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Theory of Operation

The SE14 and SE7 fryer components function in specific order of operation. Knowing and understanding the sequence of fryer and components operation will enable you to diagnose equipment failure more accurately.

Heating System

Power to the machine is turned ON:

- If Fuse F1 on the Relay board is good, the A.C. light will illuminate. The computer is supplied with 24VAC and, if the drain valve handle is closed, the proximity switch will supply 24 VAC to the DVI (drain valve interlock) Input at the computer.
- The controller is turned ON:
- The side on relay will be energized, closing the circuit and the S.O. light on the Relay Board will illuminate. If the Hi-Limit is NOT tripped the safety (side on) contactor will energize.
- Controller calls for heat:
- The 24VDC "heat demand" relay will energize supplying the heat demand contactor with 24 VAC and the H.D. light on the Relay Board will illuminate. This will also supply the controller with a heat feedback signal.

Hi-Limit System:

 If the hi-limit trips, it causes the side on and heat demand contactors to lose 24 VAC supply and the heat feedback loses 24 VAC. The computer will display HEATING. The Heat Demand lamp will be lit on the Back-up T-stat, the heat feedback lamp will not be lit. After the hilimit resets (unit cools to 375°F ±20°F) the controller will have to be turned off and back on for the unit to heat.

Filter System:

- Pulling the RED filter return valve handle will close the proximity switch causing the "pump run" relay to be energized. The pump motor will begin to run. Closing the filter return valve handle will de-energize the relay and the pump motor will stop running.
- The pump system is equipped with a circuit breaker which will de-energize the system and the heat tape in the event of over current. The circuit breaker switch must be in the ON position for the pump and heat tape to operate.
- The return piping system may be provided with optional heat tape to prevent solidification of solid shortening. the heat tape is low wattage and is on constantly to maintain liquid shortening in the line.

Troubleshooting

Troubleshooting Fryer

PROBLEM	POSSIBLE CAUSE	ACTION
Computer display does not light or Back-up T-stat is switched to Seconday control, but Green power light does not turn on.	 A. Main Power Switch not turned on B. Back-up T-stat not turned ON. C. Back-up T-stat not turned to Primary Control. D. Hood cords not connected. E. No power to the machine. F. Fuse F1 blown. G. Transformer T1A or T1B not functioning. H. Controller Failed 	 A. Turn on Main Power Switch B. Turn Power switch to Back-up T-stat to On. C. Turn Selector Switch on Back-up T-stat to Primay Control position (one dot). D. Connect all Hood cords E. Check building circuit breaker, verify power cord is plugged in all the way. F. Check Wire Reduction Board, if 24VAC light is not lit, check fuse. Replace if defective with 2.5A fast acting fuse. G. If fuse is good and 24VAC light is still off, check votage in and out of T1A or T1B. H. Transfer control to Back-up T-stat.
Computer Shows "HEATING", or Back-up T-stat Yellow Head Demand lamp is lit, but the Yellow Heat Feedback Lamp is not lit, and machine does NOT heat.	A. Hi-Limit tripped. B. Heat Demand Contactor. C. Relay Board.	 A. Once the oil temp has gone below 375°F ± 20°F, the Hi-Limit should reset automantically, if not, replace the Hi-Limit. B. Check & Replace if defective. C. Check & Replace if defective.
Machine is heating slowly	A. Unit is in Melt Cycle B. Safety Contactor C. Heat Demand Contactor D. Element E. Loss of power on one leg of 3 phase input power	 A. Wait for the computer to finish melt cycle, or switch Back-Up T-stat out of melt cycle. B. Check & Replace if defective. C. Check & Replace if defective. D. Check & Replace if defective. E. Check input power. Repair or call a qualified electrican.
Oil is hotter or colder than computer displays or Back-up Tstat is set to.	A. Temperature calibration B. Probe C. Probe wiring terminals	A. Adjust temperature offset up to ± 10°F. B. Check & Replace if defective C. Clean or repair terminals.
Computer diplays "DRAIN" or Back- up T-stat Yellow Heat Feedback lamp Flashes 7 times.	A. Blue Drain Valve not fully closed. B. Sensor Switch C. Incorrect Switch gap/alignment.	 A. Check position of handle. B. Switch may be loose or have loose wires, replace if defective. C. Check gap/alignment, replace if defective.
Computer heat demand lights are lit, or Back-up T-stat heat demand lights are lit; machine does not heat. HD & SO lights on relay board are lit.	A. Safety contactor B. Heat Demand Contactor	A. Check & Replace if defective. B. Check & Replace if defective.
Computer displays "Probe" or Back- up T-stat Yellow Heat Feedback lamp flashes 3 times.	A. Shorted probe B. Open probe C. Probe wiring terminals	A. Check probe & replace if defective.B. Check probe & replace if defective.C. Clean or repair terminals.

