



IMPORTANT FOR FUTURE REFERENCE

Please complete this information and retain this manual for the life of the equipment:

Model #: _____

Serial #: _____

Date Purchased: _____

ENGLISH

Service Manual

MGII: McDonald's Full and Split Gas Fryers with and without Filter



TO THE PURCHASER, OWNER AND STORE MANAGER

Please review these warnings prior to posting them in a prominent location for reference.

TO THE PURCHASER

Post in a prominent location the instructions to be followed in the event that an operator smells gas. Obtain this information from your local gas supplier.

WARNING

DO NOT store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

WARNING

Improper installation, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this appliance.

WARNING

Installation, maintenance and repairs should be performed by a Pitco Authorized Service and Parts (ASAP) company technician or other qualified personnel. Installation, maintenance or repairs by unauthorized and unqualified personnel will void the warranty.

WARNING

Installation and all connections must be made according to national and local regulations and codes in force.

WARNING

During the warranty period if a customer elects to use a non-original part or modifies an original part purchased from Pitco and/or its Authorized Service and Parts (ASAP) companies, this warranty will be void. In addition, Pitco and its affiliates will not be liable for any claims, damages or expenses incurred by the customer which arises directly or indirectly, in whole or in part, due to the installation of any modified part and/or received from an unauthorized service center.

WARNING

This appliance, when installed, must be electrically grounded in accordance with local codes, or in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, or the Canadian Electrical Code, CSA C22.2, as applicable.

WARNING

Adequate means must be provided to limit the movement of this appliance without depending on the gas or electrical cord connection. Single appliances equipped with legs must be stabilized by installing anchor straps. All appliances equipped with casters must be stabilized by installing restraining chains, or equivalent means.

WARNING

An appliance equipped with casters and a flexible gas line must be connected to the gas supply with a quick disconnect device. This quick disconnect must comply with ANSI Z24.41.

WARNING

DO NOT alter or remove structural material on the appliance to accommodate placement under a ventilation hood.

WARNING

This appliance is intended for professional use only and should be operated by fully trained and qualified personnel.

WARNING

If the appliance is equipped with a power cord and it is damaged, it must be replaced by a Pitco Authorized Service and Parts (ASAP) company technician, or a similarly qualified person in order to avoid a hazard.

WARNING

The power supply must be disconnected before servicing, maintaining or cleaning this appliance.

WARNING

The appliance is NOT jet stream approved. DO NOT clean the appliance with a water jet.

WARNING

DO NOT attempt to move this appliance or transfer hot liquids from one container to another when the unit is at operating temperature or filled with hot liquids. Serious personal injury could result if skin comes in contact with the hot surfaces or liquids.

WARNING

DO NOT sit or stand on this appliance. The appliance's front panel, tank, splash back, tank cover, workshelf, drain board is not a step. Serious injury could result from slipping, falling or contact with hot liquids.

WARNING

NEVER use the appliance as a step for cleaning or accessing the ventilation hood. Serious injury could result from slips, trips or from contacting hot liquids.

WARNING

The oil/shortening level should NOT fall below the minimum indicated level line at any time. The use of old shortening can be dangerous as it will have a reduced flash point and be more prone to surge boiling.

WARNING

The contents of the crumb catch and/or filter pan of any filter system must be emptied into a fireproof container at the end of each day. Some food particles can spontaneously combust if left soaking in certain types of oil or shortening.

WARNING

Completely shut the appliance down when oil/shortening is being drained from the appliance. This will prevent the appliance from heating up during the draining and filling process. Serious injury can occur.

WARNING

This appliance is intended for indoor use only.

WARNING

DO NOT operate appliance unless all panels and access covers are attached correctly.

WARNING

It is recommended that this appliance be inspected by a qualified service technician for proper performance and operation on a yearly basis.

WARNING

There is an open flame inside this appliance. The unit may get hot enough to set nearby materials on fire. Keep the area around the appliance free from combustibles.

