HENNY PENNY
Engineered to Last

TECHNICAL MANUAL

Velocity Series™
Pressure

PXE-100

FM06-059D

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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 Pressure Electric (PXE) model 100 (PXE 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

Do not open drain cocks or other emptying devices until the pressure has been reduced to approximately atmospheric pressure.

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 Programming

1.1 Program Menu

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

1.2 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 1-1 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	Specifies the pressure reading above which control displays WAIT at the end of the cook cycle - waiting for the pressure to bleed down before beeping and displaying Done
T-28	LID LINER PIN -MUST-ACTUATE	Specifies the pressure reading by which point the lid liner pressure pin monitoring switch must actuate.
T-29	AFTER COOK, PRESSURE STUCK ON GIVES ERROR	Specifies how long to wait at the end of the cook cycle - i.e. when the cook timer has counted down to 0:00 - before generating an E-86B error code if the pressure hasn't bled down to a reasonable level so that the lid can be opened.
T-30	AUTO-CYCLE PRESSURE SOLENOID?	Specifies whether or not the auto-cycle the pressure solenoid feature is enabled. If enabled, a short time after every cook cycle in which the pressure solenoid is

Menu Item (Mode)	Display	Function
		not used, the control cycles the pressure solenoid on and off. This keeps the solenoid from getting gummed up and sticking. This cycling at the end of a cook cycle occurs only for cook cycles which haven't just used the pressure solenoid. Generally it is used for open fried products being cooked in a pressure fryer.
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 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

Menu Item (Mode)	Display	Function
		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 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-39	HEAT PULSE ENABLED	Always displays YES, and is not changeable.
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.
T-99	Mix/ATO/Polish	Appears in Tech Mode is activated during Startup Mode. Lets a technician cancel Start-up mode – just for the pending start-up.

Chapter 2 Troubleshooting

2.1 Troubleshooting Guide

NOTICE

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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 2-1 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.
Pressure not exhausting at end of Cook Cycle.	Solenoid or exhaust line clogged.	• Turn off heat, allowing the fryer to cool, releasing the pressure in the vat. Clean all lines. solenoids, and exhaust tank.
Relief valve vents.	Operating pressure too high.	Turn off heat, allowing the fryer to cool, releasing the pressure in the vat. Clean deadweight. Refer to 3.23 Preventative Maintenance in the Operator's Manual.
	Deadweight clogged.	
Pressure does not build.	Not enough product in vat.	Ensure full capacity of product in vat when using fresh oil.
	Pressure not programmed.	Check programming.
	Lid gasket leaking.	Reverse or replace lid gasket.
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.

Problem	Cause	Correction
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.

2.2 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 TOO 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 2-2 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	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

Error	Cause	Correction
(Open Circuit) E-6B MAIN TEMP PROBE FAILED (Shorted)		normal operation. If the E-6 error persists, replace the control.
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 limit thermocouples for carbon build up and clean if necessary. If no carbon found, see 7.12 *High Limit and Module Inspection*, page 79 and 4.8 *High Limit Thermocouples Replacement*, page 35. **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 7.12 *High Limit and Module Inspection*, page 79 and 4.8 *High Limit Thermocouples Replacement*, page 35.
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 7.12 *High Limit and Module Inspection*, page 79 and 4.8 *High Limit Thermocouples Replacement*, page 35.

Error	Cause	Correction
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 7.12 *High Limit and Module Inspection*, page 79 and 4.8 *High Limit Thermocouples Replacement*, page 35.
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 returned to cook mode on its own after detecting that the oil was pumped up (based on temperature rise on level probe).	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 7.12 *High Limit and Module Inspection*, page 79 and 4.8 *High Limit Thermocouples Replacement*, page 35.
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 7.12 *High Limit and Module Inspection*, page 79 and 4.8 *High Limit Thermocouples Replacement*, page 35.
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 7.12 *High Limit and Module*

Error	Cause	Correction
		Inspection, page 79 and 4.8 *High Limit Thermocouples Replacement*, page 35.
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 7.12 *High Limit and Module Inspection*, page 79 and 4.8 *High Limit Thermocouples Replacement*, page 35.
E-10Y HIGH LIMIT TRIPPED	High limit tripped less than 5 minutes after user responded YES to, Is Pot Filled? question.	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 7.12 *High Limit and Module Inspection*, page 79 and 4.8 *High Limit Thermocouples Replacement*, page 35.
E-13A PRESSURE SENSOR FAILED	Sensor failed or unplugged	A “good” reading from the sensor is between 0.5v (0 PSI) and 4.5v (30 PSI). Tolerances beyond those values are allowed: - Low reference value less than 0.25v - The “unplugged” condition should generate an E-13A. A pull-down resistor on the CPU board pulls the input low if disconnected. Any E-13 error allows operators to cook on the fryer; however, the control disables the pressure for the entire cook cycle unless the E-13 condition resolves with a good probe readings.
E-13B PRESSURE SENSOR FAILED	Sensor failed or shorted to +5v	A “good” reading from the sensor is between 0.5v (0 PSI) and 4.5v (30 PSI). Tolerances beyond those values are allowed: - High reference value more than 4.75v

Error	Cause	Correction
		Any E-13 error allows operators to cook on the fryer; however, the control disables the pressure for the entire cook cycle unless the E-13 condition resolves with a good probe readings.
E-14 PRESSURE TOO HIGH	Pressure is to high within the vat.	• Check deadweight chamber for any obstruction. • Check the steam exhaust passage for obstruction.
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-41S 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-84C PRESSURE PIN	Pressure pin did not fully engage.	• Check to see if pin is activating the switch. • Condensing steam on the switch is shorting out. • Test switch; continuity when not pressed.

Error	Cause	Correction
NOT DETECTED		
E-84D PRESSURE PIN STUCK OR NOT CONNECTED	Cannot open lid - Pin is stuck and has not dropped down.	If lid pin is stuck, remove lid cover and manually free pin.
	Can open lid - wire may be disconnected or monitoring switch failed.	• Check wire connections and reconnect loose wires. • Replace faulty wires. • Test switch. • Replace switch if needed.
E-86B PRESSURE STUCK ON	Sticking solenoid.	Test solenoid.
	Clogged pressure exhaust port.	Check ports and unclog if necessary.
	Faulty pressure transducer.	Test transducer.
E-93 24V DC SUPPLY	2nd transformer disconnected from control.	• Check transformer plug on back of control. • Check wire connections on 2nd transformer.
	Short in drain motor or selector valve motor.	Test motors.

Chapter 3 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.

3.1 Software Features

3.1.1 Water Detection Software

The purpose of the water detection software is to prevent a frypot filled with water from boiling or pressurizing. The software works by preventing the fryer from leaving the melt cycle and entering a cook cycle, until the oil reaches 215°F. When the frypot is turned on, the software measures the temperature of the liquid in the frypot. If the temperature of the liquid in the frypot is below 215°F, the fryer enters the melt cycle. During the melt cycle, the solenoid remains open and does not allow the frypot to pressurize.

The melt cycle heats the liquid using a pulse rate that prevents water from boiling. If the liquid temperature in the frypot is below 200°F, then the fryer heats with an 18/40 pulse rate (18 seconds on, 22 seconds off) for electric units and 25/40 (25 seconds on, 15 seconds off) for gas units. Once the liquid temperature reaches 200°F, the pulse rate is reduced to 5/40 (5 seconds on, 35 seconds off) for electric units and to 8/40 (8 seconds on, 32 seconds off) for gas units. These reduced pulse rates provide insufficient energy to allow water to reach a boiling point of 212°F in the frypot, but will allow oil to reach 215°F. Once the liquid reaches 215°F the software allows the fryer to enter the cook cycle, and the vat to pressurize.

3.2 Software Updates

3.2.1 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.

3.2.1.1 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 4.4 *USB Port Replacement*, page 23.

3.2.1.2 SanDisk USB Flash Drive

INFO: 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 3.2.1.3 *Version Updates*, page 18.

3.2.1.3 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 3.2.1.2 *SanDisk USB Flash Drive*, page 18and 3.2.1.3.1 *Access the Extranet*, page 18to download the most current version of software.

3.2.1.3.1 Access the Extranet

INFO: 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.

3.2.1.3.2 Locate and Download the Latest Version of Software

INFO: 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.

INFO: 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.

INFO: 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 3.2.1.2 *SanDisk USB Flash Drive*, page 18.

3.2.1.4 Loading the Software

INFO: 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.

3.3 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 4 Repair and Replacement Procedures

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

4.1 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

:

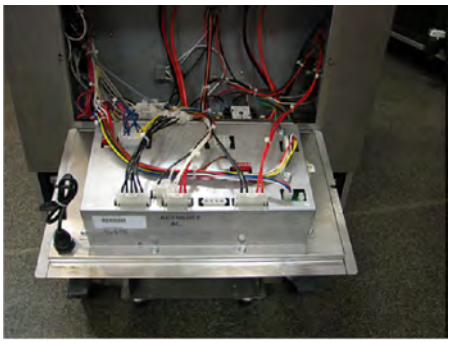
A multimeter can help you to check the electric components:

- 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.

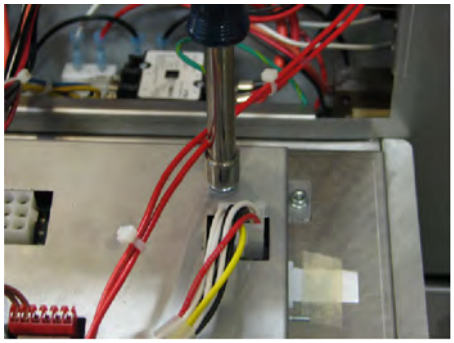
4.2 Control Board Replacement

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

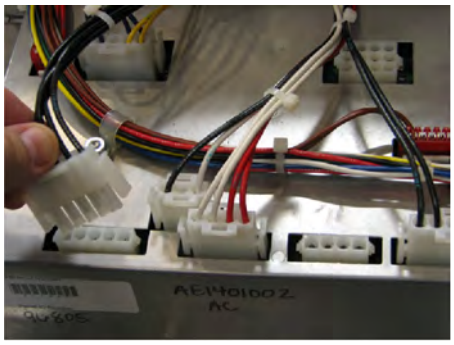
1. Use the Phillips head screwdriver to remove the two screws securing the control board to the front shroud.
2. Press in on the bottom of the board, and rotate the panel down until it rests on the shroud.



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.

4.3 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 4.2 *Control Board Replacement*, page 21.
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 4.2 *Control Board Replacement*, page 21.
6. Test the operation.

4.4 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 4.2 *Control Board Replacement*, page 21.

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 *4.2 Control Board Replacement*, page 21.

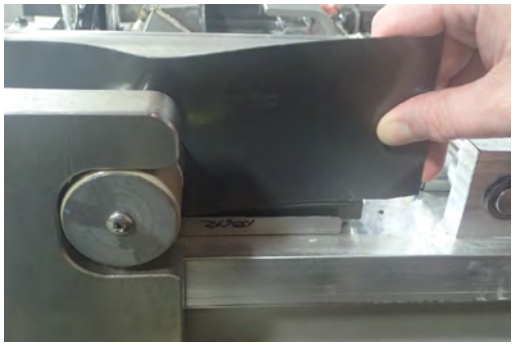
4.5 Cam Filler Strip Replacement Procedure

WARNING

- **Lid may be hot. Allow lid to cool before performing this procedure, or burns may result.**

1. Close and latch the lid with the front latch only.
2. Using a crosshead screwdriver, remove two screws in rear of lid top cover.
3. Using a flat blade screwdriver, pry rear of lid top cover up.
4. Pull lid top cover up until it clears sides.
5. Using a flat blade screwdriver, pry the front of the lid cover forward until it clears the two front pins.
6. Remove lid top cover and set aside.

7. Using a crosshead screwdriver, remove 3 screws on each side of lid sides (6 screw total).
8. Remove the lid sides and set aside.



Remove both old left and right cam filler strips by:

9. Bending the ends upward in to a V-shape, and then pulling the entire filler strip upward and away from the lid arm assembley.
10. Discard both cam filler strips.

Install both old left and right cam filler strips by:

11. Bend 4 outside corners of new fillers to 45-degree angle towards lid before installing.

12. Install cam slide filler over lid arm assembly.
    INFO: Longer side should be towards front of fryer. Ensure the front and back of the slide filler engages in cam guide.
13. Apply blue threadlocker to the lid side screws, and then reinstall the lid sides by reversing steps 8 through 7.
14. Test the operation of the lid handle and ensure both left and right filler slides operate normally.
15. Reinstall the top cover by reversing steps 6 through 2.

