HENNY PENNY
Engineered to Last

SERVICE MANUAL

KFC Velocity Series™

Open

OXE-100

FM06-070C

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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 Velocity Open Electric (OXE) model 100 (OXE 100).
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

- **BOILOVER RISK! 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 powercord 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 450° F (230°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.

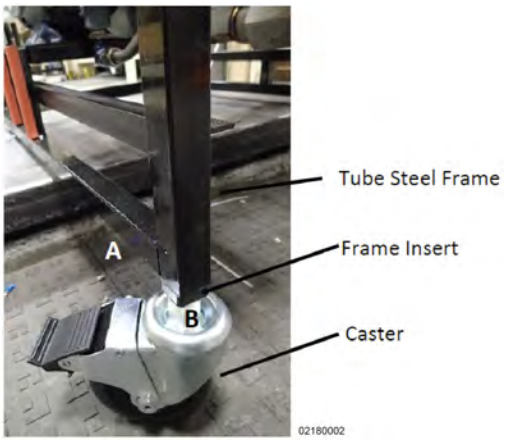
Chapter 1 Annual Inspections

A certified technician should inspect the entire fryer annually (once every 12 months). Use the Chapter 9 *Annual Inspection Checklist Form*, page 115 below to ensure all required maintenance procedures are completed.

1.1 Inspect Castors 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.**

Ensure the fryer sits level, casters are mechanically sound and able to hold the weight of the fryer, and that the tube steel frame is not cracked or bent. If the fryer is not level, inspect the condition of the floor. Repair the floor as necessary, 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 on level flooring. Casters on the fryer **cannot** be adjusted up or down. Inspect casters and the tube steel frame by removing the side panels and using a flashlight to look for cracks and/or bent framing. Replaced any damaged or broken casters by doing the following:



1. Raise the lid to lower the fryer's center of gravity.
2. Discard oil from the fry pot.
3. Remove the racks from the carrier.
4. Position two floor jacks under the frame (A), near the casters (B), on the same side of the fryer.
5. Block the casters on the opposite side of the fryer with small wheel chocks.
6. Raise the fryer approximately 2.5" (63mm).
7. Use an adjustable wrench to remove the caster (B).
8. Use an adjustable wrench to install the new caster. Ensure a snug fit but do not overtighten.
9. Continue to the next inspection or reinstall components as applicable.

1.2 Inspect Counterweight Cables

This unit uses two cables in the counter-weight mechanism that helps in the raising and lowering of the lid. Cables should be visually inspected yearly, either as part of a planned maintenance program or during a routine service call. Cables more than 10 years old should be replaced regardless of inspection results. Call for service to have both cables replaced.

CAUTION **If the lid becomes difficult to operate, stop using the fryer and call for service because the cables need to be replaced.**

:

Worn Counterweight Cable

11170113

Usable Counterweight Cable

11170114

11170115

1. Use a 3/8” socket, to remove the 6 keps nuts around exterior of rear cover and remove the back shroud.
2. Inspect the counter-weight cables. If cables have cracks in the jacket, missing pieces in the jacket, or other obvious signs of wear, replace both cables.
3. Continue to the next inspection or reinstall components as applicable.

1.3 Inspect and Lubricate the Carriage Wheels

The carriage wheels inside the back of the fryer should be lubricated at least once a year to allow for easy lid movement.


11170112

1. If necessary, use a 3/8” socket to remove the 6 keps nuts around exterior of rear cover and remove the back shroud.
2. Inspect the carriage wheels and ensure proper operation.
3. Use spindle lube (PN 12124) and place a small amount on all four (4) wheels, both top and bottom, left and right rollers.
4. Continue to the next inspection or reinstall components as applicable.

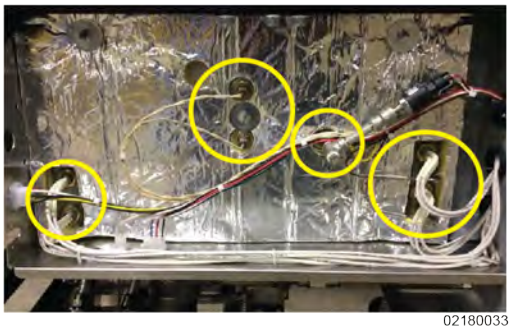
1.4 Oil Migration

WARNING

To avoid serious personal injury:

- **Unplug fryer before removing the left side panel to prevent electrical shock.**
- **Only perform this procedure when the fryer is cool or severe burns may result.**

Inspect behind the left side panel for excessive oil seeping through either the high limit pot fittings, the temperature probe pot fitting, level probe fitting, pressure transducer fitting, or the heating element fittings. If oil migration or seepage is found, remove and clean the fittings, applying pipe thread sealant and then re-install the fitting. If excessive oil migration is discovered, the insulation on the side of the fryer must be replaced.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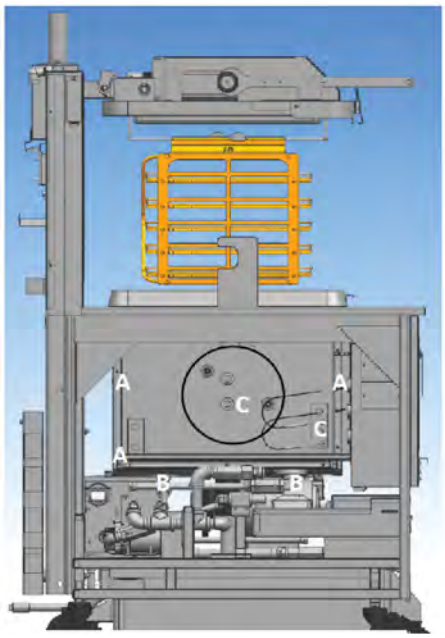
1. If necessary, remove the left side panel.
2. Inspect for oil seepage at the probe fittings, high limit fittings, pressure transducer fitting and heating element fittings.
3. Complete any necessary repairs.
4. Continue to the next inspection or reinstall components as applicable.

1.5 Inspect Fry Pot for Leaking

WARNING **Oil accumulation on the exterior of the frypot creates a fire risk. Take the fryer out of service until the oil accumulation is removed, or the fryer is replaced.**

Excessive oil accumulation on the exterior of the fry pot may indicate the fryer is having a hardware issue or the operator is not following recommended operating procedures. With both side panels and the back shroud removed, clean off the oil accumulation, and then use a flashlight to inspect the fry pot, fry pot welds, fry pot plumbing and fittings, and the probe and element fittings.



A	Pot Welds x8 *Opposite side not shown.*
B	Oil Return Fitting Welds *Bottom of Fry Pot*
C	Probe and Heating Element Fittings

If the fry pot is suspected of leaking, do the following:

- If the oil accumulation is toward the upper half of the fry pot, take the fryer out of service immediately, and replace the fryer.
- If the oil accumulation is toward the lower half of the fry pot, and it is not evident if the oil accumulation is due to the store using a drain pan without a cover or other operator error, do the following:

If necessary, scrape and clean off the existing oil from the fry pot and welds, and then have the store bread and cook 4 head or greater of bone in chicken. During cooking, monitor the suspected area for leaking:

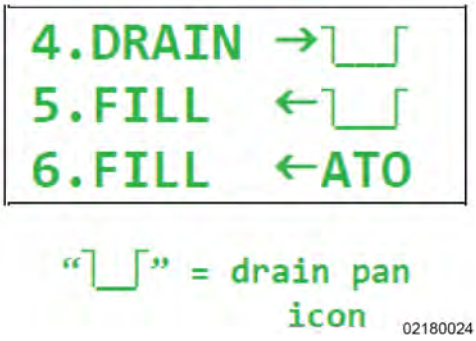
- If oil is pushed out of the fry pot or welded areas while the fryer is under pressure, take the fryer out of service and replace the fryer.

- If the pot is not leaking, take the fryer out of service until the oil accumulation is removed and the store operates the fryer with a drain pan cover or the operator error is corrected.

1.6 Temperature and Level Probe Inspection

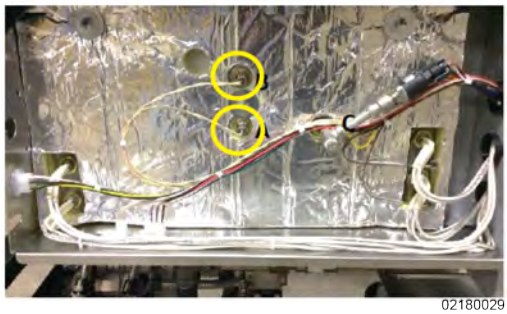
WARNING **To avoid serious personal injury. Unplug fryer before removing the left side panel to prevent electrical shock. Only perform this procedure when the fryer is cool or severe burns may result.**

Ensure the temperature and level probes are undamaged and working within specification by doing the following:



1. Press and hold the menu button until *MAIN* appears on the display.
2. Press the number one product button to enter the filter menu.
3. Press the right arrow until 4. DRAIN -> displays.
4. Select **4. DRAIN ->**, and drain all the oil in the fry pot into the drain pan.
5. On the inside of the vat, clean off any build up or debris from the temperature probe and level probe. If a probe is bent or damaged, replace the probe.
6. Check that each probe is inserted into the fry pot 3/8" into the oil. If a probe either extends too far into the oil or is too shallow, do the following:

a) Remove the left side panel.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b) Adjust the probe to the correct depth by loosening the ½" compression nut on the temperature probe.

c) Slide the probe to the correct depth then tighten the compression nut.

7. Select **5. FILL <-**. Allow oil to fully fill the vat. Once filled, cancel the filter pump motor and exit out of the filter menu by pressing and holding the menu button.
8. Continue to the next inspection or reinstall components as applicable.

1.7 Inspect the Power Cable

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.

WARNING

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.

WARNING

To avoid electrical shock, this appliance must be 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.

WARNING

FOR EQUIPMENT WITH CE MARK ONLY! To prevent electric shock hazard this appliance must be bonded to other appliances or touchable metal surfaces in close proximity to this appliance with an equipotential bonding conductor. This appliance is equipped with an equipotential lug for this purpose. The equipotential lug is marked with the following symbol.

NOTICE

:

The supply power cords shall be oil-resistant, sheathed flexible cable, no lighter than ordinary polychloroprene or other equivalent synthetic elastomer-sheathed cord. It is recommended that a 30 mA rated protective device such as a residual current circuit breaker (RCCB), or ground fault circuit interrupter (GFCI), be used on the fryer circuit.

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

1.7.1 Electrical Requirements

The electric fryer requires 208 or 240 volt, three phase, 50/60 Hertz service. The power cord may be already attached to the fryer, or provided at installation. Check the data plate mounted just above the lid, on the left side of the back shroud, to determine the correct power supply. A terminal block is mounted inside the fryer for the cable

wiring. A decal on the inside of the right side panel will help in the wiring of the unit. Refer to .

1.7.2 International Requirements

Units being used outside the United States may not be shipped with the power cord attached to the unit because of the different wiring codes. The fryers are available from the factory wired for 208, 240, 380 and 415 volts, 3 phase, 50 Hertz service. A terminal block is mounted inside the fryer for the cable wiring. A decal on the inside of the right side panel will help in the wiring of the unit. Refer to .

1.8 High Limit and Module Inspection

DANGER **Never leave a fryer with a high limit bypassed. This can lead to fire, property damage, personal injury or death.**

WARNING **To avoid serious personal injury. Unplug fryer before removing the left side panel to prevent electrical shock. Only perform this procedure when the fryer is cool or severe burns may result.**

Ensure the high limit and module are undamaged and working within specification by doing the following:

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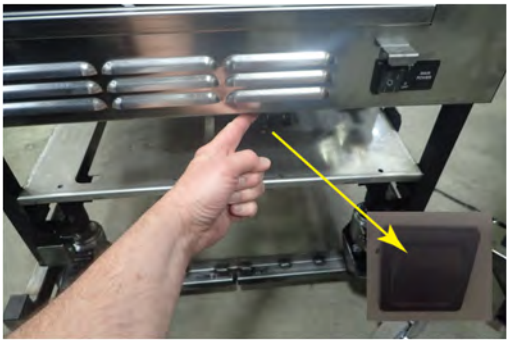
1. Locate the two high limit control modules mounted on the left hand side of the shroud behind the control.
2. Visually inspect the modules for cracks, broken or loose terminals.



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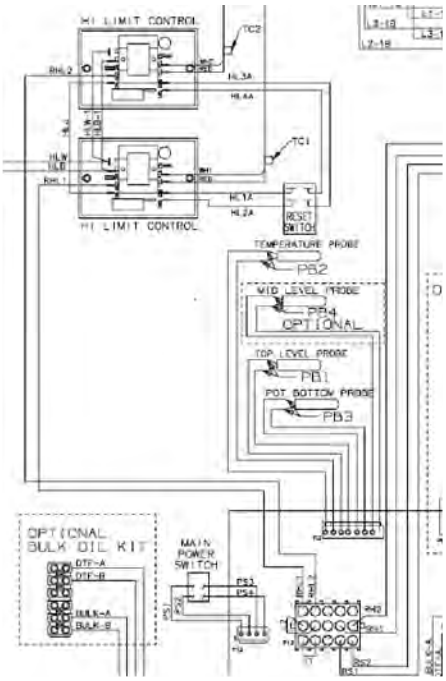
3. Visually inspect the high limit momentary reset switch and ensure it works.

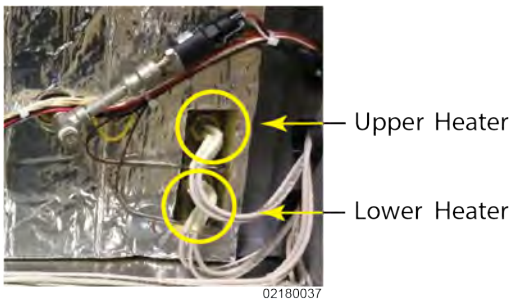


4. Follow red wire RHL 1 from the control board and make sure that it is securely attached to the terminal on the lower module. If this wire is not connected, reconnect it to match the diagram on the left.
5. Follow red wire RHL 2 from the control board and make sure that it is securely attached to the terminal on the upper module. If this wire is not connected, reconnect it to match the diagram on the left.
6. Make sure red wire HLJ connects the two modules as shown in the drawing on the left.
7. Verify all other wires attached to the high limit modules have secure connections.
8. Continue to the next inspection or reinstall components as applicable.

1.9 Measuring AMP Draw

Ensure that the amp draw of the fryer equals the amp draw listed on the data label. Why is this important? If amp draw is less than what is on the data label, this would be an indication that one of the phases that comes into the fryer may be missing, there may be an issue with one of the contactors, or there may be an issue in one of the fire bar heating elements.

DANGER **HIGH VOLTAGE PRESENT! This procedure should only be performed by a service technician who is trained and understands electrical safety.**



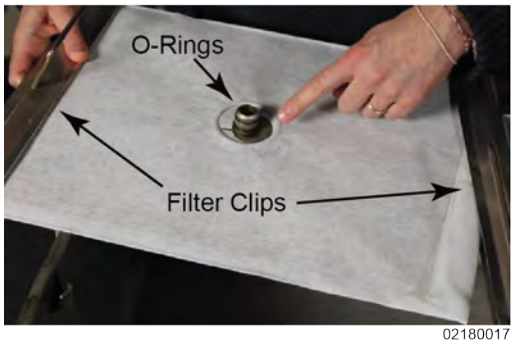
1. Attach an amp meter (amp clamp style) to one of the upper heating element's wires.
2. Connect power to the fryer, turn on the controls, and then set to call for heat. Once the fryer calls for heat, measure and note amp draw.
3. Repeat steps 1 – 2 for each of the other upper heating element's wires connected to the upper heater. The amp draw should be close to the same for each of the wires.
4. Repeat steps 1 – 2 for each of the lower heating element's wires connected to the lower heater. The amp draw should be close to the same for each of the wires.
5. Add the amp reading from all six wires together, and then divide by 1.73. The figure should equal what is listed on the data label.
6. If this figure is lower than what is on the data label, then troubleshoot to find the issue with either incoming power, the contactor or the heater assemblies.
7. Continue to the next inspection or reinstall components as applicable.

1.10 Drain Pan Component Inspection

WARNING **Do not attempt this inspection until the fryer has had time to cool, otherwise severe burns may result. Only perform this procedure when the drain pan is cool.**

TRAINING: Watch how to disassemble and reassemble the Drain Pan.

Ensure the drain pan components are undamaged and working within specification by doing the following:



02180017

1. Remove the drain pan and disassemble.
2. Verify the filter screen, two o-rings, and both filter clips are in place and assembled correctly. If any of these parts are missing or damaged, replace them.


02180018

3. Verify the standpipe and three o-rings are assembled correctly and not missing or damaged.


02180019

4. Verify the crumb basket and lid are not missing or damaged and if any components are missing or damage, replace them.
6. Continue to the next inspection or reinstall components as applicable.

1.11 ATO Reservoir Inspection and pump test

WARNING **Do not attempt this inspection until the fryer has had time to cool, otherwise severe burns may result. Only perform this procedure when the ATO reservoir is cool.**

Ensure the ATO reservoir is undamaged and working within specification by doing the following:

02180020

NOTE: Perform this step for PXE 100 (pressure) model only.

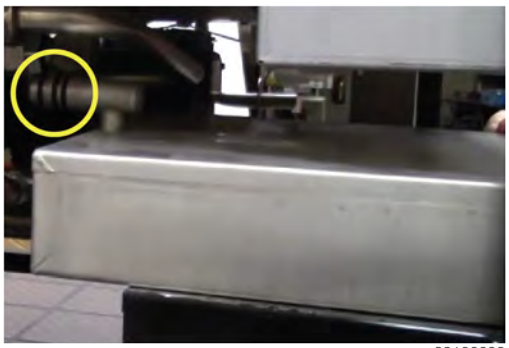
1. Remove the condensation drain pan to the right of the ATO reservoir.


02180021

2. Pull the ATO reservoir out as far as it can go.

3. Slide it slightly to the right and lift.

NOTE: This step releases the reservoir from the track beneath it, allowing the ATO reservoir to slide the rest of the way out. Be careful not to spill oil.


02180022

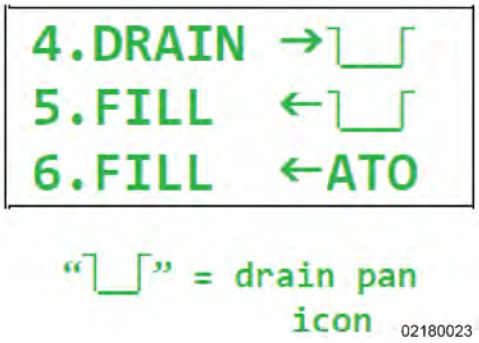
4. Inspect the three o-rings at the rear of the reservoir and replace o-rings that are missing, excessively worn, or damaged.

5. Reinstall the ATO reservoir by lining up the guides at the bottom of the reservoir with the tracks.

NOTICE:

- **Inspect the o-rings and replace if damaged or every 90 days.**
- **Use a small screw driver to gently pry o-rings from their groove to inspect for damage. Reinstall by gently rolling them in to place.**
- **Watch a short video explaining how to lubricate the o-rings after installation.**

6. Press and hold the menu button until *MAIN* appears on the display.
7. Press the number one product button to enter the filter menu.



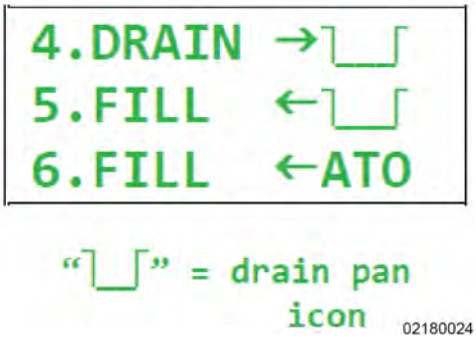
8. Press the right arrow until 6. FILL <- ATO displays.
9. Press and hold the select button next to 6. FILL <- ATO and test the ATO system. If oil pumps from the reservoir, the system is working. If oil does not pump, troubleshoot the ATO issue.

NOTE: PXE 100 model only.

10. Reinstall the condensation drain pan.
11. Continue to the next inspection or reinstall components as applicable.

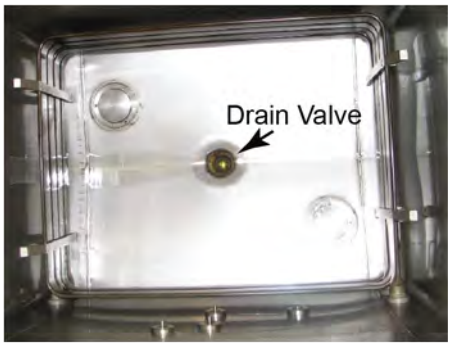
1.12 Testing the Drain Valve

Ensure the drain valve is undamaged and working within specification by doing the following:



02180024

1. Press and hold the menu button until *MAIN* appears on the display.
2. Press the number one product button to enter the filter menu.
3. Press the right arrow until 4. DRAIN -> displays.
4. Select **4. DRAIN ->**.



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5. Once all the oil drains into the drain pan, visually inspect the drain and valve.
6. Ensure the drain valve is fully open and not partially closed, which indicates the valve assembly may be misaligned or needs replaced.
7. Select **5. FILL <-**.
8. Ensure the drain valve is fully closed and not partially closed, which indicates the valve assembly may be misaligned or needs to be replaced.
9. Allow oil to fully fill the vat.
10. Once filled, cancel the filter pump motor and exit out of the filter menu by pressing and holding the menu button.
11. Continue to the next inspection or reinstall components as applicable.

1.12.1 Service Procedure Guidance

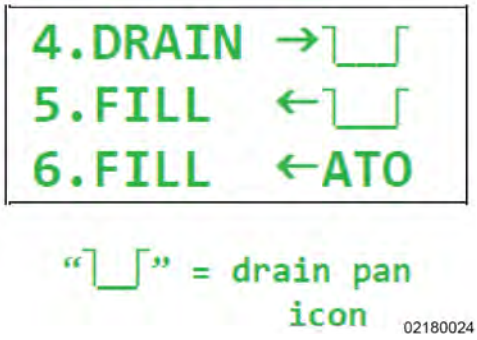
ISSUE / SYMPTOM	SERVICE RECOMMENDATION
Oil leaking in to drain pan.	Replace drain valve.
Valve not moving but hear actuator moving.	Remove actuator and check for actuator couple movement. Check if drain valve is seized. Likely replace actuator only, valve also if seized.

1.13 Bulk Dispose Test

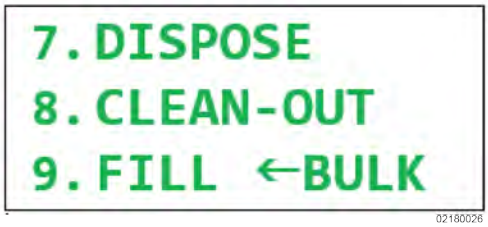
NOTICE :

Before performing this procedure, make sure the bulk oil system is securely connected to the dispose port on the fryer and the quick disconnect is engaged.

Ensure the bulk dispose process is working within specification by doing the following:



1. Press and hold the menu buttonuntil *MAIN* appears on the display.
2. Press the number one product button to enter the filter menu.
3. Press the right arrow until 4. DRAIN -> displays.
4. Select **4. DRAIN ->**, and then cancel after draining about 2" of oil in the fry pot.
5. Press the right-arrow until 7. DISPOSE displays.
6. Select **7. DISPOSE** and let the motor run for about 1 min., and then stop the pump.
7. Wearing PPE, pull out the drain pan and verify the oil pumped out of the drain pan and into the bulk oil system.



a) If oil pumped out of the drain pan, exit out of the filter menu by pressing and holding the menu button.

b) If oil did not pump out, troubleshoot dispose plumbing, selector valve issues etc.

8. Continue to the next inspection or reinstall components as applicable.

NOTE: Replenish the oil in the fry pot by pouring oil from a jug or from bulk oil as applicable.

