nut between drain switch and gas control valve. If the circuit is open, the drain switch is bad and needs to be replaced.
2. If the circuit is open, the drain switch is bad and needs to be replaced.
3. To replace the drain switch, remove the two screws and nuts securing the switch and switch cover.
4. Label and disconnect the wires.
5. Connect the wires to the new drain switch.
6. Position the actuator and attach the drain switch, and switch cover with the two screws and nuts.
7. Secure with the two screws and nuts.
8. Test to see if the drain valve extension rod actuates the switch.



Listen for an audible click of switch while rotating drain valve extension rod.

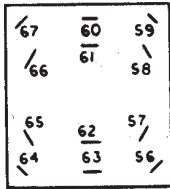
2-15. ELECTRICAL **COMPONENTS** **(Continued)**

Main Power Switch (all models)

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



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



Continuity Check Procedure

OFF POSITION

Test Points

#60 to #59 then #60 to #67
#61 to #58 then #61 to #66
#62 to #57 then #62 to #65
#63 to #56 then #63 to #64
#60 to #61
#62 to #63

Results

open circuit
open circuit
open circuit
open circuit
closed circuit
closed circuit

POWER POSITION

Test Points

#60 to #59
#61 to #58
#62 to #57
#63 to #56

Results

closed circuit
closed circuit
closed circuit
closed circuit

PUMP POSITION

Test Points

#60 to #67
#61 to #66
#62 to #65
#63 to #64

Results

closed circuit
closed circuit
closed circuit
closed circuit

2-15. ELECTRICAL COMPONENTS **(Continued)**



Step 3

Replacement

1. Remove control panel per Replacing Control Panel section.
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 Replacing Control Panel section.

Indicator Lights (all models)

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



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 control panel per Replacing Control Panel section.
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 Replacing Control Panel section.

2-15. ELECTRICAL COMPONENTS **(Continued)**

Fuse Holder(s) **(electric models)**

There are two fuse holders on each model of the electric fryers. There are no fuse holder assemblies for the gas models other than that at the main power source.



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

Checking Procedure for Fuses

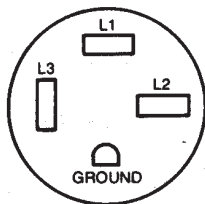
CONTROL PANEL FUSES 3 Phase

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).

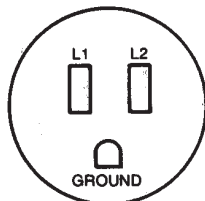


Cord and Plug Check

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.



Electric Fryer



Gas Fryer

Wall Receptacle (voltage check) **(electric models)**

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

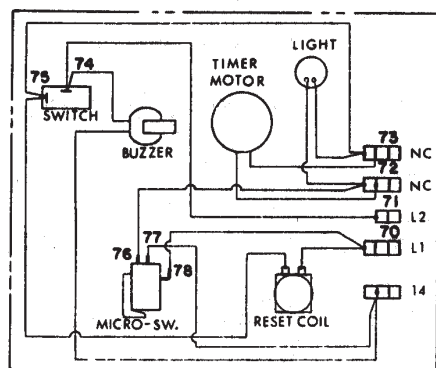
The voltage should read the same for each line test. It should correspond to the voltage shown on the data plate.

(gas models)

Check the voltage across line L1 and L2.

The voltage should correspond to the voltage shown on the data plate.

2-16. TIMING CONTROL



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



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

Checking Procedure

Test Points

Results

ON/OFF SWITCH

Switch in OFF position

Check from #74 to #75

open circuit

Switch in ON Position

Check from #74 to #75

closed circuit

BUZZER COIL

Switch in OFF position

Check from #14 to #74

120 volt 50/60 Hz.....1550 ohms

208-240 volt 50/60 Hz5880 ohms

MICROSWITCH

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

MOTOR

Check from #72 to #73

120 volt 50/60 Hz..... 290 ohms

208-240 volt 50/60 Hz3990 ohms

RESET COIL

Check from #70 to #75

120 volt 50/60 Hz..... 280 ohms

208-240 volt 50/60 Hz3950 ohms

2-16. TIMING CONTROL **(Continued)**

Replacement

1. Remove control panel per Removing Control Panel section.
2. Label the wires and remove them from the timer.
3. Remove four screws securing the timer to the control panel.

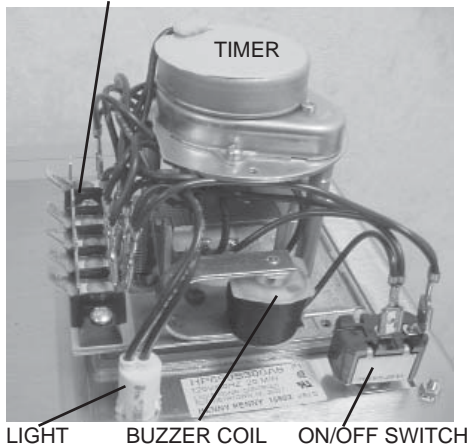
NOTICE

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 & timer microswitch can be replaced separately.