4.6 Cam Guide Replacement

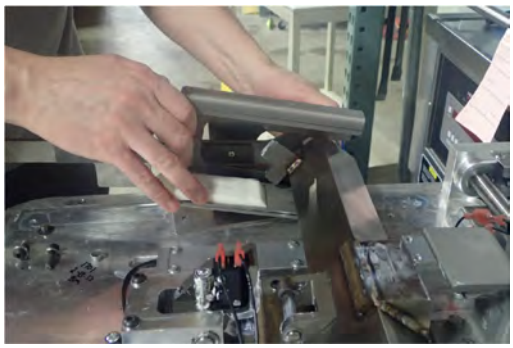
WARNING

- **Lid may be hot. Allow lid to cool before performing this procedure, or burns may result.**

TRAINING: Review the *TRAINING* before completing the replacement.

1. Close and latch the lid with the front latch only.
2. Using a crosshead screwdriver, remove two screws in rear of lid top cover.
3. Using a flat blade screwdriver, pry rear of lid top cover up.
4. Pull lid top cover up until it clears sides.
5. Using a flat blade screwdriver, pry the front of the lid cover forward until it clears the two front pins.
6. Remove lid top cover and set aside.

7. Using the 5/32 hex key, remove the two screws and split ring lockwashers on the cam guide assembly on each side of the lid (4 screws total).
   INFO: Using a hex key with well-defined edges can assist in removing the screws.



8. Remove the old cam slide and replace with the new cam slide.
9. Ensure holes in all pressure pads, shims, and spacers align with holes in lid.
11. Apply blue threadlocker to both screws and lid holes, and start threading through cam guide assembly.
    INFO: Screw shown loosely in hole to assist with alignment.

4.7 Nylatron Vertical Strip Replacement Procedure

WARNING

- **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.**

4.7.1 Estimated Resource and Time

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

4.7.2 Required Tools

Table 4-1 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 4-2 Required Tools

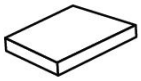
					
7/8" and 7/16" Wrench	#2 Cross-tip Screwdriver	Flat-Blade Screwdriver	Wire Cutter	Wire Crimper	Two 4 in x 4 in x 12 in (100 mm x 100 mm x 300 mm) solid blocks

Table 4-3 Required Tools

		
Food Grade Foaming Degreaser	Putty Knife	Dielectric Grease

4.7.3 Kit Parts

INFO: 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 4-4 Kit Parts

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

4.7.4 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.

4.7.5 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.**

INFO: 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.

   INFO: 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.

    INFO: 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.

4.7.6 Remove the Safety Lock Wiring

INFO:
- This procedure only applies to the PXE 100 model fryer.
- Navigate to training video timestamp 01:49 - 03:04 for procedures specific to this step.

The front shroud, containing the Nylatron vertical filler strips channels must be removed. To remove the shroud over the lid's lifting arms the safety lock wiring must be removed by doing the following:

1) Using a #2 cross-tip screwdriver, remove the 2 outer pan head screws, along the back, securing the sheet metal lid cover to the lower cast portion of the lid. The strain relief, wiring and cover is visible.

   INFO: The center screw remains in place. It is not removed.
2) Using a #2 cross-tip screwdriver, remove the 2 pan head screws securing the safety lock wiring cover to the left lift arm.
3) Remove the safety lock wiring cover and grommet.
4) Using a #2 cross-tip screwdriver, remove the 1 pan head screw securing the p-clip to the left lift arm.
5) Using a 7/8 in open end wrench, loosen the strain relief compression fitting and move out of the way.
6) Disconnect the spade connectors, and then using a pair of snips, clip off the spade connectors from the safety lock wiring.

7) Pull out the wiring through the strain relief wiring bracket assembly, and then remove the compression fitting, grommet and p-clip from the safety lock wiring.

4.7.7 Remove the Tilt Stop

INFO: 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.

4.7.8 Remove the Retaining Rod

INFO: 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.

4.7.9 Remove the Front Shroud

INFO: 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.

4.7.10 Clean the Nylatron Filler Strip Channels

INFO: 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.

4.7.11 Install the New Nylatron Filler Strip

INFO: 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.

4.7.12 Reconnect the Retaining Rod

INFO: 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.

4.7.13 Install the Tilt Stop

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

INFO: 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.

4.7.14 Install the Safety Lock Wiring

INFO:
- This procedure only applies to the PXE 100 model fryer.
- Navigate to training video timestamp 06:42 - 07:17.

Install the safety lock wiring strain relief assembly. Obtain the spade connectors from the kit and do the following:

1) Slide the p-clip, grommet and compression fitting over the safety lock wiring.
2) Using a #2 cross-tip screwdriver, install 1 pan head screw to secure the strain relief wire p-clip to the left inner lid's lifting arm.
3) Install the grommet with wire into the safety lock wiring cover.
4) Using a #2 cross-tip screwdriver, install the 2 pan head screws securing the safety lock wiring cover to the left lift arm.
5) Pull the safety lock wiring through the strain relief wiring bracket assembly.
6) Strip the two safety lock wire insulators back 1/4 in to expose the center wire.
7) Crimp two new spade connectors to the two strain relief wires.
8) Apply dielectric grease to the ends of the spade connectors. This ensure connectivity and prevents corrosion.
9) Connect both spade connectors.
10) Using a 7/9 in wrench, install and snug the strain relief compression fitting.

4.7.15 Test the Safety Lock Wiring

INFO:
- This procedure only applies to the PXE 100 model fryer.
- Navigate to training video timestamp 07:18 - 07:42.

Test the wiring connection from the control panel by doing the following:

1) Press the INFO and MAIN MENU buttons simultaneously and =INFO MODE= displays.
2) Press the top right action button until INPUTS-2 displays at the top. OK displays in the right-side of the lower window.
3) Raise the safety locking switch. The OK changes to PR.
4) Lower the safety locking switch. The PR changes to OK.
   - If the test succeeds, continue at 4.7.16 *Install the Cover Panels*, page 34.
   - If the test fails, diagnose and correct before continuing.

4.7.16 Install the Cover Panels

INFO: 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.

4.7.17 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.

4.7.18 Install the Rack Carrier

INFO: Navigate to training video timestamp 08:58.

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

4.8 High Limit Thermocouples Replacement

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

INFO: 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.

4.8.1 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°

4.8.2 Replacement

1. Lift the lid, 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 4.2 *Control Board Replacement*, page 21.

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.

INFO: 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.

INFO: 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 4.2 *Control Board Replacement*, page 21.

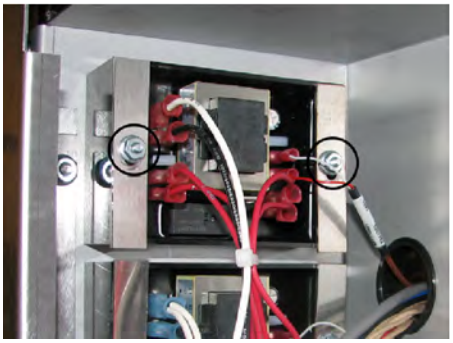
4.9 High Limit Module Replacement

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

INFO:

- 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 4.2 *Control Board Replacement*, page 21.
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 4.2 *Control Board Replacement*, page 21.

4.10 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 4.2 *Control Board Replacement*, page 21.
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 4.2 *Control Board Replacement*, page 21.

4.11 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 4.2 *Control Board Replacement*, page 21.
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.

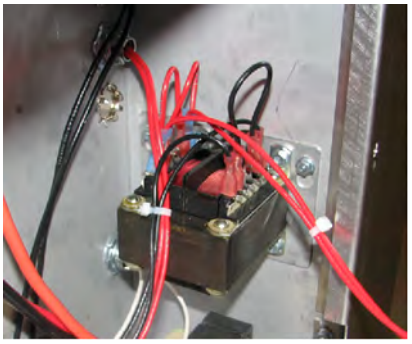
b) 1L1, 3L2, and 5L3 wires from the side of the contactor.

c) A1 and A2 blue wires from the contactor.

8. Install the control board by performing the installation procedure from 4.2 *Control Board Replacement*, page 21.

4.12 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.**

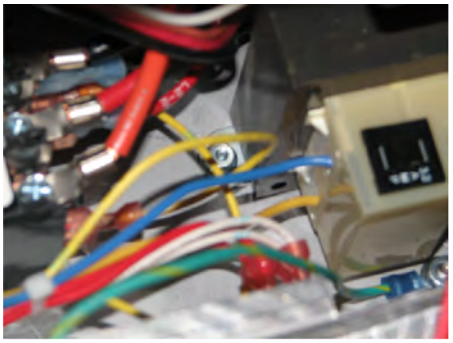


1. Lower the control board by performing the removal procedure from 4.2 *Control Board Replacement*, page 21.
2. Mark the location of the wires, and then disconnect.
3. Use a 3/8 in. nut-driver to remove the nuts that secure the transformer to the shroud.
4. Lift up on the transformer and remove it from 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 4.2 *Control Board Replacement*, page 21.

4.13 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 4.2 *Control Board Replacement*, page 21.
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 4.2 *Control Board Replacement*, page 21.

4.14 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.**

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

4.14.1 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.

4.14.2 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.

4.14.3 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.

4.14.4 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.

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

4.14.5 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.

4.14.6 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.

   INFO: 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.

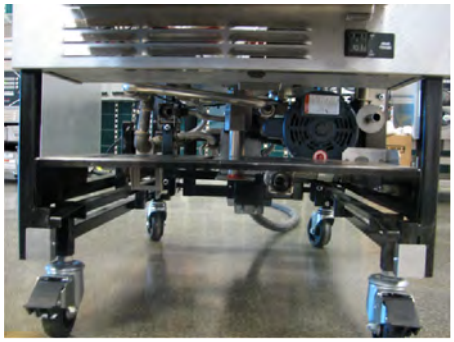
4.14.7 Test the Drain Valve and Actuator Operation

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.

4.15 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.

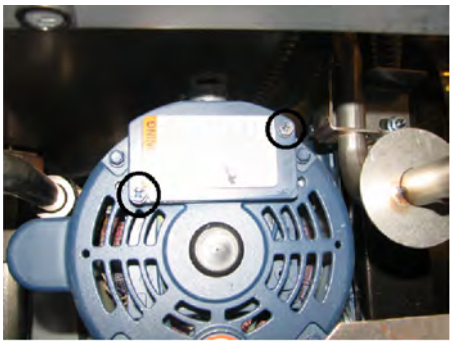


1. Remove the drain pan, fresh oil pan (ATO), and condensation pan.

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

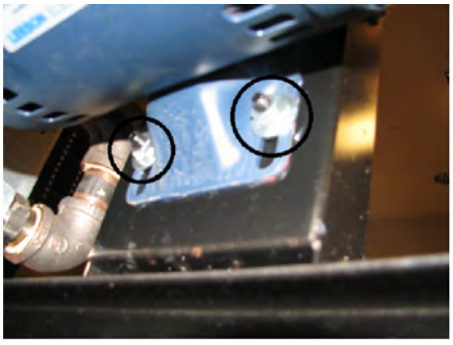
2. Use an adjustable wrench to remove the flex line and pipe connections from both ends of the pump motor.

INFO: 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.

4.16 Filter Pump Motor Seal Replacement

The filter pump and filter motor must be seperated for this procedure, see 4.15 *Filter Pump Motor Replacement*, page 44. 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 4-1 *Pump Seal Kit Placement*, page 46.

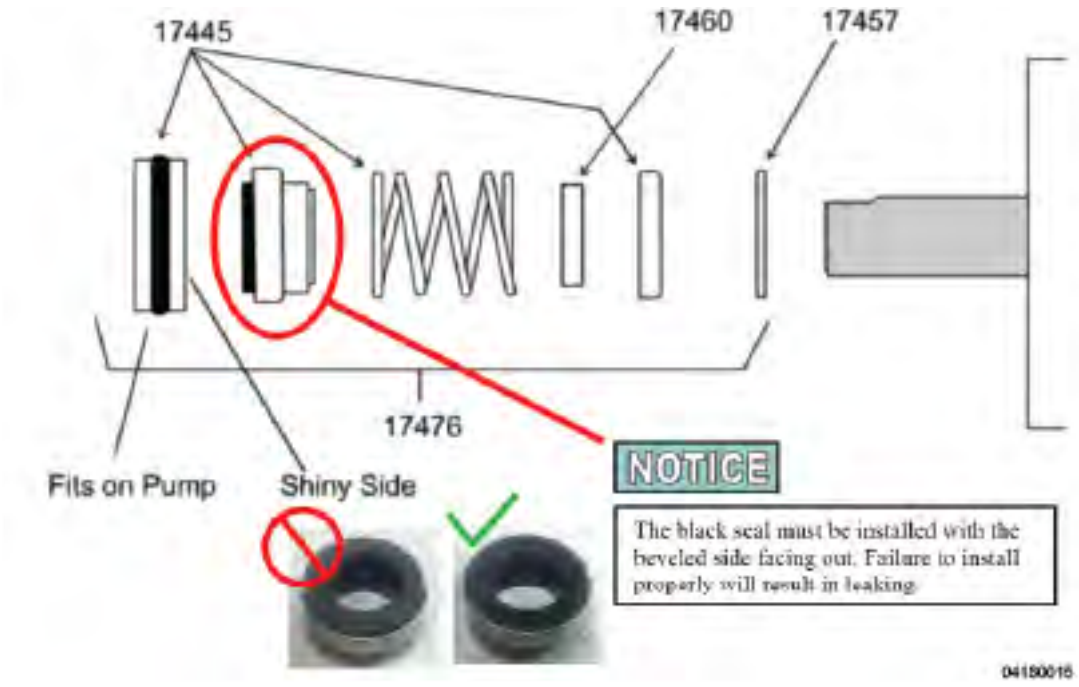


Figure 4-1 Pump Seal Kit Placement

4.17 Filter Pump Motor Roller Replacement

The filter pump and filter motor must be seperated for this procedure, see 4.15 *Filter Pump Motor Replacement*, page 44. 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.