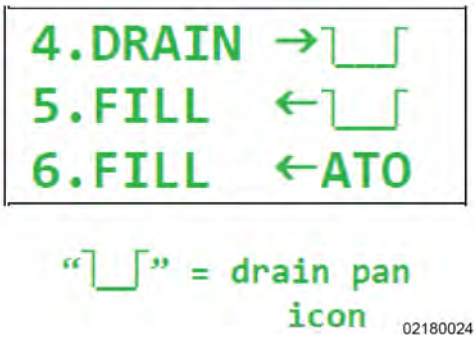
1.14 Heating Element Spreader Bars Tightening and Inspection

WARNING

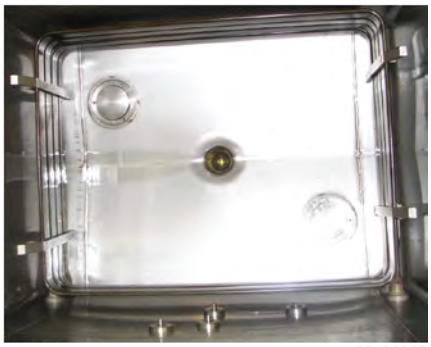
To avoid serious personal injury:

- **Unplug fryer before removing the left side panel to prevent electrical shock.**
- **Only perform this procedure when the fryer is cool or severe burns may result.**

Ensure the heating element spreader bars are undamaged and working within specification by doing the following:



1. Press and hold the menu button until *MAIN* appears on the display.
2. Press the number one product button to enter the filter menu.
3. Press the right arrow until 4. DRAIN -> displays.
4. Select **4. DRAIN ->**, and drain all the oil in the fry pot into the drain pan.


02180027

5. Using a Phillips screwdriver, check the tightness of the screws on all four spreader bars.

NOTE: Do not overtighten screws. If any spreader bar is missing or any of the spreader bar screws are missing, replace them.

6. Select **5. FILL <-**. Allow oil to fully fill the vat.
7. Once filled, cancel the filter pump motor and exit out of the filter menu by pressing and holding the menu button.
7. Continue to the next inspection or reinstall components as applicable.

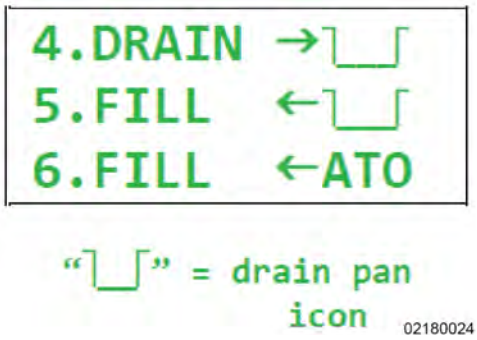
1.15 Oil Return Diverters and Pressure Outlet Inspection

WARNING

To avoid serious personal injury:

- **Unplug fryer before removing the left side panel to prevent electrical shock.**
- **Only perform this procedure when the fryer is cool or severe burns may result.**

Ensure the oil return diverters and pressure outlet are undamaged and working within specification by doing the following:



1. Press and hold the menu button until *MAIN* appears on the display.
2. Press the number one product button to enter the filter menu.
3. Press the right arrow until 4. DRAIN -> displays.
4. Select **4. DRAIN ->**, and drain all the oil in the fry pot into the drain pan.


02180030

5. Use a Phillips head screwdriver, and remove the screws on each of the oil return diverters located at the bottom of the fry pot.
6. Remove both oil diverters and o-rings.

02180031

7. Clean and remove debris from the oil return tube at the bottom of the fry pot.
8. Clean the oil diverters by removing all debris from the narrow opening.
9. If the o-rings are not cracked or damaged reuse them, otherwise replace them.

02180032

10. Reinstall the oil diverters, ensuring that the opening is aimed to return oil in the directions shown.
11. Select **5. FILL <-**. Allow oil to fully fill the vat. Once filled, cancel the filter pump motor and exit out of the filter menu by pressing and holding the menu button.
12. Continue to the next inspection or reinstall components as applicable.

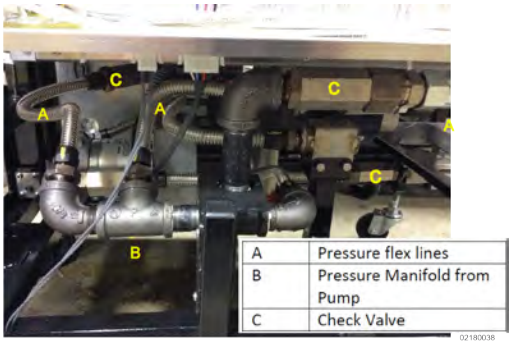
1.16 Inspect for Plumbing Leaks in the Filtration System

WARNING

To avoid serious personal injury:

- **Unplug fryer before removing the left side panel to prevent electrical shock.**
- **Only perform this procedure when the fryer is cool or severe burns may result.**

Ensure the filtration pump, tubing and connectors are undamaged and working within specification by doing the following:



A	Pressure flex lines
B	Pressure Manifold from Pump
C	Check Valve

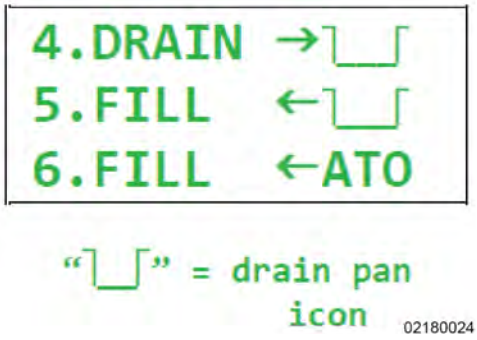
02180038

1. Use a flashlight to inspect the fittings of the filtration plumbing and between the filter pump and motor for oil leaks.

2. Press and hold the menu button until *MAIN* appears on the display.

3. Press the number one product button to enter the filter menu.

4. Press the right arrow until 4. DRAIN -> displays.



5. Select **4. DRAIN ->**, and drain about half of the oil in the fry pot into the drain pan.

6. Select **5. FILL <-**, and pump the oil back in to the fry pot.

7. While the oil is pumping, use a flashlight to inspect for oil leaks. If leaks are detected:

- In the plumbing, disassemble, clean and reassemble fittings using pipe thread sealant on tapered thread fittings and/or replace any flex lines, and/or compression fittings as applicable.

- In the filter pump and motor, disassemble and replace the seal (and rollers) with a new seal kit.

1.17 Inspect Cam Slide Fillers

DANGER

To avoid serious personal injury:

- **Do not operate without lid cover in place and all components installed.**
- **Do not tamper with any component of the lid locking mechanism during operation.**

WARNING

Do not attempt this procedure while the fryer is in use or the fry pot is hot. Severe burns may result. Only perform this procedure when the fryer is cool and disconnected from the power source.

Inspect the cam slide fillers on the sides of the lid cover. If either side is damaged or missing, replace with new cam slide fillers. Why is this important? The cam slide fillers help minimize the amount of grease laden vapor, breading, dust and debris that can accumulate on the components under the lid cover.

02180049

1. Remove old left and right cam slide fillers if necessary by pulling the remaining pieces out of its channel and discarding.
2. Install the new left and right cam slide fillers by flexing open the slot in the circular opening.
3. Fit the new cam slide filler around the circular handle cam, ensuring the edge of the filler is inserted into the channel.
4. Reinstall the lid cover, ensure the cam slide fillers are completely seated on the inside of the cover.
5. Test that the handle slides forward and backwards with little resistance. Stoppage or resistance usually indicates an obstruction present in the channel, or that the slide is not seated properly.
6. Continue to the next inspection or reinstall components as applicable.

1.18 Replacement Maintenance Parts

Operators must replace normal wear parts (items) to maintain the safe reliable operation of the unit.

1.18.1 Ordering Parts

Use only genuine Henny Penny parts in this unit. Using a lesser quality substitute part may result in damage to the unit or personal injury. Your service provider or distributor has a parts price list and will be glad to provide you with part(s) costs. Commonly replaced items are stocked by your service provider or distributor and are sent out when your order is processed. Less common parts ordered from Henny Penny by your service provider or distributor normally take three working days. All replacement parts (except lamps and fuses) are warranted for 90 days against manufacturing defects and workmanship. If damage occurs during shipping, notify the carrier at once so that a claim may be properly filed. Refer to the warranty for other rights and limitations.

1.18.2 Parts List

These are commonly replaced parts that are ordered due to normal wear, accidental breakage or loss.

Table 1-1 Replacement Maintenance Parts

Qty.	Part #	Description	When to Replace
5	17586-0	DRAIN PAN O-RING - 116 SUCTION LINE (multiples of 10 per pack)	Used to seal the oil tubing connections. Replace every 90 days or sooner if cut, flattened or missing.
2	90085	O RING - CRUMB SWEEP	Ports in the bottom of the vat where fresh oil enters during a cleaning cycle to wash across the bottom of the vat. Replace as required.
100	12102	DRAIN PAN FILTER ENVELOPES	Used inside the drain pan as apart of the filtration assembly. Replace at least daily, more often as required.
1	17572-7	NYLATRON FILLER STRIP KIT	Used to cover the lid arm slots to prevent food debris, oil and water from entering the internal mechanics of the unit. Replace when broken.
2	14061-0	KIT, LID CABLE	Used to connect the lid assembly to the carriage weight assembly in the back of the unit to offset the lid weight. Replace cables when worn.

Chapter 2 Programming

2.1 Program Menu

From the MAIN menu, refer to , select 4. PROG, and then 1. PRODUCTS.

2.2 Tech Mode Menu

To access the Tech Mode menu from the Program menu, press the **7. Tech Mode** button and then type the code 11221122.

Table 2-1 Tech Mode Menu Function

Menu Item (Mode)	Display	Function
T-1	SOFTWARE ID'S	Press and hold lower-left button to view software release level. Shows the active version of software in the middle display.
T-2	METADATA	Displays information about the file that was used to flash the software into the control board, includes: including the "ID" of the file, date it was created, original file size, original file name, the version number of the metadata information, the authentication (checksum), and the board assemblies that the software is compatible with.
T-3	FRYER TYPE	Shows what type of fryer (pressure or open) in the middle display. To change the fryer type, press the illuminated lower-left button to change from "PRESSURE" to "OPEN". The model type will change in the middle display.
T-4	FRYER HAS SEL VALVE	NO- The unit is not equipped with a selector valve. YES - The unit is equipped with a selector valve. If incorrectly labeled, use the plus or minus button to change.
T-4A	FRONT DISPOSE KIT INSTALLED?	An optional kit is available to support a front dispose connection, where a hose is connected to a quick disconnect fitting at the front of the fryer, and bulk dispose operations pump directly into a portable disposal cart.
T-5	FRYER SERIAL NUMBER	This fryer's serial number is programmed into the control so that it can be included in USB reports and can be used when naming data log files.
T-6	PUSH BUTTON TEST	This section tests all the button to confirm all are working correctly. Press any of the non-illuminated button to

Menu Item (Mode)	Display	Function
		enter the test mode. The screen will return to normal operation after 3 seconds of no activity.
T-7	DISPLAY TEST	This section tests all of the LED and display lights. Press the illuminated button next to the type of test listed on the display. Press and hold the button of the LED test to test all the lights on the buttons. Press and release the button next to the display test options to circulate through the different sections of the display.
T-8	AUDIO TEST	Press the button next to start the Audio volume test. Press and hold the button next to Hold to test the current volume.
T-9	LVL TEMP OFFSET ADJ	Shows the current temperature of the oil at the level probe. To adjust the temperature. press and hold the button next to Temp With the button held, press the plus or minus button to adjust the temperature. To adjust the offset, press and hold the button next to the OFST With the button held, press the plus or minus button to adjust the offset.
T-10	MAIN TEMP OFFSET ADJ	Shows the current main temperature of the oil. To adjust the temperature, press and hold the button next to TEMP With the button held, press the plus or minus button to adjust the temperature. To adjust the offset, press and hold the button next to OFST With the button held, press the plus or minus button to adjust the offset.
T-11	BOTTOM TMP OFFSET ADJ	Shows the current temperature of the oil at the bottom probe. To adjust the temperature, press and hold the button next to TEMP With the button held, press the plus or minus button to adjust the temperature. To adjust the offset, press and hold the button next to OFST With the button held, press the plus or minus button to adjust the offset.
T-12	SPARE TMP OFFSET ADJ	Accesses a spare temperature probe input. To adjust the temperature, press and hold the button next to TEMP With the button held, press the plus or minus button to adjust the temperature. To adjust the offset, press and hold the button next to the OFST With the button held, press the plus or minus button to adjust the offset.
T-13	CPU° TEMP OFFSET ADJ	This displays the current CPU temperature offset. To adjust the temperature, press and hold the button next to Temp With the button held, press the plus or minus

Menu Item (Mode)	Display	Function
		button to adjust the temperature. To adjust the offset, press and hold the button next to OFST With the button held, press the plus or minus button to adjust the offset.
T-14	INPUTS-1	A H D S F P M shows in the middle display. A - Power Switch. H - High Limit. D- Drain Switch Jumper. S - Power Switch. F - Fan Switch Jumper. P - Not in use at this time. M - Not in use at this time. check - signal present. - signal not present.
T-15	INPUTS-2	24dc - 24 DC Supply. Pan - Filter Drain Pan. Lid - Lid Liner Pin. OK - lid pin is down (not under pressure). Flashing PR - lid pin is raised (under pressure) check - active. - inactive.
T-16	INPUTS-3	DTF, HDP, AFR show in the middle display. DTF - Discard Tank Full. check - Tank is full; cannot dispose oil to tank. HDP - High Dispose Pressure check - Dispose pumping caused high pressure. AFR - ATO Fill Request. check - Switch is asking to pump Bulk Supply Oil to refill the ATO tank.
T-17	PRESSURE INPUTS	This section shows the current psi of the lid. If OK is on the display, the lid is safe to open. Otherwise, PR; flashes showing lid is under pressure. The bottom display reads Lid Pin;. If OK is on the display, the lid pin is down. Other wise, PR flashes showing the pin is raised (under pressure).
T-17A	PUMPING PRESSURE	This section shows the current pumping pressure in psi.
T-18	OUTPUTS	Press the illuminated button next to the feature to test. Pri - Primary Contactor. Ht - Heat (regulating) Contactor. Pr - Pressure Solenoid. * - On. - - Off.
T-19	DRN VALVE	Be sure drain pan is in place before testing drain valve. This section tests the drain valve functions. ► - Shows next to the drain valve current state. Par - Partially open. Stp - Forced stop. Opn - Fully open. At - Where the drain valve stopped from 00-20. Max open position may be as high as 25 or 50. Cls - Fully closed.
T-20	SEL VALVE FWD/REV	This section tests the selector valve rotation position. Cst - Coast counts how much the motor coasts after being turned off (11 = typical). Stp - Stop the selector valve rotation. Fwd - Press to rotate the selector valve forward. Rev - Press to rotate the selector valve in reverse. Enc (encoder) - Shows the position count, 0 to

Menu Item (Mode)	Display	Function
		999. When running, top line shows time of each revolution.
T-21	SEL VALVE PORTS	This section tests the positioning of each port on the selector valve. P0 - At pot. P1 - At dispose (rear dispose) P2- At FDI (front dispose) Enc - Encoder position. FAIL - Selector valve does not function properly.
T-22	PUMPS	Press the illuminated button next to the function to start test * - On - - Off Fltr - Filter pump ATO- JIB pump (optional) Drn C - Drain valve (c - closed, o - open)
T-23	OPS/QPM SYSTEM ENABLED?	This section shows if the unit is equipped with a radio system. To change the option press the plus or minus button to select YES or NO
T-24	RADIO COM (Zigbee)	If the control is equipped with an OPS/QPM ZigBee radio module, and it has been enabled (step T-23 or SP-4), this test mode displays information received from the radio module via the wired connection. If the OPS System is disabled (see previous step), this step simply displays ZigBee IS -OFF-
T-25	ANALOG CHANNELS	This test mode is available to display the current low-level analog status of any of the analog inputs on the primary Analog to Digital converter chip inside the control.
T-26	HEAT CTRL	This test mode has very specialized and very limited use. It displays information about the heating algorithm and its performance, and can be useful when tuning the heating algorithm for a brand new fryer type.
T-27	ALLOW LID OPEN	n/a
T-28	LID LINER PIN -MUST-ACTUATE	n/a
T-29	AFTER COOK, PRESSURE STUCK ON GIVES ERROR	n/a
T-30	AUTO-CYCLE PRESSURE SOLENOID?	n/a
T-31	BLOCKED DRAIN AUTO-REV RETRIES	The control gets a feedback signal from the motorized drain valve when it is at the fully open and fully closed positions. If the control is commanding the drain valve to close, but it doesn't see the closed feedback signal within a reasonable time, it presumes that maybe a brush has been left in the open drain valve and that is

Menu Item (Mode)	Display	Function
		preventing the valve from closing. In response, the control automatically opens the drain valve back up, sounds a sequence of fast beeps, and displays Drain Blocked for a few seconds, giving the user time to remove the brush. After a short delay, the control automatically tries to close the drain valve again.
T-32	ATO DELTA: -FULL-	The auto-topoff (ATO) oil level detection system monitors the temperature difference between the main probe (just above the heating elements) and the level probe (located at the desired oil fill level). In static, non-cooking situations, the level probe, high in the pot, is generally cooler than the main probe, even when the pot is properly filled and both probes are immersed in the oil (the oil at the top of the pot radiates a lot of its heat, and conducts heat away, into the air).
T-33	ATO DELTA: -LOW-	The auto-topoff (ATO) oil level detection system monitors the temperature difference between the main probe (just above the heating elements) and the level probe (located at the desired oil fill level). In static non-cooking situations, the level probe high in the pot is generally cooler than the main probe even when the pot is properly filled and both are immersed in the oil.
T-34	QUICK FLTR: FILL TO LVL PROBE - TEMP RISE	When refilling the pot after a filter operation, the control monitors the upper temperature probe (the level probe, at the oil fill line) and looks for a temperature rise there that indicates the oil has refilled high enough to reach or splash on that probe.
T-35	DAILY+POL: FILL TO LVL PROBE - TEMP RISE	When refilling the pot after a filter operation, the control monitors the upper temperature probe (the level probe, at the oil fill line) and looks for a temperature rise there that indicates the oil has refilled high enough to reach or splash on that probe.
T-36	ANY FILL: LVL PROBE MIN DETECT	How the control monitors the level probe for a temperature rise when refilling the pot is described in the details of step T-34. This T-36 parameter specifies a minimum reasonable filling time for that temperature rise to be trusted.
T-37	CHANGE TECH CODE	The default Tech Mode password can be changed by the user. This password is used for entry to Tech Mode and Stats Mode. It is recommended that this password not be changed except under extreme circumstances, as a service technician visiting the store to service the

Menu Item (Mode)	Display	Function
		fryer would probably not know the new password and would not be able to access Tech Mode.
T-38	TOTAL INIT	Press and hold the button next to hold on the display to initialize the control board.
T-40	PROTECTION PROBE	Manually turn on the protection probe feature. Must upgrade software to v1.60 to use this feature. For software v1.60 and after, the control auto-detects whether the probe is connected when the fryer enters the melt cycle for the first time and sees the probe 50°F hotter than the main temp probe.

Chapter 3 Troubleshooting

3.1 Troubleshooting Guide

NOTICE

:

More detailed troubleshooting information is available in the Technical Manual, available at www. hennypenny. com, or 1-800-417-8405 or 1-937-456-8405.

Table 3-1 Troubleshooting Guide

Problem	Cause	Correction
Power switch is on but the fryer is completely inoperative.	Open circuit.	• Fryer plugged in. • Check breaker or fuse at wall. • Check circuit breakers between control panel and ATO tank.
Oil not heating.	High temperature limit tripped.	Reset high temperature limit. Refer to 3.1 Operating Components in the Operator's Manual.
Foaming or boiling over.	Some customers choose not to use oil stabilizers which can cause foaming and boil-over.	Product with excessive ice crystals should be dipped once quickly then removed from the fryer to allow ice crystals to melt and excessive water to evaporate. Then place the product back into the fryer and cook normally.
	See boil-over chart on fryer and Boil-Over Prevention section of Operator's Manual.	Refer to 2.7 Boil-Over Prevention in the Operator's Manual.
Oil not draining.	Drain valve clogged.	Push cleaning rod through open drain valve.
Filter motor won't run.	Motor overheated.	Reset motor. Refer to Filter Pump Motor Protector - Manual Reset section of Operator's Manual.

3.2 Error Codes

In the event of a system failure the control board displays an error message. These messages are coded as E which represents an error, a number designation and error message, such as E-4 CPU TO HOT. Also, a constant tone sounds. To silence the tone, press any of the product buttons. Use the following table to interpret and correct an error code.