WARNING

DO NOT supply the appliance with a gas that is not indicated on the data plate. If you need to convert the appliance to another type of fuel, contact your Equipment Supplier or a Pitco Authorized Service and Parts (ASAP) Company.

WARNING

DO NOT use an open flame to check for gas leaks!

WARNING

If gas flow to appliance is interrupted, or pilots extinguish, wait 5 minutes before attempting to relight the pilot to allow any residual gas in appliance to dissipate.

WARNING

Ensure that the appliance can get enough air to keep the flame burning correctly. If the flame is starved for air, it can give off a dangerous carbon monoxide gas. Carbon monoxide is a clear odorless gas that can cause suffocation.

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1. Theory of Operation

Knowing and understanding the MGII sequence of fryer and component operation will enable you to diagnose equipment failure more easily and accurately. (Note: The schematic references used are derived from the schematic on pages _ - _ of this manual.)

1.1. Heating System

Power to the machine is turned ON:

- When the fryer is plugged in, power is supplied to the transformer, T1. The transformer steps the line voltage down to 24VAC to operate the heat control circuit.
- If Fuse, F1, on the Relay Board, A4, is good, the “AC POWER” LED illuminates. The computer is supplied with 24VAC and, if the drain valve handle is closed, the proximity switch, LS1, supplies 24 VAC to the DVI (drain valve interlock) Input at the Computer Controller, (reference connector J/P1, pin #5).
- The Computer Controller, A1, is turned ON by pressing the  button:
- The Side On Relay, K3, will be energized, closing the circuit and the “S.O.” LED on the Relay Board illuminates. If the High Limit, HL1, is NOT tripped the ignition module is supplied with 24VAC at terminal 6 (24VAC).
- The ignition module generates a 24VAC output from terminal 3(PV) to the PV terminal on the Gas Valve, V1, and generates a spark at the igniter, E2. When the pilot has lit and the ignition module has proven the pilot flame, it will have a 24VAC output at terminal 1(MV) resulting in 24VAC at connector J/P32, pin #2, on the Relay Board. The Heat Demand Relay, K1, on the Relay Board will control the 24VAC supply to the gas valve when the controller calls for heat. **Note:** When the Computer Controller is on, the pilot should always remain lit.
- When the Computer Controller calls for heat:
- The Heat Demand Relay is energized supplying the Gas Valve with 24VAC and the “HD” LED on the Relay Board illuminates. This also supplies the Computer Controller with a heat feedback signal, at connector J/P32, pin #6.

1.2. High Limit System:

- If the High Limit, HL1, opens (“trips”), it interrupts the 24VAC supply to the ignition module. As a result, the pilot goes out. When the Computer Controller calls for heat, it will not receive a 24VAC heat feedback signal. After 10 seconds, (90 seconds on first heat demand), of heat demand output lacking a heat feedback signal, the Computer Controller will indicate “IGNITION FAILURE” or “HEAT FAIL”. After the High Limit is reset, (allow unit to cool below 400°F, (204°C), and press red reset button.), the Computer Controller will have to be turned off and back on for the unit to heat.

1.3. Hood Relay System - U.S./Canada units only

- There is one Hood Relay, K6, per system, (“battery”) of fryers (located in a box mounted below the rear bottom brace of left-hand fryer). It is wired in parallel to the Side On signal of every Computer Controller (both sides of an MG2T Split). When any side of any Computer Controller is turned on this relay is energized, (providing power to the hood fan motor) and will stay energized until all Computer Controllers are turned off.
- The Side On harness is equipped with a Fuse, F_. In the event of a short or over-current in the wiring to the Hood Relay, all the F_ fuses in the system will blow. As a result, the fryer will no longer control the hood fan motor. To repair, first correct the over-current condition, and then replace all the F_ fuses in the fryer system.

1.4. Temperature Probe

- The Computer Controller receives temperature readings from the Temperature Probe, RT1.
- The Temperature Probe resistance varies with temperature, decreasing as temperature rises.