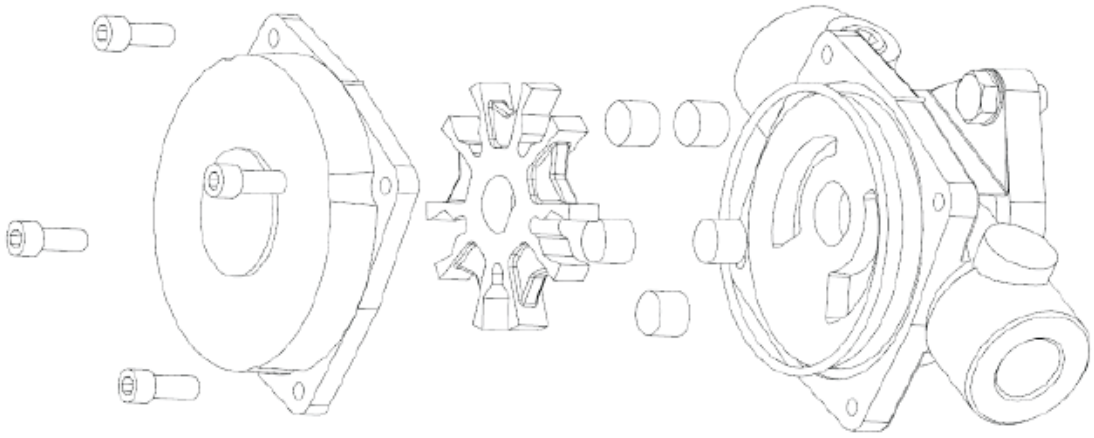


Figure 4-2 Pump Rollers

4.18 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.

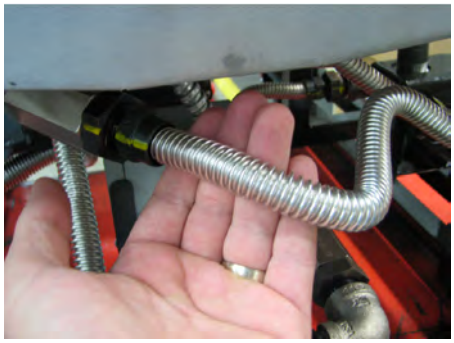
CAUTION

- 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.

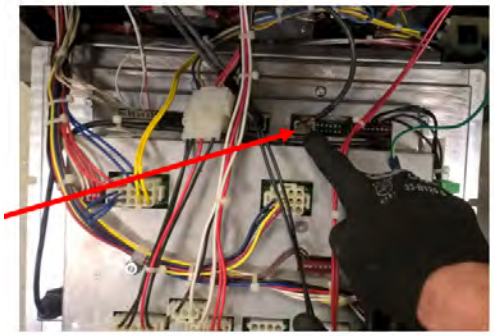
3. Use the old flex tube as a template to rough bend the new tube.
4. Install the new flex tube by torquing finger tight, and then turning (torque) an additional 1/4 turn.

4.19 Selector Valve Motor and Encoder Replacement

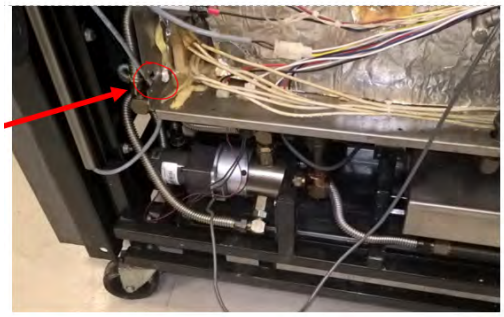
WARNING **Remove all electrical power from the fryer. Failure to do so may result in electrical shock.**

NOTE: **This procedure applies to the repair of updated (newer) sealed design selector valve. If an older non-sealed design, then the complete selector valve must be replaced using P/N 171456.**

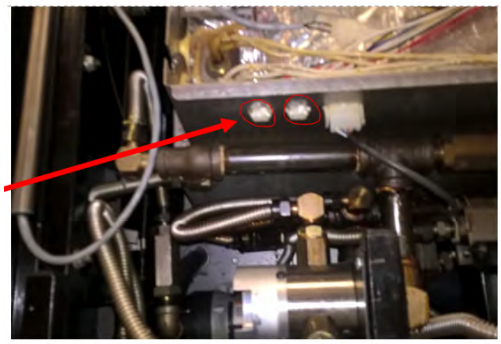
1. Remove power to fryer and move to allow access to left side panel.
2. Remove left side panel and drain pan.



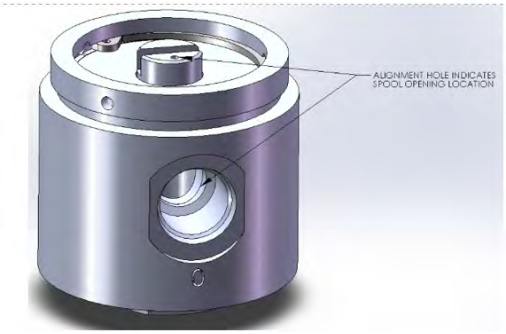
3. Remove two screws holding in control assembly of fryer and rotate down. Unclip harness for selector valve encoder and remove any wire ties holding this harness. Pull through electrical enclosure.



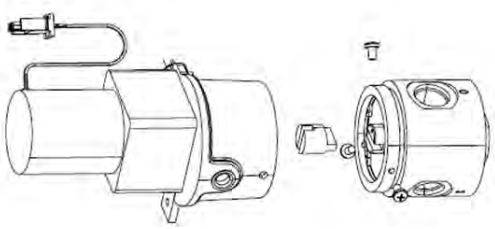
4. Remove the two screws holding in harness, remove grommet from cable and keep parts for later assembly.



5. Unclip the selector valve motor and drain pan switch wiring harness, and then set aside.



6. Remove the three button cap screws from the valve body and encoder and set aside.
7. Remove old motor/encoder assembly from fryer and discard.
8. Remove coupler and set aside.
9. Align spool so that the spool alignment indicator points towards the home port and the home port is fully open, if not already.
10. Place coupler back onto spool making sure the male tang of the coupler engages the spool and is centered. Use of some grease on the male tang may be helpful to help hold it in place for the next step.



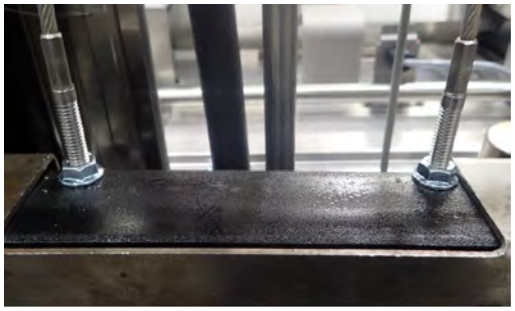
11. Place new motor/encoder assembly on to the spool valve making sure the motor tang engages the female tang of the coupler. Fully seat the assembly to the spool and align screw holes. May need to exert force to get the screw holes to align, by compressing o-ring on spool valve.
12. Apply blue Loctite #242 to the cap screws and reinstall, torque to 34 in-lbs.
13. Clip the new motor wire harness, drain pan switch, and new encoder cable back to their original locations and secure. Motor wire pair should be twisted approximately 2 twists per inch.
14. Re-install the rear bracket of the selector valve to the frame.
15. Test Selector valve operation using tech mode or in filter mode.
16. Upon successful results, return fryer to service.

4.20 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.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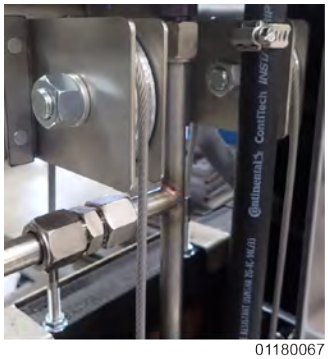
2. Using a Phillips screwdriver, remove screws securing the top cap and remove.
3. Lower the lid until it latches, and then insert two 5/16” carriage bolts, one through each side of the weight carriage and in to the frame to secure the carriage. Ensure the carriage is level.

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

4. Unscrew and remove both cables from the weight carriage assembly, and then the chassis. Remove weights as needed.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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.
8. Using a 1/2” wrench, tighten the lock-nut against the weight carriage assembly, securing both cables in to place.


01180069

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

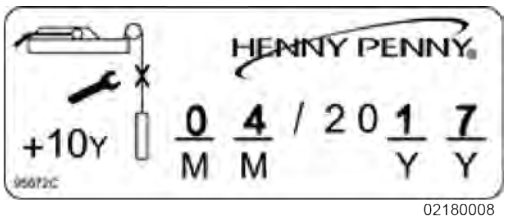
end of each of the cables, and then tighten.

INFO: 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.



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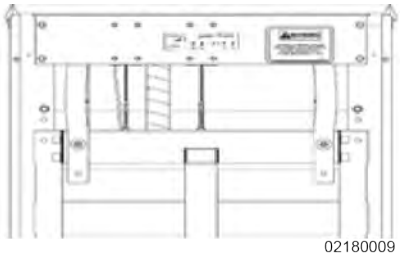
16. After replacing both cables, locate the white label. Using a marker or pen, write the cable replacement month and year on the white label as shown.



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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.

4.21 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.

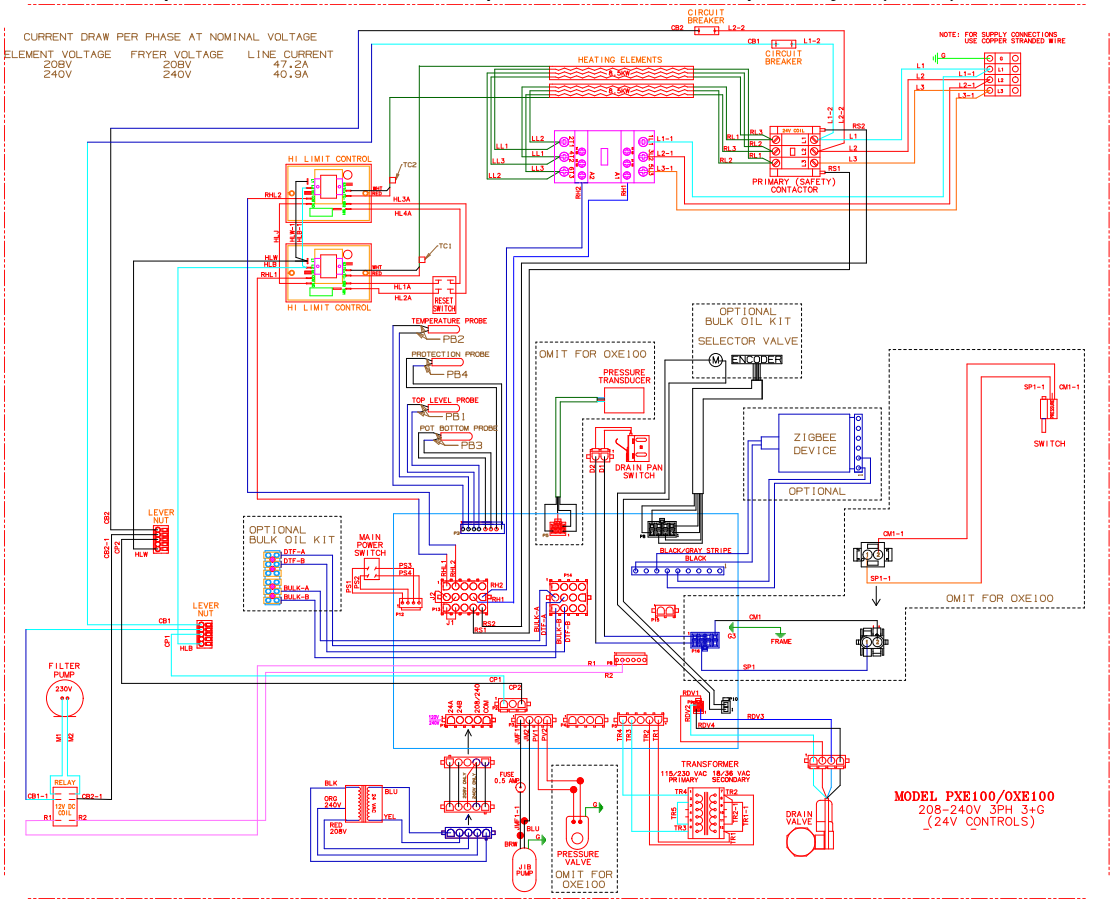
NOTICE: Do not use a scotch brite pad or other similar abrasive material anywhere on the fryer.