Table 3-2 Error Codes

Error	Cause	Correction
E-1 LOW OIL IN POT	The top heating element where the probe is located is getting hotter than it would if the element were submerged in oil.	If the Protection Probe monitoring function determines that the oil level is too low—below the main probe—it generates an E-1 error code and displays the message LOW OIL IN POT!, CHECK OIL LEVEL.
E-4 CPU TOO HOT	Control board overheating.	Turn the switch to off position, then turn the switch back to on. if E-4 continues to display, the board is getting too hot. Check for signs of overheating behind the control panel. Once the panel cools down the controls should return to normal operation. If the E-4 error persists, replace the control.
E-5 OIL TOO HOT	Oil overheating.	Turn the switch to off position, then turn the switch back to on. If E-5 continues to display, the heating circuits and temperature probe should be checked. Once the unit cools down, the controls should return to normal operation. If the E-5 error persists, replace the control.
E-6A MAIN TEMP PROBE FAILED (Open Circuit)	Temperature probe failure.	Turn the switch to off position, then turn the switch back to on. If E-6 continues to display, the temperature probe should be checked. Once the temperature probe is repaired, or replaced, the controls should return to normal operation. If the E-6 error persists, replace the control.
E-6B MAIN TEMP PROBE FAILED (Shorted)		
E-10	High limit tripped (Software prior to version 1.60).	Check the error log to find out the vat temperature at the time the high limit tripped. If this temperature was very low, this may be a sign that the vat was turned on with low or no oil. If this was the case, fill the pot with oil and reset the high limit. If the trip temperature was several degrees above the oil setpoint temperature, test for a sticking contactor and replace if faulty. If the high limit tripped at an oil temperature, inspect the high

Error	Cause	Correction
		limit thermocouples for carbon build up and clean if necessary. If no carbon found, see 1.8 *High Limit and Module Inspection*, page 9and 5.6 *High Limit Thermocouples Replacement*, page 51. TRAINING:E-10 Error explanation.
E-10A HIGH LIMIT TRIPPED	High limit tripped while vat main probe temperature was at or above 300°F.	Check the error log to find out the vat temperature at the time the high limit tripped. If this was several degrees above the oil setpoint temperature, test for a sticking contactor and replace if faulty. If the trip temperature was near the oil setpoint temperature, inspect the high limit thermocouples for carbon build up and clean if necessary. If no carbon found, see 1.8 *High Limit and Module Inspection*, page 9and 5.6 *High Limit Thermocouples Replacement*, page 51.
E-10B HIGH LIMIT TRIPPED	High limit tripped while vat main probe temperature was below 300°F.	Check the error log to find out the vat temperature at the time the high limit tripped. If this temperature was very low, this may be a sign that the vat was turned on with low or no oil. If this was the case, fill the pot with oil and reset the high limit. If the high limit tripped at a higher temperature, inspect the high limit thermocouples for carbon build up and clean if necessary. If no carbon found, see 1.8 *High Limit and Module Inspection*, page 9and 5.6 *High Limit Thermocouples Replacement*, page 51.
E-10C HIGH LIMIT TRIPPED	High limit tripped while cooking (Not simply in cook mode, but with cook cycle running).	Check the error log to find out the vat temperature at the time the high limit tripped. If this was several degrees above the oil setpoint temperature, test for a sticking contactor and replace if faulty. If the trip temperature was near the oil setpoint temperature, inspect the high limit thermocouples for carbon build up and clean if necessary. If no carbon found, see 1.8 *High Limit and Module Inspection*, page 9and 5.6 *High Limit Thermocouples Replacement*, page 51.
E-10D HIGH LIMIT TRIPPED	High limit tripped less than 5 minutes after fryer was performing an Auto-Filter or Quick Filter and the control	Check the error log to find out the vat temperature at the time the high limit tripped. If this was several degrees above the oil setpoint temperature, test for a sticking contactor and replace if faulty. If the trip temperature was near the oil setpoint temperature, inspect the high limit thermocouples for carbon build up and

Error	Cause	Correction
	returned to cook mode on its own after detecting that the oil was pumped up (based on temperature rise on level probe).	clean if necessary. If no carbon found, see 1.8 *High Limit and Module Inspection*, page 9and 5.6 *High Limit Thermocouples Replacement*, page 51.
E-10F HIGH LIMIT TRIPPED	High limit tripped while filtering (including Auto-Filter, Daily Filter, Polish, Dispose, Drain to Pan, Fill from Pan, etc.).	Check the error log to find out the vat temperature at the time the high limit tripped. If this was several degrees above the oil setpoint temperature, test for a sticking contactor and replace if faulty. If the trip temperature was near the oil setpoint temperature, inspect the high limit thermocouples for carbon build up and clean if necessary. If no carbon found, see 1.8 *High Limit and Module Inspection*, page 9and 5.6 *High Limit Thermocouples Replacement*, page 51.
E-10M HIGH LIMIT TRIPPED	High limit tripped while fryer was in Melt Mode.	Check the error log to find out the vat temperature at the time the high limit tripped. If this temperature was very low, this may be a sign that the vat was turned on with low or no oil. If this was the case, fill the pot with oil and reset the high limit. If the high limit tripped at a higher temperature, inspect the high limit thermocouples for carbon build up and clean if necessary. If no carbon found, see 1.8 *High Limit and Module Inspection*, page 9and 5.6 *High Limit Thermocouples Replacement*, page 51.
E-10S HIGH LIMIT TRIPPED	High limit tripped while vat was in Start-up Mode (not including Melt mode), but not while it was executing one of the filter operations.	Check the error log to find out the vat temperature at the time the high limit tripped. If this temperature was very low, this may be a sign that the vat was turned on with low or no oil. If this was the case, fill the pot with oil and reset the high limit. If the high limit tripped at a higher temperature, inspect the high limit thermocouples for carbon build up and clean if necessary. If no carbon found, see 1.8 *High Limit and Module Inspection*, page 9and 5.6 *High Limit Thermocouples Replacement*, page 51.
E-10Y HIGH	High limit tripped less than 5 minutes after user responded	Check the error log to find out the vat temperature at the time the high limit tripped. If this temperature was very low, this may be a sign that the vat was turned on

Error	Cause	Correction
LIMIT TRIPPED	YES to, Is Pot Filled? question.	with low or no oil. If this was the case, fill the pot with oil and reset the high limit. If the high limit tripped at a higher temperature, inspect the high limit thermocouples for carbon build up and clean if necessary. If no carbon found, see 1.8 *High Limit and Module Inspection*, page 9and 5.6 *High Limit Thermocouples Replacement*, page 51.
E-15C DRAIN VALVE ERROR	The control energized the drain valve to close it, and waited a reasonable amount of time, but didn't see the expected feedback signal that would have confirmed that the drain valve was fully closed.	Check the drain valve for obstruction. Carefully remove any obstruction found. If no obstruction, check to make sure both connections to the drain valve are plugged in securely. If connections are secure, operate the drain valve using the drain valve test in tech mode. If no drain valve movement, test to make sure the drain valve is getting 24 VDC from control board when testing both directions (open and closed) from connector P9 pins 3 & 4. If voltage is present and no movement, replace drain valve motor. If no DC voltage, replace control board.
E-15P DRAIN VALVE ERROR	The control energized the drain valve to open it, and waited a reasonable amount of time, but didn't see the expected feedback. signal that would have confirmed that the drain valve was fully open.	Check to make sure both connections to the drain valve are plugged in securely. If connections are secure, operate the drain valve using the drain valve test in tech mode. If no drain valve movement, test to make sure the drain valve is getting 24 VDC from control board when testing both directions (open and closed) from connector P9 pins 3 and 4. If voltage is present and no movement, replace drain valve motor. If no DC voltage, replace control board.
E-18A LEVEL SENSOR FAILED (Open Circuit)	The oil level probe has failed.	• Press "" button to keep using the fryer. Error repeats every four hours until fixed. • If circuit is open, check connection. • Replace probe.
E-18B LEVEL SENSOR		

Error	Cause	Correction
FAILED (Shorted)		
E-19 PROTECTION PROBE FAILED	A setting in Tech Mode (T-40) specifies whether or not the fryer is equipped with a protection probe system. If the T-40 option is set to YES, and the control does not detect a valid reading on the protection probe input, an E-19 error is generated.	Replace the protection probe. Once the error code is acknowledged, the E-19 message goes away and normal operation resumes without the benefit of the protection probe feature. If the protection probe input is in a continuously failed state, the E-19 error repeats every 4 hours. If this E-19 error occurs in a fryer that does not have and is not supposed to have a protection probe installed, access Tech Mode and change the T-40 option to NO.
E-41P-1-LOST	System data lost. Both the RAM copy and stored copy of the settings have been lost. Settings are reset to default.	Replace control board if occurs repeatedly.
E-41 SYSTEM DATA LOST	System data lost. Both the RAM copy and stored copy of the settings have been lost. Settings are reset to default.	Replace control board if occurs repeatedly.
E-46C INTERNAL SD MEM ERR	Issue with microSD chip.	Check to ensure chip is not ejected from slot.
E-46W DATA SAVE FAILED	Unable to communicate and save data to the microSD chip.	Replace control board if occurs repeatedly.
	Corrupt file.	
E-47 ANALOG SYSTEM OR	Problem reading the A-to-D Analog to	• Check 12 VDC and 5 VDC analog power supplies • Unplug pressure transducer at back of control.

Error	Cause	Correction
12 VOLT FAILED	Digital converter inputs.	• Unplug filter pump relay at back of control. • Replace control board.
E-48 INPUT SYSTEM ERROR	Failure of the CPU board.	Replace control board.
E-54C MAIN TEMP CIRCUIT FAILURE	Fault on the CPU board.	• Initialize the CPU board. • Replace control board
E-54D MAIN TEMP DSC ERROR	Fault on the CPU board.	• Initialize the CPU board. • Replace control board
E-70A FAN JUMP MISSING	Jumper wire is loose or missing from 15 pin connector.	Check connector for loose connection.
E-70B PWR SWITCH OR WIRES FAILED”	Short in wires/ loose connection.	Check connections of all four wires on the power switch
	Power switch may be faulty.	Replace power switch.
E-70C DRN JUMPER MISSING	Loose connection on the 15 pin connector.	Check connection.
E-82 SELECTOR VALVE FAILURE	The selector valve failed calibration or not responding.	• Check motor, encoder or wiring. • If unit is not equipped with a selector valve and gives this error: check settings in to confirm settings are correct.
E-93 24V DC SUPPLY	2nd transformer disconnected from control.	• Check transformer plug on back of control. • Check wire connections on 2nd transformer.

Error	Cause	Correction
	Short in drain motor or selector valve motor.	Test motors.

Chapter 4 Software Updates

TRAINING: Watch a short video explaining software updates.

Periodically the software is updated with enhancements, menu changes or must be reloaded such as when a control board is replaced or updated with a newer model control. Use the following procedures to reload the software.

4.1 Software Updates

4.1.1 Control Board Updates

The control board is operated by an onboard Micro SD card, which is loaded with HP software during the factory programming process and/or installation; it occasionally requires an update. The software on a control board must be loaded from a USB drive. The file type used for loading software is an .hpf (Henny Penny Flash) file. All .hpf files are encrypted and are checksum protected, in order to prevent accidental or malicious changes to the official HP software. In addition, the boot-loader program on the control board allows selection of only the .hpf files that are designed for that specific unit's control assembly. This prevents accidental loading of say a holding cabinet in to a pressure fryer control, or similar mistake.

4.1.1.1 USB Port Overview

WARNING **Disconnect the power or electrical shock may occur. Lowering the control board exposes the technician to 240 VAC electricity inside the fryer.**

The external USB port on the front of the unit is connected to an internal USB port on the control board with a short wiring harness. If the external USB port fails, access and use the internal USB port by lowering the control board from the unit to gain access to the internal USB port. Refer to 5.4 *USB Port Replacement*, page 43.

4.1.1.2 SanDisk USB Flash Drive

NOTE: It is recommended that before performing a service call, technicians check for and download the latest version of the software, and then update the unit while on site. Updated versions contain the latest customer requested features and fixes.

Two SanDisk brand USB flash drives with plastic tips, 2 to 8 GB of storage space and formatted with FAT 32 are shipping with each unit. One is zip tied externally to the front of the unit and the second internally to the back of the control board. Each contains the most current version .hpf file for the unit based on ship date. If the customer's USB drives are missing or outdated, refer to 4.1.1.3 *Version Updates*, page 38.

4.1.1.3 Version Updates

Current versions of the software are maintained on the HP Extranet by unit model and software version. Because the customer's on site USB flash drive may be outdated. Download the newest version of the software to an approved plastic tipped USB flash drive before performing a service call. Refer to 4.1.1.2 *SanDisk USB Flash Drive*, page 37and 4.1.1.3.1 *Access the Extranet*, page 38to download the most current version of software.

4.1.1.3.1 Access the Extranet

NOTE: Add the Extranet to the Favorite list in the browser of the laptop for ease of future access.

The better the quality of ISP service the quicker the access to the Extranet. Always use a non-public, secure connection to the Extranet to prevent non-authorized access. Access the HP Extranet by doing the following:

1) From a Internet connected laptop, navigate to MyHennyPenny.
2) Scroll down to the **Quick Links** on the right side of the page. The Extranet-Distributor Network link displays.
3) Click the **Extranet-Distributor Network** link. Wait, a login displays.
4) Type your HP assigned e-mail address in the **Email address** text box and then your user defined password in the **Password** text box.
5) Click the **LOGIN** button. The HP Extranet home page displays.

4.1.1.3.2 Locate and Download the Latest Version of Software

NOTE: Always select the latest version of software from the list unless directed otherwise by HP Technical Support.

Download the latest .hpf software by doing the following:

1) In the upper right corner of the HP Extranet home page, type **Software Update** in the search box, and then press **Enter**. All Documents displays in the left navigation bar.
2) Click the **Software Update** link from the All Document menu list. A list of updates displays in the center navigation bar.
3) Scroll through the list and locate the latest .hpf file and then click on the associated **READ MORE>** link. A pop-up window displays asking if you want to save the file. If not, ensure pop-up blockers are disabled.

NOTE: Optionally download the file by right-clicking the READ MORE> link and selecting the Save Target As option.

4) Click **Save** and save the file to the laptop using the default file name.

NOTE: Do not change the file name, it is used during the reflashing process and to differentiate customer specific information.

5) Move the file to an approved plastic tipped USB flash drive. Refer to 4.1.1.2 *SanDisk USB Flash Drive*, page 37.

4.1.1.4 Loading the Software

NOTE: E-41 (data lost) and other errors are common.

The control board is operated by an onboard Micro SD card loaded with HP software during the factory programming process or installation. The software can be reloaded from a plastic tipped USB flash drive. Perform a software reload by doing the following:

1) Begin with the control in -OFF- mode, and the filter drain pan in place.
2) Insert the USB flash drive in to the external USB port on the control board.
3) Press and hold the **Main Menu** button until *MAIN* displays. Refer to .
4) Select **3. USB/DATA** from the Main Menu. Additional menus display. Refer to .
5) Select **USB Menu page 2**. Additional menus display.
6) Select **4. REFLASH SW**. Additional menus display.
7) Select **1. Update**. Files display.
8) Locate and select the **.hpf** file. Are You Sure displays.
9) Select **Y**.
10) Wait. The control saves a copy of the current software, erases program memory, flashes in new software, and then reboots back to -OFF-.
11) Remove the USB drive.

4.2 Download a Report

Use the following procedure to download a report.

1) Begin with the control in -OFF- mode, and the filter drain pan in place.
2) Insert the USB flash drive in to the external USB port on the control board.
3) Press and hold the **Main Menu** button until *MAIN* displays. Refer to .
4) Select **3. USB/DATA** from the Main Menu. Additional menus display. Refer to .
5) Select **1. REPORTS**. Additional menus display.
6) Select **Print Report**. Additional menus display.
7) Select **Print**. Once the print process is complete, REMOVE USB displays.
8) Select **REMOVE USB**.
9) Wait. OK to Remove displays.
10) Remove the USB drive.
11) Select **X**. -OFF- mode displays.

Chapter 5 Repair and Replacement Procedures

This section provides checkout and replacement procedures, for various parts of the fryer.

5.1 Maintenance Hints

WARNING **Do not move the fryer with hot oil in the vat or filter pan. Severe burns can result from splashing hot oil.**

NOTICE

:

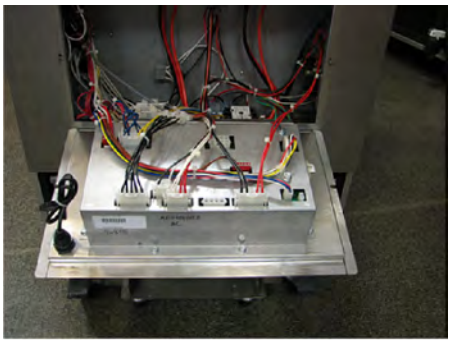
A multimeter can help you to check the electric components:

- When the manual refers to the circuit being closed, the multimeter should read zero unless otherwise noted.
- When the manual refers to the circuit being open, the multimeter should read infinity.

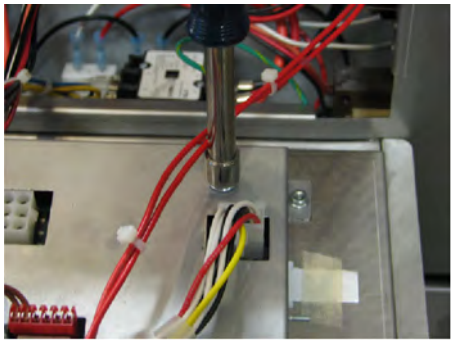
5.2 Control Board Replacement

WARNING **Disconnect the power or electrical shock may occur. Lowering the control board exposes the technician to 240 VAC electricity inside the fryer.**

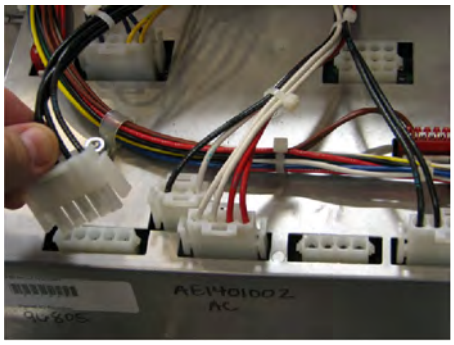
1. Use the Phillips head screwdriver to remove the two screws securing the control board to the front shroud.
2. Press in on the bottom of the board, and rotate the panel down until it rests on the shroud.



3. Disconnect all the connectors on the back of the control board.



4. Use a 3/8 inch nut-driver or socket and remove the nut securing the ground wire to the control board.
5. Remove old control board.



6. Place new control board on to the unit with the tab inserted in to the slot. Let the control board rest on the shroud.
7. Use a 3/8 inch nut-driver or socket and reconnect the nut securing the ground wire to the control board.
8. Reconnect all the connectors on the back of the control board.
9. Use the Phillips head screwdriver to reinstall the two screws securing the control board to the front shroud.

5.3 Power Switch Replacement

WARNING **Disconnect the power or electrical shock may occur. Lowering the control board exposes the technician to 240 VAC electricity inside the fryer.**

1. Perform the removal procedure from *5.2 Control Board Replacement*, page 41.
2. Use a flat-blade screwdriver to press down on the locking tabs.
3. Pull the old switch out of the shroud, and then disconnect the wires.
4. Attach the wires to the new switch, and then slide new power switch into the shroud.
5. Perform the installation procedure from *5.2 Control Board Replacement*, page 41.
6. Test the operation.

5.4 USB Port Replacement

The USB port is typically replaced after a software update fails with the assumption the port is bad. There are multiple failure points in the circuit that can cause the update process to fail. Before replacing the external USB port attempt a software update using the internal USB port located on the control board. A short jumper wire connects the external USB port to the internal USB port, ensure it's connected and intact. Corrupted, out of date or incorrect versions of the files on the USB drive can also cause an update failure.

1. Remove the USB cover cap.
2. Use an adjustable wrench to remove the locking nut.
3. Perform the removal procedure from *5.2 Control Board Replacement*, page 41.

4. Disconnect the USB plug from the receiver on the back of the control board.
5. Remove the old USB port assembly from the hole in the control board.
6. Install the new USB port assembly in the hole in the control board.
7. Use one adjustable wrench to hold the USB port in place while using another adjustable wrench to tighten the locking nut.
8. Reconnect the USB plug on to the receiver on the back of the control board.
5. Perform the installation procedure from 5.2 *Control Board Replacement*, page 41.

5.5 Nylatron Vertical Strip Replacement Procedure

WARNING

- **Objects can fall and splash hot oil or hot water while performing this procedure. Cover the vat with a sheet pan or drain the vat and allow to cool otherwise serious burns may result.**
- **Lid may be hot. Allow lid to cool before performing this procedure, or burns may result.**
- **The carrier may be hot. Allow carrier to cool to prevent personal injury.**

NOTICE: **Snug the 2 counterweight securing bolts to the rear of the unit but do not overtighten or risk stripping out the bolt holes.**

5.5.1 Estimated Resource and Time

Estimated resource and time to completion is: 1 Technician, 1.5 hour.

5.5.2 Required Tools

Table 5-1 Required Tools

					
Electric Drill w/ #2 Cross-tip Bit	3/8" Nut Driver or Socket	1/4" Hex Wrench	3/8" Socket	Extension	Ratchet

Table 5-2 Required Tools

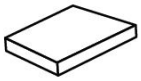
					
7/8" and 7/16" Wrench	#2 Cross-tip Screwdriver	Flat-Blade Screwdriver	Wire Cutter	Wire Crimper	Two 4 in x 4 in x 12 in (100 mm x 100 mm x 300 mm) solid blocks

Table 5-3 Required Tools

		
Food Grade Foaming Degreaser	Putty Knife	Dielectric Grease

5.5.3 Kit Parts

NOTE: The spade connectors are only used on the pressure model fryer (PXE 100) to reconnect the lid's pressure switch wiring.

The kit contains all the necessary components to complete the task outlined in this document. If replacement parts are required due to damage or loss, technicians must order another 175727 kit. Single Nylatron slides are not offered individually for Velocity fryers. The kit includes:

Table 5-4 Kit Parts

		
x2) Nylatron Filler Strips	**x2) Bolts**	**x3) Connectors (PXE 100 Only)**

5.5.4 Technician Training

Watch the following video before replacing the Nylatron vertical filler strip (slides).

TRAINING VIDEO:

Scan me

- Use this video to ramp-up on the procedure: https://vimeo.com/332593461/0ffcfa8add.

5.5.5 Remove the Counterweights and Secure Carriage Assembly

DANGER **The lid and counterbalance weight carriage assembly moves with force and can cause injury. Secure the weight carriage to the rear of the unit with securing bolts to prevent injury.**

NOTE: Navigate to training video timestamp 00:15 - 01:48 for procedures specific to this step.

The counterweight assembly is attached to one end of the Nylatron vertical filler strips and must be detached by doing the following:

1) Using a #2 cross-tip screwdriver or electric drill with bit, remove 4 pan head screws from the top access panel and then remove the panel. Do not remove the deadweight valve or the safety relief valve.
2) Using a 3/8 in nut driver, remove 6 locking flange nuts from the rear access panel and then remove the panel. The weight carriage assembly is visible.
3) Raise the lid assembly to its full height.

4) Remove the lid rack carrier.

5) Using a large flat head screwdriver or pry bar, separate and remove three individual weights from the top of the counterbalance weight carriage assembly to lighten the assembly.

6) Close the lid, engaging the front lid hold down.

7) Engage the lid handle by pulling forward on the handle until the lid handle rollers are firmly inside the locking slots.

8) Push down on the handle ensuring both cams (sides) are engaged in the locking slots.

9) Insert 2 bolts from kit through the upper left and right corners of the counterbalance weight carriage assembly and snug using 1/4 in hex wrench.

   NOTE: The counterbalance weight carriage assembly can be moved to align the 2 counterweight securing bolts with the holes in rear of the unit as required.

10) **PXE 100 Only**: Using a 3/8 in socket and ratchet, remove the p-clip holding the condensate line to the back of the front panel.

    NOTE: The front panel is restricted from removal if the p-clip is not removed.

11) Using a 7/16 in open-end wrench remove the two bolts holding the Nylatron strips to the weight carriage.

5.5.6 Remove the Tilt Stop

NOTE: Navigate to training video timestamp 02:30 - 02:36 for procedures specific to this step.

The tilt stop, also referred to as the lid kickstand, must be removed so the front shroud can be removed. Remove the lid tilt stop by doing the following:

1) Remove the lid tilt stop inner retaining c-clip.

2) Remove the lid tilt stop assembly by pulling the rod out of the outer side of the lid's left lifting arm.

3) Lay the lid tilt stop assembly aside to a safe and protected space.

5.5.7 Remove the Retaining Rod

NOTE: Navigate to training video timestamp 03:05 - 04:04 for procedures specific to this step.

The lid arms must be disconnected from the lid so the front shroud can be fully removed. Remove the lid by doing the following:

1) Disengage the lid handle by lifting up on the handle, and then pushing back.

2) Obtain two 4 in x 4 in x 12 in (100 mm x 100 mm x 300 mm) solid blocks.

3) Disengage the front lid hold down, lift the front of the lid up, and then prop up the lid with a block of wood. Force on the lid retaining rod is relieved.

4) Remove a c-clip and washer from one side (left or right) of the retaining rod.

5) Remove both inner left and right c-clips from the inner left and right lid grooves.

6) Slide the retaining rod out from the lid's arms and the lid lifting arms. Two washers fall off the retaining rod.

7) Retrieve the two washers and save for reassembly.

5.5.8 Remove the Front Shroud

NOTE: Navigate to training video timestamp 04:05 - 04:30.

Lift and pull forward the top, front shroud to remove. Remove the front shroud to access the Nylatron filler strip channels on the inside by doing the following:

1) Using a #2 cross-tip screwdriver or electric drill with bit, remove 4 pan head screws from the sides of the front shroud.

2) Raise the lift arm up and pull the front shroud clear from the arms and wire by doing the following:

   A. Press the safety lock wiring against the lid's left lifting arm. This is necessary to provide clearance for the front shroud removal.

   B. Lean the front shroud toward the front of the fryer and pull forward until it is free of the lid's lifting arms, and then lift up at an angle to remove.

5.5.9 Clean the Nylatron Filler Strip Channels

NOTE: Navigate to training video timestamp 04:31 - 04:52.

Over time the Nylatron filler strip channels fill with debris and add friction and wear to the movement of the Nylatron vertical filler strips. Clean the Nylatron strip channels by doing the following:

1) Remove the Nylatron vertical filler strips from the channel and discard.

2) Clean the channels using food grade foaming degreaser and a putty knife until clean.

5.5.10 Install the New Nylatron Filler Strip

NOTE: Navigate to training video timestamp 04:53 - 05:54.

Once both Nylatron filler strip channels are clean, start the reassembly process by installing the Nylatron vertical filler strips and front shroud by doing the following:

1) Insert new Nylatron vertical filler strips in to each of the strip channels with the bolt hole that attaches to the counterweight positioned toward the top of the fryer.

2) Using an electric drill with a #2 cross-tip bit or a #2 cross-tip screwdriver, remove the 5 pan head screws, and then the center access panel.

3) Align the two rectangular shaped holes in the Nylatron vertical filler strips, over both of the lid's lifting arms and carefully guide the bottom and then the top of the shroud in to place.

4) Gently guide the safety lock wiring through the front shroud opening next to the left lifting arm.