1.5. Filter System

- Opening the RED filter return valve handle closes the magnetically actuated Proximity Switch, LS4, causing the “Pump Run” Relay, K5, to be energized. This allows line voltage to flow to the Filter Pump Motor, M1. The Pump Motor begins 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, CB1, which de-energizes the system and the heat tape, (if so equipped), 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, HTR1, to prevent solidification of solid shortening. The Heat Tape is low wattage and is on constantly to maintain liquid shortening in the line.
- The Filter Pump Motor, M1, is equipped with a thermal overload. In the event of over-temperature of the pump motor, the thermal overload opens shutting off the pump. Once the pump motor has cooled, it can be reset by pressing the red button at the end of the motor housing.

2. Troubleshooting

2.1. Fryer Troubleshooting

Problem	Probable Causes	Corrective Actions
Computer Controller display does not light.	No power to appliance.	Check main building power supply.
	Circuit Breaker tripped.	Reset circuit breaker.
	Power Cord loose or not connected.	Connect power cord. Check power cord where it enters the rear of the fryer's entrance box. Verify that it is plugged all the way into the receptacle.
	Fuse, F1, blown.	Check Wire Reduction Board. If AC Lamp is not lit check F1 fuse. If fuse is blown, replace with a 2.5 A fast acting fuse.
	Transformer, T1, Defective.	Check and replace if defective
	Defective Controller	If AC Lamp on Wire Reduction Board is lit, check for 24 VAC between pins 1 and 2 on J/P 1. If voltage is present and computer display is not lit, controller is defective. Check for shorts on controller outputs prior to replacing controller.
Computer Controller shows "MELT" and heats slowly, or not at all.	Computer is in Melt Cycle.	Allow time for unit to heat up.
	Main gas supply is off.	Verify main gas supply is turned on.
	Gas shut off valve (yellow handle) is closed.	Verify gas shut-off valve is open, (yellow handle is in line with the gas line).
	Gas valve is not turned on.	Turn manual gas valve to "ON".
	Quick disconnect not properly connected.	Verify quick disconnect is properly seated.
	High temperature limit has tripped.	Reset high temperature limit. Check and replace if defective.
	Ignition Module has locked out.	Turn Fryer off and back on again to reset ignition module. If lockout recurs, check for proper pilot flame and proper module operation. Replace if defective
	Low gas pressure	Check regulated gas pressure at burner manifold. Verify pressure matches dataplate information. Adjust as necessary.
Computer Controller shows "IGNITION FAILURE" and alarms.	Main gas supply is off.	Verify main gas supply is turned on.
	Gas shut off valve (yellow handle) is closed.	Verify gas shut-off valve is open, (yellow handle is in line with the gas line).
	Gas valve is not turned on.	Turn manual gas valve to "ON".
	Quick disconnect not properly connected.	Verify quick disconnect is properly seated.

Problem	Probable Causes	Corrective Actions
Computer Controller shows "IGNITION FAILURE" and alarms (cont.)	High temperature limit has tripped.	Allow appliance to cool and reset high temperature limit. Check and replace if defective
	Ignition Module has locked out.	Turn fryer off and back on again to reset ignition module. If lockout recurs, check for proper pilot flame and module operation. Replace if defective.
	Low gas pressure	Check regulated gas pressure at burner manifold. Verify pressure matches dataplate information. Adjust as necessary.
	Improper Flue Baffle Setting	Adjust flue baffle to provide proper burner operation.
Excessive Recovery Time; (Recovery Time exceeds 2:25 Standard)	Excessive Oil Level	Oil level should never exceed "MAX" line. Drain extra oil from tank.
	Oil added during Recovery Test.	Repeat heat up without adding oil during test and compare results.
	Quick disconnect not properly connected.	Verify quick disconnect is properly seated.
	Low gas pressure	Check regulated gas pressure at burner manifold. Verify pressure matches dataplate information. Adjust as necessary.
	Improper Flue Baffle Setting	Adjust flue baffle to provide proper burner operation.
	Burners require cleaning.	Remove and clean burners.
Oil Temperature is hotter, or colder than shown by Computer Controller	Temperature Calibration	Refer to McDonald's PM Card FR014.
	Defective Temperature Probe	Contact a qualified service technician.
Computer Controller displays "DRAINING" or "TURN OFF"	Blue drain valve is not completely closed.	Close blue drain valve handle.
	Improperly adjusted or defective drain switch	Check and Adjust/Replace as needed.
Computer Controller displays "PROBE FAILURE"	Open or shorted temperature probe	Check and replace if defective.