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 5 Wiring and Plumbing Diagrams

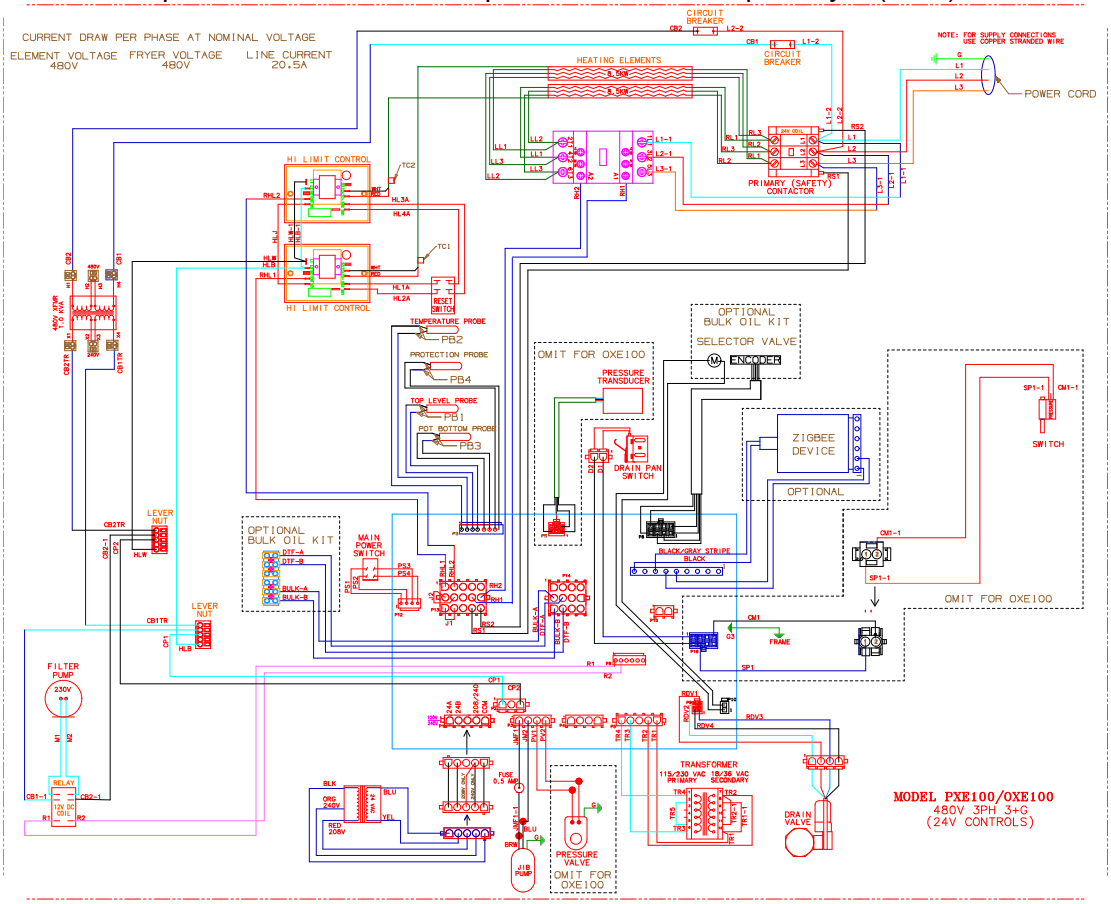
5.1 208-240V 3PH 3+G 24V Controls

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



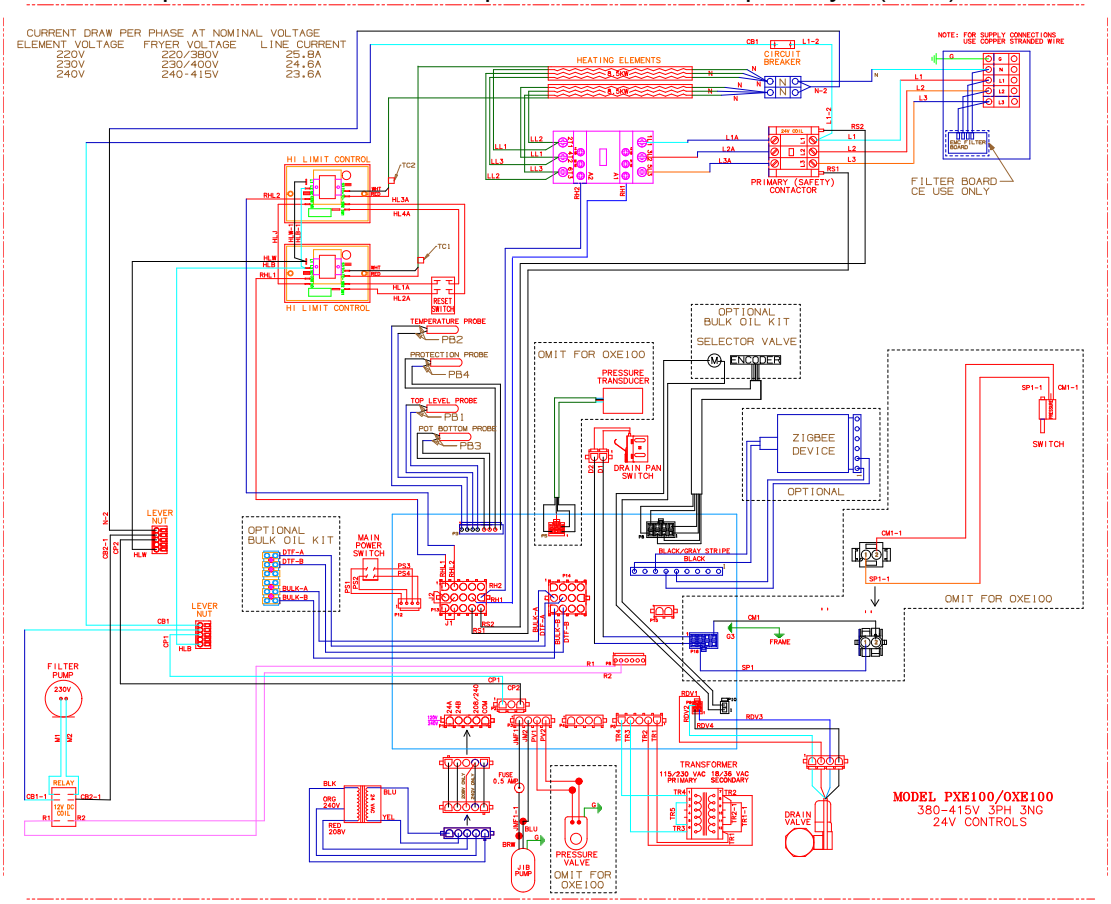
5.2 480V 3PH 3+G 24V Controls

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



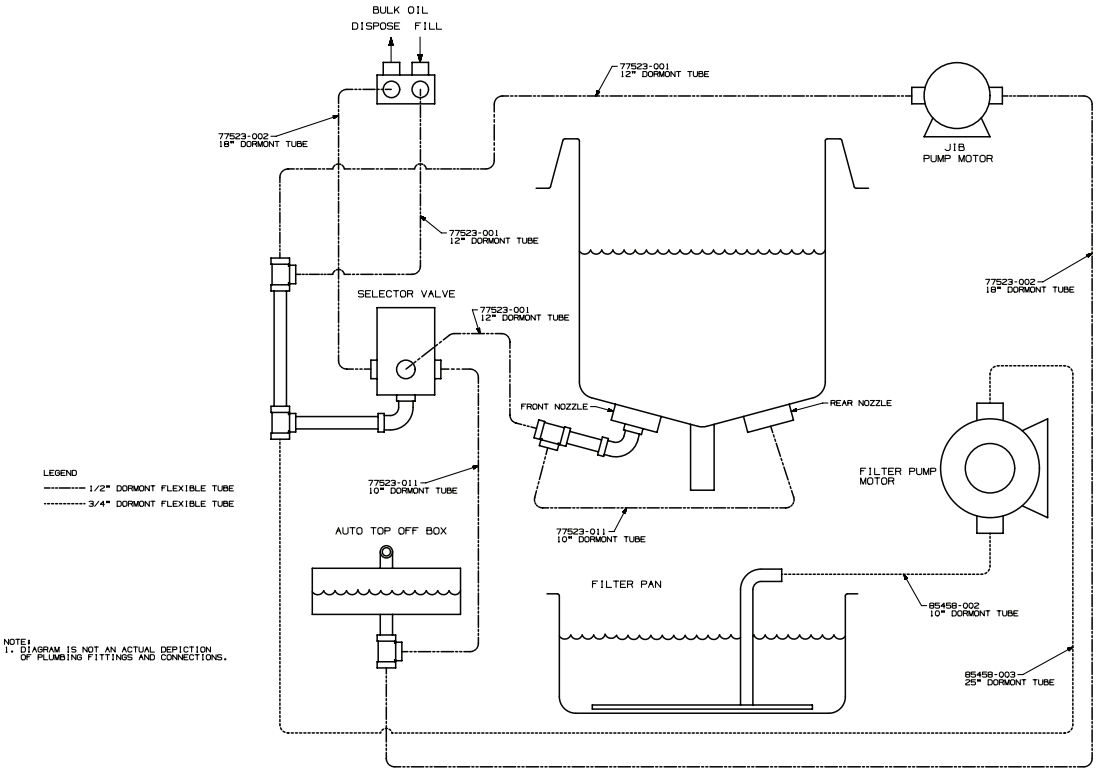
5.3 380-415V 3PH 3+G 24V Controls

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



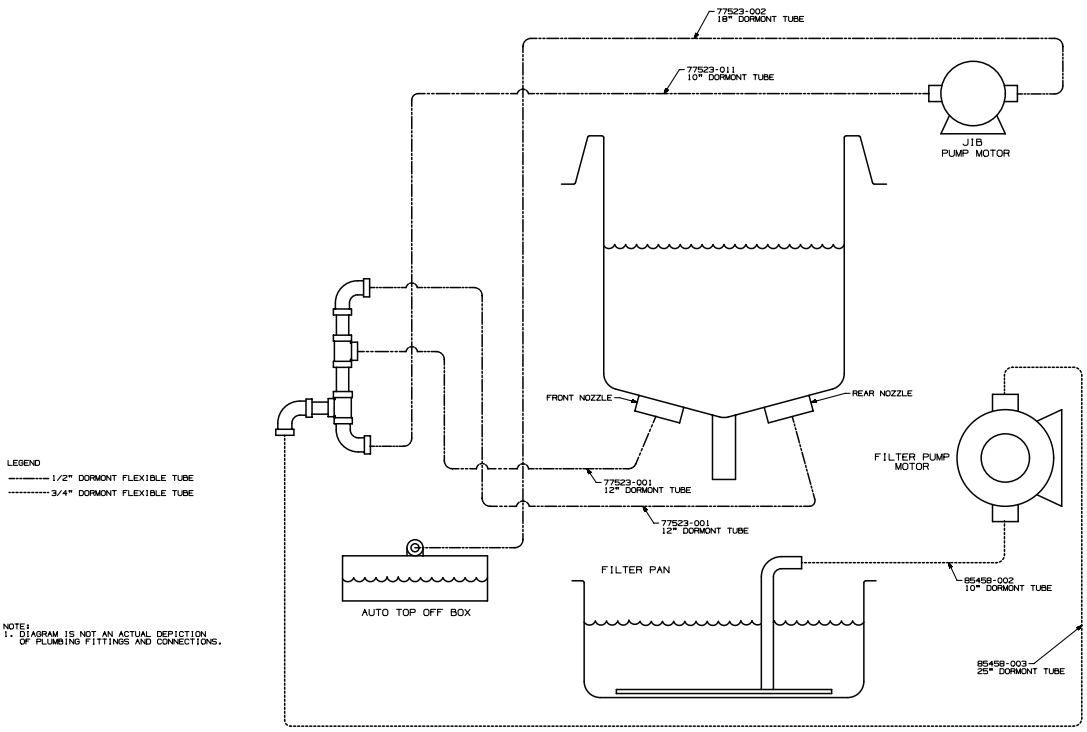
5.4 Oil Line Connections for Bulk Disposal

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



5.5 Oil Line Connections for Non-Bulk Disposal

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



Chapter 6 Annual Inspection Checklist

Use this form to document the annual general inspection of the fryer.
*Critical Item - Take fryer out of service until repaired.