Timer Light

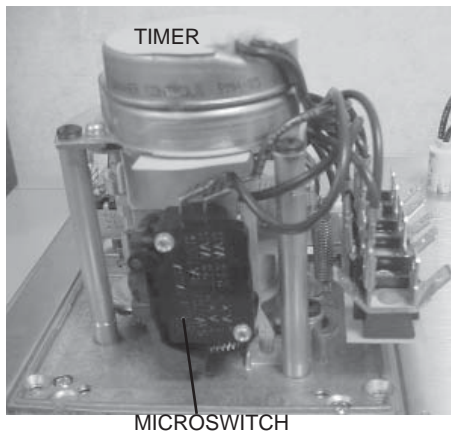
1. Disconnect light wires from terminal board.
2. Remove and discard the bad light assembly.
3. Install new light assembly allowing retainers to snap into place.

TERMINAL BOARD



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 Removing Control Panel section.

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 the timer.

2-17. PRESSURE REGULATION/ EXHAUST

Solenoid Valve

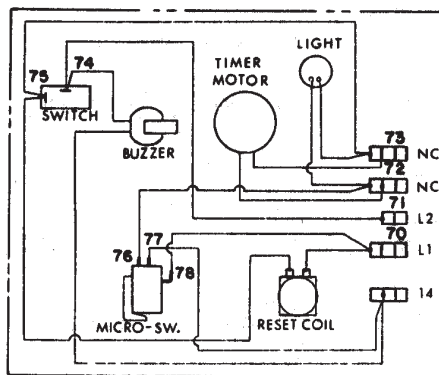
This is an electromechanical device that causes pressure to be held in the frypot. The solenoid valve closes at the beginning of the cook cycle and is opened automatically by the timer at the end of the cook cycle. If this valve should become dirty or the teflon seat nicked, pressure will not build up. The 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.



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

Coil Check Procedure

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

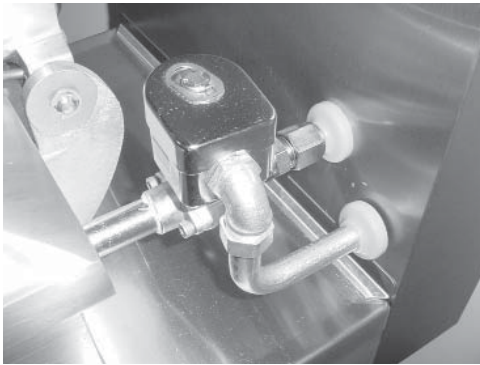


<u>Test Volts/Phase</u>	<u>Results</u>
120 volt 60 Hz	50 ohms
208-240 volt 60 Hz	150 ohms
208-240 volt 50 Hz	245 ohms

**2-17. PRESSURE REGULATION/
EXHAUST (Continued)**

Replacement

Solenoid Valve Assembly



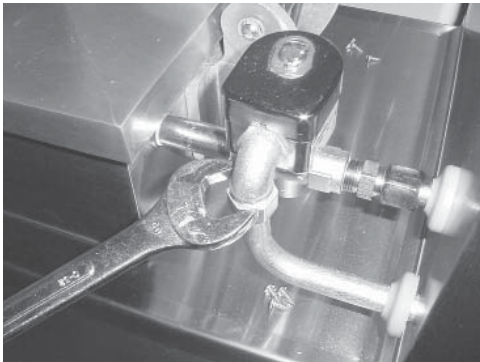
1. Remove Tru-Arc retaining clip on top of the coil housing.

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 seals are being replaced, continue on to step 4.

Conduit Connector



Step 4

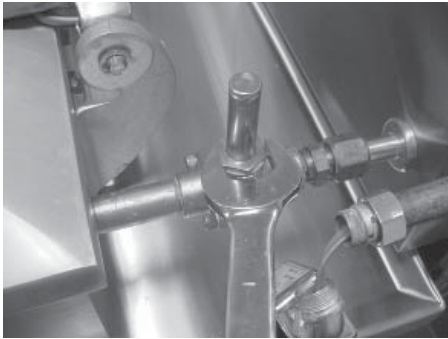
NOTICE

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.

**2-17. PRESSURE
REGULATION/
EXHAUST (Continued)**

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



Step 5a

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



Step 5b

- b. Remove the solenoid bonnet assembly and the bonnet gasket.



Step 5c

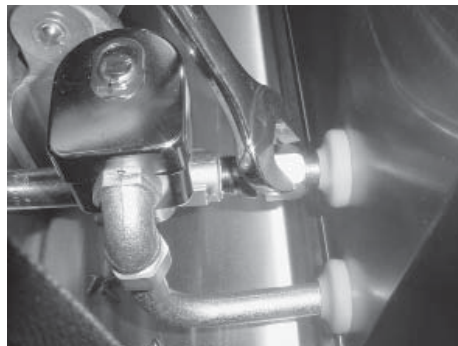
- c. Remove the core-disc assembly, core spring retainer, and the core spring.