5) Ensure the lower lip slides into the retention channel.

5.5.11 Reconnect the Retaining Rod

NOTE: Navigate to training video timestamp 05:55 - 06:32.

Reattach the lid lift arms to the lid by doing the following:

1) Pull the lid forward to allow the lid lifting arms to clear the lid arms.
2) Apply downward pressure on the lid's lifting arms and align the holes in the lid's arms with the holes in the lid's arms.
3) Install 1 c-clip and washer on one end of the retaining rod. The c-clip is on the outside.
4) Slide the opposite end of the retaining rod through the lid's left arm and lifting arm mounting holes.
5) Stop, install 2 washers on the end of the retaining rod, and then push the retaining rod through the lid's right arm and lifting arm mounting holes.
6) Using a nut driver install a washer and c-clip on the end of the retaining rod. The c-clip is installed on the outside of the washer.
7) Push the two inner washers against the inside of the lid's lifting arms.
8) Using a nut driver install 2 inner c-clips in to the retaining rod's retaining grooves.

5.5.12 Install the Tilt Stop

WARNING **Install as instructed, or the lid can fall with force causing serious personal injury.**

NOTE: Navigate to training video timestamp 06:33 - 06:41.

Install the lid tilt stop, and then test by doing the following:

1) Ensure the tilt stop is clean prior to installation.
2) Insert the lid tilt stop assembly's retaining rod through the outside of the lid's left lifting arm, tilt stop hole.
3) Install the inner retaining C-Clip.
4) Test the tilt stop by doing the following:

   A. Pull on the tilt stop to ensure the C-clip is fully seated.

   B. Raise the lid to 45 degrees and setting the tilt stop in to place, then lower. Repeat several times to ensure the tilt stop does not bind or fail.

5.5.13 Install the Cover Panels

NOTE: Navigate to training video timestamp 07:43 - 08:55.

Install all the cover panels by doing the following:

1) Ensure the weight carriage lift cables are aligned properly over the pulleys.

2) Remove the solid blocks (lid props), and then lower and lock the lid.
3) Replace the lid's sheet metal cover by aligning the cover's two front pins with the mounting holes in the front of the lower cast lid.
4) Tilt the sheet metal cover down in to place, aligning the rear screw holes.
5) Using a #2 cross-tip screwdriver, install 3 pan head screws, along the back, securing the sheet metal cover to the lower cast lid.
6) Using an electric drill with a #2 cross-tip bit or a #2 cross-tip screwdriver, install 5 pan head screws to secure the center access panel.
7) Using an electric drill with a #2 cross-tip bit or a #2 cross-tip screwdriver, install 4 pan head screws to secure the sides of the front panel.
8) **PXE 100 Only**: Using a 3/8 in socket and ratchet, install the p-clip holding the condensate line to the back of the front panel.
9) Remove the 2 bolts from the upper left and right corners of the counterbalance weight carriage assembly.
10) Install the counterweights into the counterbalance weight carriage assembly.
11) Using a 7/8 in open end wrench and 2 bolts with lock and flat washers, attach the bolt hole end of the Nylatron vertical filler strips to the counterbalance weight carriage assembly.
12) Using a 3/8 in nut driver, install 6 locking flange nuts to secure the rear panel to the mounting studs and torque snug.
13) Place the top access panel over the side panels, ensuring the safety relief valve assembly is not pinched or hindered.
14) Using an electric drill with a #2 cross-tip bit or a #2 cross-tip screwdriver, install 4 pan head screws to secure the top access panel.
15) Ensure the safety relief valve is not pinched or hindered.

5.5.14 Test the Nylatron Strips

Move the lid up and down several times to ensure the Nylatron filler strip moves freely in the channel and in synchronization with the counterbalance weight carriage assembly.

- If the Nylatron filler strip moves freely, continue at .
- If the Nylatron filler strip does not move freely, diagnose and correct before continuing.

5.5.15 Install the Rack Carrier

NOTE: Navigate to training video timestamp 08:58.

1) Reinstall the rack carrier onto the lid rails.
2) Continue to .

5.6 High Limit Thermocouples Replacement

5.6.1 Troubleshooting

An ohm reading can be taken of the protection probe from the P3 connector pins 7&8 on the rear of the board. The values follow our standard RTD 1000 chart we use for all other Henny Penny RTDs.

The Protection probe can be viewed by entering Info mode and scrolling to Temps. Once in temps, the lower right selection button is blinking. Press, and the protection probe displays rather than the Bot display. The displayed temp should be quite a bit higher than the main temp probe. If 999 displays, it indicates an open probe.

Before pressing the lower right button	After pressing the lower right button
<= TEMPS => Main Lvl Bot 348° 331° 287°	<= TEMPS => Main Lvl PPrb 348° 331° 462°

5.6.2 Replacement

WARNING **Disconnect the power or electrical shock may occur. Lowering the control board exposes the technician to 240 VAC electricity inside the fryer.**

NOTE:

The E-1 - “Low Oil In Pot” error code triggers if the protection probe is around 280° F (approximate) hotter than the main temperature probe. If this happens, the heat shuts off for 20 seconds to wait for the heat to dissipate from the element. If the element remains hotter than the temperature probe after this time, the control triggers an E-1 error. This error would trigger in the place of a high limit trip if the fryer is turned on with no oil in the pot as the element would be substantially hotter than the main temp probe and the heat would not dissipate into the oil. Troubleshooting a nuisance E-1, check oil level is at the fill mark, make sure the store is performing a clean out procedure. An E-1 can occur with carbon build up and breading build up just like with nuisance high limit trips.

1. Lift the carrier, tilt back and lock in to place.
2. Use a Phillips head screwdriver to loosen the heating element spreaders.
3. Use a Phillips head bit to remove the screws from the left-hand (from the front of the unit) side panel.
4. Remove the side panel and set aside.
5. Use a 1/2 inch wrench to loosen the compression fitting.
6. Pull the thermocouple from the fitting.
7. Lower the control board by performing the removal procedure from 5.2 *Control Board Replacement*, page 41.
8. Trace wires to the high limit modules on the sidewall of the control board area.
9. Remove the wires from high limit module.
10. Use a 1/2 inch wrench to remove fitting from the vat wall.
11. Obtain the new thermocouple and fitting.
12. Apply thread sealant to the fitting and thread into the vat wall. Tighten with a 1/2 inch wrench.
13. Insert the new thermocouple into the compression fitting.

NOTE: The protection probe is only mounted to the top heating element. The new bracket makes sure the probe comes directly in contact with the element rather than the slight gap on the current thermocouple design.

14. Extend probe out from vat wall 4.5 inches and clamp to allow .125 inch of the probe to be exposed.
15. Use a 1/2 inch wrench to tighten the compression fitting onto the thermocouple.
16. Position heating element spreader next to clamp.
17. Use a Phillips head screwdriver to tighten the heating element spreader.
18. Connect the new thermocouple wires to the high limit module.

NOTE: The RTD plugs into the additional probe connection on the rear of the board. This plugs in to the P3 connector on the display CPU board.

19. Install the side panel, and then the control board by performing the installation procedure from 5.2 *Control Board Replacement*, page 41.

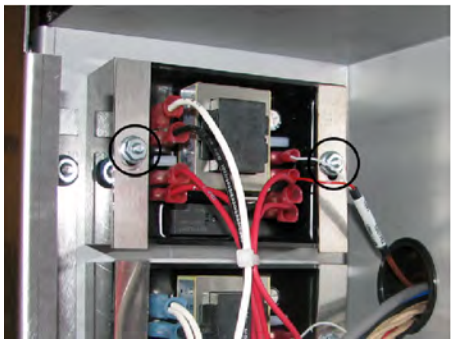
5.7 High Limit Module Replacement

WARNING **Disconnect the power or electrical shock may occur. Lowering the control board exposes the technician to 240 VAC electricity inside the fryer.**

NOTE:

- The upper module controls the lower thermocouple.
- The lower module controls the upper thermocouple.

1. Lower the control board by performing the removal procedure from 5.2 *Control Board Replacement*, page 41.
2. Locate the faulty high limit module on the left-hand (from the front) side wall.
3. Mark all the wire locations, and then disconnect all the wires.



5. Use a 3/8 inch socket or nut-driver to remove the nuts.
6. Remove the two metal lock strips, and then slide the old high limit module off of the mounting studs.
7. Slide the new high limit module on to the mounting studs, and then place the two metal lock strips onto the studs.
8. Secure in place with a 3/8 inch socket or nut-driver, and then reconnect the wires.
10. Install the control board by performing the installation procedure from 5.2 *Control Board Replacement*, page 41.

5.8 Primary Contactor Replacement

WARNING **Disconnect the power or electrical shock may occur. Lowering the control board exposes the technician to 240 VAC electricity inside the fryer.**

NOTICE :

Do not connect L1 & L2 to a circuit operating at more than 150 volts to ground (gnd) or component damage may result.

1. Lower the control board by performing the removal procedure from 5.2 *Control Board Replacement*, page 41.
2. Mark the location of the wires.
3. Use a Phillips head screwdriver to remove the:

a) L1, L2, and L3 wires from the contactor.

b) T1, T2, and T3 wires from the side of the contactor.

c) RS1 and RS2 yellow wires.

4. Use a 3/8 in. nut-driver to remove the nuts that secure the contactor to the shroud.
5. Lift up on the contactor and remove it from the studs.
6. Place the new contactor on to the studs, and then use a 3/8 in. nut-driver to secure in place.
7. Use a Phillips head screwdriver to install the:

a) RS1 and RS2 yellow wires.

b) T1, T2, and T3 wires to the side of the contactor.

c) L1, L2, and L3 wires to the contactor.

8. Install the control board by performing the installation procedure from 5.2 *Control Board Replacement*, page 41.

5.9 Heat Contactor Replacement

WARNING **Disconnect the power or electrical shock may occur. Lowering the control board exposes the technician to 240 VAC electricity inside the fryer.**

1. Lower the control board by performing the removal procedure from 5.2 *Control Board Replacement*, page 41.
2. Mark the location of the wires.
3. Use a Phillips head screwdriver to remove the:

a) A1 and A2 blue wires from the contactor.

b) 1L1, 3L2, and 5L3 wires from the side of the contactor.

c) 2T1, 4T2, and 6T3 wires from the side of the contactor.

4. Use a 3/8 in. nut-driver to remove the nuts that secure the contactor to the shroud.
5. Lift up on the contactor and remove it from the studs.
6. Place the new contactor on to the studs, and then use a 3/8 in. nut-driver to secure in place.
7. Use a Phillips head screwdriver to install the:

a) 2T1, 4T2, and 6T3 wires from the side of the contactor.

b) 1L1, 3L2, and 5L3 wires from the side of the contactor.

c) A1 and A2 blue wires from the contactor.

8. Install the control board by performing the installation procedure from 5.2 *Control Board Replacement*, page 41.

5.10 AIF Multi-Tab Transformer Replacement

WARNING **Disconnect the power or electrical shock may occur. Lowering the control board exposes the technician to 240 VAC electricity inside the fryer.**

1. Lower the control board by performing the removal procedure from 5.2 *Control Board Replacement*, page 41.
2. Mark the location of the wires, and then disconnect.
3. Use a 3/8 in. nut-driver to remove the nuts that secure the transformer to the shroud.
4. Lift up on the transformer and remove it from the studs.
5. Place the new transformer on to the studs, and then use a 3/8 in. nut-driver to secure in place.
6. Reconnect the wires.
7. Install the control board by performing the installation procedure from 5.2 *Control Board Replacement*, page 41.

5.11 Control Transformer Replacement

WARNING **Disconnect the power or electrical shock may occur. Lowering the control board exposes the technician to 240 VAC electricity inside the fryer.**

1. Lower the control board by performing the removal procedure from 5.2 *Control Board Replacement*, page 41.
2. Locate the 5-pin connector leading from the transformer, and then disconnect.

3. Use a 3/8 in. socket and extension to remove the nuts that secure the transformer to the shroud.
4. Lift up on the transformer and remove it from the studs.
5. Place the new transformer on to the studs, and then use a 3/8 in. socket and extension to secure in place.
6. Locate the 5-pin connector leads, and then connect.
7. Install the control board by performing the installation procedure from 5.2 *Control Board Replacement*, page 41.

5.12 Drain Valve and Actuator Replacement

WARNING **Burn Risk. Using PPE, remove hot oil from fryer before performing procedure or personal injury may occur.**

WARNING **Shock Risk. Remove power from fryer before performing procedure or personal injury may occur.**

TRAINING:

To replace either the drain valve or actuator or both, do the following:

5.12.1 Prepare the Fryer

1) Access the Filter Menu, refer to .
2) Drain oil from vat (frypot) in to the drain pan, and then remove the drain pan.
3) Close the drain valve, and then exit the menu.
4) With the drain valve closed, remove power from the fryer.
5) Remove the left-side panel.

5.12.2 Remove the Drain Valve Extension

1) Disconnect the drain valve harness connector.
2) Remove the drain valve extension from valve by gripping it with hands or channel lock pliers, and then turning the tube 1/8 turn (45°) clockwise, when viewed from top down.
3) Pull the drain valve extension down and out of the drain valve.
4) Remove the drain valve extension, and then set aside.

5.12.3 Remove the Actuator and Drain Valve

1) Use a long 3/32” hex key (T-handle or socket and extensions) to loosen the set screws on the drain valve actuator until nearly all the way out, without removing.
2) Use a flat blade screwdriver and with a back and forth action, pry and remove the actuator from the drain valve.

   IMPORTANT: Note the valve stem is pointed straight towards the back of fryer and the actuator label is pointing to left side of fryer.

3) Using a 2-1/2” socket and ratchet with extensions (large open-ended wrenches, pipe wrench) remove the drain valve by turning clockwise, when viewed from top down.

5.12.4 Install the Drain Valve and Actuator

1) Install the new o-ring in to the groove at the bottom-inside of the new drain valve. Lubricate with cooking oil.
2) Apply food grade pipe thread sealant to pot drain nipple and/or threaded top of valve.
3) Install the new drain valve by turning counter-clockwise, when viewed from top down.
4) Turn until fully tightened and stem is pointing straight towards rear of fryer.
5) Ensure valve is in closed position.

   NOTE: New drain valves are shipped in the close position.

5.12.5 Install the Drain Valve Extension

1) Align the two protrusions on the top of the drain valve extension with the two slots (extensions) on the drain valve.
2) Push the drain valve extension up in to the drain valve slots.
3) Using two hands or channel lock pliers, turn the tube 1/8 turn (45°) counter-clockwise, when viewed from top down.
4) Ensure the bottom of the drain valve extension is square with the frame.

5.12.6 Install the Drain Valve Actuator

1) With the cylindrical part of the actuator towards the right side of the fryer, and the red label pointing to the left side, align the square key of the actuator with the valve stem.
2) Push the actuator towards the valve, aligning the base of the actuator to the slot in the valve.
3) Align the actuator and valve by rotating the actuator, push actuator further towards drain valve until fully set.

   NOTE: Ensure the drain valve remains closed during this procedure.

4) Tighten the set screws until the actuator is tightly affixed to the drain valve.

5) Reconnect the actuator harness connector back into the fryer wiring harness.

6) Reinstall the left-side panel, and then the drain pan.

7) Return power to the fryer.

5.12.7 Test the Drain Valve and Actuator Operation

1) Access the Filter Menu, refer to .

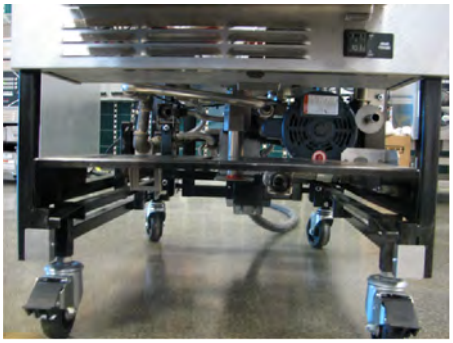
2) Test both the drain valve and actuator by opening and closing them. Use the Fill and Drain option from the Filter Menu.

3) If the control panel displays the drain valve as open but it is closed (or vice-versa), the actuator will need to be separated from the drain valve again, and the valve position rotated ¼ turn (90°) in either direction to be properly aligned.

5.13 Filter Pump Motor Replacement

TRAINING: Watch a video explaining how to replace the filter pump motor.

Filter motors can be replaced independent of the filter pump or together as an assembly. The following instruction includes the separation of the filter pump from the filter motor.

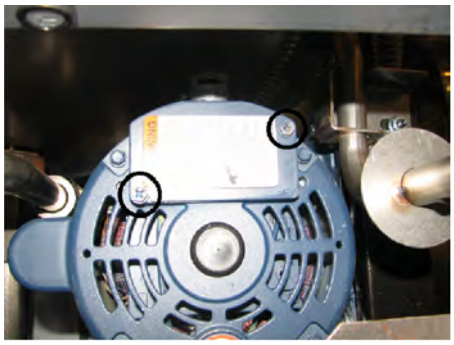


1. Remove the drain pan, fresh oil pan (ATO), and condensation pan.

NOTE: The condensation pan is not used on an open fryer, only a pressure fryer.

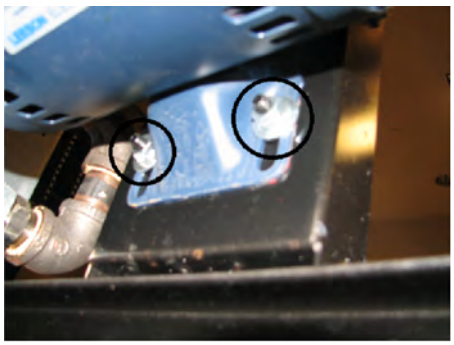
2. Use an adjustable wrench to remove the flex line and pipe connections from both ends of the pump motor.

NOTE: A hard tube may be present on pump outlet if this is a newer build.



3. Use a Phillips head screwdriver to remove the two screws that secure the plate onto the pump motor.

4. Mark the locations of the black wires.
5. Remove the black wires from the pump motor.
6. Use a flat blade screwdriver to remove the conduit retainer ring from the pump motor.
7. Remove the conduit retainer and conduit from the pump motor.



8. Use a 1/2 inch wrench to remove the two nuts on the mounting plate.
9. Lift up on the pump motor then pull it off the mounting plate.
10. If replacing the motor only, remove the two screws connecting the filter pump to the face of the filter motor.
11. Separate the pump and motor assemblies.

12. Install the two screws connecting the filter pump to the face of the filter motor.
13. Place the new pump motor onto the mounting plate so the hanger bolts rest on the top lip and slide down so the studs are in line with the holes in the pump motor base.
14. Use a 1/2 inch wrench to secure the pump motor to the mounting plate.
15. Use an adjustable wrench to reconnect the lines to the correct port of the pump motor.

5.14 Filter Pump Motor Seal Replacement

The filter pump and filter motor must be seperated for this procedure, see 5.13 *Filter Pump Motor Replacement*, page 59. The oil seals prevent oil from migrating into the motor assembly, which can damage the motor. With the new filter motor on a flat sturdy work surface, using seal kit 17476, install the pump seal components on to the new filter pump motor as shown in Figure 5-1 *Pump Seal Kit Placement*, page 61.

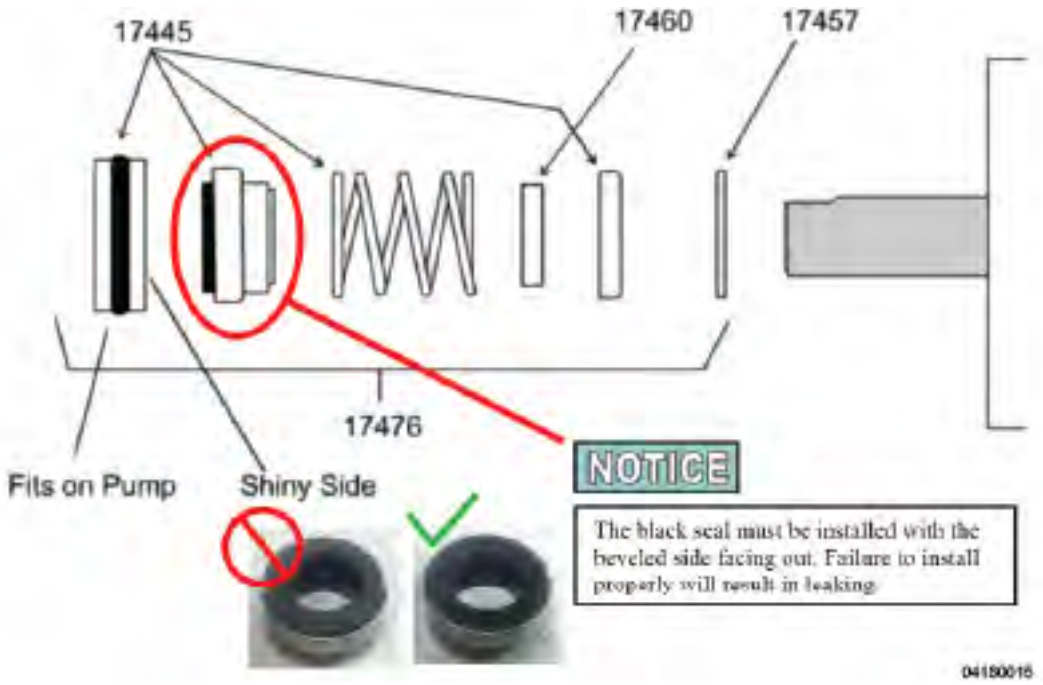


Figure 5-1 Pump Seal Kit Placement

5.15 Filter Pump Motor Roller Replacement

The filter pump and filter motor must be seperated for this procedure, see 5.13 *Filter Pump Motor Replacement*, page 59. The rollers inside the filter pump that creates the oil pressure, wear and require replacement. Replace the rollers by doing the following:

1) Remove the four screws attaching the cover to the filter pump, and then remove the cover.
2) Replace the five old rollers with the new rollers.
3) Replace the cover's old o-ring with the new o-ring.
4) Install the cover using four screws on to the filter pump.

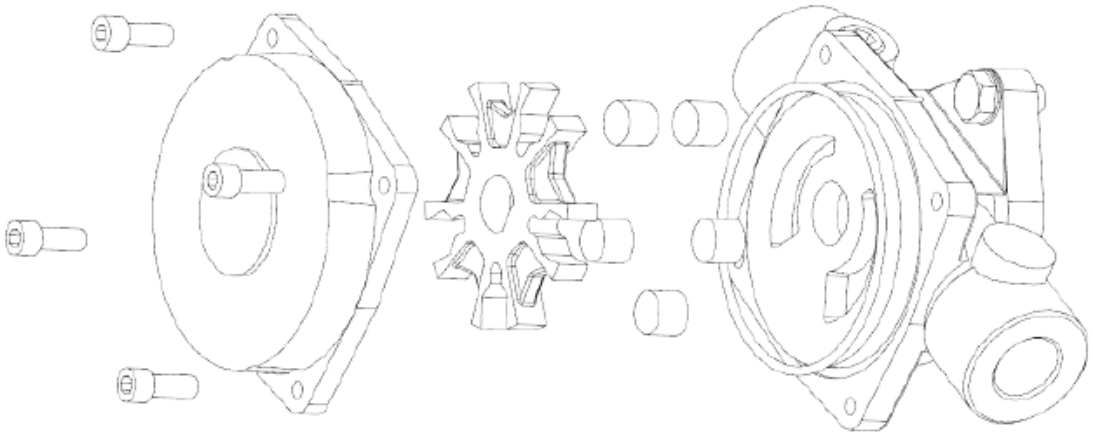


Figure 5-2 Pump Rollers

5.16 Flex Tube Replacement

WARNING **Flex tubes carry hot oil under pressure**

When installing new flex tubes, follow the listed guidelines to prevent failures of the new flex tube. When bending the flex tube do not:

- Bend smaller than a golf ball in radius.