Table 6-1 Annual (12 month) Inspection Checklist

#	Assess Vat and Frame (remove rear cover and both side panels)	OK	Clean	Replace
1.*	Inspect the vat for leaks. 7.9 *Inspect Vat for Leaking*, page 75.			
2.	Ensure the fryer sits level. .			
3.	Inspect the casters and fryer frame for damage. 7.7 *Inspect Castors and Frame*, page 74.			
4.*	Inspect the electrical cord and plug. 7.11 *Inspect the Power Cable*, page 78.			
5.*	Inspect lid cables. 7.21 *Inspect Lid Counterweight Cables*, page 90.			
6.	Check that the counterweight frame hangs level. .			
7.	Inspect and lubricate lid carriage rollers and cable pulleys, and then make sure the lid moves up and down freely. 7.22 *Inspect and Lubricate the Lids Carriage Wheels*, page 91.			
8.	Inspect lid wiring for damage or excessive wear from lid pin switch to left side panel. 7.23 *Lid Pressure Pin Switch Harness Inspection*, page 92.			
9.	Replace filter pump seals and rollers. 4.17 *Filter Pump Motor Roller Replacement*, page 47.			
10.	Clean and replace the Nylatron slides as necessary. , 4.7 *Nylatron Vertical Strip Replacement Procedure*, page 27.			
Behind Service Access Panel - Pressure System				
11.	Inspect the steam exhaust hose insert. 7.2 *Steam Exhaust Hose Insert Inspection*, page 66.			
12.	Remove the condensation box cover, and then clean and inspect:			

	- Inspect the condensation box gasket. - Inspect and clean the deadweight and orifice. - Inspect and clean the condensation drain hose. Re-install after completing step 14. 7.3 *Condensation Box and Component Inspection*, page 67.			
13.	Remove the safety relief valve. Clean, inspect and reassemble, and then install after completing step 14. 7.4 *Safety Relief Valve Inspection*, page 68.			
14.	Remove the solenoid valve. Clean, inspect and reassemble, and then install after completing step 14. 7.6 *Solenoid Valve Cleaning and Inspection*, page 70.			
15.	Remove all pressure system tubing, and then clean, inspect, replace as necessary and reassemble. 7.5 *Pressure System Tubing Cleaning and Inspection*, page 69.			
Filter Components, ATO and Bulk Fill				
16.	Verify all components of the drain pan are present and un-damaged. 7.14 *Drain Pan Component Inspection*, page 81.			
17.	Remove ATO reservoir (not used in bulk fill applications), and then clean, inspect, and reassemble. 7.15 *ATO Reservoir Inspection and pump test*, page 82.			
18.	Use the filter menu to test the opening and closing of the drain valve. 7.16 *Testing the Drain Valve*, page 84.			
19.	If a bulk oil system is connected to the fryer, dispose a small amount of oil to make sure this system is working correctly. 7.17 *Bulk Dispose Test*, page 86.			
20.	Test the ATO pump (not used in bulk fill applications) by making sure the vat fills from the ATO reservoir. 7.15 *ATO Reservoir Inspection and pump test*, page 82.			
Heat System				
21.	Tighten heating element spreader bars and high limit bracket. 7.18 *Heating Element*			

	Spreader Bars Tightening and Inspection, page 87.			
22.	Inspect both the temperature probe and level probe for damage and proper depth. 7.10 *Temperature and Level Probe Inspection*, page 76.			
23.	Remove the covers on both oil return diverters, and then clean and replace O-rings if necessary. 7.19 *Oil Return Diverters and Pressure Outlet Inspection*, page 88.			
24.	Inspect the pressure transducer inlet inside the vat is clean and free from any obstruction. 7.8 *Inspect Oil Migration*, page 75			
25.	Inspect for excessive oil migration behind left side panel. 7.8 *Inspect Oil Migration*, page 75.			
26.*	Verify that the high limit modules are wired in the high limit circuit and wires are secured on the terminals of the modules. 7.12 *High Limit and Module Inspection*, page 79.			
27.	Verify high limit thermocouples are clean and mounted properly to the heating elements. 4.8 *High Limit Thermocouples Replacement*, page 35			
28.	Test oil filtration system for function and leaks. 7.20 *Inspect for Plumbing Leaks in the Filtration System*, page 89.			
29.*	Check that all six heating circuits have similar amp draw. 7.13 *Measuring AMP Draw*, page 80.			
Labels				
30.	Verify all labels are in place and legible on fryer. , 7.32 *Lid Label Inspection (English)*, page 109.			
Lid Pressure System				
31.	Remove lid cover and inspect lid components. 7.24 *Lid Inspection*, page 93.			
32.*	Remove and inspect the lid gasket and check the tightness of lid liner screws as per the instructions for this step. 7.30 *Lid Gasket and Liner Inspection*, page 105.			

33.	Inspect lid liner screws and gasket retainer screws. 7.30 *Lid Gasket and Liner Inspection*, page 105.			
34.	Inspect lid handle rollers. 7.29 *Cam Guide Inspection*, page 100.			
35.	Inspect cam slide fillers located on each side of the lid cover. 7.27 *Inspect the Lid Cam Guide Fillers*, page 97.			
36.	Inspect front lid latch and make adjustments as necessary. 7.31 *Lid Latch Inspection and Adjustment*, page 107.			
37.	Inspect pressure pads. 7.26 *Lid Pressure Pad Inspection*, page 96.			
38.	Manually test lid pin switch. 7.25 *Lid Pressure Pin Switch Manual Test*, page 94.			
39.	Check error log and address recent pressure errors. .			
Recorded Error Message				

Table 6-2 Date of Inspection and Signatures

DATE OF INSPECTION AND SIGNATURES
MM/DD/YY:
Signature of Inspecting Technician:
Signature ot the Store Manager:

Chapter 7 Annual Inspection Procedures

A certified technician should inspect the entire fryer annually (once every 12 months). Use the Chapter 6 *Annual Inspection Checklist*, page 61 to ensure all required maintenance procedures are completed.
INFO: Refer to the Service Procedure and Parts section of the Technical Service Manual for further instruction.

7.1 Required Parts and Tools

7.1.1 Parts

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

- Safety relief valve (one per fryer)
- Temperature probe
- Spindle lube
- Pipe thread sealant
- Towels
- Steel and teflon sleeve fittings
- Condensation box hose
- Check valve
- Plumbing elbows
- Drain switch
- Splice connectors

7.1.2 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

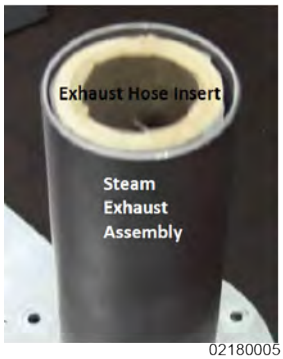
- Crimping tool
- Adjustable wrench set 8–12”
- Open end wrench set (imperial sizes)

7.2 Steam Exhaust Hose Insert Inspection

WARNING **Do not attempt to remove any of the condensation box components while the fryer is in use. Severe burns may result. Only perform this procedure when the fryer is cool and disconnected from the power source.**

CAUTION **The deadweight is not captive inside the steam stack and can fall out. Keep the steam stack in the upward orientation or the deadweight can fall out and may cause personal injury or damage to the deadweight.**

Ensure the steam exhaust hose is undamaged and working within specification by doing the following:



02180005

Visually inspect the steam exhaust hose insert and ensure it is secure inside the steam stack. If the hose is missing, collapsed or missing, replace it by doing the following:


11170098

1. Remove the steam exhaust.
2. Cut out the old hose insert if necessary.
3. Install (glue in) the new hose insert using a silicone rated for applications of 220F (104C) or higher and allow to dry and set.
4. Continue to the next inspection or reinstall components as applicable.

7.3 Condensation Box and Component Inspection

WARNING **Do not attempt to remove any of the condensation box components while the fryer is in use. Severe burns may result. Only perform this procedure when the fryer is cool and disconnected from the power source.**

Ensure the condensation box and related components are undamaged and working within specification by doing the following:


11170098

1. If necessary, remove the steam exhaust by loosening the thumb screws.
2. Clean steam exhaust, deadweight and gasket in warm soapy water as necessary.
3. Close and lock the lid.

4. Using a Phillips screwdriver, remove the lids top cover.
5. Using a Phillips screwdriver, remove the service access panel behind the lid.
6. Using a Phillips screwdriver, remove the condensation box lid.


02180006

7. Clean the box, lid and gaskets as necessary.
8. Replace gaskets and other components as necessary.
9. Continue to the next inspection or reinstall components as applicable.

02180007

7.4 Safety Relief Valve Inspection

DANGER

Do not disassemble or modify this valve. It is factory preset to open at 14½ psi. (999 mbar). Tampering with this valve may cause serious injuries and will void agency approvals and appliance warranty.

WARNING

Do not attempt to remove the condensation box safety relief valve while the fryer is in use. Severe burns may result. Only perform this procedure when the fryer is cool and disconnected from the power source.

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

1. If necessary, remove the steam exhaust, top cap cover and 6 keps nuts around exterior of rear cover, and then remove the back shroud of the fryer.
2. Using an adjustable wrench, remove the compression nut.
3. Remove the safety relief valve and soak the assembly in a 1:1 ratio mix of degreaser and water for 24 hours. If this valve does not open or close, or leaks steam during cooking, it must be replaced.
4. Thoroughly rinse the safety relief valve with hot water.
5. Reinstall the safety relief valve and the compression nut. This fitting does not require pipe thread sealant.
6. Continue to the next inspection or reinstall components as applicable.

INFO: Ensure the pop-off on top of the safety relief valve is unobstructed.

7.5 Pressure System Tubing Cleaning and Inspection

WARNING **Do not attempt to remove any of the pressure system tubing while the fryer is in use. Severe burns may result. Only perform this procedure when the fryer is cool and disconnected from the power source.**

NOTICE

Perform this procedure in conjunction with .

:

Ensure the pressure system tubing is undamaged and working within specification by doing the following:

1. Remove the service access panel.
2. Loosen all compression nuts on the pressure system tubing.
3. Remove pressure tubing manifold and clean or replace.
4. Remove the clean out plug.
5. Clean from the fry pot outlet through to the clean out port.
6. Clean tubing from the condensation box to the solenoid valve.
7. Clean tubing from the safety relief to the pressure tubing manifold.
8. Remove and clean the solenoid valve. Refer to .
9. Replace the solenoid valve and all tubing.
10. Reinstall the coil on the solenoid valve.
11. Continue to the next inspection or reinstall components as applicable.

INFO: All tubing should be completely free from build up or obstruction.

7.6 Solenoid Valve Cleaning and Inspection

WARNING

To avoid serious personal injury:

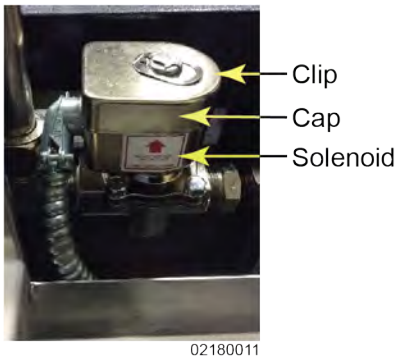
- **Unplug fryer before removing the left side panel to prevent electrical shock.**
- **Only perform this procedure when the fryer is cool or severe burns may result.**

NOTICE

:

Perform this procedure in conjunction with .

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



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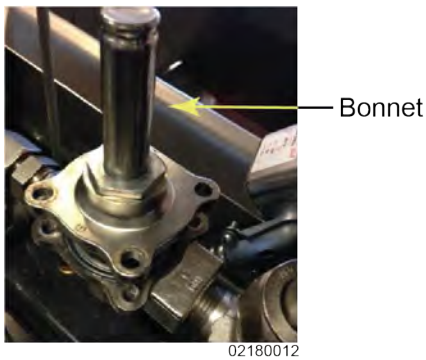
1. Use a small flat blade screw driver to pry up on the center clip, and then slide off.
2. Slide the cap and coil assembly up off of the shaft.
3. Remove the top cap, and note the spring washer inside.
4. Place the cap and spring in a safe location so they are not lost.
5. Hang the lower cup and coil assembly to the side.



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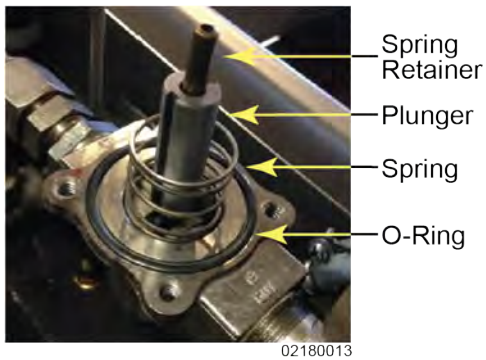
6. Using a 7/16” wrench to break the four hex head screws loose, remove and lay aside.
7. Lift the bonnet up and off the plunger and lay aside.