**2-17. PRESSURE
REGULATION/
EXHAUST (Continued)**



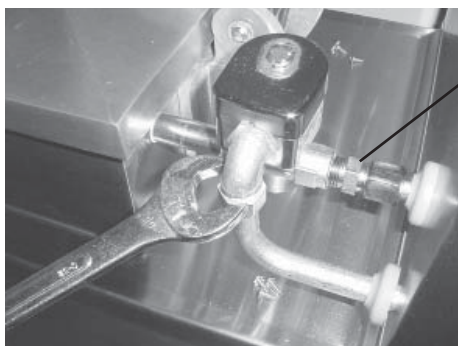
Rear Cover

Step a



Exhaust Fitting

Step b



Conduit Fitting

Step b

- d. 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 drawing on next page)

6. A repair kit (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. Refer to exploded view of solenoid in figure 3-14 to help identify all parts.

- a. Remove back cover.

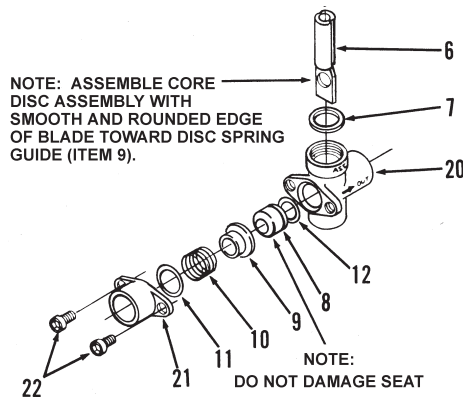
- b. Loosen both conduit and exhaust fittings.

- c. Remove nipple from solenoid body.

- d. Unthread body from fryer.

- e. 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.

**2-17. PRESSURE
REGULATION/
EXHAUST (Continued)**



7. To change seals:

- 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

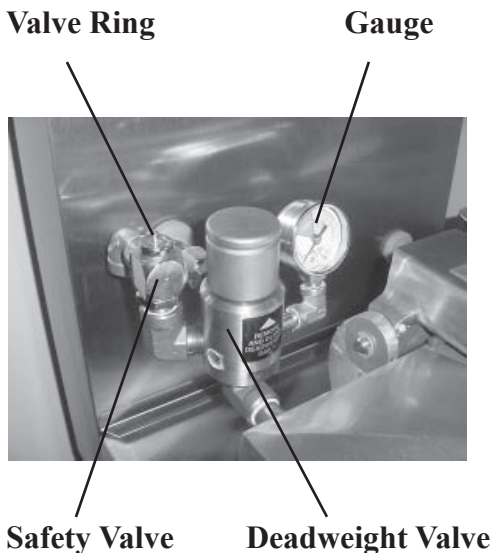
The smallest nick can cause a pressure leak. Replace all O-ring seals, found in the parts kit, and reassemble valve.

**2-17. PRESSURE
REGULATION/
EXHAUST (Continued)**

Deadweight Valve



DO NOT ATTEMPT TO REMOVE THE VALVE CAP WHILE THE FRYER IS OPERATING. SEVERE BURNS, OR OTHER INJURIES 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 frypot.

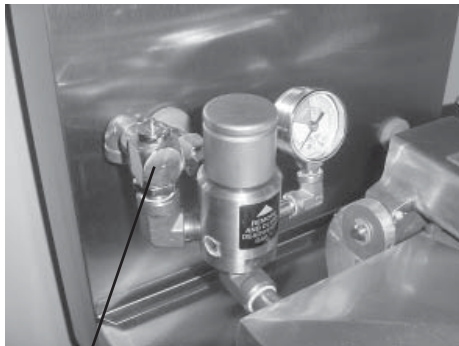


DO NOT MANUALLY ACTIVATE THE SAFETY RELIEF VALVE. HOT STEAM RELEASES FROM THE VALVE WHEN THE RING IS PULLED. KEEP BODY PARTS AWAY FROM SAFETY VALVE EXHAUST, OR SEVERE BURNS COULD RESULT.

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.

**2-17. PRESSURE
REGULATION/
EXHAUST (Continued)**



Safety Valve

**Removal and Cleaning
of Safety Relief Valve**

The safety relief valve should be cleaned once a year.

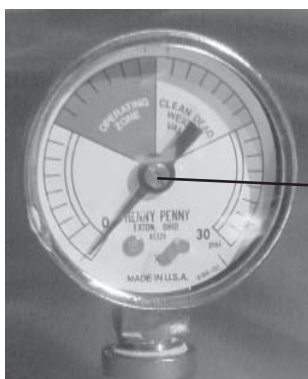


DO NOT ATTEMPT TO REMOVE VALVE WHILE FRYER IS OPERATING. SEVERE BURNS OR OTHER INJURIES COULD RESULT.

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.



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.



Step 2

**ADJUSTING
SCREW**

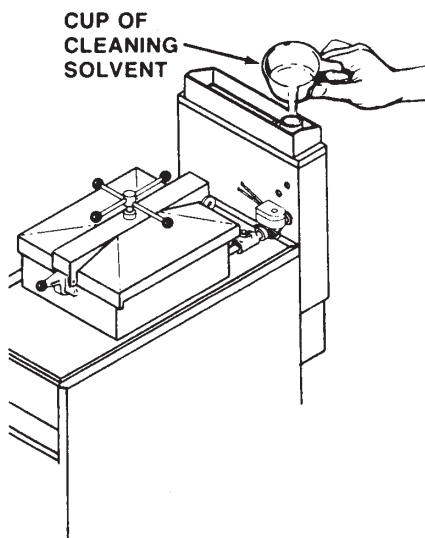
Pressure Gauge

The pressure gauge can be recalibrated should it be out of adjustment.