2.2. Filter Troubleshooting

Drain Valve is open; the oil is draining slowly or not at all	Drain valve is not fully open	Press down on the drain valve handle and verify that it is fully open
	Drain is plugged with debris.	Use the clean out rod to clear the drain valve opening. If this does not clear the blockage, close the drain valve. Remove drain "T" to clear blockage.
Pump return handle is pulled out, but no pumping sound can be heard.	Red return valve handle is not completely open.	Pull on the red return valve handle to make sure it is completely open.
	Filter circuit breaker is tripped or in the off position.	Reset the circuit breaker or press it to the on position.
	Filter motor thermal overload is tripped.	Push the red reset button on the end of the filter pump motor.
	Filter power cord is unplugged or loose.	Check the power cord at the rear of the fryer entrance box, and at the rear of the pump box and verify that the power cords are pushed all the way into their receptacles.
	Loose or defective sensor switch	Check that the switch is tight and has the correct gap. Replace if defective.
Oil is returning to the tank slowly or not at all.	Dirty filter media	Change filter paper/pad.
	Pickup tube screen clogged	Remove and clean pickup tube screen cap.
	Filter pan not pushed in completely	Push filter pan in to complete connection.
	O-rings not sealing on pickup tube.	Check and replace o-rings if defective.
Excessive air bubbles are in the oil being returned to the tank.	Pickup tube screen not tight.	Tighten pickup tube screen cap.
	Pickup tube screen cap missing	Locate and install pickup tube screen cap.
	Filter pan not pushed in completely	Push filter pan in to complete connection.
	O-rings not sealing on pickup tube.	Check and replace o-rings if defective.
Drain valve is closed, but the computer controller still displays "DRAINING"	Blue drain valve handle not completely closed	Verify that drain valve handle is completely closed.
	Improperly adjusted or defective drain switch.	Check that the switch is tight and has the correct gap. Replace if defective.

3. Component Troubleshooting

3.1. Temperature Probe:

Electrical resistance of the Temperature Probe, RT1, changes as the temperature changes. As temperature rises, the probe's resistance decreases.

If the probe is suspect, check its resistance and the oil/air temperature at which it was taken. Compare these values to those in the table at right.

If the probe measures open circuit, (O.L. or ∞) or shorted, (0 Ohms), it should be replaced. If the resistance varies more than 30 Ohms when being checked between 325-375°F, (163-190°C), the probe will give a false temperature reading to the computer controller and should be calibrated (up to 10°F) or replaced.

TEMP °F/°C	RESISTANCE OHM Ω	TEMP °F/°C	RESISTANCE OHM 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		

3.2. Gas Valve:

The Gas Valve, VI has dual 24VAC valve coils. When 24VAC is applied to the PV connection, the pilot valve opens, allowing gas to flow to the pilot.

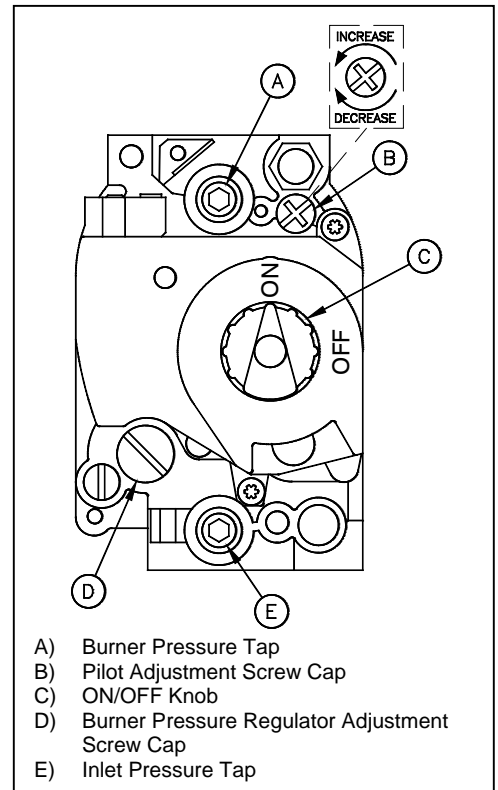
When 24VAC is applied to the MV connection, the main valve opens, allowing gas to flow to the main burners.