INFO: Solenoid bonnet shown with four screws removed.



02180013

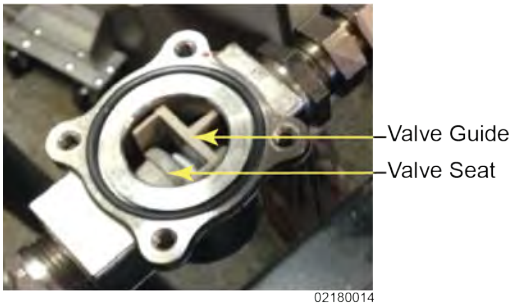
8. Remove the small spring retainer, plunger, large spring, and o-ring and lay aside.

INFO: The spring pulls out of the top of the plunger, and the plunger pulls out of the Valve Guide and Valve Seat. If a component is damaged or worn beyond specification, replace it.

9. Remove the valve guide by pulling it straight up.

10. Slide the valve seat out, and then pull it out of the valve body.

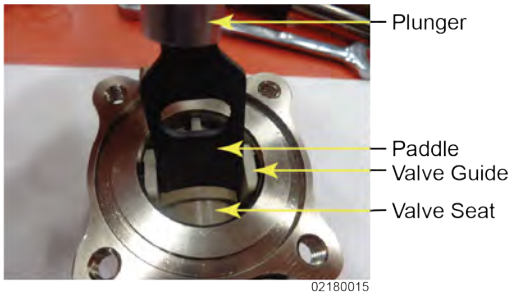
11. Clean and inspect both of these components.



INFO: The Valve Guide is comprised of three separate pieces, a seat, spring and frame. The longer end of the frame goes down. The Valve Seat must be installed with the length of the rectangular hole in the horizontal position so it matches the paddle end of the plunger. If a component is damaged or worn beyond specification, replace it.

12. Reinstall the valve seat in the solenoid valve body.

INFO: Ensure the rectangle opening is oriented horizontally in the valve body. This ensures the beveled lip is pointing up, which is necessary when inserting the plunger.



13. Assemble the valve guide (frame + seat + seat) by inserting the longer end into the valve body, keeping the seat compressed so it slides past the valve seat.

14. Press the plunger's paddle end down between valve guide and valve seat.

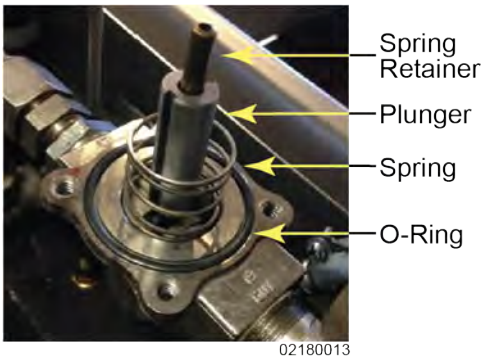
15. Ensure the plunger slides up and down freely.

16. Insert the small spring and retainer into the top of the plunger.

INFO: The Valve Guide is comprised of three separate pieces, a seat, spring and frame. The longer end of the

frame goes down. The Valve Seat must be installed with the length of the rectangular hole in the horizontal position so it matches the paddle end of the plunger. Also, there is a bevel that must be positioned upward so the paddle can be inserted between the Valve Guide and Seat.

17. Install the o-ring into the valve body's o-ring groove.
18. Place the large spring over the plunger and seat into the valve body.
19. Place the bonnet over the spring and retainer, plunger and large spring, and then press the two halves together.
20. Using a nut driver, install the four 7/16" hex head screws with captive star lock washers.
21. Snug the hex head screws with a 7/16" wrench in a star pattern to evenly seal the o-ring between both halves of the valve body.



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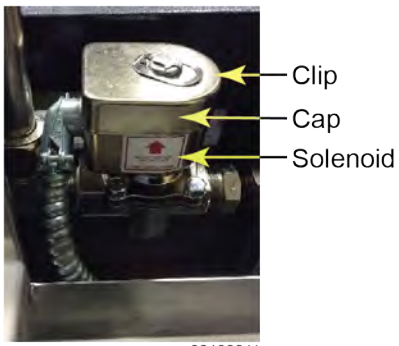
22. Reinstall the coil over the bonnet with the conduit on the left side so it does not interfere with the lid cables.
23. Reinstall the spring washer and top cap over the coil.
24. Install the clip on top of the cap and coil.



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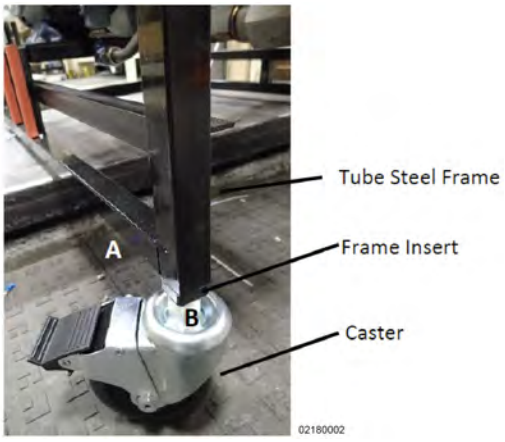
7.7 Inspect Castors and Frame

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.

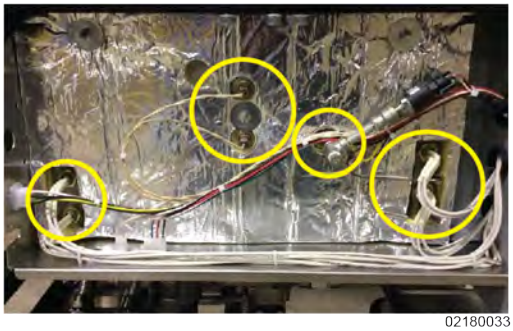
7.8 Inspect Oil Migration

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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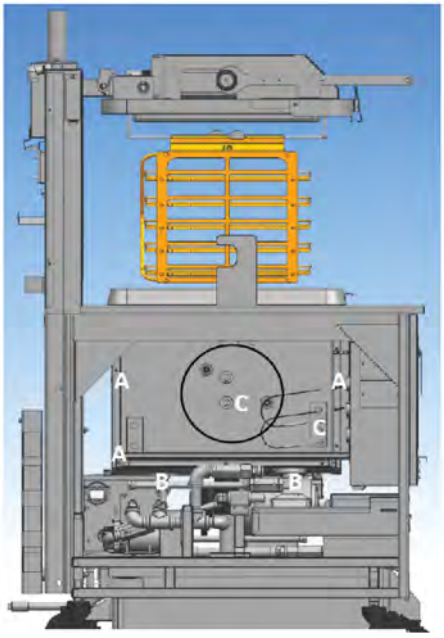
1. If necessary, remove the left side panel.
2. Inspect for oil seepage at the probe fittings, high limit fittings, pressure transducer fitting and heating element fittings.
3. Complete any necessary repairs.
4. Continue to the next inspection or reinstall components as applicable.

7.9 Inspect Vat 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:

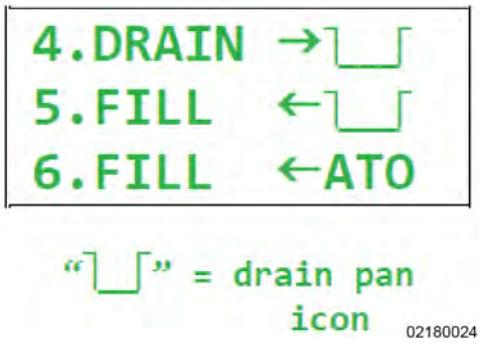
If necessary, scrape and clean off the existing oil from the fry pot and welds, and then have the store bread and cook 4 head or greater of bone in chicken. During cooking, monitor the suspected area for leaking:

- 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.

7.10 Temperature and Level Probe Inspection

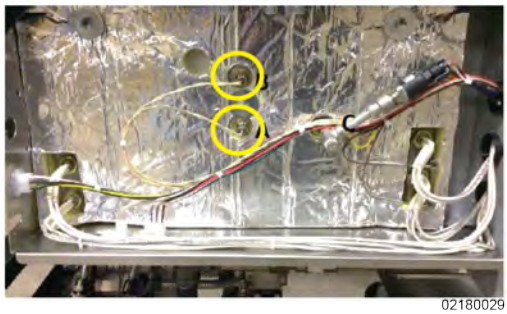
WARNING **To avoid serious personal injury. Unplug fryer before removing the left side panel to prevent electrical shock. Only perform this procedure when the fryer is cool or severe burns may result.**

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.

7.11 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.

7.11.1 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 .

7.11.2 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 200, 220, 230, 240, 380, 400 and 415 volts, 3 phase, 50 Hertz service. A terminal block is mounted inside the fryer for the cable wiring. 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 .

7.12 High Limit and Module Inspection

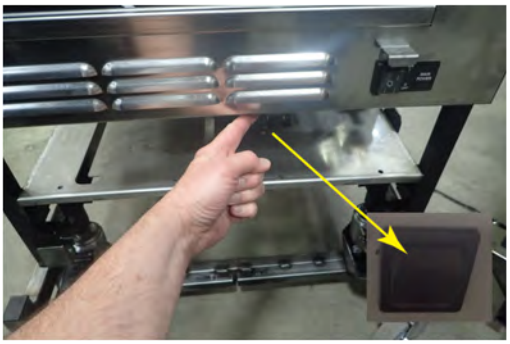
DANGER **Never leave a fryer with a high limit bypassed. This can lead to fire, property damage, personal injury or death.**

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:

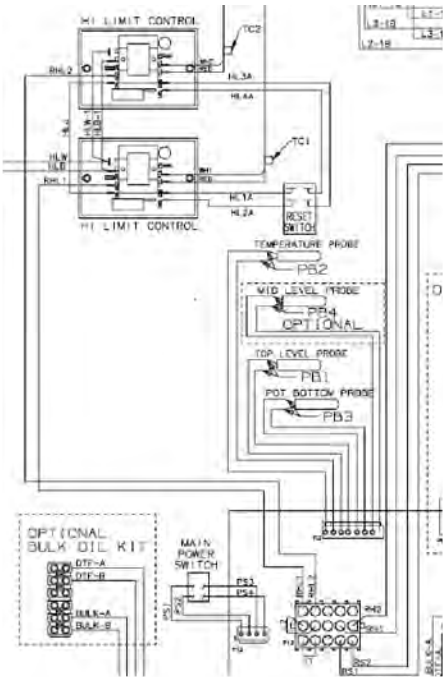
02180035

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.



02180064

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

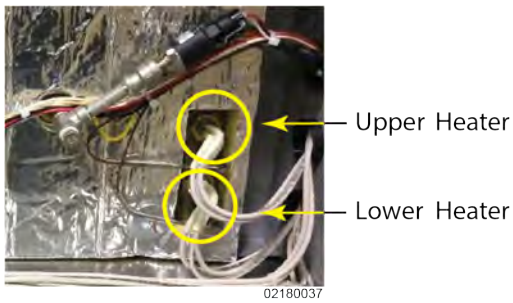


4. Follow red wire RHL 1 from the control board and make sure that it is securely attached to the terminal on the lower module. If this wire is not connected, reconnect it to match the diagram on the left.
5. Follow red wire RHL 2 from the control board and make sure that it is securely attached to the 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.

7.13 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.**



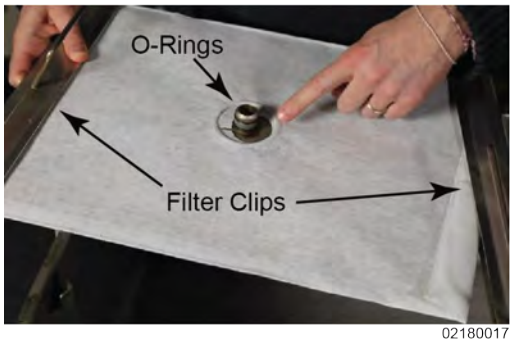
1. Attach an amp meter (amp clamp style) to one of the upper heating element's wires.
2. Connect power to the fryer, turn on the controls, and then set to call for heat. Once the fryer calls for heat, measure and note amp draw.
3. Repeat steps 1 – 2 for each of the other upper heating element's wires 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.

7.14 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:

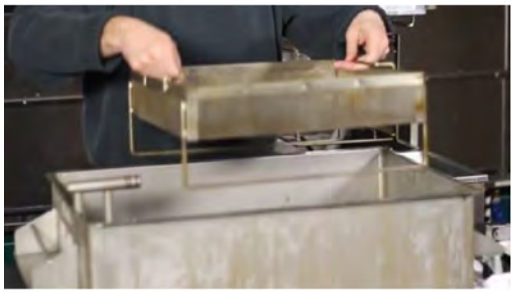


02180017

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.