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 recalibrator screw in the same direction in which the indicating hand is to be moved until the hand stands at proper "0" position.
3. Replace the rim and glass.

2-17. PRESSURE REGULATION/ EXHAUST (Continued)



Pressure Gauge Cleaning Steps

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

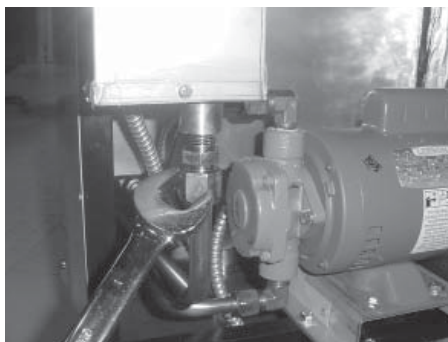
Condensation Box Assembly

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.

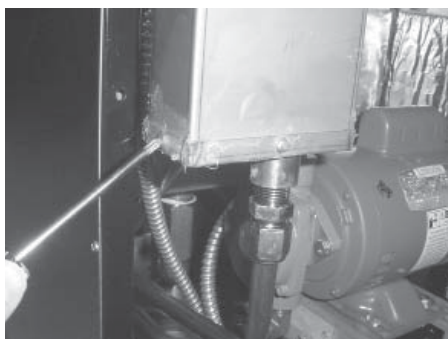
Condensation Box Bottom Removal

NOTICE

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



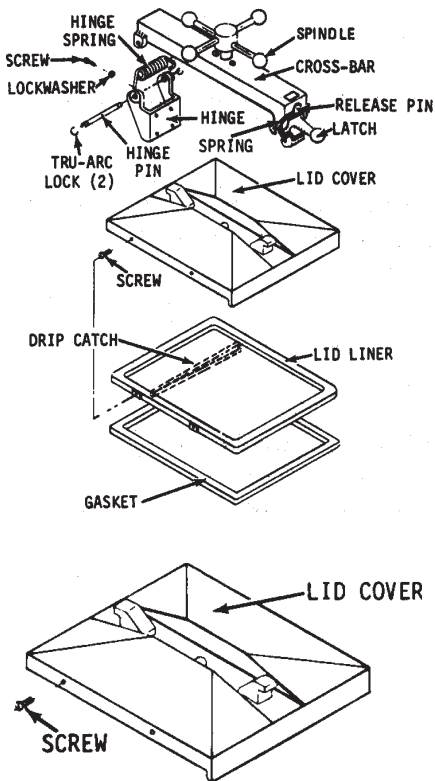
Condensation Box Fitting Step 1



Condensation Box Bottom Step 2

1. Loosen fitting at the bottom of the box.
2. Using Phillips head screwdriver, remove 4 screws securing the bottom of the box and pull bottom from assembly.
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.

2-17. PRESSURE REGULATION/ EXHAUST (Continued)



Lid Cover Assembly

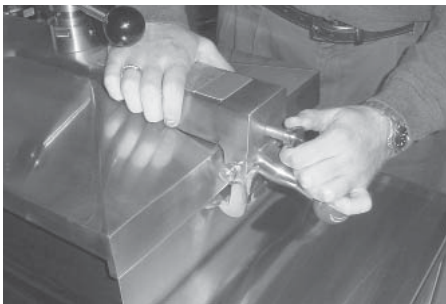
Description

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

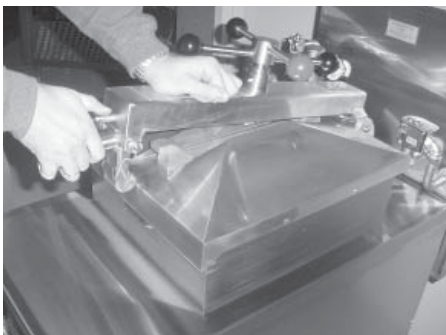
Lid Cover Removal

The lid cover is easily removable for cleaning or service.

1. Close the lid cover and turn the spindle counterclockwise until it stops.



Step 2

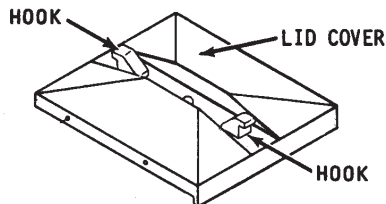


Step 3

2. Pull the lid release pin on front of crossbar, lift the latch, and raise the crossbar.

3. The cover can now be removed from frypot.

**2-17. PRESSURE
REGULATION/
EXHAUST (Continued)**



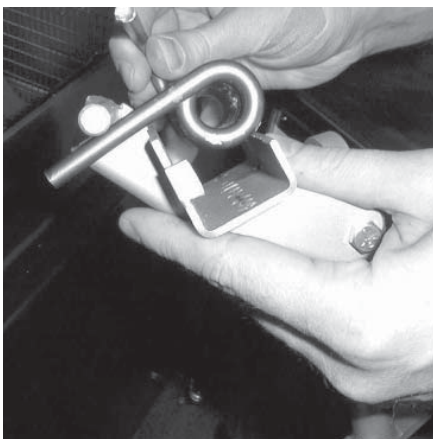
Lid Cover Installation

1. Place the lid cover on the 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 cross bar down and pull out on lid release pin.
4. Push the lid to rear of frypot and latch the cross bar to the lid cover. Release the pin.
5. Check that lid cover is fastened properly before raising.