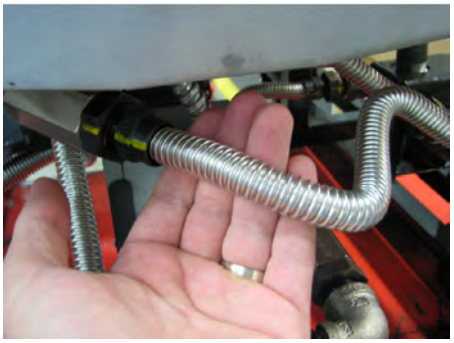
CAUTION

- Bend more than 3 times in the same area of tube.

- Bend the flex tube within 4 finger widths of the end fittings.

Discard any tube bent more than 3 times in the same area of tube.

When torquing, hold the brass fitting that the flex tube is being torqued onto, to avoid twisting of the flex tube.



1. Notice the routing of the old flex tube before removal.
2. Use two adjustable wrenches to loosen the brass fitting and remove the flex tube. One wrench holds the flex tube fitting and the other holds the attaching fitting.

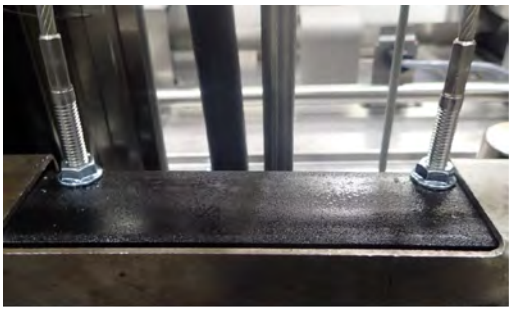
3. Use the old flex tube as a template to rough bend the new tube.
4. Install the new flex tube by torquing finger tight, and then turning (torque) an additional 1/4 turn.

5.17 Lid Cable Replacement

The weight carriage on the rear of the fryer counter-balances the lid system for ease of operation. Two cables attached to it; the safety cable on the left-side and the lifting

cable in the middle. The lifting cable tension should be tight and the safety cable tension should be loose enough that when squeezing the cable together, the two sides can touch. Both cables should be replaced in pairs. The white label denotes the cable replacement date and should be affixed to the back of the fryer's frame.

1. Using a 3/8” nut driver, remove the nuts securing rear shroud of the fryer and remove the shroud.


01180068

2. Using a Phillips screwdriver, remove screws securing the top cap and remove.
3. Lower the lid until it latches, and then insert two 5/16” carriage bolts, one through each side of the weight carriage and in to the frame to secure the carriage. Ensure the carriage is level.

NOTE: Carriage bolt holes are provided in the frame for securing the carriage.


01180067

4. Unscrew and remove both cables from the weight carriage assembly, and then the chassis. Remove weights as needed.
5. Screw a 5/16” lock-nut on each end of the new cables.
6. Apply blue Loctite thread sealant to the cable threads.
7. Using an adjustable wrench, screw one end of each new cable in to the weight carriage assembly until tight.


01180069

8. Using a 1/2” wrench, tighten the lock-nut against the weight carriage assembly, securing both cables in to place.
9. Thread the cables over the pulleys and down behind the weight assembly.
10. Apply blue Loctite thread sealant to the cable threads.

11. Insert both cables in to the holes in the chassis, screw a 5/16” nut on to the end of each of the cables, and then tighten.

NOTE: The lifting cable tension should be tight and the safety cable tension should be loose enough that when squeezing the cable together, the two sides can touch.

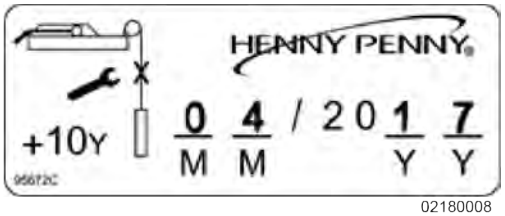
12. Tighten the lock-nut against the top of the bracket, securing the cable.

01180070

13. Remove the two carriage bolts securing the weight carriage against the fryer’s frame. Retain the bolts for future use.

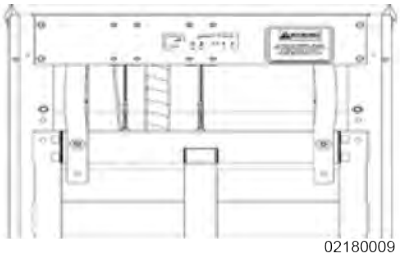
14. Raise the lid up and down to ensure free movement of the weight carriage and that it is level. Correct as needed.

15. Replace the top cap and rear shroud.



02180008

16. After replacing both cables, locate the white label. Using a marker or pen, write the cable replacement month and year on the white label as shown.



02180009

17. Place the label on the back of the fryer in the area indicated.

18. Place the clear label protector overtop of the white label to prevent ink from wiping away during future cleaning.

5.18 Label Replacement

If a label becomes unreadable it should be replaced. These procedures explain how to remove a label and prepare the surface for the new label. In certain situations it may be quicker and more cost effective to replace the component on the fryer, which ships with a new label attached. As an example, a PXE model fryer has multiple labels

affixed to the top lid cover and it would be quicker to replace the lid cover than trying to clean off all the label glue and readhering new labels.

NOTICE: Do not use a scotch brite pad or other similar abrasive material anywhere on the fryer.

1) Peel off as much of the old, failing label as possible by hand.
2) Use a 3M Adhesive Eraser Wheel in a hand drill to remove the remainder of label, quickly and easily.
3) Wipe away the label debris with a towel.
4) If necessary, remove any remaining adhesive remnant by lightly spraying the surface with 3M citrus based adhesive remover. Let stand for a minimum of five minutes.
5) Gently scrape, scrub and wipe away remaining adhesive remnants.
6) Using isopropyl alcohol wipes, thoroughly clean the surface to remove any oil or other film from the surface.
7) Remove the adhesive liner from new label.
8) Apply the new label, laying the label flat on to the surface. Ideally working from the center of the label outward using the 3M PA-1 blue applicator, which is included.
9) To eliminate any large bubbles, use a pin to create an airhole, and then press down the bubble using the 3M PA-1 blue applicator.

Chapter 6 Zigbee Radio

6.1 Overview

6.1.1 Online Projection System (OPS) and Quality and Production Management (QPM)

6.1.1.1 What is OPS/QPM

Both the Online Projection System (OPS) and the Quality and Production Management (QPM) systems are KFC initiatives, similar to smart kitchen products, that assists store operators in maintaining an appropriate inventory of cooked food, ready to serve, so that customers do not have to wait for their orders. The computer system performs real-time monitoring of sales, product inventory, product "in process" (being cooked), etc., and consults a history of past sales data in order to project expected sales. Based on projected sales and current inventory, the system prompts the restaurant staff on how much product to cook and when.

6.1.1.2 Data Tracking

In order to track how much product is being cooked and placed into inventory, the OPS/QPM system communicates directly with the kitchen equipment via an inhouse ZigBee wireless network. It can directly query each fryer, for example, to discover its current operating status: off, on, melt mode, cook mode, currently cooking, etc. Also, the fryer reports the start and end of each cook cycle, as well as which product is being cooked. For some products, like strips, the control asks the user to specify precisely how many pieces are being cooked, and then passes that information on to the OPS/QPM computer. For other products, like various loads of bone-in chicken, the OPS/QPM system is pre-programmed to know how many pieces to expect for the various standard loads.

6.1.2 Communication Architecture

The Digi ZigBee radio is hard-wired to communicate with the fryer's control board but uses wireless to interact with the operator's network. To facilitate two way communication between the Digi radio and fryer, the Digi radio must be properly installed, powered on, and the fryers communication software enabled. In addition, to facilitate communication between the fryer and the virtual (network) environment (Smart Kitchen), the network must see the Digi radio and allow it to join the network to enable seamless two way communication.

6.1.2.1 Digi ZigBee Radio

Digi is the company that manufactures the radio, and whose name and logo is prominently displayed on the radio, while **ZigBee** is a wireless technology developed as an open global standard to address the unique needs of low-cost, low-power wireless M2M networks.

6.1.2.1.1 Digi Radio

The Velocity control board communicates directly with the Digi radio module. The radio modules are manufactured by Digi with firmware customized for Henny Penny, to support operator requirements.

The radio module speaks the standard ZigBee protocol on the wireless side, and speaks RS-485 Modbus protocol on the hard-wired side to communicate with the fryer's control board. The radio module basically asks the control for a status update about every 5 seconds, and we send a reply message back to the radio module with the requested information. The radio module then takes care of converting this information to the ZigBee wireless format and broadcasts it on to the ZigBee wireless network.

6.1.2.1.2 ZigBee Protocol

ZigBee is the name of a type of wireless communications technology and protocol, just as WiFi and BlueTooth are names for other types of wireless network technologies.

The advantage of a ZigBee network—particularly in a commercial kitchen where large panels of stainless steel may obstruct other technologies—is that ZigBee can form a wireless mesh network, where the various radios that have joined the network are able to forward messages from one device to another. If a piece of equipment is out of range or is blocked from communicating directly with some other piece of equipment at the other end of the building, the radio modules in between can receive and forward messages as needed. That is, if equipment A cannot talk directly to equipment C, but A can talk to B and B can talk to C, then A will send the message to B, and B will pass it on to C.

The ZigBee protocol operates in the 2.4 GHz range and is therefore approved for operation worldwide. The data rate in the 2.4 GHz band is about 250 kilobits a second, which is acceptable performance for in-store monitoring of equipment status.

6.1.2.2 Mesh Network

A mesh network is a network topology in which each node relays data for the network. All mesh nodes cooperate in the distribution of data in the network. Mesh networks can relay messages using either a flooding technique or a routing technique. The flooding technique releases the data packets on to the network without specific routing instructions. The routing technique is more sophisticated and requires a table of addresses, which is used to route the data packets from point to point.

6.1.2.2.1 Practical Application

In a Smart Kitchen application a ZigBee (wireless) signal can travel through ZigBee (wireless) enabled appliances regardless of which appliance the signal originates from. Each ZigBee (wireless) enabled appliance becomes a node on the network. Eventually the signal reaches a local or virtual (over the Internet) server which contains the Operator's Smart Kitchen software. The upside is the signal from the

Henny Penny fryer has many additional opportunities to reach the server successfully. The downside is if our signal is blocked by a structure (i.e. wall, distance, etc.) and is using another appliance (node) to reach the server, then we have an additional point of failure. As an example, if the signal is being routed through a refrigerator (node) and not directly connecting to the server, then the refrigerator becomes a point of failure.

6.2 Installation

There are two major steps to installing the Digi ZigBee radio; hardware installation and setting configuration.

WARNING **A qualified technician must perform the installation. To avoid electrical shock or property damage, disconnect power before starting installation.**

6.2.1 Install the Hardware

1) On a table or countertop, position the radio adapter so that the terminal block screws are face-up. Attach wire ZB3 to the left-outside terminal (1), and attach wire ZB4 to the right of the left-outside terminal (2). See Figure 6-1 *Connecting Wires to Terminal Block*, page 69.

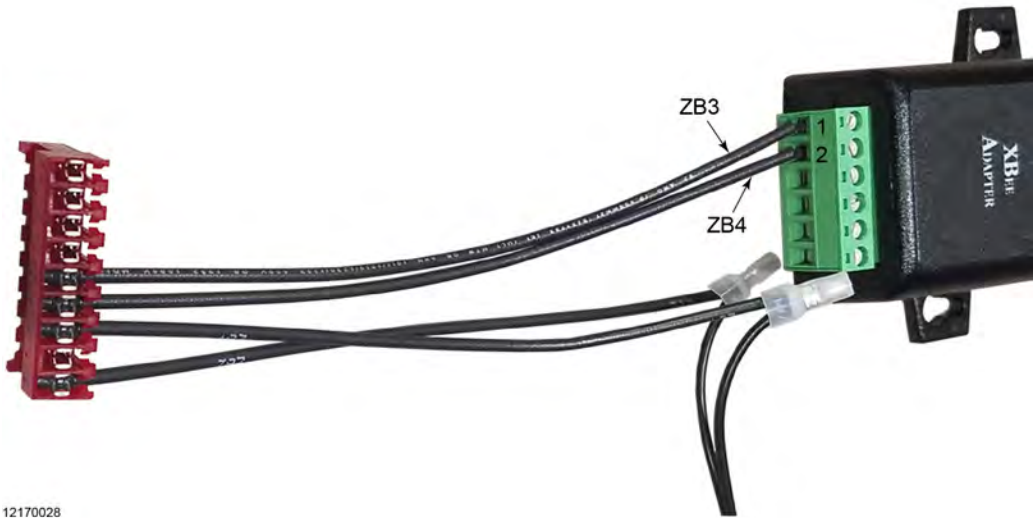


Figure 6-1 Connecting Wires to Terminal Block

NOTE: Wire numbers are printed on the exterior insulation of the wire.

2) Using a Phillips head screwdriver, remove the two screws securing the control board and lower it down.

3) Slide the radio on to the studs, located on the side of the control, with the green (9-pin) connector directed towards the fryer. See Figure 6-2 *Sliding Radio Module on to Studs*, page 70.

11170169

Figure 6-2 Sliding Radio Module on to Studs

4) To attach the barrel connection to the radio, align the barrel connector with the notches located on the top of the radio. Press in on the barrel and rotate 90 degrees clockwise to lock the connector into place. See Figure 6-3 *Attaching Connector to Radio*, page 71.

11170170

Figure 6-3 Attaching Connector to Radio

5) Using the nuts provided in the kit, secure the radio to the controls with a 1/4 inch socket or nut-driver. See Figure 6-4 *Securing Radio to Control*, page 71.

11170171

Figure 6-4 Securing Radio to Control

6) Run the wires underneath the side of the adapter, then connect the 9-pin connector to the control board. See Figure 6-5 *Connecting 9-Pin Connector*, page 72.

11170172

Figure 6-5 Connecting 9-Pin Connector

NOTE: It is recommended to gather power harness wires and tie with wire tie. See Figure 6-6 *Gather Wires in Wire Tie*, page 72.

12170029

Figure 6-6 Gather Wires in Wire Tie

7) Place control board back to factory location and secure with the Phillips head screws.

8) Place the OP decal on the lower right-hand corner of the control board. See Figure 6-7 *OP Decal Location*, page 73.

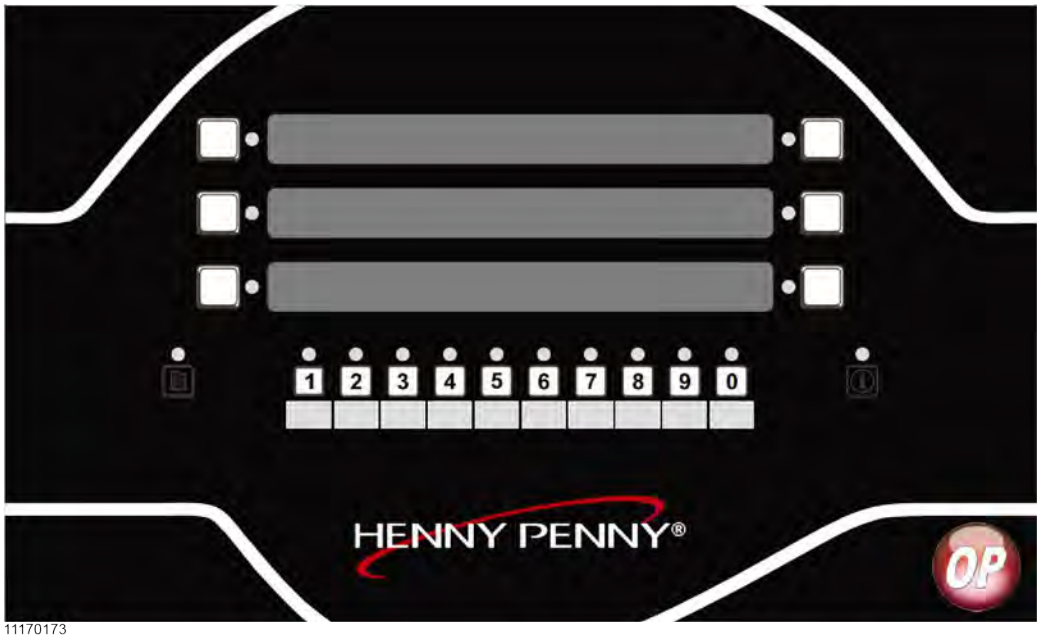


Figure 6-7 OP Decal Location

6.2.2 Configure the OPS/QPM Settings

6.2.2.1 Overview

A configuration setting in the fryer control determines whether or not the OPS/QPM features are enabled. This programming operation can be performed whether the fryer is on or off, as long as the control is powered. Special Program Mode allows simple enabling or disabling of the OPS/QPM system on this fryer, but does not provide any further technical or diagnostic support. Diagnostic displays are easily accessible in Info Mode.

6.2.2.2 Enable OPS/QPM

1) Press and hold the menu button (1) until *MAIN* displays. See Figure 6-8 *Menu & Info Button Locations*, page 74.

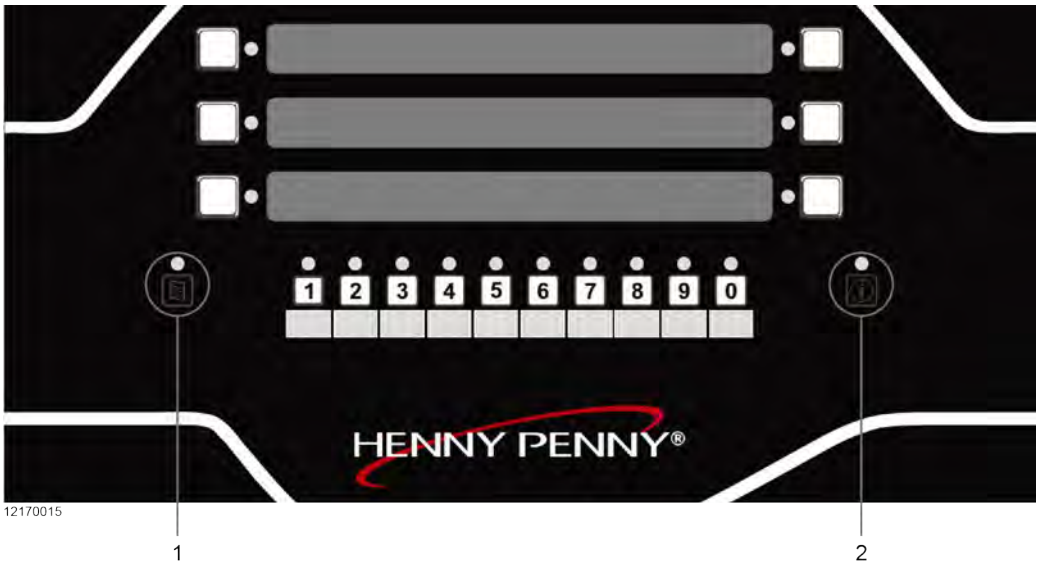


Figure 6-8 Menu & Info Button Locations

2) Press and release the menu button (1) again, to cycle to the second set of menu options.

Figure 6-9 Second Set of Main Menu Options

3) Select 4.PROG. See Figure 6-9 *Second Set of Main Menu Options*, page 74. Programming menus display.

12170014

Figure 6-10 Programming Menus

4) Select 3.SPCL PROG. See Figure 6-10 *Programming Menus*, page 75.

5) Using the number buttons, enter code 1, 2, 3.

6) Use the top right arrow to navigate to SP-4 ENABLED. See Figure 6-11 *SP-4 OPS/QPM Enabled*, page 75.

11170175

Figure 6-11 SP-4 OPS/QPM Enabled

7) Use the plus or minus buttons to change the middle screen to read YES. See Figure 6-12 *SP-4 OPS/QPM Enabled Yes Display*, page 76.

11170176

Figure 6-12 SP-4 OPS/QPM Enabled Yes Display

8) Press and hold the menu button to exit special program mode.

6.2.2.3 Verify Communication

Verify the Digi radio can communicate with the fryer's control board and the network. OPS/QPM must accept the Digi radio to complete the connection and seamless data connection.

1) Press the menu (1) and info (2) button at the same time until ==INFO MODE== is displayed. Release both buttons. See Figure 6-8 *Menu & Info Button Locations*, page 74.
2) Press the left-arrow button to cycle to the last menu option. The Join Status screen displays. See Figure 6-13 *Join Status Display*, page 76.

12170016

Figure 6-13 Join Status Display

3) The middle display reads ZigBee with either a check mark, a dash or a flashing X. See descriptions below:
   - ✓: Control has received a good message within the past 15 seconds.

- - : Last good message was more than 15 seconds but less than 60 seconds ago.
- X: Control has not received a good message in more than 60 seconds.

NOTE: These messages only indicate if the Digi radio and control board are communicating. It does not mean the Digi radio is communicating with the network.

4) The bottom display reads JOIN = followed by a value. If the value reads 00, this means the radio is joined to the network. Any other value means the radio is not joined to the network.
5) Use the down arrow to navigate to the Channel Status screen. See Figure 6-14 *Channel Status Display*, page 77.

12170017

Figure 6-14 Channel Status Display

6) The bottom display reads CHAN= and gives a value. If the radio is joined to a network, that particular channel's number displays. If the radio is not connected to a network, that value reads 00.
7) Use the down arrow to navigate to the PAN ID display screen. See Figure 6-15 *Pan ID Display*, page 78.

12170018

Figure 6-15 Pan ID Display

8) The bottom display reads PAN ID followed by a value. If the radio is joined to a network, the ID number displays. If the radio is not connected to a network, FFFF displays.

9) Use the down arrow to navigate to the Radio Short ID display screen. See Figure 6-16 *Radio Short ID Display*, page 78.

12170019

Figure 6-16 Radio Short ID Display

10) The bottom display reads RADIO followed by a value. If the radio is joined to a network, that particular radio module number displays. This varies for each radio and may change if the radio is unjoined and then rejoined to a network. If the radio is not connected to a network, FFFF displays.

11) Use the down arrow to navigate to the Reset/Unjoin Command display screen. See Figure 6-17 *Reset/Unjoin Command Display*, page 79.

12170020

Figure 6-17 Reset/Unjoin Command Display

12) The bottom display reads RESET followed by a value. if the value is 00, no reset is required, or the requested reset has been completed. If the value is 01, a reset is pending.

13) To reset, press and hold the button next to RESET. The display counts down.

14) Once the count-down has expired, release the button and the radio now shows 01 for the reset code. The 01 remains until the radio completes the reset operation, then the code changes back to 00.

15) Press and hold the menu button to exit out of Info Mode.

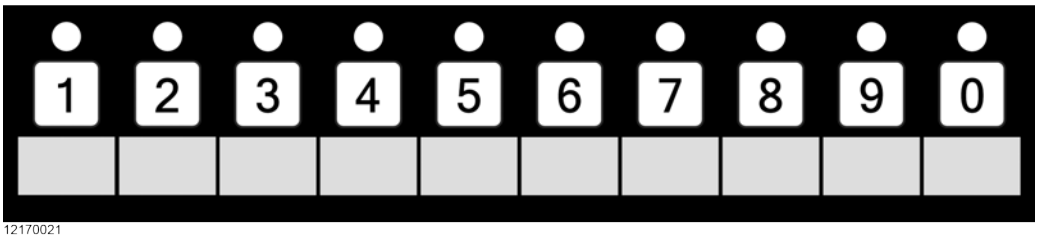
6.2.3 Cook ID Code

The OPS/QPM system in the store must be configured so that it understands which products are being cooked by the Velocity fryer. When a cook cycle is started, the data sent by the fryer's control board (software) to the OPS/QPM system sends only a product number for the product being cooked, not the actual product name. The product number assignments are determined by KFC and change periodically. The product number mapping on the fryer is updated when the KFC menu is updated on the fryer's control board.

6.2.3.1 Verifying the Cook ID Code

Each Cook Menu item has a unique product number that communicates with the in-store system. To check each product code do the following:

1) Select a number button from the number pad to access the product menus. See Figure 6-18 *Number Buttons*, page 80.



12170021

Figure 6-18 Number Buttons

2) With the products displayed on the screen, press and hold the same number button. See Figure 6-19 *Display*, page 80.

12170022

Figure 6-19 Display

3) After a few seconds, each product name shows their unique product number. See Figure 6-20 *Unique Product Number Display*, page 80.