Pilot flame is adjustable using the pilot adjustment screw. It should be adjusted at installation to achieve a flame sense current of 0.15 μ A or greater.

Note: This procedure requires the use of a DC microammeter. The meter should be wired with a switch that allows the meter to be switched out of the circuit while the ignition system is sparking. Connect the DC microammeter between the flame sensor (spark) terminal and the flame sensor lead, (spark cable). Once the pilot is lit, and sparking has stopped, switch the meter into the circuit. Observe proper polarity: if the meter needle goes below 0, reverse the leads. The flame current reading must be 1.0 μ A or greater, (0.15 μ A or greater for CE units).

Remove the pilot adjustment screw cap screw, (B), to expose the pilot adjustment screw. Turning the pilot adjustment screw clockwise decreases the size of the pilot flame and flame sense current. Turning the pilot adjustment screw counterclockwise increases the pilot flame size and the flame sense current. Once the pilot flame has been adjusted properly, replace the pilot adjustment screw cap screw and remove the microammeter.

The gas valve is equipped with a pressure regulator to regulate burner pressure. Regulated pressure should be the same, ± 0.1 " W.C. (.25mbar, .02kPa), as that marked on the data plate on the inside door of the appliance. To measure regulated gas pressure, connect an accurate pressure gauge (range of 0-16 "W.C. (0-39.85mbar, 0-3.98kPa) in 0.1" (.25mbar, .02kPa) increments) or manometer to the burner pressure tap, (A). To adjust the pressure, remove the burner pressure regulator adjustment screw cap and, with a flat head screwdriver, adjust the regulator screw until the proper burner



NON-CE COUNTRIES				
Model	Gas Type		Gas Pressure (in W.C.)	
	Nat	LP	Nat	LP
MG2	#46	#55	4.0	10.0
MG2S	#46	#55	4.0	10.0

Orifice Tip Size and Burner Pressure
(for CE Countries see Section 4.0)

pressure is reached. Turning the screw clockwise will increase the burner pressure. Turning the screw counterclockwise will decrease the burner pressure. When the pressure is correct, replace the regulator adjustment screw cap.

NOTE: A properly sized and installed gas line will deliver a minimum supply pressure of 7.0" W.C. (17.4mbars, 1.74kPa) natural gas or 13.0" W.C. (32.4mbars, 3.25kPa) propane to all appliances connected to the supply line, operating simultaneously at full demand. If regulated gas pressure cannot be achieved with all appliances in the store running, there may be a building gas supply deficiency.

3.3. High Limits:

The High Limit switch, HL1, is a normally closed switch that opens when the temperature at the high limit sensing bulb reaches 450°F±15°F, (232°C ±8).

The high limit can be tested by utilizing the Computer Controller high limit test feature. Refer to **McDonald's PM Card FR015** for instructions on how to perform this test.

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 burners to run continuously.

If the switch does not open, ("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 400°F, (204°C). If the switch cannot be reset, (by pressing the red reset button), after the oil has cooled it is defective.

3.4. Drain Valve & Return Valve Switches:

These switches, LS1 and LS4, are magnetically actuated proximity switches.

When the Drain Valve Handle is moved to the open position, the Actuator magnet will move away from the switch causing the Drain Valve Switch, LS1, to open. When the Drain Valve is closed the switch will close.