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)

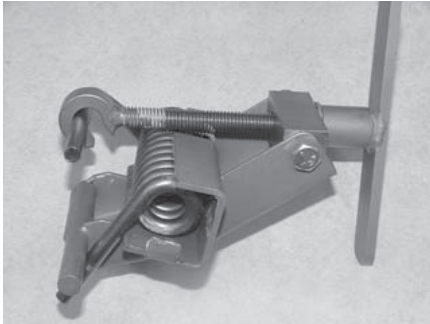
1. Pull out on the retaining pin knob on the front of the cross bar to release lid cover. (Refer to lid cover removal instructions.)
2. Lift the cross bar up and away from the lid.
3. Remove tru-arc locks and hinge pin if the spring is broken. If the spring is not broken, use spring tool as described 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.



Step 5

2-17. PRESSURE
REGULATION/
EXHAUST (Continued)

Lid Hinge Spring
(Continued)



Step 6



Step 7

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 toward the front of fryer and the tool handle is toward the top of the fryer.

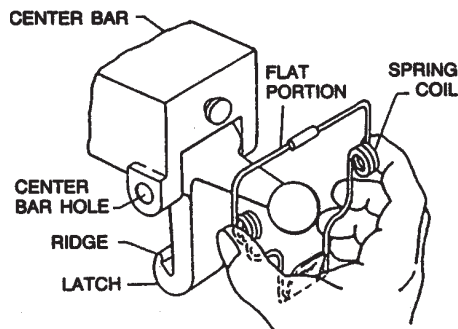
8. Replace hinge pin and Tru-Arc locks. Loosen and remove the tool.

9. Refer to the lid installation procedure and reinstall the lid.

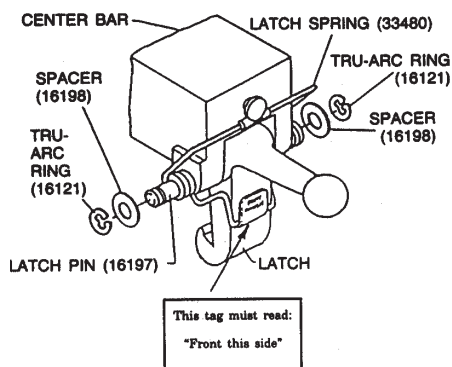
2-17. PRESSURE REGULATION/ EXHAUST (Continued)

Latch Spring Installation

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.



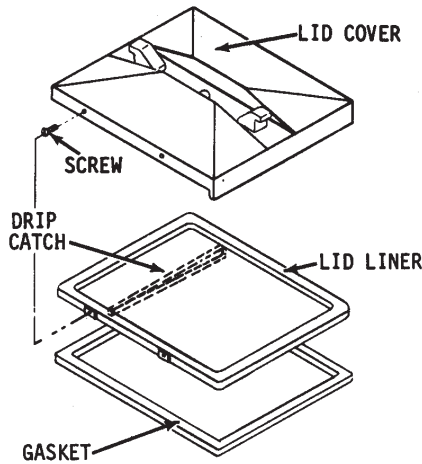
To avoid severe burns and injuries make sure the lid is secure during a cook cycle. The latch spring must be in good working order and properly installed. (Refer to illustrations at left.) If the latch spring is weak, broken, or mounted backwards, it will provide little force against the latch.



1. Replace the crossbar from the lid. (Refer to previous steps on Lid Cover Removal.)
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. (Refer to illustrations at left.)
5. Secure spring in place with Tru-Arc ring.

2-17. PRESSURE REGULATION/ EXHAUST (Continued)

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.

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.

Purpose

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.

2-17. PRESSURE
REGULATION/
EXHAUST (Continued)

Reversing the Lid Gasket
(Continued)



Step 1

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



Step 2

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.

**2-17. PRESSURE
REGULATION/
EXHAUST (Continued)**



**Reversing the Lid Gasket
(Continued)**

NOTICE

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

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.



Step 1



Step 2

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. 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 lid and turn spindle until lid gasket meets the top of the 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.

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 frypot.

**2-17. PRESSURE
REGULATION/
EXHAUST (Continued)**

**Lid Limit Stop
Adjustment (Continued)**

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

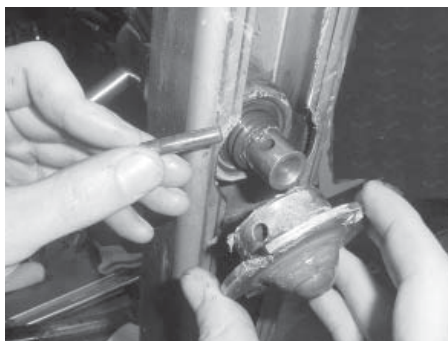
6. Adjust the limit stop by turning it counterclockwise until it stops against the bottom hub of the spindle.
7. Tighten Allen set screws.
8. If the lid cover fails to seal properly, steam will escape around the gasket during the frying operation. The limit stop should be readjusted. This time turn the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

Spindle Screw Assembly

This assembly is used to tighten the lid cover against the frypot flange.