12170023

Figure 6-20 Unique Product Number Display

4) Use the product number to identify what product is being cooked. For example, P3 represents Product 3.

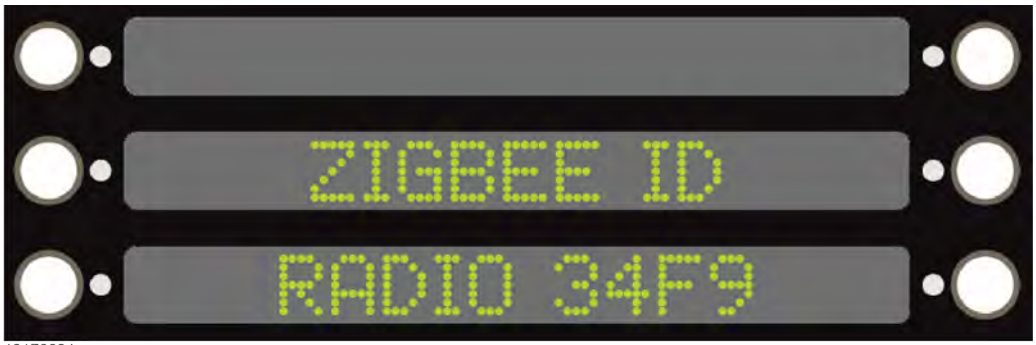
6.2.4 ZigBee Identify Response

6.2.4.1 Identify Overview

Even though the OPS/QPM computer is able to list any new radios detected within range of the network, there is nothing on the OPS/QPM screen that identifies what piece of equipment that radio is installed in. For example, if two new fryers are brought into the store on the same day, the OPS/QPM computer screen would see two new radios available, but there would be no way to know which radio is installed in which fryer. To clearly identify which radio corresponds to which fryer, every ZigBee device must implement an audio-visual **Identify** response. When the Identify command is sent from the OPS/QPM computer to a fryer's radio module, the fryer control itself must beep and display a message to make it clear which piece of equipment to which the OPS/QPM computer is communicating.

6.2.4.2 Configuring the Identify Response

For stores that have multiple units and need to quickly identify each unit's channel ID, a signal can be sent from the OPS/QPM operating computer to the units. Once the channel ID is selected, the unit that is linked to that ID starts to flash ZIGBEE ID, and then beeps. See Figure 6-21 *ZigBee ID Display*, page 81. A note can then be inserted in the OPS/QPM system to identify that ID with the correct unit.



12170024

Figure 6-21 ZigBee ID Display

NOTE: If you are having issues linking the control to the Online Projections System, please contact the KFC Help Desk at 1-800-HELP-KFC (1-800-435-7532).

6.3 Troubleshooting

6.3.1 Overview

In order for seamless communication between the fryer's control board and the operator's data tracking system the following steps are required:

- The Digi radio must have uninterrupted power from the fryer's control board.
- The fryer's control board must be able to communicate (pass data) bidirectionally with the Digi Radio over the wired connection.
- The Digi radio must be able to convert data into the ZigBee network protocol.
- The Digi radio must be able to transmit wireless data using the ZigBee protocol.
- The Digi radio must be seen on the operator's network.
- The Digi radio must be able to Join the operator's OPS/QPM environment, which is KFC specific.

Each of these steps can be a failure point.

6.3.2 Digi ZigBee Radio Basics

6.3.2.1 Network Connectivity

Just because a Digi ZigBee radio module can hear transmissions from a ZigBee network, it does not mean the radio module is part of that network. In fact, any particular module may be able to hear transmissions from multiple ZigBee networks—just as your laptop may hear transmissions from multiple wireless networks—though it can connect to only one at a time, or might not be connected to any. When our controls and radio modules leave Henny Penny, they are sent out in an **Unjoined** state, which means they are not a member of any particular network group. **Joining** a radio is the process of having it locate and join a particular ZigBee network.

6.3.2.2 Joining a Network

The radio must be manually invited by the OPS/QPM computer to join the store's ZigBee network. The OPS/QPM computer screen lists all the nearby radio modules that the network can communicate with and the operator selects a module and invites it to join the network.

NOTE: There are options available in the ZigBee protocol to support an "auto-join" feature, but KFC is currently manually joining new radios at this time.

Once joined to the network, the radio automatically reconnects to that same network at each power up. Even if a fryer is unplugged and powered down for days, the radio module remembers the network that it has been assigned to, and automatically reconnects to it again the next time the fryer is plugged in.

6.3.3 Data Communication

The Digi radio can be powered on but not communicating. The radio needs to communicate with both the fryer's software (control board) and the operator's virtual network in order to seamlessly pass data. As an example, the data can flow successfully between the fryer and the Digi radio but never make it on to the operator's virtual network, which inhibits the fryer's data from reaching the operator's Smart Kitchen software. Conversely the data may never make it from the fryer to the

Digi radio because the radio was improperly installed, damaged, setting changes, fryer moved to a new location, or due to software or hardware failures. Ensure seamless data communication by doing the following:

6.3.3.1 Verify Power

The Digi radio operates on 12 VDC. A power cable is provided in the kit. The barrel end of the wire is notched and plugs directly in to the Digi Radio. The other end is connected to a 9-pin connector and connects in to the back of a control board, to receive power. See Figure 6-1 *Connecting Wires to Terminal Block*, page 69 and also Figure 6-5 *Connecting 9-Pin Connector*, page 72. Ensure the unit has power by doing the following:

1) Verify the Power light, that is adjacent to the barrel connector on the Digi Radio, is illuminated. If yes, continue to 6.3.3.2 *Communication Cables*, page 83. If no, continue to step 2.
2) Verify the 9-pin connector is connected correctly, and not reversed. See Figure 6-1 *Connecting Wires to Terminal Block*, page 69 and also Figure 6-5 *Connecting 9-Pin Connector*, page 72. Also, refer to . If correctly wired, continue to step 3. If incorrectly wired, repair and verify if the Digi Radio has power.
3) Use a volt meter to verify the control board's 9-pin connector is providing 12 VDC of power. The barrel connector sleeve (ring) is negative, and the tip (interior) is positive. If yes, order a new Digi Radio and/or power cable. If no, diagnose and repair the control board's power source (transformer).

6.3.3.2 Communication Cables

Two communication wires connect between the Digi radio's terminal block and a 9-pin connector, the same 9-pin connector that the power wires connect to for a power source. These two wires provide the signals for half duplex communication between the Digi radio and the fryer's control board. Ensure seamless data communication between the Digi radio and control board by doing the following:

6.3.3.2.1 Check the Wires

Verify the 9-pin connector is connected correctly, and not reversed. See Figure 6-1 *Connecting Wires to Terminal Block*, page 69 and also Figure 6-5 *Connecting 9-Pin Connector*, page 72. Also, refer to . If correctly wired, continue to 6.3.3.2.2 *Check Data Communication*, page 83. If incorrectly wired, repair and verify seamless data communication.

6.3.3.2.2 Check Data Communication

If the Digi radio hardware is installed and operating correctly, verify the fryer's control board (software) is communicating with the Digi radio. Refer to 6.2.2 *Configure the OPS/QPM Settings*, page 73.

- If SP-4 **OPS/QPM Enabled** is set to **YES** the control board monitors the RS-485 data link for messages from a ZigBee radio module and responds appropriately when requests are received. Continue at 6.3.3.2.3 *Join or Re-Join the Network*, page 84.

- If SP-4 **OPS/QPM Enabled** is set to **NO**the control board does not attempt to communicate with the radio module (via RS-485). All ZigBee related information (displays) indicates OPS/QPM is -OFF-.
Set **OPS/QPM Enabled** to **YES** and then continue at 6.3.3.2.3 *Join or Re-Join the Network*, page 84.

NOTE: Setting “OPS/QPM System Enabled?” to “NO” does not actually disable the radio module or prevent it from communicating with the ZigBee network. It simply configures the fryer’s control board software to ignore the radio module and ignore all things related to OPS/QPM (i.e. batch size requests, etc.). The radio module can talk to the wireless network; however, the control board (software) will not respond to the radio.

6.3.3.2.3 Join or Re-Join the Network

Complete the steps in section 6.2.2.3 *Verify Communication*, page 76 and ensure the fryer’s Digi radio is Joined to the OPS/QPM network. Continue diagnostic steps as necessary by referring to 6.3.4 *ZigBee Radio Info Display*, page 84.

6.3.4 ZigBee Radio Info Display

Use the information obtained from the ZigBee radio information display to further diagnose technical issues.

6.3.4.1 Access the Display

Access Info Display by doing the following:

1) Press the Menu and Info buttons together at the same time. Release the buttons once **== INFO MODE ==** displays.
2) Press the left-arrow button once. The OPS/QPM RADIO screen displays.

NOTE: Info Mode can not be used to enable or disable the OPS/QPM system. It simply provides access to the ZigBee Radio Info Display if the OPS/QPM system has already been enabled. The same information is available in Data Comm program mode, as item DC-2.

6.3.4.2 JOIN Screen

ZigBee: The check mark next to the ZigBee text in the middle display indicates that the module is actively receiving good messages from the radio module over the RS485 wired connection to the control. The check mark indicates that the radio module and fryer’s control board are communicating with each other. It does not indicate the radio is talking to the in-store wireless network. If the radio status displays a:

- ✓: Control has received a good message within the past 15 seconds.
- - : Last good message was more than 15 seconds but less than 60 seconds ago.

- X: Control has not received a good message in more than 60 seconds.

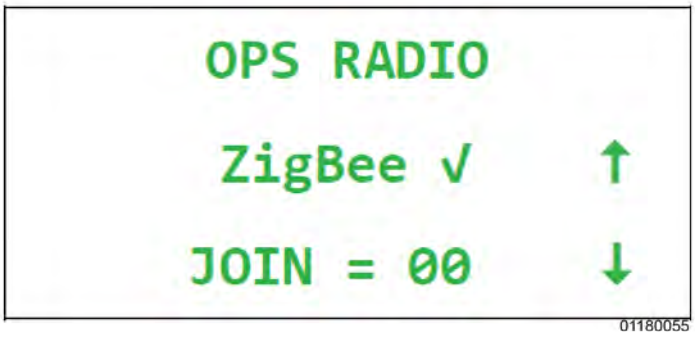


Figure 6-22 Screen 1

JOIN: The number displays join status reported by the radio module to the control.

- 00 means the radio is currently joined to a network.
- 21, 23, or FF are typically shown for a radio module that is currently not joined to any network.
- Other, transient values may appear when the radio has just powered up or is in the process of joining or unjoining a network.

6.3.4.3 CHANNEL Screen

Displays the radio channel currently being used by the radio and network. If the radio is not currently joined to any network, 00 is typically displayed.

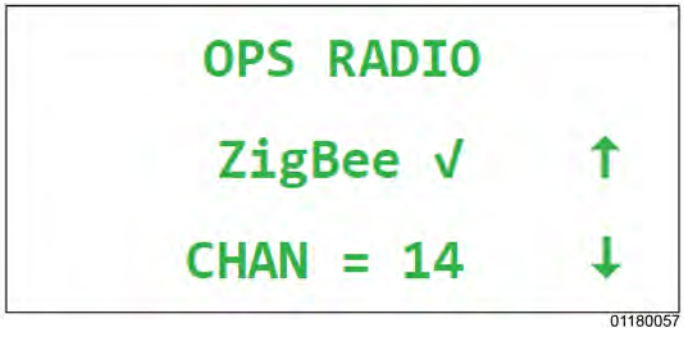


Figure 6-23 Screen 2

6.3.4.4 PAN ID Screen

Displays the PAN ID number (Personal Area Network ID) of the ZigBee network the radio is currently joined to. If the radio is not currently joined to any network, FFFF is typically displayed.

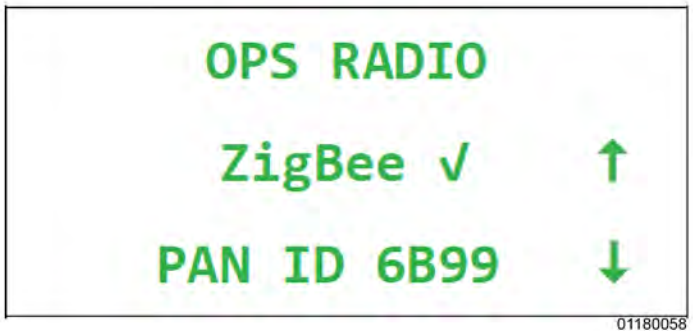


Figure 6-24 Screen 3

6.3.4.5 RADIO SHORT ID Screen

Displays the Short ID of the radio module, as it is currently addressed on the network. The number is dynamic and is assigned by the Operator's network coordinator device when the radio module joins the network. The number is not necessarily tied to any static property, MAC address, or serial number of the radio itself. If the radio is unjoined from the network, then rejoined to the same network, it might end up with a different Short ID number. If the radio is not currently joined to any network, FFFE is typically displayed.

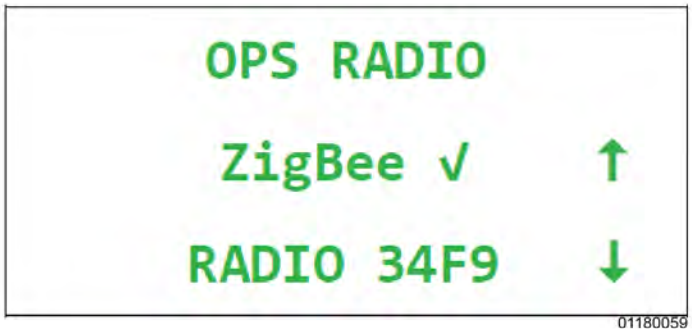


Figure 6-25 Screen 4

6.3.4.6 Reset / Unjoin Command

This option resets the radio module; Or rather, asks the radio module to reset itself. The radio module unjoins the network.

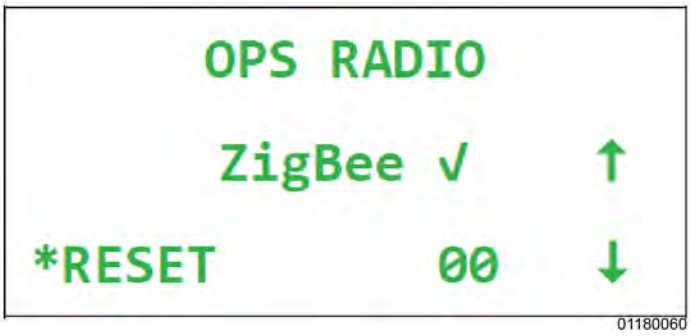


Figure 6-26 Screen 5

The number to the right of the RESET field displays the pending reset command. 00 means no reset is in progress. 01 means the process of resetting the radio module has been initiated, but the radio module has not received the message to reset itself yet.
To perform the reset operation, the user must press the button to the left of RESET. While holding the RESET button, the control beeps loudly and displays a countdown: 3,2,1... If the user continues holding the button until the countdown expires, the reset code is changed from 00 to 01, indicating a reset operation is in process. After the radio unjoins the network, 00 displays.
If the radio is already unjoined from the network, it might not respond to this command. In this case, the 01 status may display until the next time the control is turned off and back on again, which returns the control's reset code to 00.

6.3.4.7 Modbus Packet Statistics

Displays statistics about the data packets received from the radio module (i.e. the wired RS-485/Modbus communications link between the ZigBee radio module and the control). These packets do not have any relationship to the wireless side of things and do not indicate anything about whether the radio is sending or receiving ZigBee wireless data.

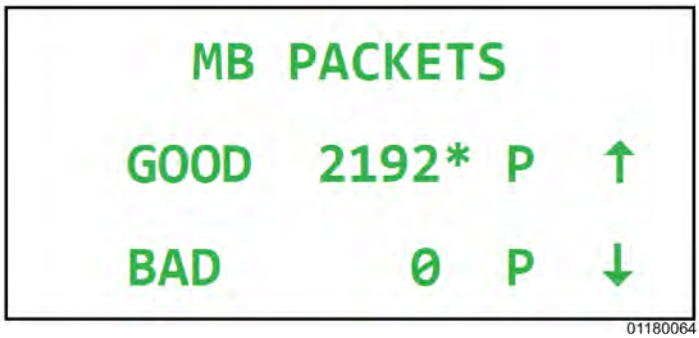


Figure 6-27 Screen 6

While on this display, the control chirps each time a good packet is received. A joined radio normally communicates with the control about every five seconds. The control sends a reply to the radio after each valid packet, and the radio normally sends several packets at each exchange. An unjoined radio module sends fewer packets and less frequently.
Each Modbus data packet must follow a certain format and must have a valid checksum byte, which confirms the integrity of the packet. If the checksum value is invalid, or if there is an interruption in the middle of the transmission, etc., the packet is discarded and the bad packet count is incremented.

6.3.4.8 Modbus Character RX/TX Statistics

Displays counts of the number of bytes received by the control from the radio module (RX), and the number of bytes transmitted by the control to the radio module (TX). These are characters on the wired RS-485 link between the radio module and the control. They do not reflect anything about the wireless side of things.

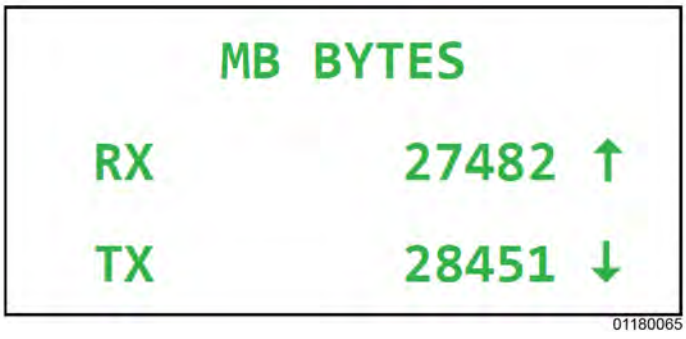


Figure 6-28 Screen 7

In our particular RS485 implementation, the control hears its own transmissions, so it can confirm that what it sent was transmitted correctly. The RX count reflects only the characters received from other devices (i.e. from the radio module). It does not include the characters the control sent.

Chapter 7 Replaceable Parts

7.1 Parts

7.1.1 Introduction

This section lists the replaceable parts of the Henny Penny Velocity Series Open Fryer.

7.1.2 Genuine Parts

Use only genuine Henny Penny parts in your fryer. Using a part of lesser quality or substitute design may result in damage to the unit or personal injury.

7.1.3 When Ordering Parts

Once the parts have been identified from the parts list, write down the item number, part number, description, product number, serial number, and voltage. **NOTE**: Examples provided.

Parts Information		Data Plate Information	
Item Number	1	Product Number	OXE100.09
Part Number	175860	Serial Number	LA1901001
Description	O-ring Pack	Voltage	208

7.1.4 Prices

Your distributor has a price parts list and will be glad to inform you of the cost of your parts order.

7.1.5 Delivery

Commonly replaced items are stocked by your distributor and will be sent out when your order is received. Other parts will be ordered, by your distributor, from Henny Penny Corporation. Normally, these will be sent to your distributor within three working days.

7.1.6 Warranty

All replacement parts (except lamps and fuses) are warranted for 90 days against manufacturing defects and workmanship. If damage occurs during shipping, notify the carrier at once so that a claim may be properly filed. Refer to the warranty for other rights and limitations.

7.1.7 Recommended Spare Parts For Distributors

Recommended replacement parts are indicated with A or B in the parts lists:
- A: Indicates the parts should be stocked on service vans or trucks.
- B: Indicates the parts should be stocked at the distributor/KES location.

Inventory on all other parts not identified, should be based upon usage in the territory. Please use care when ordering recommended parts, because all voltages and

variations are marked. Distributors should order parts based upon common voltages and equipment sold in their territory.

Figure 7-1 Components

Item No.	Part No.	Description	Qty.
1A	35227	ROLLER, LINKAGE SHAFT	2
2A	52224	SWITCH, COVERED POWER	1
3	35154	CASTER, 4 INCH SWIVEL STEM	2
4	151783	ASSY, DRAIN PAN OFX (see Figure 7-2 *Drain Pan Assembly*, page 93 for breakdown.)	1
5	90227	CASTER, 3.5 RIGID W/ END BRAKE	2
6	150598	TANK, FRESH OIL	1
7A	96805	ASSY, OXE100 CONTROL	1
8*	96612	DECAL, PXE100	1
9B*	26974	ASSY, SPEAKER	1
10*	03734	RADIO, ZIGBEE	1
Recommend Parts: A = Truck Stock / B = Dist. Stock * = Not Shown			

Item No.	Part No.	Description	Qty.
11B*	140440	KIT, LID ROLLER	1
12*	151042	WELD ASSY, OXE 100 2-3/8 CARRIER	1
13*	140597	KIT, BULK DISPOSE FRONT (built prior to 2016)	1
14*	140596	KIT, SELECTOR VALVE TO ATO FLEX TUBE (built prior to 2016)	1
Recommend Parts: A = Truck Stock / B = Dist. Stock * = Not Shown			

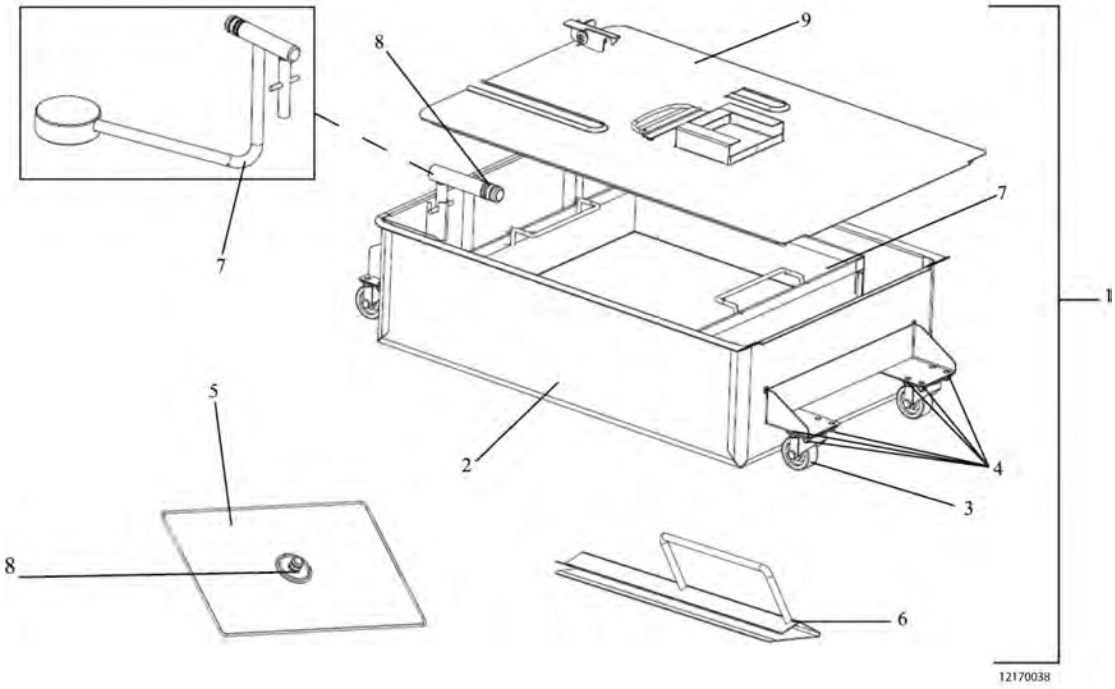


Figure 7-2 Drain Pan Assembly

Item No.	Part No.	Description	Qty.
1	151783	ASSY, DRAIN PAN PFX	1
2	156492	WELD ASSY, FILTER DRAIN PAN	1
3	19004	CASTER, 2 IN SWIVEL MTG PLATE	4
Recommend Parts: A = Truck Stock / B = Dist. Stock * = Not Shown / AR = As Required			