Troubleshooting Filter

PROBLEM	POSSIBLE CAUSE	ACTION
	A. Red Filter Return Handle not completely	A. Pull on red Filter Return Handle to make sure
	open.	valve is completely open.
	B. Filter Circuit Breaker may be tripped or	B. Reset the Circuit Breaker or press it to the
	in the off position.	ON position.
Red Filter Return Handle is pulled	C. Filter Pump Motor Thermal Overlaod may	C. Push the Red Reset Button on the end of the
out, but no pump sound can be heard	be Tripped.	Pump Motor.
	D. Sensor switch may be loose or defective.	D. Check that the switch is tight and that it has the
	E. Power cord unplugged or loose.	correct gap. Replace if defective.
		E. Check the power cord at the fryer Entrance Box
		and at the Pump Box and make sure that the power
		cords are plugged in and/or pushed in all the way.
Drain Valve is closed, computer	A. Blue Drain Valve not fully closed.	A. Check position of handle.
has been reset, but computer still	B. Sensor Switch	B. Switch may be loose or have loose wires,
displays "Draining", or Back-up T-	C. Incorrect switch gap/alignment.	replace if defective.
stat has been reset, but Yellow		C. Check gap/alignment, replace if defecitive.
Heat Feedback lamp flashes 7		
times.		
	A. Dirty Filter Wire Mesh Envelope.	A. Clean Filter Wire Mesh Envelope.
Oil is returning to the tank slowly	B. Strainer cap dirty.	B. Remove strainer cap and clean.
or not at all.	C. Filter Pan not pushed in completely.	C. Push Filter Pan in.
	D. O-rings not sealing on pick-up tube.	D. Check & replace if defective.
	A. Strainer cap not tight.	A. Tighten strainer cap.
Air bubbles are in the oil be	B. Strainer cap not in pick-up tube	B. Install strainer cap.
returned to the tank.	C. Filter Pan not pushed in completely.	C. Push Filter Pan in.
	D. O-rings not sealing on pick-up tube.	D. Check & replace if defective.
	A. Drain valve is not fully open.	A. Apply a little more pressure to the Blue Drain
	B. Drain line is plugged with debris.	Valve handle to check that the Drain Valve is
Drain Valve is open, the oil is		fully open.
draining slowly or not at all.		B. Use the clean out rod to clear the Drain Valve
		opening. If this does not clear the blockage, close
		the drain valve, and call for service.

Component Troubleshooting

Probe:

The resistance of the probe will change as the temperature changes. The resistance will decrease as the temperature rises. The lower the temperature the greater the resistance change will be per degree of temperature change, as the temperature approaches the working range of the probe, the resistance change will become more linear.

TEMP	RESISTANCE	TEMP	RESISTANCE
°F/°C	OHM Ω	°F/°C	ΟΗΜ Ω
60/16	139,055	330/166	1,192
80/27	84,644	335/168	1,123
100/38	53,146	340/171	1,058
120/49	34,328	345/174	998
140/60	22,755	350/177	942
160/71	15,446	355/179	890
180/82	10,716	360/182	841
200/93	7,586	365/185	795
210/99	6,427	370/188	752
220/104	5,470	375/191	712
240/116	4,013	380/193	675
260/127	2,991	385/196	640
280/138	2,262	390/199	607
300/149	1,734	395/202	576
320/160	1,347	400/204	547
325/163	1,267		

If the probe is suspect, check its resistance and the oil/air temperature at which it was taken. Compare these values on the chart below.