Opening the Red Return Valve Handle will close the proximity switch causing the "Pump Run" Relay, K5, to be energized. The pump will begin to pump. Closing the return valve handle will open the proximity switch causing the relay to de-energize and the pump will stop pumping. These switches can be checked with an Ohmmeter. When the switch is closed, you should have continuity, (near 0 Ohms). The normal gap between the Actuator magnet on the valve handle and the Sensor switch is $\frac{1}{8}$ " – $\frac{1}{4}$ " (3 – 6mm).

3.5. Transformer:

The Transformer, T1, is a Class 2 step-down, multiple tap primary to 24VAC secondary device. The transformer can be checked by reading the input and output voltages. A quick check for transformer 24VAC output can be done at the relay board behind the front panel. The AC LED is illuminated if the F1 fuse is good and the board is receiving 24 VAC at connector J/P35 between pins #2 and #4.

3.6. Ignition Module:

The Ignition Module, A2, is a 24VAC input, single ignition trial, (with multiple retrials upon flame loss), device. It senses flame through the spark lead using flame rectification. When 24VAC is input between the 24V (THS on CE modules) terminal and 24V (GND), the ignition module generates a 24VAC output from its PV terminal. The igniter sparks until the module senses pilot flame, or for 85-90 seconds, at which time the module will lock out, whichever occurs first. When the module has proven the pilot flame, it will generate a 24VAC output at the MV terminal resulting in 24VAC at connector J/P32, pin #2 on the relay board. (The relay board then controls the 24VAC to the gas valve when the Computer Controller calls for heat.)

SERVICE



Note: When the Computer Controller is on, the pilot should always remain lit. If the pilot is not lit, either the high limit is open, or the ignition module has locked out. Ignition module lockout can be reset by turning the fryer off and back on again.

3.7. Relay Board:

- The relays on the relay board have 24VDC coils. They are soldered to the board and are non-repairable. In the event of a relay failure, replace the relay board
- When installed, the relay board must have fish paper installed between it and the heat shield to which it is mounted. This prevents the leads on the board from shorting against the metal heat shield.

Relay Board Component Explanation:

Fuse:

F1 – If fuse is blown, AC will not be lit.

Trouble Shooting Lights:

A.C. – When lit, F1 Fuse and T1 Transformer are good.

S.O. – When lit, A1 Computer is on and K3 Side On Relay should be energized.

H.D. – When lit, A1 Computer is on and calling for heat, K1 Heat Demand Relay should be energized.

Relays:

K1 – Heat Demand Relay, will be energized when A1 Computer calls for heat and when H.D. is lit.

K3 – Side On Relay, will be energized when A1 Computer is on and A.C. is lit.

Connectors:

J31 – Connects to A1 Computer.

J32 – To Side On and Heat Demand Contactors and Heat Feed Back.

J33 – To 24 VAC jumper harness.

J34 – To Drain Switch.

J35 – Input voltage from transformer.

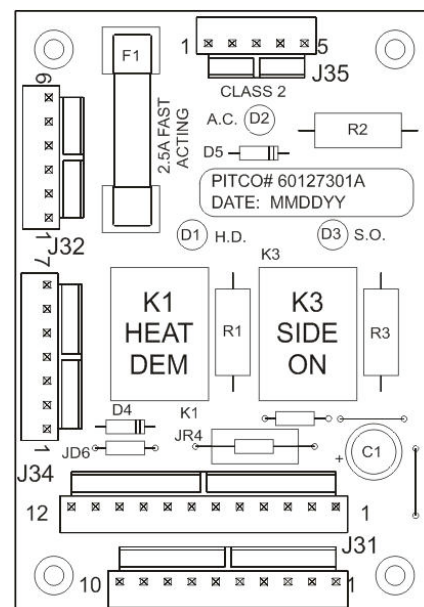
Relay Board:

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.

Note: Since the fryer is equipped with a computer, at connection J33 there will be a jumper from pin #2 to pin #10 to supply 24 VAC to pin #2 at connection J31 to supply the controller with 24 VAC.