7.15 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

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

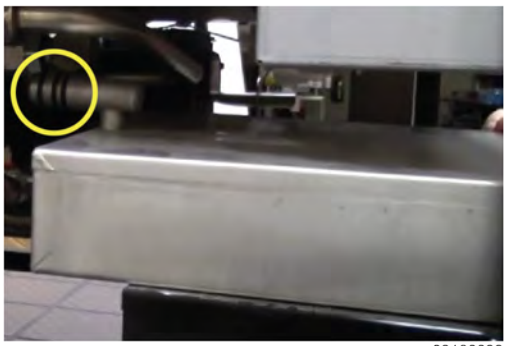
1. Remove the condensation drain pan to the right of the ATO reservoir.


02180021

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

3. Slide it slightly to the right and lift.

INFO: 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

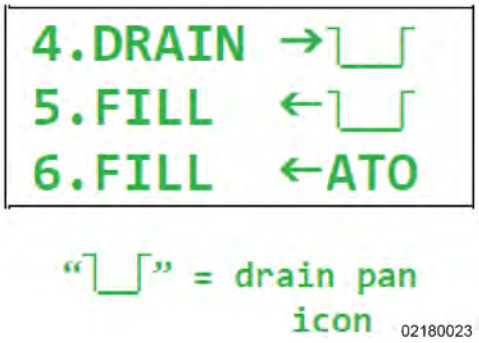
4. Inspect the three o-rings at the rear of the reservoir and replace o-rings that are missing, excessively worn, or damaged.

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.



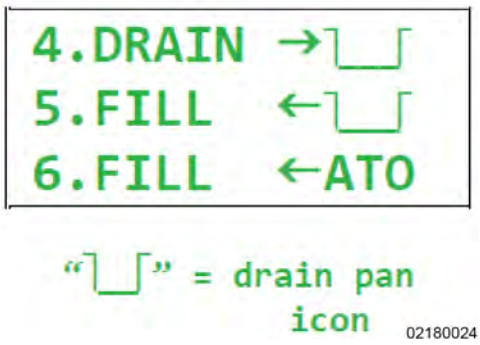
8. Press the right arrow until 6. FILL <- ATO displays.
9. Press and hold the select button next to 6. FILL <- ATO and test the ATO system. If oil pumps from the reservoir, the system is working. If oil does not pump, troubleshoot the ATO issue.

INFO: PXE 100 model only.

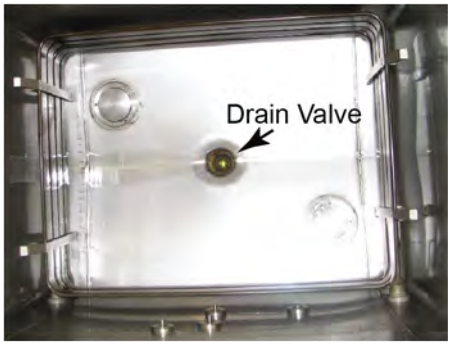
10. Reinstall the condensation drain pan.
11. Continue to the next inspection or reinstall components as applicable.

7.16 Testing the Drain Valve

Ensure the drain valve is 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 ->**.



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.

7.16.1 Service Procedure Guidance

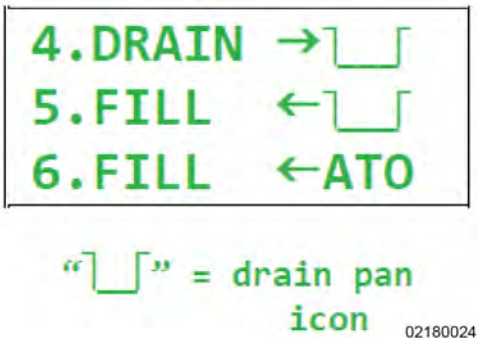
ISSUE / SYMPTOM	SERVICE RECOMMENDATION
Oil leaking in to drain pan.	Replace drain valve.
Valve not moving but hear actuator moving.	Remove actuator and check for actuator couple movement. Check if drain valve is seized. Likely replace actuator only, valve also if seized.

7.17 Bulk Dispose Test

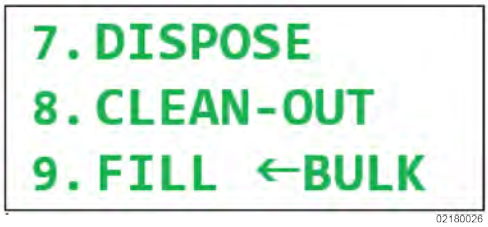
NOTICE :

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.

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

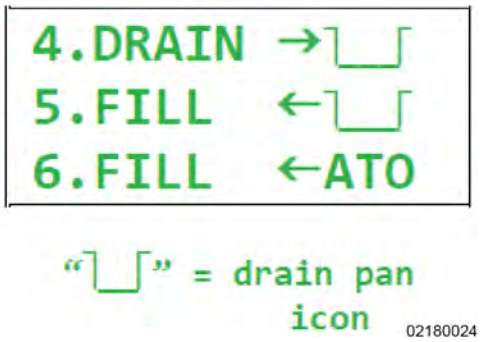
7.18 Heating Element Spreader Bars Tightening and Inspection

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.

INFO: 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.

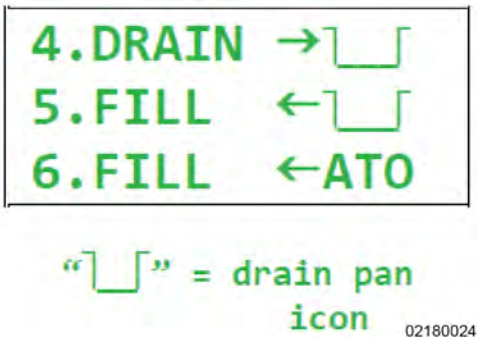
7.19 Oil Return Diverters and Pressure Outlet Inspection

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.

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.

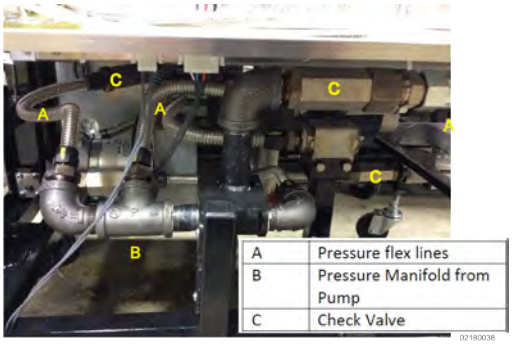
7.20 Inspect for Plumbing Leaks in the Filtration System

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:

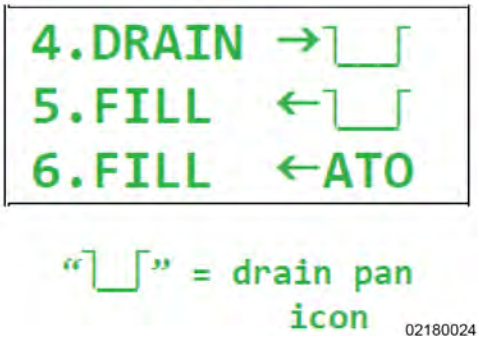


1. Use a flashlight to inspect the fittings of the filtration plumbing and between the filter pump and motor for oil leaks.

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.

7.21 Inspect Lid 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.

7.22 Inspect and Lubricate the Lids 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.

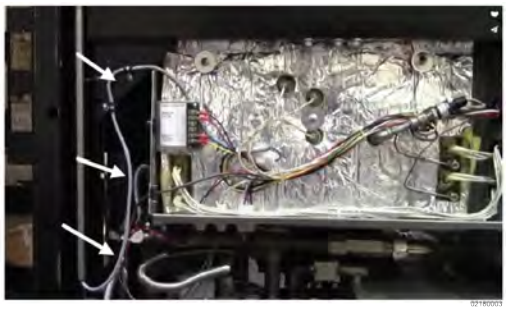
7.23 Lid Pressure Pin Switch Harness Inspection

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 pressure pin switch harness is undamaged and working within specification by doing the following:



1. Inspect the entire length of the harness as the lid is lowered and raised.
2. Replace the harness if any cracking or other damage is found.
3. Continue to the next inspection or reinstall components as applicable.

7.24 Lid Inspection

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.

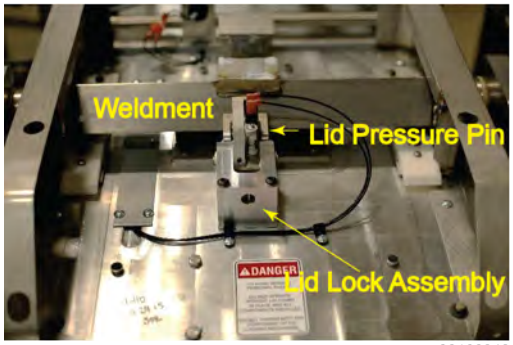
CAUTION

If excessive oil is found migrating through any of the vent holes or the lid lock assembly, the lid will need to be replaced ASAP. The store can continue to use this lid until the new lid arrives. If the components under the lid cover are just coated with oil residue, clean the lid and components and follow all steps noted in the cam slide filler and lid gasket procedure.

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

02180039

1. Remove the two screws at the rear of the lid cover.
2. Tilt the rear of lid cover up, then push toward the front of the fryer to remove the lid cover.



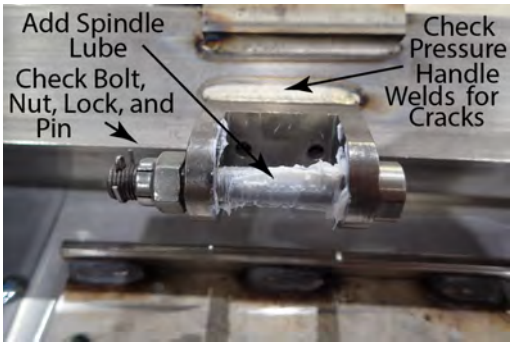
02180040

3. Inspect the lid pressure pin, lid lock assembly, lid handle weldment and stop for damage or wear.
4. Clean off oil accumulation and lubricate as needed.

INFO: If any of these parts are broken or missing, take the fryer out of service until repairs are made.

5. Inspect the latch pin and latch pin bracket for damage or wear.

6. Ensure the latch pin rotates. Clean and lubricate as required.



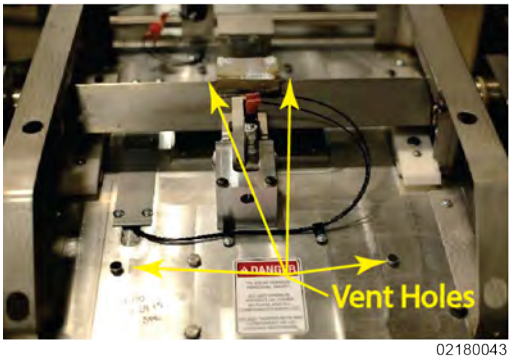
7. Ensure the cotter pin and nut are in place and secure, and oriented to the left.

INFO: Proper pin orientation prevents the cotter pin from snagging lid wires.

8. Ensure the latch pin bracket is secure and the weld isn't showing signs of cracking.

9. Clean off oil accumulation and lubricate as needed.

INFO: If any of these parts are broken or missing, take the fryer out of service until repairs are made.



02180043

10. Ensure the vent holes are unobstructed by oil and debris. Clean as required.

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

7.25 Lid Pressure Pin Switch Manual Test

DANGER

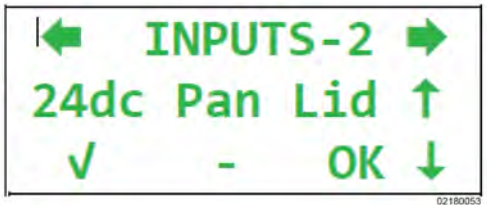
To avoid serious personal injury:

- **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.

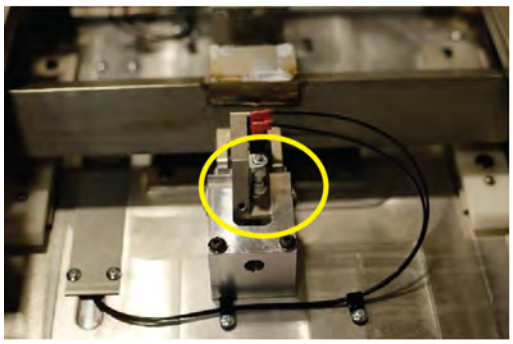
Ensure the lid pressure pin switch is undamaged and working within specification by doing the following:



1. Press and hold the menu button until *MAIN* appears on the display.
2. Press the number two product button to select INFO MODE.
3. Press the right arrow until INPUTS-2 displays. OK should be displayed under Lid.

INFO: OK indicates the switch is closed and no pressure exists in the fry pot. PR indicates the lid pressure pin switch is open indicating pressure in the fry pot.

4. Manually lift the upper pressure pin until the microswitch changes position.


02180054

5. Verify that OK changes to PR on the display. This means the switch is working properly. If OK remains on the display and does not change to PR, take the fryer out of service because this means the switch is NOT working properly.
6. Troubleshoot the switch, wiring and control, and repair or replace as required.
7. Once the switch is working correctly, continue to the next inspection or reinstall components as applicable.