If the probe returns an open circuit or 0 Ohms reading it should be replaced. If the resistance varies more than 30 Ohms when being checked between 325-375°F the probe will give a false temperature reading on the controller and should be calibrated (up to 10°F) or replaced. However, it will continue to operate at a slightly higher or lower temperature.

Allow the oil to cool and check the probe resistance at a lower temperature. As can be seen from the chart a greater variation can be tolerated at a lower temperature.

Heat Demand Contactor:

The heat demand contactor has a 24 VAC coil and will energize when the correct voltage is supplied to the coil. when energized, the contacts will close, allowing current to flow through the elements. The coil resistance is 192 Ohms out of current.

Hi-Limits:

The hi-limit switch is a normally closed switch until the temperature at the hi-limit bulb reaches $425^{\circ}F \pm 20^{\circ}F$.

WARNING!

This test should be performed by a qualified technician only! Monitor the fryer closely. This test will cause the oil to heat past the normal operating temperature and can cause damage to the machine and its operator if care is not taken.

WARNING!

This test will cause the elements to heat continuously. Remove test resistor when test is complete. Leaving the test resistor in the fryer could cause damage to the equipment and/or personal injury.

To test the hi-limit, use a $2k\Omega - 5 k\Omega$ resistor to simulate a $230^{\circ}F - 275^{\circ}F$ temperature. This will cause the elements to heat continuously until the hi-limit trips or the fryer is turned off.

- If testing with the **computer**, plug the resistor in at connector J41 behind the front panel.
- If testing with the **back-up thermostat** behind the door, plug the resistor in at connector J43 behind the front panel.

If the switch does note trip between the prescribed limits it is defective and should be

replaced. Once tripped, the switch cannot be reset until the oil has cooled to approximately $375^{\circ}F \pm 20^{\circ}F$. If the switch does not reset after oil has cooled it is defective.

Drain Valve & Filter Return Valve Switches:

These switches are magnetically operated proximity switches. When the BLUE Drain Valve handle is moved to the open position (down), the Actuator will move away from the switch causing the switch to open. When the Drain Valve is closed the switch will close.

Pulling the RED Filter Return Valve Handle will close the proximity switch causing the "pump on" relay to be energized. The pump will begin to pump. Pushing the filter return valve handle will de-energize the relay and the pump will stop pumping. These switches can also be checked with an Ohm meter. The normal gap between the Actuator and the Sensor switch on the valve handle is 1/8" - 1/4" (3-6mm)

Transformer:

Transformers are multiple input voltage 24 volt output voltage and can be checked by reading the input and output voltages. A quick check for 24 VAC can be done at the relay board behind the computer. The AC led will be lit if the F1 fuse is good and the board is receiving 24 VAC.

Elements:

Each Element has three coils, check all element coils out of circuit with an Ohm meter, the resistance should correspond to the chart below, if the resistance is outside of the rating, the element will need to be changed. Also check for continuity to ground on each end of the suspect element, there should be no continuity to ground.

208 Volt Element	14.1-16.4 Ohms
240 Volt Element	18.8-21.8 Ohms

Safety (Side On) Contactor:

Check the coil with and Ohm meter, the resistance should be approximately 3 - 6 Ohms out of circuit. If it does not have this resistance it should be changed.

<u>Relay Board:</u>

Note: J connectors are marked on the relay board.

- With 24 VAC supplied to pin #2 at connector J35 and a good F1 fuse, the relay board will have a 24 VAC output at pin #2 on connectors J33 and J34 and the A.C. indicator will be illuminated.
- When the board receives a 24 VDC side on input at pin #7 on connectors J31 or J33 the S.O. indicator will illuminate, the side on relay (S.O.) will energize and there will be a 24 VAC output at pin #4 on connector J32.
- When the board receives a 24 VDC heat demand input at pin #6 on connectors J31 or J33, the H.D. indicator will illuminate, the heat demand relay (H.D.) will energize and there will be continuity between pin #1 and pin #2 at connector J32.

Computer Control:

Note: All controller test points are at connector P/J1 (closest connector to the controller).

 With 24 VAC supplied to pin #1 (24 VAC supply) and pin #5 (24 VAC input from DVI), the display should read "READY".