- When the board receives a 24 VDC side on input at pin #7 on connectors J31 and 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 should be continuity between pin #1 and pin #2 at connector J32.



3.8. Computer Controller:

The McDonald's Computer controller is an electronic temperature control, timer and menu control. Input signals to the controller, (Power, DVI, Heat Feedback) are 24VAC. Controller outputs, (Side On, Heat Demand), are 24VDC. Temperature is measured via a thermistor temperature probe, RT1.

The same controller is used for McDonald's Gas and Electric Fryers and for both Full and Split Tanks. When the controller is powered up, it looks at probe and drain valve inputs to determine if it is a full or split configuration. (For this reason, always connect the right harness first and then the left harness when connecting a Split, as power comes into the controller via the left harness.)

Note: When replacing a controller, it must be set up for the appliance type, (GAS, GAS2 or ELECTRIC) on which it is installed. The MGII fryer uses the GAS2 temperature algorithm. **Failure to set the control up for the correct appliance type may result in poor appliance operation.**

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 "OFF".
- 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 controller does not receive the 24VAC input at pin #6 within 10 seconds, (90 seconds on first heat demand), the controller will display "HEAT FAIL" or "IGNITION FAILURE". This indicates that the controller did not receive a heat feedback signal when it called for heat. If this occurs:
 - Look to see if the pilot is lit. If not:
 1. Check the high-limit switch, HL1. (Is it open ("tripped"))?
 2. Check the ignition module, A2, (Sensing pilot flame? locked out?).
 - If the pilot is lit:
 3. Check the heat demand (HD) relay, K1, on the relay board; (Is heat demand relay energized? Continuity through COM and NO contacts?).
- If display reads "PROBE", check the resistance of the temperature probe, RT1. See the table on page 5. Check the wires and connectors between the probe and controller for continuity.
- If display reads "SYSTEM" "FAILURE", or "HOT HI-1", test the temperature probe and the wires and connectors between the probe and controller for a short.
- If display reads "DRAINING" "TURN OFF", this indicates that there is no 24VAC input at pin # 5, (DVI Input). Verify that the drain valve is closed, check the proximity switch on the drain valve, turn the fryer off, then turn the fryer on.

3.9. Flue Baffle

The McDonald's MGII Gas Fryers are typically installed in a direct-coupled ventilation hood. They are shipped from the factory with adjustable baffles installed in the flue of each fryer. Upon installation, these baffles must be adjusted to provide proper operation within the ventilation hood.

WARNING

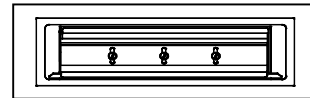
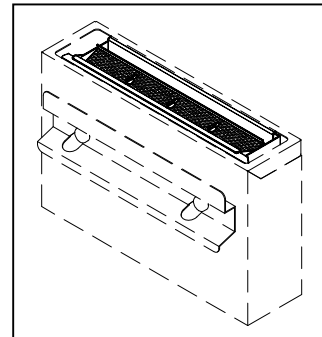
Failure to properly adjust the flue baffles may result in improper operation, poor temperature recovery, poor ignition, pilot extinction, and damage to the appliance.

If the appliance is not installed in a direct-coupled hood system, (e.g. canopy hood), the flue baffles must be removed before installation for proper operation.

The fryer will ship with the baffle set in the normal position for most McDonald's "Universal" hoods. (McDonald's direct-coupled hoods manufactured after 1995 are of the "Universal" type.) If upon installation under the hood, the burner flame is found to be lifting or pulsing, the draw of the hood may be higher than nominal and adjustment of the flue baffle may be necessary. The flame can be viewed by looking through the burner shield. If the flue baffle requires adjustment, pulsing can often be heard when the burners fire.

The baffle can be adjusted as follows:

1. Pull the fryer out from under the ventilation hood.
2. Loosen the 2 screws securing the baffle slide plate, move the plate to a more closed position and retighten the screws.
3. Reinstall fryer under ventilation hood.
4. Recheck burner operation
5. Repeat as necessary



The burners should be rechecked after baffle adjustment. If there is pulsing or the flame is lifting off the burner face, the baffle is still too far open. If there is significant flame roll out on ignition, then the baffle is too far closed. The baffle should be set in the most open position that allows for stable, non-pulsing, non-lifting burner operation.