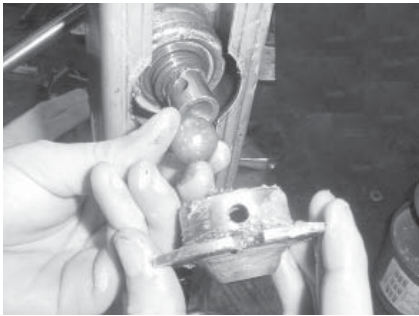
Step 3



Step 4

1. Loosen the set screw in the limit stop collar and loosen the limit stop.
2. Disengage the crossbar from the lid cover as described in the "Lid Cover Removal". Leave the lid cover in position on the frypot rim with the crossbar in the upright position.
3. Turn the spindle so the pin in the locking collar will be exposed.
4. Remove pin and locking collar. Use a small diameter punch and a hammer to drive out the pin from the locking collar. Remove the locking collar.

**2-17. PRESSURE
REGULATION/
EXHAUST (Continued)**



Step 5

5. Remove the ball from the locking collar. In some cases, lightly tapping the steel ball with a hammer may be needed.



Step 6

6. Remove and inspect the idle nut.



Step 7

7. Thread the spindle out of the acme nut.



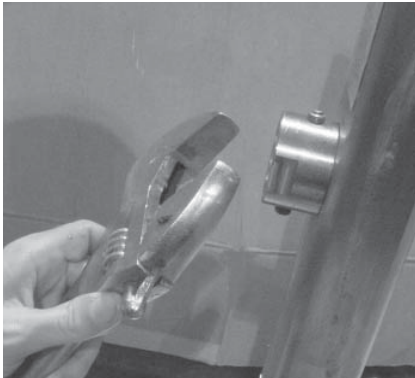
Step 8

8. Loosen the Allen set screw in the outer ring of limit stop. Thread the inside portion up and down several times to check for ease of operation. If thread feels tight or must be forced, threads may be damaged. Discard and replace with new limit stop assembly.

**2-17. PRESSURE
REGULATION/
EXHAUST (Continued)**

NOTICE

The acme nut must be changed when there is excessive play and movement between the spindle and the acme nut.



Step 9



Step 10



Step 11



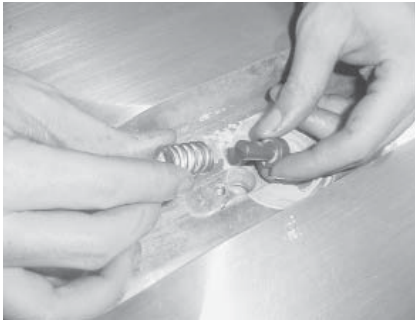
Step 11

9. Using a nylon tape type wrench unthread the limit stop collar from the acme nut.

10. Gently tap the acme nut from the center crossbar. Inspect the acme nut for thread damage. If the threads are thin and sharp or worn, replace with a new acme nut.

11. Use an Allen wrench and ratchet to remove the retainer.

**2-17. PRESSURE
REGULATION/
EXHAUST (Continued)**



Step 12

12. Remove the locking pin and spring. Inspect and replace, if necessary.

NOTICE

When reinstalling the locking pin, be certain it is put back in its original position. The angled side of the pin should be to the right.



Step 13

13. Use a magnet to remove the ball seat. Inspect and replace if necessary.



Step 13

14. Install the acme nut and limit stop collar. Lubricate the acme nut with special grease (our part number 12124).

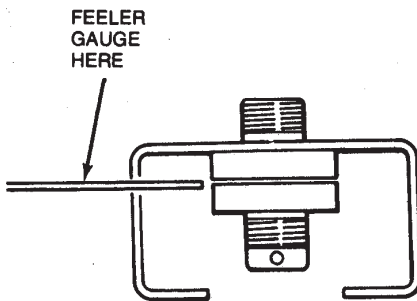
15. Thread the limit stop assembly into the limit stop collar.



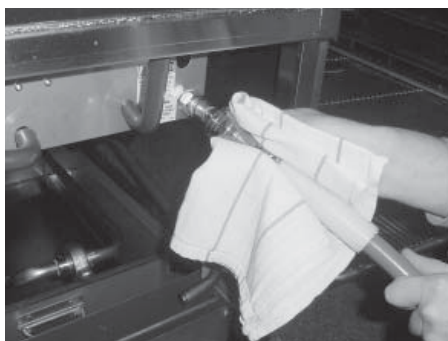
Step 16

16. Lubricate the spindle with special grease (our part number 12124) every 30 days.

2-17. PRESSURE REGULATION/ EXHAUST (Continued)



2-18. FILTERING SYSTEM



Step 3

17. Slip the spindle through the limit stop, hold the idle nut against the acme nut, and thread spindle through both. There should be 20 to 60 thousandths between the acme nut and the idle nut. To increase dimension turn the idle nut counterclockwise; to decrease turn clockwise.
18. Install the locking collar, locking pin and ball. Install the ball seat in the lid. Install the retainer and spring.
19. Reassemble the crossbar to the lid cover according to the "Lid Cover Installation" procedure.
20. Readjust the lid limit stop during the test cook cycle.