- With the controller turned on, there will be a 24 VDC output at pin #9 (side on).
- When the controller calls for heat, there will be a 24 VDC output at pin #8 (heat demand) and a 24 VAC input at pin #6 (heat feed back). If the heat demand contactor does not pull in, this would indicate a break in the heat demand circuit.
- 1. Check the hi-limit switch (is it open or tripped.
- 2. Check the heat demand relay (H.D.) on the relay board (is heat demand relay energized, continuity through COM and NO contacts).
- If display reads "PROBE OP", "OPEN", Ohm test the temperature probe. Check the wires and connectors between the probe and controller for continuity.
- If display reads "SYSTEM" "FAILURE", test the temperature probe and the wires and connectors between the probe and controller for a short.
- If display reads "DRAINING" "TURN OFF", verify that the drain valve is closed, check the proximity switch on the drain valve, turn the fryer off, then turn the fryer on.

Back-Up Solid State Control:

The 24 VAC supply passes through the solid state back-up transfer switch to the computer. If the transfer switch is set to back-up or if the back-up controller has been unplugged, the primary controller will not work. A jumper must be installed on the relay board (connection J33, pin #2 to pin #10) to allow the primary controller to function if the back-up controller is removed.

 24 VAC is supplied to the controller at pin #1 (24 VAC supply) and pin #5 (24 VAC input from DVI). With the controller turned on, there will be a 24 VDC output at pin #9 (side on) and the green indicator will be illuminated.

- When the controller calls for heat, there will be a 24 VDC output at pin #8 (heat demand), the yellow indicator on the left will be illuminated and there will be a 24 VAC input at pin #6 (heat feed back).
- When the controller receives the 24 VAC input at pin #6 the yellow indicator on the right will illuminate. If the controller does not receive the 24 VAC input at pin #6, the indicator will not illuminate. This would indicate a break in the heat demand or heat fee back circuit.
- 1. Check the hi-limit switch (is it open or tripped.
- 2. Check the heat demand relay (H.D.) on the relay board (is heat demand relay energized, continuity through COM and NO contacts).
- If the green indicator and the yellow indicator on the left come on and shut off when the controller is turned on, that indicates an open or shorted probe or wires in between the probe and the controller.
- If none of the indicators illuminate when the controller is turned on, verify that the drain valve is closed and that the magnetic proximity switch has continuity when the drain valve is closed. Also verify that there is 24 VAC at pin #1 (24 VAC supply) and pin #5 (24 VAC input from DVI).





Component Replacement Fryer

Cover Removal

WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PROIR TO STARTING ANY SERVICE WORK

Front Panel Bezel



1. Remove Bezel Screws with Phillips Screwdriver.



2. Remove Bezel.

Entrance Box Covers Lower



1. If Drain Valve Handles can be lowered, skip this and next step. If Drain Valve Handles must remain closed (upright), unscrew all sections of Lower Entrance Box Covers with Phillips Screwdriver.



2. Remove Support Plate for Lower Entrance Box Cover sections with Phillips screwdriver.



3. If Drain Valves can be lowered remove only two outermost screws with Phillips Screwdriver on Lower Entrance Box Cover Assembly. The Lower Entrance Box Cover Assembly can then be removed as one piece.



1. If Drain Valve Handles can be lowered, skip this and next step. If Drain Valve Handles must remain closed (upright), unscrew all sections of Upper Entrance Box Covers with Phillips Screwdriver.

WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PROIR TO STARTING ANY SERVICE WORK



2. Remove Support Plate for Upper Entrance Box Cover sections with Phillips Screwdriver.



3. If Drain Valves can be lowered remove only two outermost screws with Phillips Screwdriver on Upper Entrance Box Cover Assembly. The Upper Entrance Box Cover Assembly can then be removed as one piece.

Entrance Box Wire Guard

1. Remove Front Panel Bezel as outlined under Cover Removal.



2. Remove two Entrance Box Guard screws with a 5/16" hex bit.



3. Lower Entrance Box Guard and remove.

Control Components

WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PROIR TO STARTING ANY SERVICE WORK

Main On/Off Switch

1. Remove Front Panel Bezel as outlined under Cover Removal.



2. Disconnect Switch wires.



3. Pinch Switch on both sides and push through Bezel.





1. With 5/16" Hex bit remove 2 screws holding Thermostat Box.



2. Disconnect Thermostat Control Harness.

Wire Reduction Board (WRB)

1. Remove Front Panel Bezel as outlined under Cover Removal.



2. Disconnect all harnesses from Wire Reduction Board.



3. With 5/16" Hex bit remove 2 screws holding Wire Reduction Board Bracket.

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4. With a narrow tip Flat blade screwdriver remove four wire reduction board mounting screws.