Item No.	Part No.	Description	Qty.
4	NS04-005	LOCKNUT, SERRATED FLANGE 1/4–20	16
5	92889	WELD ASSY, FILTER SECTION	1
6	150739	WELD ASSY, CARRIER CLIP	2
7	151819	WELD ASSY, CRUMB CATCHER	1
8A	175860	O-RING, 116 SUCTION LINE (multiples of 10 per pack)	1
9	94289	ASSY, DRAIN PAN COVER PFX	1
10B*	12102	PHT FILTER ENVELOPES - 100CT	AR
11*	152204	WELD ASSY, PNP UNIT	1

Recommend Parts: A = Truck Stock / B = Dist. Stock
* = Not Shown / AR = As Required

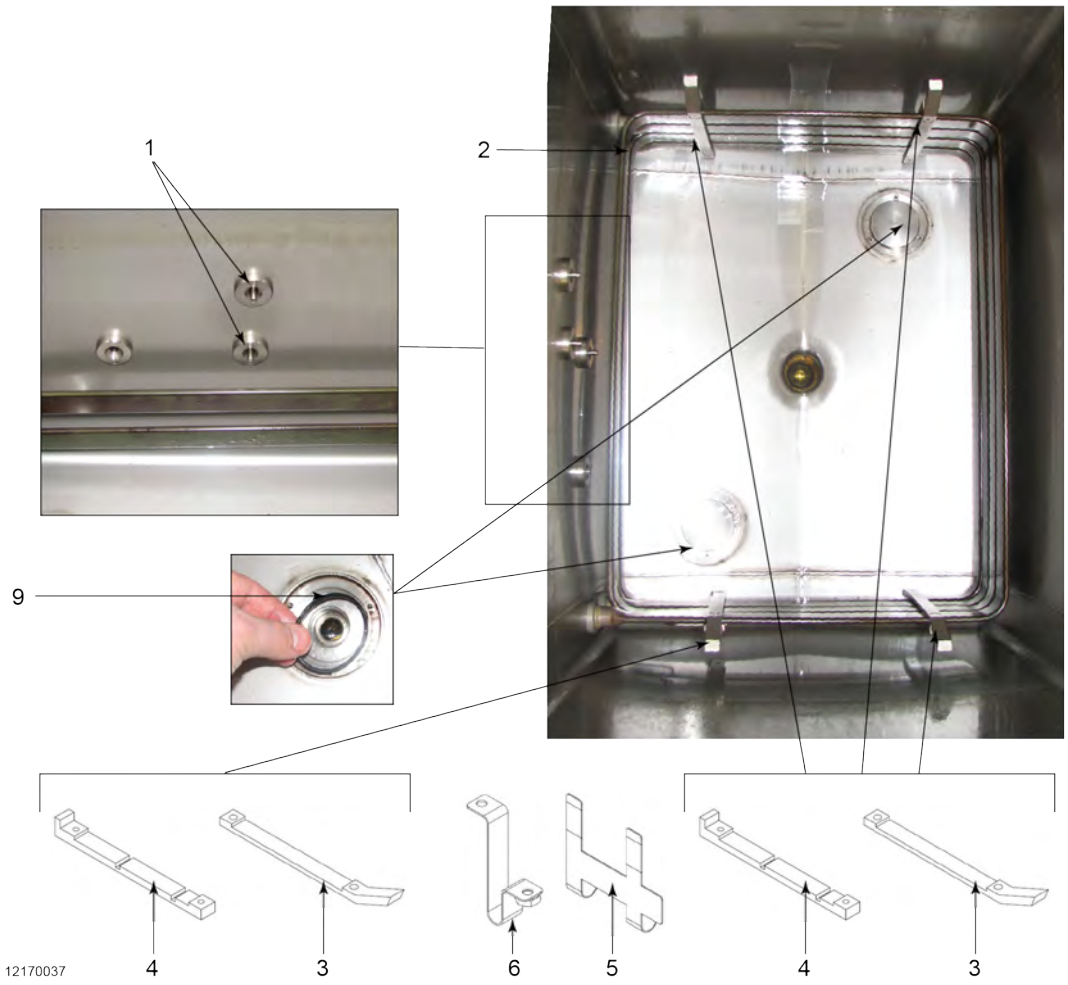


Figure 7-3 Heating Elements

Item No.	Part No.	Description	Qty.
1A	154252	ASSY, 2 IN RTD PROBE	1
1A*	140593	KIT, PROBE GUARD	1
2B	161612-001	ELEMENT, HEATING 8.5 KW (208V)	1
2B	161612-003	ELEMENT, HEATING 8.5 KW (240V)	1
Recommend Parts: A = Truck Stock / B = Dist. Stock * = Not Shown / AR = As Required			

Item No.	Part No.	Description	Qty.
2B	161612-004	ELEMENT, HEATING 8.5 KW (480V)	1
2B	161612-005	ELEMENT, HEATING 8.5 KW (200V)	1
2B	161612-006	ELEMENT, HEATING 8.5 KW (230V)	1
2B	161612-007	ELEMENT, HEATING 8.5 KW (220V)	1
3*	174482	SERVICE PACK, ELEMENT BRACKET (new design, not compatible with older brackets)	1
3	164497	- BRACKET, HI LMT-FRONT	2
4	164500	- BRACKET, HI LMT-BACK	2
4*	SC04-026	- SCREW, #10-32 X 3/8	4
5	154736	CLIP, HIGH LIMIT	2
6	154866	WELD ASSY, HI LIMIT CLAMP CLIP	2
7*	SC01-310	SCREW, HIGH LIMIT CLAMP	2
8*	SC01-173	SCREW, #10 - 32 X 5/8 PH FHD SS	8
9	90085	O RING, CRUMB SWEEP	2
9*	162545	STOP, DRAIN (KFC Australia and New Zealand only)	1
10*	94016	FITTING, CRUMB SWEEP	2
11*	SC01-152	- SCREW, CRUMB SWEEP	4

Recommend Parts: A = Truck Stock / B = Dist. Stock
* = Not Shown / AR = As Required

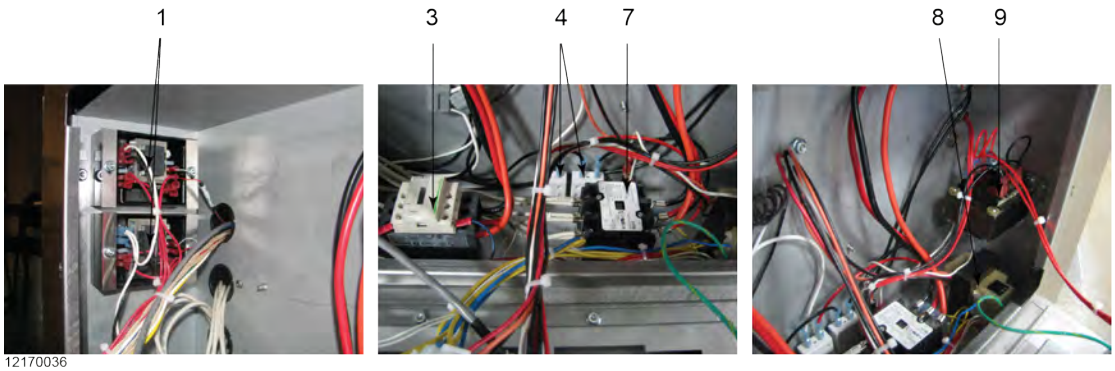


Figure 7-4 Thermocouple, Heat Contactor & Control Transformer

Item No.	Part No.	Description	Qty.
1B	83581-002	CONTROL, WATLOW HIGH LIMIT (208V)	2
1B	156985	CONTROL, WATLOW HIGH LIMIT (CE)	2
2*	84987	HL SWITCH, MOMENTARY SPLASH PROOF	1
3B	65073	CONTACTOR, SQUARED D-24V	1
4	EF02-125	BREAKER, PUSH BUTTON RESET	2
5*	EF02-104	HOLDER, FUSE - 20A 250V	2
6*	EF02-105	FUSE 15 AMP	2
7B	51795	CONTACTOR, 24 VAC COIL	1
8B	86087	ASSY, 24V/240V 75VA TRANSFORMER	1
9	TS22-012	TRANSFORMER	1
10*	ME90-008	RELAY, P&B T92 12VDC COIL 30AMP	1
Recommend Parts: A = Truck Stock / B = Dist. Stock * = Not Shown			

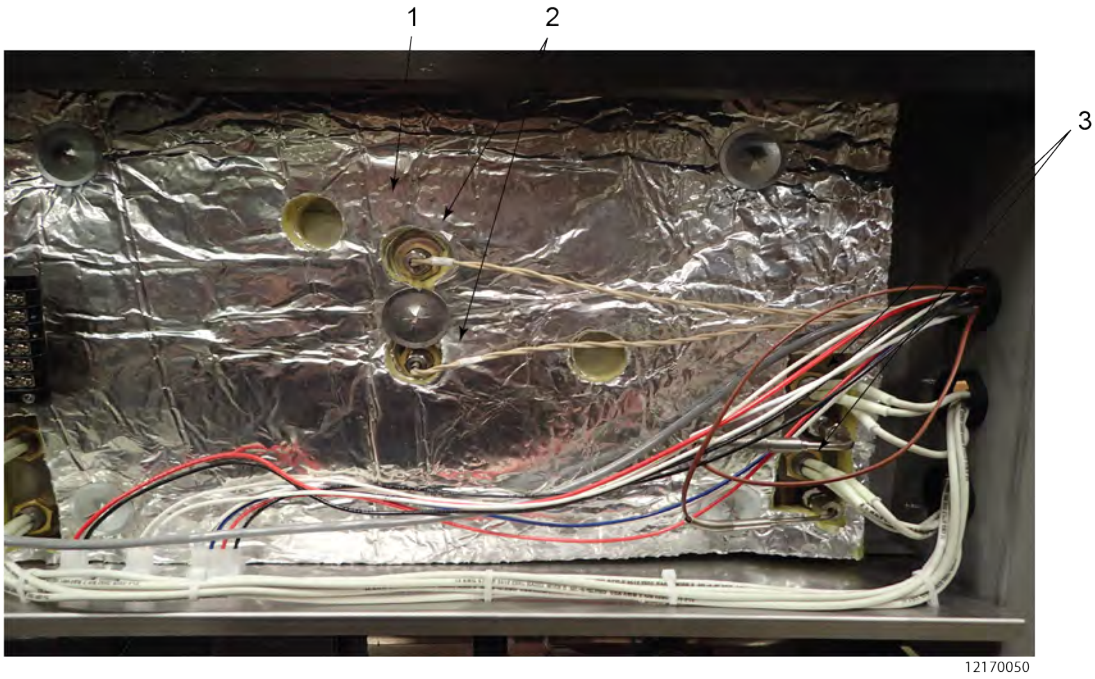


Figure 7-5 Left Side Vat

Item No.	Part No.	Description NOTE: Only OXE (Open Fryer) components are called out.	Qty.
1	94229	INSULATION, POT LEFT SIDE	1
2A	154252	ASSY, 2 IN RTD PROBE (High/Low Oil Levels)	2
3A	140563	KIT, PROTECTION PROBE UPPER - HI LIMIT w/ RTD (UL) (Replaces older upper thermocouple (93968) on fryers made before May 2017)	1
3A	162535	- PROTECTION PROBE, UPPER- HI LIMIT w/ RTD (UL) (Replaces upper protection probe on fryers made after May 2017 and older fryers upgraded with kit 140563)	1
3A	93968	THERMOCOUPLE, LOWER - HI LIMIT (UL)	1
3A	140564	KIT, PROTECTION PROBE UPPER - HI LIMIT w/ RTD (CE) (Replaces older upper thermocouple (156986) on fryers made before May 2017)	1
Recommend Parts: A = Truck Stock / B = Dist. Stock			

Item No.	Part No.	Description NOTE: Only OXE (Open Fryer) components are called out.	Qty.
3A	162523	- PROTECTION PROBE, UPPER - HI LIMIT w/ RTD (CE) (Replaces upper protection probe on fryers made after May 2017 and older fryers upgraded with kit 140564)	1
3A	156986	THERMOCOUPLE, LOWER - HI LIMIT (CE)	1
Recommend Parts: A = Truck Stock / B = Dist. Stock			

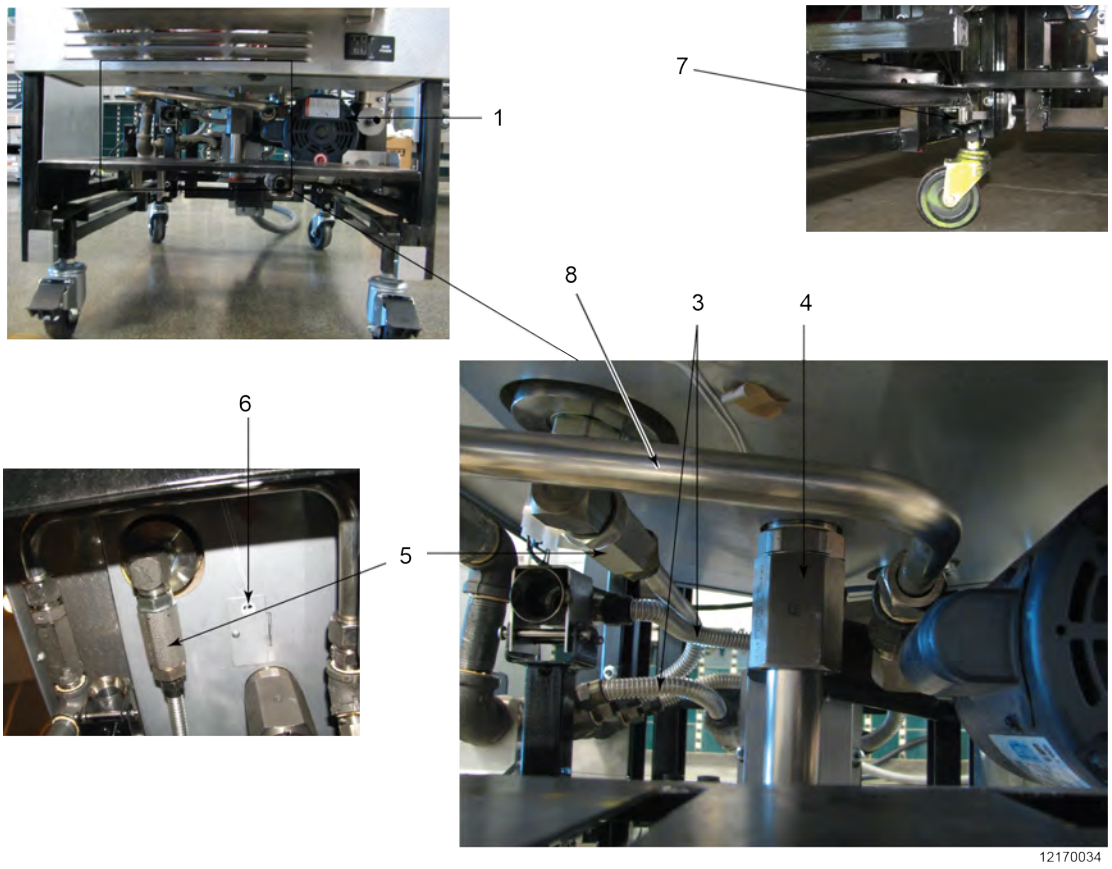


Figure 7-6 Bottom Of Fryer

Item No.	Part No.	Description	Qty.
1B	67583	MOTOR, 1/2 HP FILTER PUMP (60 Hz)	1
1B	163147	MOTOR, 1/2 HP FILTER PUMP (50 Hz) **NOTE**: When used on CE units pre-9/16 also replace the condensate tank with P/N 163939.	1
2B*	162497	ASSY, FILTER PUMP - 8 GPM	1
2B*	17476	- KIT, PUMP MOTOR SEAL	1
2B*	162501	- KIT, FILTER PUMP ROLLER	1
3	-	LINES, FLEX (See Table 7-1 *Flex Lines*, page 101 for part numbers and lengths)	
Recommend Parts: A = Truck Stock / B = Dist. Stock * = Not Shown / AR = As Required			

Item No.	Part No.	Description	Qty.
4B	175835	DRAIN VALVE W/ O-RING KIT	1
4B	84415	- DRAIN VALVE O-RING (ONLY) (Pack of 5 o-rings)	1
4B*	169857	ACTUATOR (ONLY)	1
5B	90506-001	VALVE, CHECK SAE 12 (max 200 psi)	AR
6A	154252	ASSY, 2 IN RTD PROBE	1
7B	91700	ASSY, LH DRAIN PAN SW W/ CONN	1
8	140444	KIT, FORM TUBE (NO SELECTOR VALVE)	1
8	140446	KIT, FORM TUBE (BULK OIL) (WITH SELECTOR VALVE)	1
Recommend Parts: A = Truck Stock / B = Dist. Stock * = Not Shown / AR = As Required			

Table 7-1 Flex Lines

Part Number	Length
77523-002	12 INCH
77523-011	10 INCH

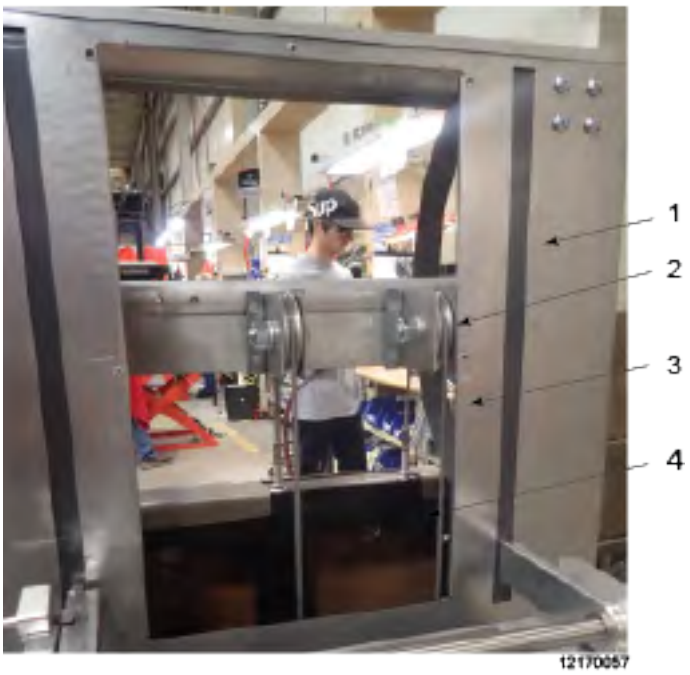


Figure 7-7 Front Top View

Item No.	Part No.	Description	Qty.
1	175727	SVC PACK, NYLATRON SLIDE	1
2	35962	ASSY, BRACKET/WHEEL	1
3	140610	KIT, LID CABLE	1
4	94259	COUNTERWEIGHT, BAR FULL	AR
4	167010	COUNTERWEIGHT, BAR HALF	AR
Recommend Parts: A = Truck Stock / B = Dist. Stock * = Not Shown / AR = As Required			

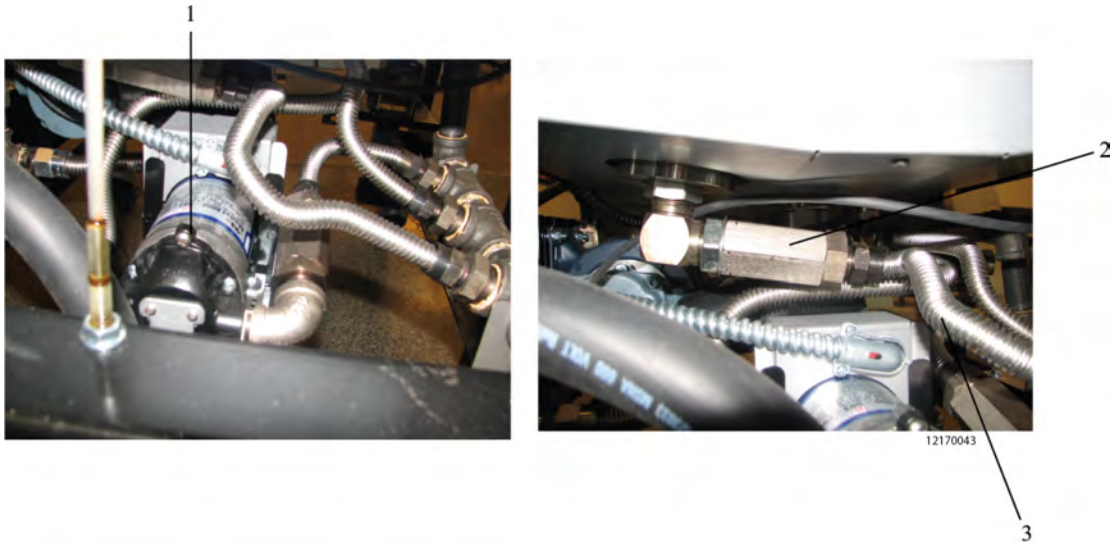


Figure 7-8 Pump and Valve

Item No.	Part No.	Description	Qty.
1B	97657	SVC PACK, PXE/OXE JIB RETRO-230V (before May 1, 2015)	1
1B	153417-001	PUMP MOTOR, 120V (after May 1, 2015)	1
1B	153417-002	PUMP MOTOR, 230V (after May 1, 2015)	1
2B	90506-001	VALVE, CHECK SAE 12 (max 200 psi)	AR
3	- - - - -	LINES, FLEX (see Table 7-2 *Flex Line*, page 103 for part numbers and lengths.)	
Recommend Parts: A = Truck Stock / B = Dist. Stock AR = As Required			

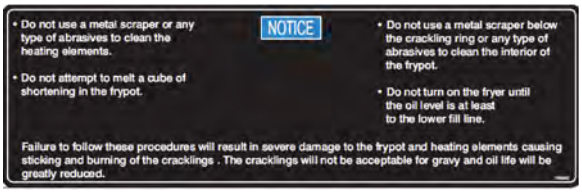
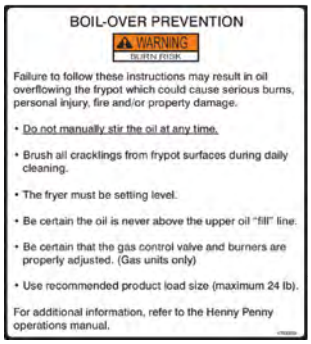
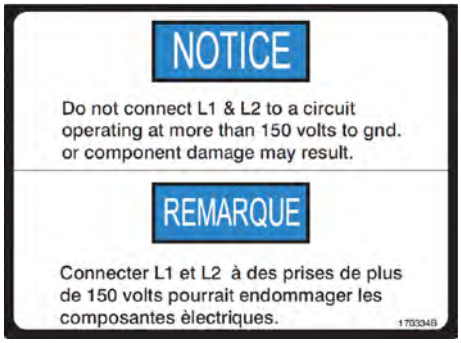
Table 7-2 Flex Line

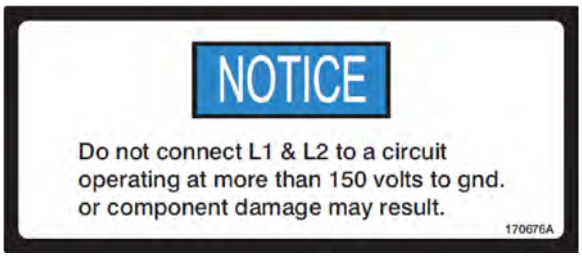
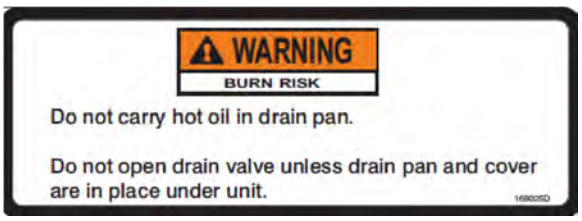
Part Number	Length
85458-002	10 INCH
85458-003	25 INCH

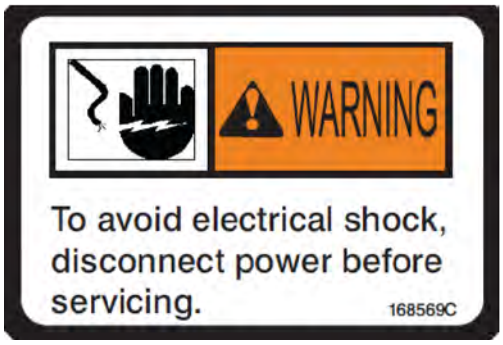
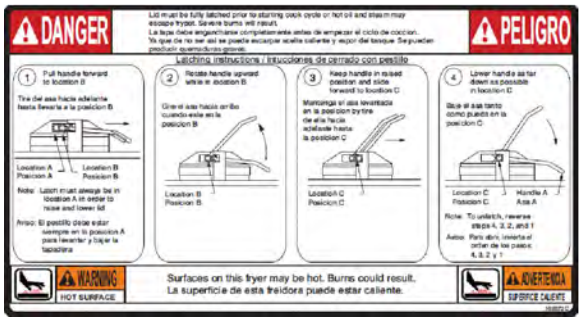
7.1.8 Lasered Acrylic Labels

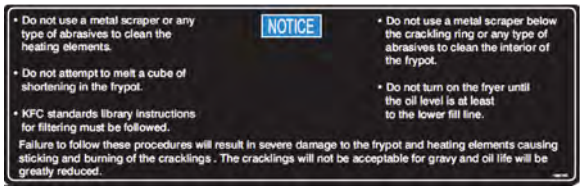
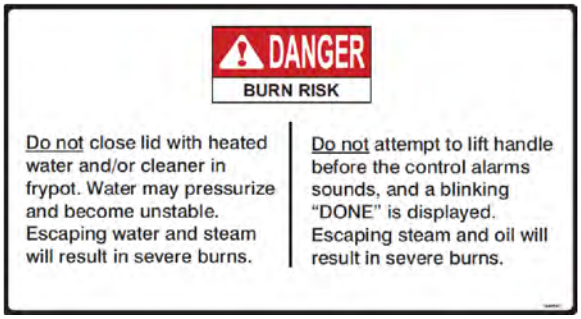
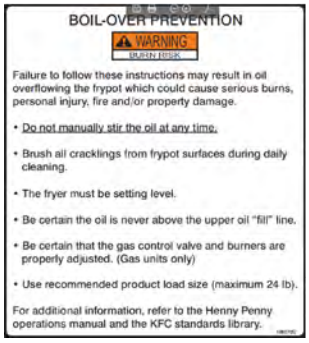
These labels are thicker and should be used in place of the standard Mylar labels under the following circumstances:

- Required by Agency.
- Mylar label peels due to environment.