Filter Rinse Hose

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



SHORTENING WITH TEMPERATURE IN EXCESS OF 200°F 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.

Removal

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

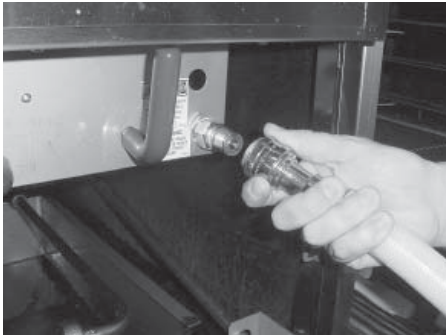


THE HOSE AND FITTING WILL BE HOT. USE PROTECTIVE GLOVES OR CLOTH WHEN FOLLOWING THIS PROCEDURE, OR SEVERE BURNS COULD RESULT.



This hose is not connected to fryer during normal operation.

2-18. FILTERING SYSTEM **(Continued)**



Step 1

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.
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.

Filter Valve Description

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



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

Removal

1. Drain the shortening from the 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.

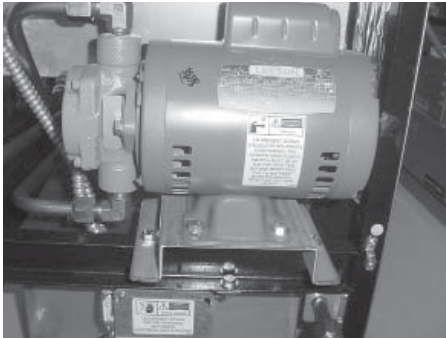
2-18. FILTERING SYSTEM **(Continued)**

Filter Pump Repair

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



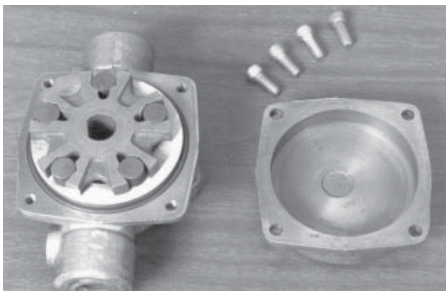
To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.



Step 1

Cover Removal

1. Loosen the four Allen head screws on the end of pump and remove the cover.
2. The inside is now exposed leaving a rotor and five teflon rollers. Clean the rotor and rollers.



Step 2

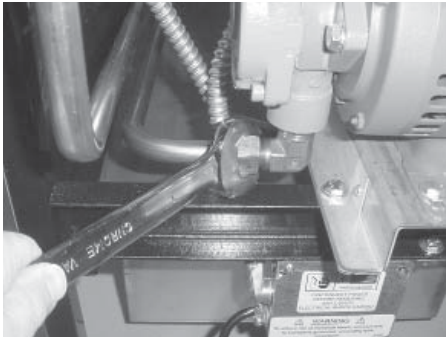
3. To reassemble, place rotor on drive shaft, and place roller into rotor.

NOTICE

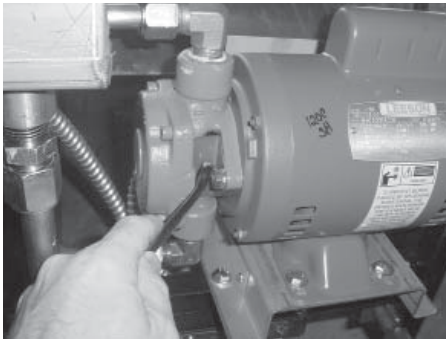
A small amount of grease might be needed to hold the bottom roller into place until cover plate is put on. Make sure O-ring is in proper position on plate.

2-18. FILTERING SYSTEM **(Continued)**

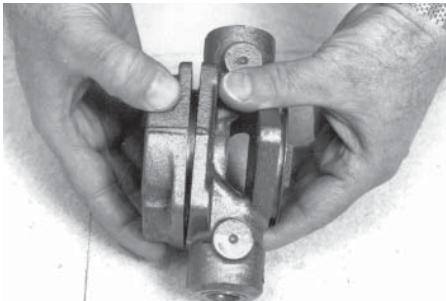
Pump Removal



Step 1



Step 2



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.
2. Shaft seal should remain on the motor shaft, or if leaking, could be replaced at this time.
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 shaft seal. Place the two 1/2 inch bolts through the pump and into the motor and tighten. Then replace rotor, rollers, front plate and tighten 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 halves of the pump, this mark must be together and face to the front of the fryer.