Note: retain Wire Reduction Board mounting bracket, Insulation, and screws for reinstallation.

Entrance Box

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Transformer

1. Remove Front Panel Bezel, Entrance Box Wire Guard, and Entrance Box Covers Upper as outlined under Cover Removal.

2. Remove Wire Reduction Board as instructed in Control Components.



3. Disconnect all Transfomer connections.



4. Unscrew front and rear Transformer screws with Phillips Screwdriver.

Heat Demand Contactor

1. Remove Front Panel Bezel, Entrance Box Wire Guard, Entrance Box Covers Upper, and Entrance Box Covers Lower as outlined under Cover Removal.

2. Remove Wire Reduction Board as instructed in Control Components.



3. With Phillips Screwdriver disconnect Line voltage supply to Contactor.



4. With Phillips Screwdriver disconnect 24 volt supply to Contactor coil.



5. Using a Phillips Screwdriver unscrew lower Contactor Plate mounting screw.



6. Remove upper Contactor Mounting Plate screw using a Phillips Screwdriver.

WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PROIR TO STARTING ANY SERVICE WORK



7. Remove Contactor from Contactor Mounting Plate with a Phillips Screwdriver.

Safety Contactor

1. Remove Entrance Box Covers Lower and Entrance Box Covers Upper as outlined under Cover Removal.



2. With a Flat Blade Screwdriver disconnect Line voltage supply to Contactor.



3. Disconnect 24 volt supply to Contactor coil.



4. Unscrew lower Contactor mounting screw with a Phillips Screwdriver.



5. Loosen upper Contactor mounting screw with a Phillips Screwdriver. Slide Contactor down and pull out

Tank

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1. Remove Basket Hanger.



2. Remove one screw from Probe Clamps with Phillips Screwdriver.



3. Loosen other Probe Clamp screw. When loose turn Rear Probe Clamp down and remove all three Probe Clamp pieces.



4. Unscrew Probe Nut with 7/16" wrench.



- 5. Cut Probe wires at termination end, connected to Entrance box Wire Channel.
- 6. Pull probe and wires through tank fitting.



7. Slide Probe wires through Probe Nut and Ferrule and slide Nut and Ferrule onto Probe as shown.



8. Pass Probe wires through Tank Fitting.



9. Install Connectors onto wires as shown, black with black, white with white.

WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PROIR TO STARTING ANY SERVICE WORK



10. Fasten Connectors to Wire Channel as shown. Be aware to use the appropriate set of Connections on the Wire Channel.

11. Tighten Probe Nut and install Probe Clamps.



12. Be sure to leave at least 1 inch of probe exposed below probe clamps.



1. Remove Hi-Limit Clamp screws with a Phillips Screwdriver. Remove clamps.



2. With a 7/8" socket remove Hi-Limit.



3. Cut Probe wires at termination end, connected to Entrance Box Wire Channel.

4. Pull Hi-Limit and wires through Tank Fitting.

5. Run wires of new Hi-Limit through Tank Fitting. Install new Hi-Limit cartridge.



6. Install Hi-Limit wires into Connector (Pins 1 and 2). Fasten Connector to the Wire Channel as show. Be aware to use the appropriate connection on the Wire Channel.

WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PROIR TO STARTING ANY SERVICE WORK

Element

1. Follow steps 1 through 3 from Probe removal to remove Probe Clamps and Basket Hanger.

2. If the Element being replaced is the left Element of the SE14 tank, then follow step 1 from Hi-Limit removal to remove Hi-Limit Clamps.



3. With a 7/16 wrench or socket, remove Element mounting bolts.



4. Push down on front of Element, and pull out back to expose Element supply wires.



5. Disconnect Element supply wires. Be careful to not let wires fall back through Element Mounting Block.



6. Replace Element O-rings

7. Connect Element supply wires to new Element, install new Element, and tighten mounting bolts.

8. Reattach Hi-Limit Clamps (if necessary) and Probe Clamps. See step 12 from Probe replacement section for appropriate Probe Clamp settings.