Part No.	Description	Image
170332	LABEL, SHORTENING MELT (GM)	
170333	LABEL, BOILOVER PRE-VENTION (GM)	
170334	LABEL, VOLTAGE TO GROUND	
170336	LABEL, SECURE APPLIANCE	
* = Not Shown		

Part No.	Description	Image
170632	LABEL, LID DANGER (PRESSURE)	
170676	LABEL, VOLTAGE TO GROUND	
168024	LABEL, HOT SURFACE WARNING	
168025	LABEL, DRAIN PAN WARNING	
* = Not Shown		

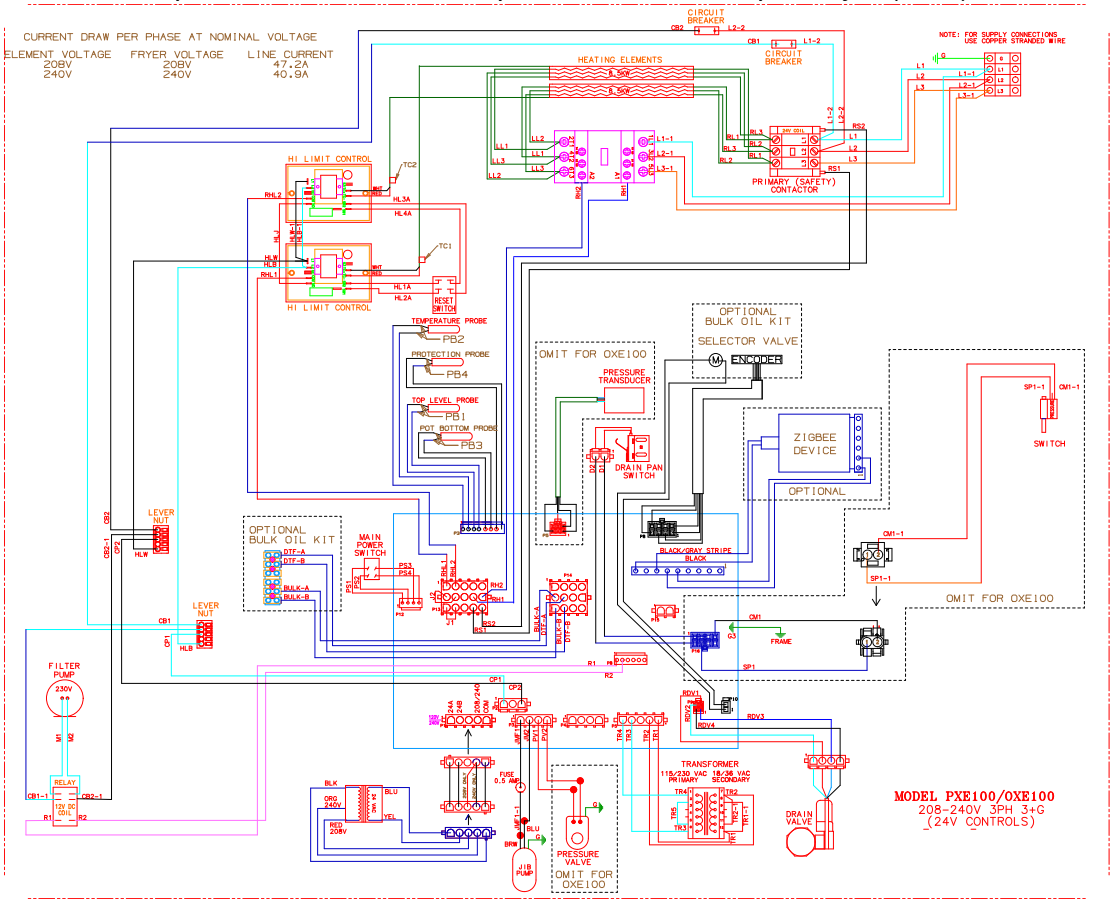
Part No.	Description	Image
168569	LABEL, DISCONNECT POWER	
168570	LABEL, LID DANGER (PRESSURE)	
168571	LABEL, SERVICE COVER	
168572	LABEL, LID INSTRUC-TION (PRESSURE)	
* = Not Shown		

Part No.	Description	Image
168573	LABEL, SHORTNING MELT KFC	
168574	LABEL, OPERATION MANUAL	
168575	LABEL, BOILOVER PRO-TECTION KFC	
168576	LABEL, SHORTNING DANGER	
168577	LABEL, OIL STIRRING DANGER	
* = Not Shown		

Chapter 8 Wiring and Plumbing Diagrams

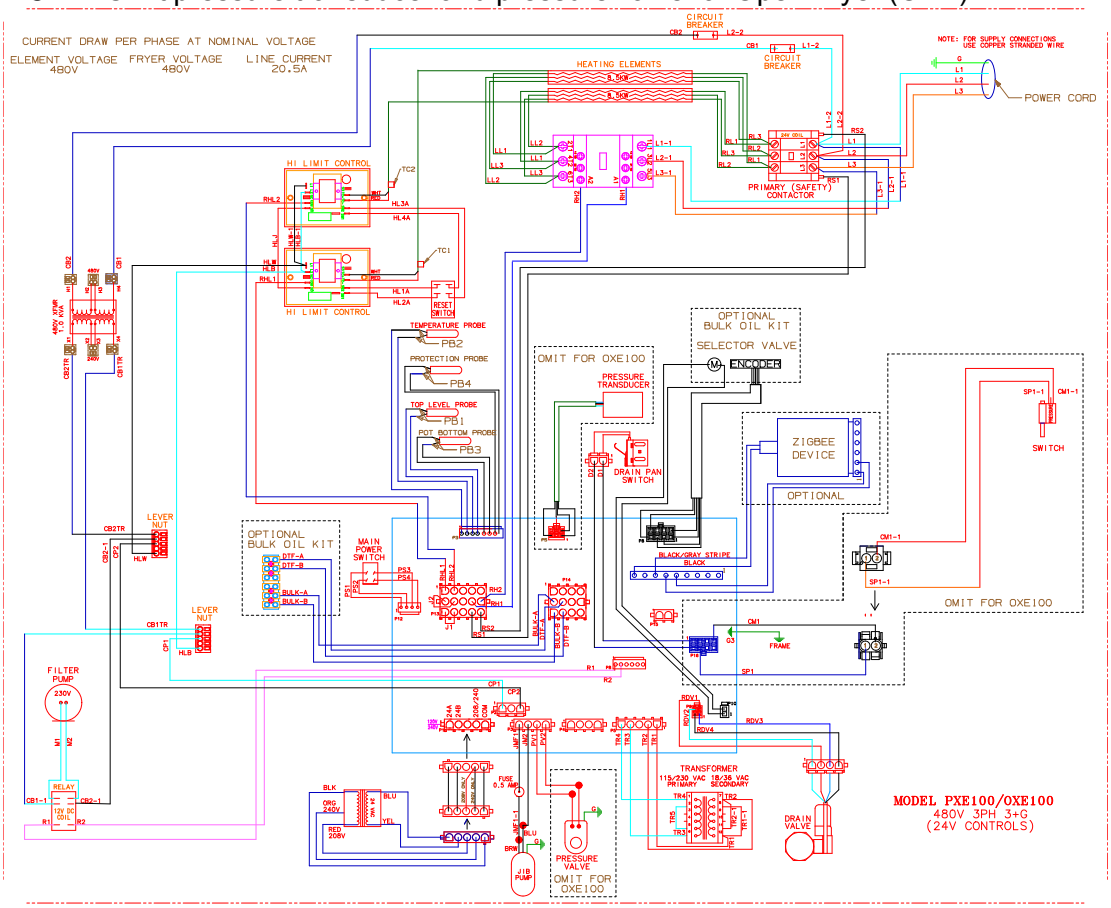
8.1 208-240V 3PH 3+G 24V Controls

NOTE: Omit pressure transducer and pressure valve for Open Fryer (OXE).



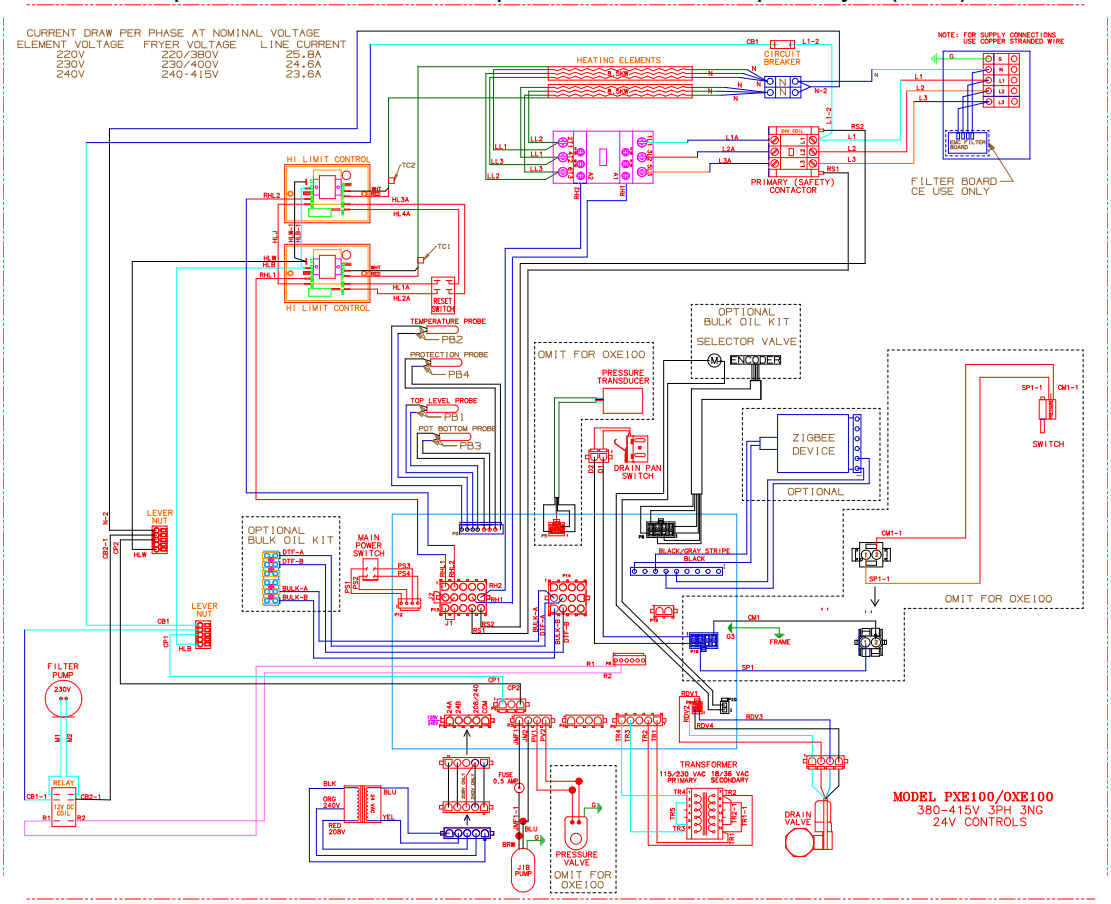
8.2 480V 3PH 3+G 24V Controls

NOTE: Omit pressure transducer and pressure valve for Open Fryer (OXE).



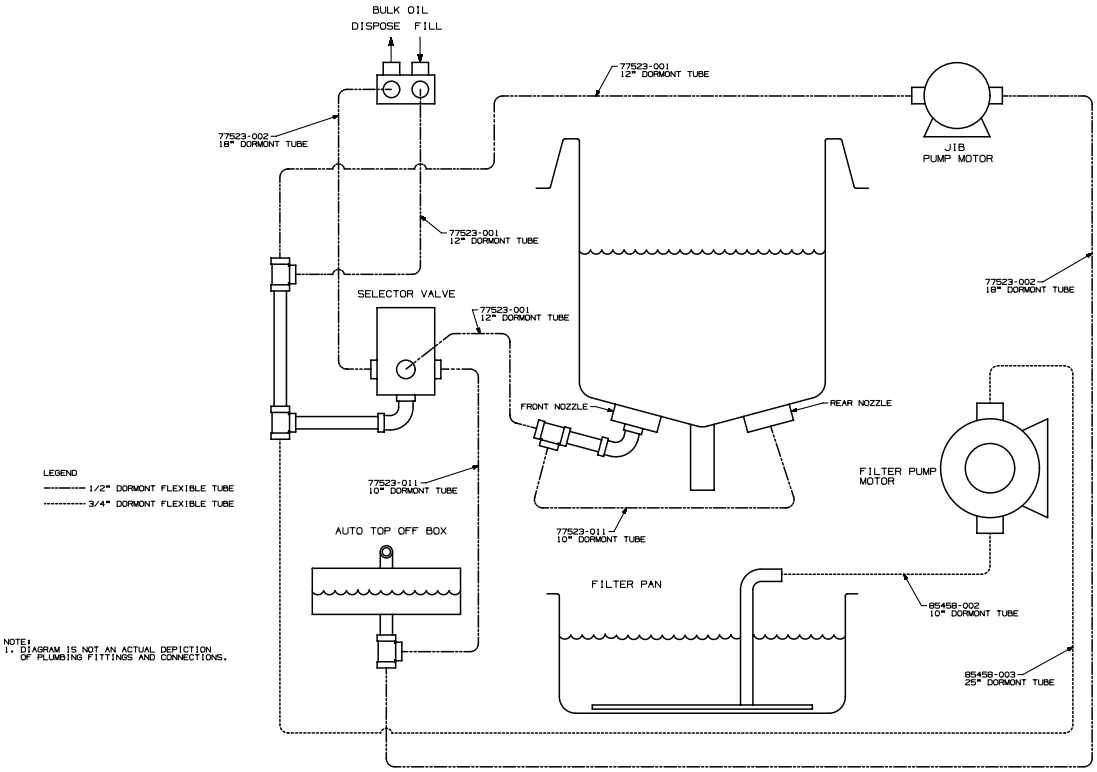
8.3 380-415V 3PH 3+G 24V Controls

NOTE: Omit pressure transducer and pressure valve for Open Fryer (OXE).



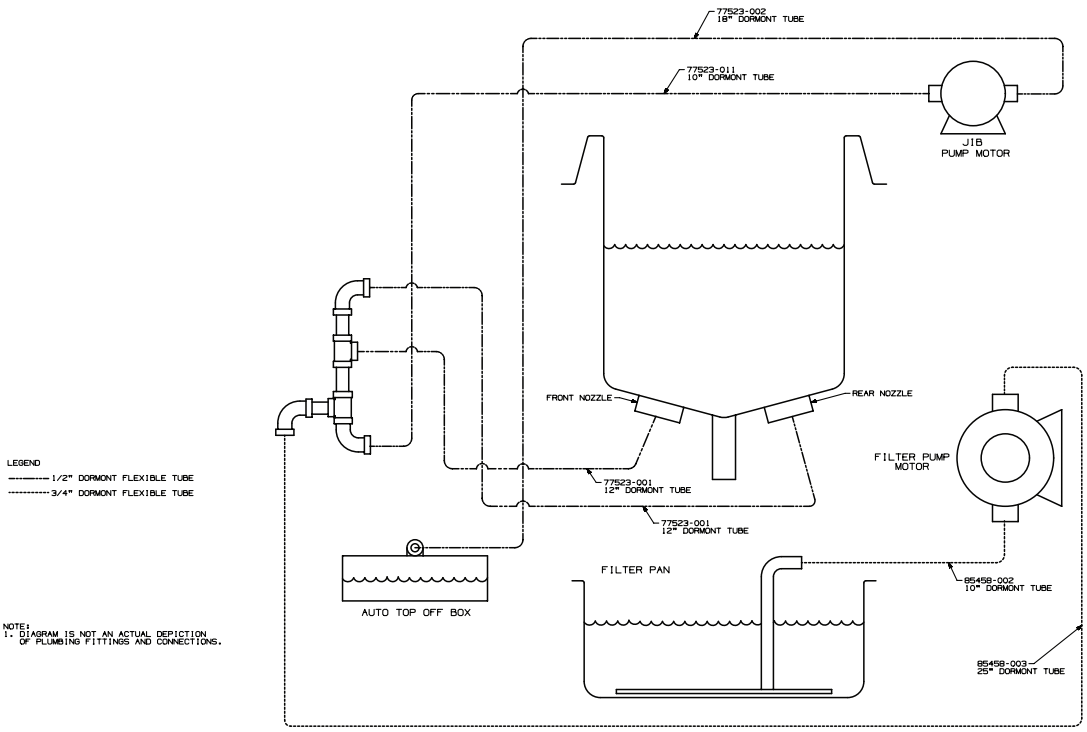
8.4 Oil Line Connections for Bulk Disposal

NOTE: Not an actual depiction of plumbing fittings or oil line routing. Includes bulk disposal selector valve components. (154835)



8.5 Oil Line Connections for Non-Bulk Disposal

NOTE: Not an actual depiction of plumbing fittings or oil line routing. Excludes bulk disposal selector valve components. (154903)



Chapter 9 Annual Inspection Checklist Form

Perform the following annual inspection in the order provided.
*Critical Item - Take fryer out of service until repaired.

Table 9-1 Annual (12 month) Inspection Checklist

#	Assess Vat and Frame (remove rear cover and both side panels)	OK	Clean	Replace
1.*	Inspect the fry pot for leaks or oil accumulation.			
2.	Ensure the fryer sits level. Inspect the casters and fryer frame for damage.			
3.*	Inspect the electrical cord and plug.			
4.*	Inspect lid cables as per instructions for this step.			
5.	Check that the counterweight frame hangs level.			
6.	Inspect and lubricate lid carriage rollers and cable pulleys. Make sure the lid moves up and down freely.			
7.	Inspect lid wiring for damage or excessive wear from lid pin switch to left side panel.			
8.	Replace filter pump seals and rollers.			
9.	Clean and replace the Nylatron slides as necessary.			
Behind Service Access Panel - Pressure System				
10.	Inspect the steam exhaust hose insert.			
11.	Remove the condensation box cover. Inspect the condensation box gasket, deadweight, and orifice. Inspect and clean the condensation drain hose. Ensure each component is in good working condition. Clean and re-install all components after step 13 is complete.			
12.	Clean the Safety Relief Valve – Install only after step 13 is complete.			
13.	Remove the solenoid valve and clean and re-assemble. Install only after step 13 is complete.			

14.	Remove all pressure system tubing. Inspect, clean, or replace any tubing or fitting that is blocked, or obstructed. If leaking is found at any fitting, clean and replace the compression fitting.			
Filter Components and Drain Oil				
15.	Verify all components of the drain pan are present and not damaged. Components include five O-rings, filter screen, two filter clips, standpipe, crumb basket, drain pan, drain pan cover and drain pan casters. Replace any components that are missing or damaged.			
16.	Remove ATO reservoir (not used in bulk fill applications). Inspect that reservoir is clean with no obstructions. Replace any damaged or missing O-rings.			
17.	Use the filter menu to test the opening and closing of the drain valve. Visually ensure the drain valve is fully open and fully closed when commanded from the control. OK to drain oil in this step and leave oil in drain pan until finished with the heat system inspection.			
18.	If a bulk oil system is connected to the fryer, dispose a small amount of oil to make sure this system is working correctly.			
19.	Using the appropriate step in the filter menu to test the ATO pump (not used in bulk fill applications). Make sure the fry pot fills from the ATO reservoir.			
Heat System				
20.	Tighten heating element spreader bars and high limit bracket.			
21.	Inspect both the temperature probe and level probe, verify neither is bent nor damaged. Check the insertion depth of each probe with a gauge – adjust if necessary.			
22.	Remove the covers on both oil return diverters. Clean and replace O-rings if necessary. Inspect the pressure transducer inlet inside the fry pot is clean and free from any obstruction.			
23.*	Inspect for excessive oil migration behind left side panel.			

24.	Verify that the high limit modules are wired in the high limit circuit and wires are secured on the terminals of the modules. Verify high limit thermocouples are clean and mounted properly to the heating elements.			
25.	Test filtration system – motor is running, oil is pumping freely back to fry pot. No leaks and no leaks back to drain pan (drain valve, check valve not leaking). Pump all oil back to fry pot.			
26.*	Check that all six heating circuits have similar amp draw. Electrically troubleshoot issues if any are found.			
Pressure System				
27.	Remove lid cover and inspect lid components – Please read and follow PXE-100 Lid Inspection instructions for this step.			
28.*	Remove and inspect the lid gasket and check the tightness of lid liner screws as per the instructions for this step. Replace the gasket if it has not been replaced in the last 12 months, or if the gasket is hardened, brittle, damaged, or blackened.			
29.	Inspect Lid Handle Rollers – Please read and follow all instructions for this step.			
30.	Inspect cam slide fillers located on each side of the lid cover.			
31.	Inspect front lid latch and make adjustments as necessary.			
32.	Inspect pressure pads. Rotate if excessively worn, replace if cracked or both sides are excessively worn.			
33.	Manually test lid pin switch. Refer to test instructions.			
34.	Check error log and address recent pressure errors.			
General Fryer, ATO, and Filtration System				
35.	Verify all labels are in place and legible on fryer.			

9.1 Required Tools

Ensure you have the following tools prior to performing the annual inspection:

- Temperature probe depth gauges
- Pipe snake
- Amp clamp
- Imperial size socket set
- Imperial size set of hex key wrenches
- 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)

9.2 Required Parts

Ensure you have the following parts prior to performing the annual inspection:

- Safety relief valve (one per fryer)
- Lid cables
- Pressure pads
- Lid gasket
- Temperature probe
- Spindle lube
- Pipe thread sealant
- Towels
- Steel and teflon sleeve fittings
- Condensation box hose
- Check valve
- Lid handle rollers
- Nylatron slides
- Side cam filters
- Lid latch
- Plumbing elbows

- Drain switch
- Splice connectors

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