2-18. FILTERING SYSTEM **(Continued)**

Pump Removal **(Continued)**

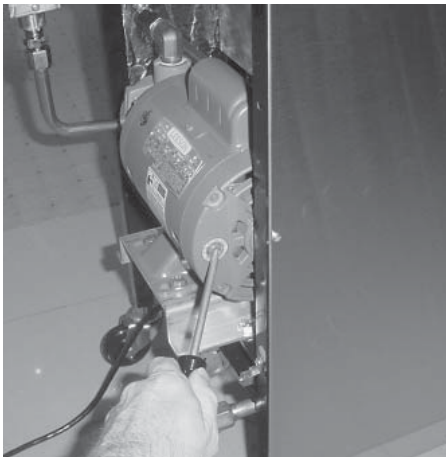
4. To replace the pump and motor assembly, insure the main power has been removed from the fryer.



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 90° conduit connector (8). (Refer to Figure 3-6.)
7. Remove tubing to the pump. (Refer to Figures 3-17 and 3-18.)
8. Remove hardware attaching the motor to the motor base bracket and remove motor and pump assembly.

Filter Pump Motor **Protector - Manual Reset**



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.



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.

2-19. GAS CONVERSION

Gas model fryers are factory available for either natural gas or propane gas. Factory conversion kits for natural gas and propane gas are available that require the burner jets, pilot jet and regulator assembly to be changed.

Refer to the Technical Manual illustrated parts breakdown for kit identification.



Conversion must be accomplished by an authorized Henny Penny dealer or service representative, or personal injury could result.

Service Hints

On natural gas installation, the gas pressure regulator on the automatic gas control valve is factory set at 3.5 inch water column.

On propane gas installations, the gas pressure regulator on the automatic gas control valve is factory set at 10.0 inch water column.

After converting the fryer, turn on the gas supply and check for leaks. A simple method is to brush all the connections with soapy water, and watch for bubbles which indicate escaping gas.



NEVER USE AN OPEN FLAME TO TEST FOR LEAKS. ESCAPING GAS COULD CAUSE AN EXPLOSION, AND PERSONAL INJURY OR PROPERTY DAMAGE COULD RESULT.

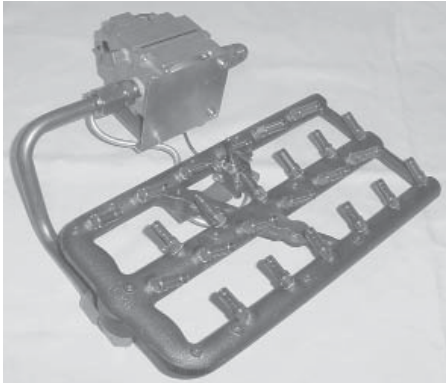
2-19. GAS CONVERSION **(Continued)**

Maintenance

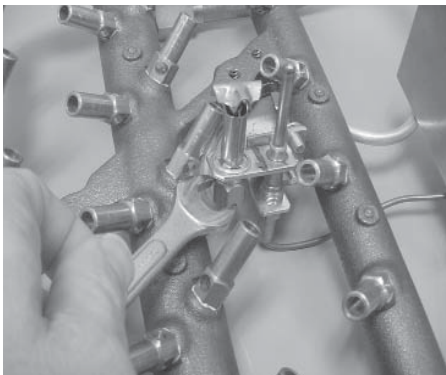


To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

To convert from one type of gas to another, follow the procedure below:



Step 3



Step 5

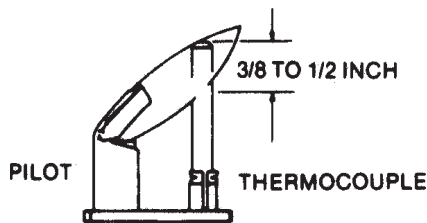
1. Turn the gas valve knob to the OFF position.
2. Close the gas control valve and disconnect fryer supply line.
3. Refer to Figure 3-30 and remove gas control valve and burner assembly per Gas Burner Assembly section.
4. Remove the burner orifices (24 each), and replace with orifices in gas conversion kit.
5. Remove the pilot holder assembly and replace with the one from the kit.
6. Remove the gas control valve manufacturer's instructions from the envelope containing the regulator spring, and follow the directions for converting the gas control valve.

NOTICE

Outlet pressure is stated on the enclosed label.

7. Attach the pressure sensitive data plate label to the data plate, covering up the old rating and pressure information.
8. Install converted gas control valve and burner assembly per Gas Burner Assembly section.
9. Connect the gas supply to the fryer.
10. Insure the power switch is in the OFF position, gas control valve in the OFF position.
11. Connect the electrical power to the fryer.

2-19. GAS CONVERSION **(Continued)**



2-20. ELECTRICAL **CONVERSIONS**

12. Check for gas leak at supply line as per Service Hints in this section.
13. Turn the gas control valve on and turn the gas control valve to the pilot position.
14. Check for gas leak at the gas control valve and main gas valve per step 12 of this section. If there are no leaks, continue to step 15.



IF A LEAK IS DETECTED, SHUT OFF GAS CONTROL VALVES AND REPAIR LEAK. ESCAPING GAS COULD CAUSE AN EXPLOSION, AND/OR PERSONAL INJURY AND PROPERTY DAMAGE COULD RESULT.

15. With the gas valve knob at PILOT, depress the dial and light the pilot burner per Operator's Manual.

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.

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 volt heating elements. Delay timers must be changed on variable temperature models.

Single Phase to Three Phase:

A factory conversion kit (part number 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 number 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.