Drain Valve Interlock Switch



1. With a narrow tip Flat blade Screwdriver remove Actuator mounting screws.



2. Use a Phillips Screwdriver to loosen Drain Valve Interlock Switch Mounting Plate. Slide Switch and Mounting Plate Assembly off of Drain Valve.

WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PROIR TO STARTING ANY SERVICE WORK



3. Unfasten Switch harness from Wire Channel.



4. With a narrow tip Flat blade Screwdriver remove Switch from Mounting Plate.

Tank Replacement

1. Remove Front Panel Bezel, Entrance Box Wire Guard, and Entrance Box Covers Upper as outlined under Cover Removal.



2. Remove Top Deck with a 5/16" hex bit.



3. Remove Top Deck Heat Shield with 5/16" Hex bit.



4. With 5/16" Hex bit loosen Entrance Box Heat Shield Sides (Top and bottom).



5. Slide Entrance Box Heat Shield Sides in so as to clear cabinet sides during Tank removal.



6. Disconnect and remove Power Cords from Entrance Box.



7. Disconnect any wiring spanning both sides of Entrance Box.

WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PROIR TO STARTING ANY SERVICE WORK



8. Using a 5/16" bit remove all Entrance Box Joining Bracket screws.



9. Loosen 4 Drain Elbow bolts with a 9/16" socket. Slide Entire Drain Line Assembly off of Drain Extension Nipples.



10. Unscrew Entrance Box hold down screws with a 5/16" bit.



11. Disconnect Filter Pump Box power supply.



12. Disconnect the following at the Wire Channel: (SE7 Tank side only) Drain Valve Interlock Switch, Probes, and Hi-limit.



13. Remove Basket Hangers.



14. Remove Splash Back screws with a 5/16" Bit.



15. With a Flat blade Screwdriver remove front Splash Back screws. Slide Splash Back up and off of Tanks.

WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PROIR TO STARTING ANY SERVICE WORK



16. Remove Cabinet Back Cover with a 5/16" bit.



17. With an Adjustable Wrench disconnect all Return Hoses connected to Tank being replaced.



18. Remove cotter pin from Filter Return Handle and disconnect from Three way valve.



19. With 5/16" hex bit remove Filter Return Handle Clip and Filter Return Handle.



20. Remove all Tank hold down screws (front and back) with a 5/16" bit.



21. Remove Channel Strip.



22. Cut RTV seal with a sharp blade.

23. Remove elements as covered covered in steps 1 through 5 of Element removal. Retain all removed clamps.



24. Remove tank from cabinet.

25. For SE14 Disconnect any remaining electrical connections to Wire Channel.

WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PROIR TO STARTING ANY SERVICE WORK



24. With Pipe Wrench Remove Drain Valve.



26. Disconnect Filter Return Valve with Adjustable Wrench.



27. Remove Filter Return Valve Adapter with Adjustable Wrench.



28. Remove Entrance Box mounting screws with 5/16" bit.



29. For SE14 remove Wire Channel mounting screws with Phillips Screwdriver.

30. Remove Entrance Box and Wire Channel Assembly as one.



31. With 5/16" Hex Bit remove Entrance Box Support Brackets from Entrance Box Heat Shields.



31. With 5/16" Hex Bit remove Entrance Box Heat Shields.

Component Replacement Filter

WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PROIR TO STARTING ANY SERVICE WORK

Pump Removal



1. Remove Filter Pan and Cover.



2. Disconnect Pump Power Cable from Pump Box.



3. Remove Cabinet Back Cover with 5/16" hex bit. With Adjustable Wrench disconnect Pump return hose from Three Way Valve.