7.26 Lid Pressure Pad Inspection

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.**

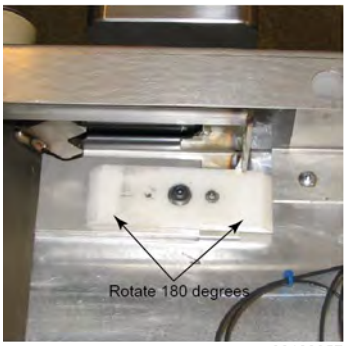
WARNING

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.

Ensure the pressure pads are undamaged and working within specification by doing the following:

02180056

1. If necessary, push the lid cam back off of the pressure pads.
2. Inspect the pressure pads.



02180057

3. If any excessive wear is found, the pad will need to be rotated by removing both screws and rotating the pad 180°.
4. If both ends of the pad have been used or either pad is cracked, replace both pressure pads.
5. Continue to the next inspection or reinstall components as applicable.

INFO: Never flip the pads to use the underside of the pad. Always replace pressure pads in pairs.

7.27 Inspect the Lid Cam Guide 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.

7.28 Lid Handle Roller Inspection

DANGER

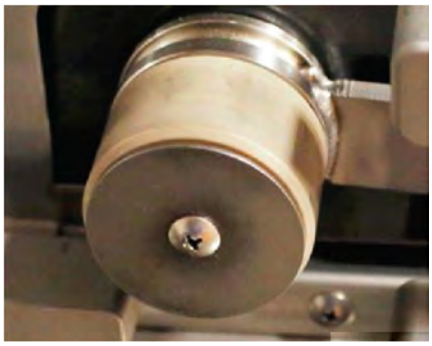
To avoid serious personal injury:

- **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.

Ensure the lid handle rollers are undamaged and working within specifications by doing the following:



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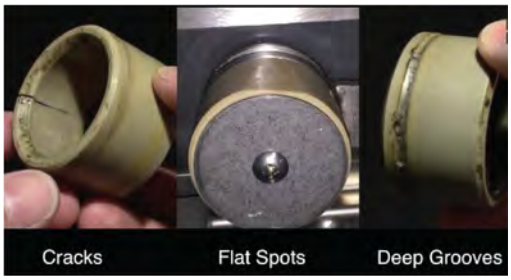
1. Remove the mounting screw and mounting plate holding each roller on to the lid handle, and then slide each roller off of its shaft.
2. Clean each lid roller and each shaft with hot soapy water.



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3. Inspect the inside and outside of each roller for cracks, flat spots or deep grooves that are .010” or deeper.

INFO: Use a measuring tool like a micrometer to precisely measure the depth of the groove.

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4. Slide each roller on its roller shaft.
5. Apply blue semi-permanent thread lock to the threads of each mounting screw.
6. Securely fasten each mounting plate with its mounting screw. The rollers should spin freely after installation.
7. Continue to the next inspection.

7.29 Cam Guide Inspection

DANGER

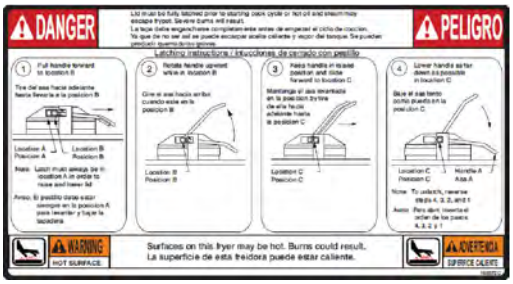
To avoid serious personal injury:

- **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.

TRAINING: Review the *TRAINING* before completing the replacement.



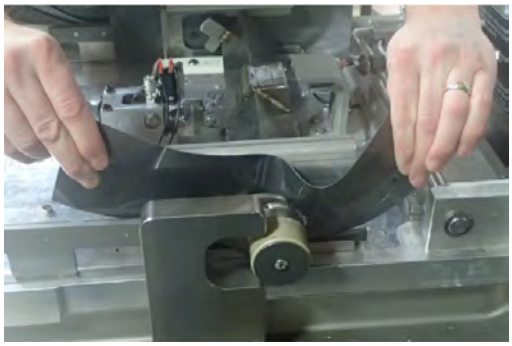
Ensure the lid cam guides are undamaged and working within specifications.

1. Pull the lid handle forward into the “B” position, as stated on the lid label. Do not engage the hook arms.
2. Lift the handle upward.
3. The handle should freely raise no more than 45 degrees. If the handle rotates freely past the 45 degree angle the test fails. Replace the cam guides by continuing below at step 4.

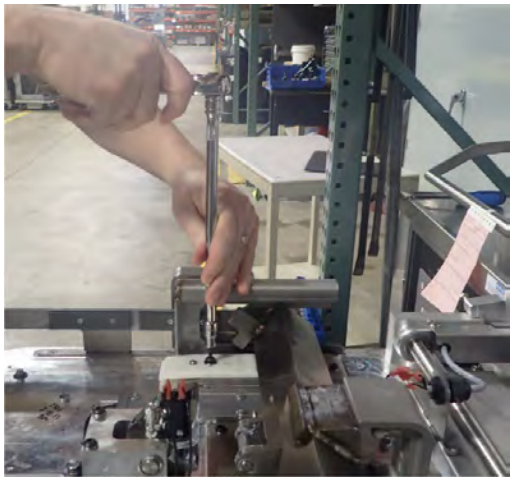
If the test fails, do the following:

4. Using a crosshead screwdriver, remove 3 screws on each side of lid sides (6 screw total).

5. Lift and hold handle with one hand as you lift and turn the lid side cover to remove it. Repeat for the other lid side cover and set both lid sides aside.



6. Remove the cam slide fillers, and lay aside.



7. Using the 5/32 hex key, remove the two screws and split ring lockwashers on the cam guide assembly on each side of the lid (4 screws total).

Note: Using a hex key with well-defined edges can assist in removing the screws.

8. Lift the lid handle and linkage assembly while sliding out the cam guide assembly.

9. Lift lid handle and linkage assembly and slide new cam guide assembly under it.

Note: Screw shown loosely in hole to assist with alignment.

10. Ensure holes in all pressure pads, shims, and spacers align with holes in lid.

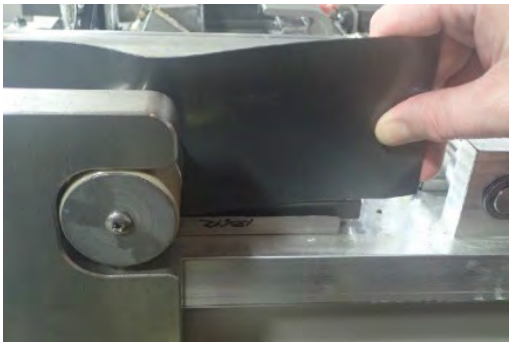
11. Apply blue threadlocker to both screws and lid holes, and start threading through cam guide assembly.

12. Tighten both screws with the 5/32 hex key, and then torque screws to 96 in/lb (10.8 Nm) with a torque wrench.

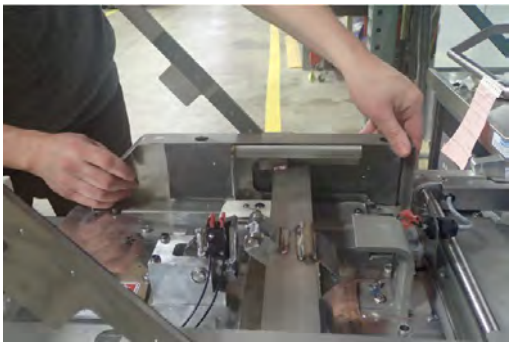
13. Either reuse or install new cam slide filler over lid arm assembly. **Note**:

Note:

- When replacing cam slide fillers, bend 4 outside corners of new fillers to 45-degree angle towards lid.
- Longer side should be towards front of fryer. Ensure the front and back of the slide filler engages in cam guide as shown below.



14. Pull lid handle and linkage assembly up to disengage lid lock.



15. Replace lid side cover.

16. Apply blue threadlocker to the threads of each lid side cover screw and lid holes.

17. Using a crosshead screwdriver, install 3 screws through each side cover into the lid.
18. Pull handle down and forward to engage latch. Repeat several times to ensure lid handle and linkage assembly is correctly installed.

19. Ensure holes in front of lid cover are aligned with front pegs and place on top of assembly.
20. Install two screws in rear of lid cover.

7.30 Lid Gasket and Liner Inspection

TRAINING: Watch this video before performing this inspection.

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.**
- **Ensure the tilt stop (kickstand) is engaged. Lid may fall with force if tilt stop (kickstand) is not engaged. Failure to engage the tilt stop (kickstand) may result in serious injury or product damage.**

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1. Lift and secure the lid. Refer to for instructions.
2. Cover the fry pot with a sheet pan.

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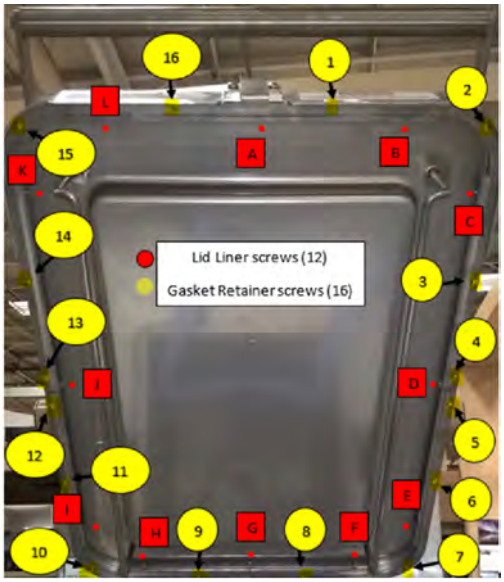
3. Remove the lid gasket and inspect.
4. Replace the gasket if it has not been replaced in the last 12 months, or if hardened, brittle, damaged, or blackened.
5. If the gasket passes inspection, clean the gasket with hot water and mild detergent and reinstall.
6. Clean the entire pot band removing any build up or debris.

CAUTION: Do not use power tools when tightening screws.



7. Inspect and tighten all 16 lid gasket retainer screws around the perimeter of lid gasket to 18 in. lbs. (2.03 Nm).
   INFO: Do not overtighten or screws may break. If any retainer screws are missing, replace. If any retainer screws are broken, do not use until lid is replaced.
8. Pull back the lid gasket and inspect all 12 lid liner screws. If any lid liner screws (#6-32x5/16) are missing or broken, submit photographs of broken or missing screws to Technical Support. Include a description of which screws are missing or broken using the diagram, and also include the serial

number to receive further instructions.

9. Refer to the table below.

Screw Description	Issue	Action
* Only refers to screws labeled A and B in cam guide image. **There should be at least 2 screws attaching each lid side cover to the lid.		
Gasket retainer screw	Missing	Replace screw
Gasket retainer screw	Broken	Replace lid assembly
Lid liner screw	Missing	Replace lid if any of the following conditions are met: A. No more then 1 lid liner screw missing per corner B. No more than 4 lid liner screw missing overall C. No more than 2 lid liner screw missing consecutively
Lid liner screw	Broken	
Rear lid cover screw	Stripped	Replace rear lid cover
Main lid cover screw	Stripped	Replace screw
Cam guide screw	Stripped	Replace screw
Cam guide screw*	Broken	Replace lid assembly
Lid side cover screw**	Missing	Contact Technical Support for guidance

7.31 Lid Latch Inspection and Adjustment

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.

Over time, as the lid is raised and lowered, the lid latch and catch flex out of tolerance. Operators begin slamming the lid down to engage the lid latch, which pushes the latch and catch further out of tolerance. Without correction, the latch or catch can break. Ensure the lid latch and catch engage without the need to slam the lid shut. The lid should shut with a light, easy and positive engagement. Train the operator on the proper procedure for shutting the lid and engaging the latch. Also, explain that when the latch and catch are out of alignment, and slamming the lid is necessary for engagement, they need to call for service. Inspect and adjust the lid latch and catch.

1. Open and close the lid while inspecting the lid latch and catch for engagement.

INFO: The lid latch to catch engagement should be smooth and not clunky. The lid latch should gently but firmly slide over the catch and engage without excessive play. If the lid must be slammed to lock, the engagement is to tight.

2. Inspect the lid latch and catch for cracking, excessive looseness, missing parts or other damage.

3. Adjust the lid latch with an adjustable wrench. Gently flex the latch in or out as required.

4. Adjust the catch with an adjustable wrench. Gently flex the catch up or down as required.

7.32 Lid Label Inspection (English)

If labels are illegible or loose and falling off the lid they must be replaced. The labels explain to operators the safe and proper way to close, lock and open the lid. Order new labels as needed and replace them.

- Refer to and order new labels.
- Refer to 4.21 *Label Replacement*, page 52 and replace the labels.

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