4. With Arc Joint Pliers unscrew Filter Pick-Up Receptacle.



5. With 5/16" hex bit remove Pump Rod Bracket.



6. Support Pump Plate and pull Pump Rods out.



7. Drop Pump assembly

Pump



1. With 5/16" bit remove screw from Coupling.

WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PROIR TO STARTING ANY SERVICE WORK



2. Remove U-clip screws with 5/16" Hex bit.



3. Remove Pump mounting screws and nuts with 7/16" Wrenches and Remove Pump from Pump Plate.



4. Remove Inlet Pipe and Coupling with Arc Joint Pliers.



5. With Arc Joint Pliers remove Elbow and Return Hose.



6. Remove Elbow on return side of Pump with Arc Joint Pliers.



7. Remove Inlet Elbow and Nipple with Arc Joint Pliers.



8. Remove Pump Junction Box Cover with Flat blade Screwdriver and disconnect Power Supply Cord. Retain Cord for Replacement Pump.

Pump Box



1. Disconnect all electrical connections to Pump box.

WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PROIR TO STARTING ANY SERVICE WORK



- 2. Remove Pump Box mounting screws with a 5/16" Hex bit.
- 3. Slide Pump box back and out.

Pump Circuit Breaker

1. Follow instructions for Pump Box removal.



2. Disconnect connections to Circuit Breaker.



3. Pinch both sides of Circuit Breaker and push out.

Pump Relay

1. Follow instructions for Pump Box removal.



2. Disconnect connections to Pump Relay.



3. With a Phillips Screwdriver and a pair of pliers remove Pump Relay fasteners.

Pump Transformer

1. Follow instructions for Pump Box removal.



2. Cut all connections to Pump Transformer.



3. With a Phillips Screwdriver and a pair of pliers remove Pump Transformer fasteners.

WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PROIR TO STARTING ANY SERVICE WORK

Pump Actuator (Switch)



1. Remove Filter Return Handle Mounting Clip with 5/16" Hex bit.

2. Remove Entrance Box Covers Lower as outlined under Cover Removal.



3. Remove Filter Return Handle Mounting Bracket with 5/16" bit.



4. With a narrow tip Flat blade Screwdriver remove Switch from Mounting Plate.

Pump Actuator (Actuator)

1. Remove Cabinet Back Cover with 5/16" Hex bit.



2. Remove cotter pin to disconnect Filter Return Handle from Three Way Valve.



3. Remove Filter Return Handle Mounting Clip with 5/16" Hex bit and remove Filter Return Handle.



4. With a narrow tip Flat blade Screwdriver remove Actuator from Filter Return Handle.

WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PROIR TO STARTING ANY SERVICE WORK

Flush Hose Assembly



1. Remove Male Connector with Adjustable Wrench.



2. Remove Flush Hose Assembly Mounting screws with 5/16" Hex Bit and remove Assembly.



Schematics



L22-289 Rev 00



L22-289 Rev 00





Solid State Thermostat Calibration

- A) INSTALL A TEST RESISTANCE OF 942 OHMS AT P43. APPLY POWER TO TEST FIXTURE.
- B) TURN CONTROL ON. POWER INDICATOR SHOULD BE ON.
- C) TURN KNOB FULLY COUNTERCLOCKWISE. SLOWLY TURN KNOB CLOCKWISE UNTIL THE HEAT FEED BACK INDICATOR TURNS ON. THIS IS THE 350°F SET POINT OF THE CONTROL.



- D) LOOSEN 5/16" NUT ON KNOB ALLOWING KNOB TO ROTATE WITHOUT TURNING THE SHAFT. AFFIX POINTER OF OF KNOB AT 350°F MARK ON LABEL. TIGHTEN 5/16" NUT TO 16–17 IN–LBS TORQUE. KNOB MUST NOT SLIP ON SHAFT WITH 25 IN–LBS OF APPLIED TORQUE ON KNOB AGAINST POT END STOP.
- E) INSTALL CAP WITH WHITE LINE AT POINTER POSITION.
- F) INSTALL MELT CYCLE JUMPER TO ELECTRIC PART NUMBERS.
- G) TURN CONTROL ON, VERIFY OPEN/SHORTED PROBE, AND DRAIN OPEN DISPLAYS.

Computer Programming Instructions			
MULTIPLE LEVEL COMPUTER			
POWER ON/OFE KEY PROGRAMMING INSTRUCTIONS POWER ON/OFE KEY			
(not present on all models) PROGRAM KEY, TEMPERATURE KEY TIME KEY (not present on all models)			
PRODUCT KEYS			
TO CHECK ACTUAL TEMP After 5 secs. machine will return to run mode.			
TO CHECK SET TEMP. After 5 secs. machine will return to run mode.			
TO CHECK COOK, SHAKE, AND HOLD TIMES 🕑 THEN THE PRODUCT KEY DESIRED			
NOTE: THE TIMES WILL BE DISPLAYED IN SEQUENCE PAUSING MOMEN- TARILY ON EACH TIME AND THEN RETURN TO COOK MODE.			
TO ENTER BOIL MODE — for enter and enter and enter the second sec			
must turn off both fryers to exit Boil mode.			
CHECKING THE REMAINING TIME WHEN USING MULTIPLE TIMERS			
TO VIEW REMAINING TIME ON ANY FUNCTION KEYS WHEN MULTIPLE TIMERS ARE COUNTING IS AS FOLLOWS:			
PRESS THEN PRESS FUNCTION KEY OF ANY NON DISPLAYED ACTIVE TIMERS YOU WANT TO VIEW			
FIRST LEVEL PROGRAMMING			
USING AND ENTERING FIRST LEVEL PROGRAMMING AND			
PROGRAMMING FUNCTION KEYS			
Press the P key (display shows "PROGRAM"), then enter pass word if needed.			
If you are unable to remember the set pass word use (6684).			
TO PROGRAM SINGLE OR DUAL TANK LOGIO ENTER DESIRED TEMP.			
TO PROGRAM DUAL TANK COMPUTER SET TEMP RIGHT SIDE — olo			
TO SAVE OR EXIT — PP			
TO SET ———————————————————————————————————			
TO SET SHAKE TIME 🙆 ENTER TIME			
TO SET HOLD TIME 🕑 ENTER TIME AND			
TO SAVE OR EXIT OPP			

SECOND LEVEL PROGRAMMING

ENTERING SECOND LEVEL PROGRAMMING:

Press the P key (display shows "**PROGRAM**"), <u>IF PASS WORD IS REQUIRED</u>, and you are unable to remember the set pass word use (6684). Then press You have now entered the upper level programming, all the useable function keys will be lighted and display will show "**SELECT OPTIONS**".

NOTE: Any time P is used to save a setting a must be pressed to return to "Select Options" mode.

FUNCTION PROGRAMMING

- FAHRENHEIT/CELSIUS SCALE Toggles between Fahrenheit and Celsius scale by pressing the key. Change is saved by pressing the key to set
- SET PASS WORD Toggles the pass word function on and off or install a numeric pass word.

Turn pass word on or off Chooses "PASS REQ" or "NO PASS". If pass word is chosen then press P and current pass word will display. Using the number keys a new pass word can be entered and then set by pressing P.

BEEPER VOLUME - Allows volume of beeper alarm to be chosen. Press to toggle between volume levels 1,2,3. Press **p** to set.

- LANGUAGE Choose between English, Spanish, French, German, and Dutch. Press to toggle between different language options. Press **P** to set.
- MELT CYCLE Melt cycle choices: NO MELT (melt cycle is turned off), MELT S (solid shortening melt cycle), and MELT L (liquid shortening melt cycle) Press to toggle between different settings. Press **P** to set.
- RECOVERY TEST TIMES Displays the factory set and field temperature recovery times starts measuring recovery time at 220°F and ends measurement at 280°F. Factory recovery time is not applicable, use field recovery time to monitor recovery problems. NOTE: Oil level can alter recovery times. Press to display "F065 LXXX", where the time following "F" is 065 and the most recent recovery time is "LXXX"
- CONTROL / TIMER Toggles computer between controlling all fryer functions to timer only, on a single tank computer or left side of a dual tank computer. Press to toggle between "Control and Timer". Press P to set.
- CONTROL/TIMER Toggles computer between controller and timer only on the right side of a dual tank computer. Press (P) to toggle between "Control and Timer". Press (P) to set.

EXIT SECOND LEVEL PROGRAMMING MODE PRESS FUNCTION KEY

IP

In the event of problems with or questions about your order, please contact the Pitco Frialator factory at (800)258-3708 US and Canada only (603)225-6684 World Wide In the event of problems with or questions about your equipment, please contact the Pitco Frialator Authorized Service and Parts representative (ASAP) covering your area, or contact Pitco at the numbers listed to the left.

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