WARNING!

If the baffle can not be adjusted properly, the facility must have the ventilation system checked immediately to be sure that it is within normal operating specifications. After the ventilation system is corrected, the baffle setting must be rechecked. Failure to correct ventilation problems or properly set flue baffles will result in extremely poor fryer operation and possible equipment damage.

4. CE GAS TABLE

Refer to the following table for gas specifications for the country of use. If the country of use is NOT listed, refer to the information stamped on the data plate.

Staat	Modell	Gas-Art	Gas	Gerätekategorie	Eingangsleistung (brutto) kW	Eingangsleistung (netto) kW	Eingangsdruck (mbar)	Brennerdruck (mbar)	Brennerlöse	Zündflammenlöse	Regler	Nennleistung (m ³ /hr)	Eingang Messblende (mm)
AT	MGII	Nat	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	
	LP	LP	G31	I _{3P}	23.4	21.5	50/37	25.4	#55	LP16	Ja	0.9	N/A
BE	MGII	Nat	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	
	LP	LP	G31	I _{3P}	23.4	21.5	50/37	25.4	#55	LP16	Ja	0.9	
BG	MGII	Nat	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	
	LP	LP	G31	I _{3P}	23.4	21.5	50/37	25.4	#55	LP16	Ja	0.9	
CY	MGII	Nat	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	
	LP	LP	G31	I _{3P}	23.4	21.5	50/37	25.4	#55	LP16	Ja	0.9	
CZ	MGII	Nat	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	
	LP	LP	G31	I _{3P}	23.4	21.5	50/37	25.4	#55	LP16	Ja	0.9	
DK	MGII	Nat	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	
	LP	LP	G31	I _{3P}	23.4	21.5	50/37	25.4	#55	LP16	Ja	0.9	
EE	MGII	Nat	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	
	LP	LP	G31	I _{3P}	23.4	21.5	50/37	25.4	#55	LP16	Ja	0.9	
FI	MGII	Nat	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	
	LP	LP	G31	I _{3P}	23.4	21.5	50/37	25.4	#55	LP16	Ja	0.9	
FR	MGII	Nat	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	
	LP	LP	G31	I _{3P}	23.4	21.5	50/37	25.4	#55	LP16	Ja	0.9	
DE	MGII	Nat	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	
	LP	LP	G31	I _{3P}	23.4	21.5	50/37	25.4	#55	LP16	Ja	0.9	
GB	MGII	Nat	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	
	LP	LP	G31	I _{3P}	23.4	21.5	50/37	25.4	#55	LP16	Ja	0.9	
GR	MGII	Nat	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	
	LP	LP	G31	I _{3P}	23.4	21.5	50/37	25.4	#55	LP16	Ja	0.9	
HU	MGII	Nat	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	
	LP	LP	G31	I _{3P}	23.4	21.5	50/37	25.4	#55	LP16	Ja	0.9	
IE	MGII	Nat	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	
	LP	LP	G31	I _{3P}	23.4	21.5	50/37	25.4	#55	LP16	Ja	0.9	
IT	MGII	Nat	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	
	LP	LP	G31	I _{3P}	23.4	21.5	50/37	25.4	#55	LP16	Ja	0.9	

Staat	Modell	Gas-Art	Gas	Geräte-kategorie	Eingangsleistung (brutto) kW	Eingangsleistung (netto) kW	Eingangsdruck (mbar)	Brennerdruck (mbar)	Brennerdüse	Zündflammdüse	Regler	Nennleistung (m ² /hr)	Eingang Messblende (mm)
LT	MGII	Nat LP	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	N/A
					NOT APPROVED FOR USE WITH LP GAS IN THIS COUNTRY								
LU	MGII	Nat LP	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	N/A
					NOT APPROVED FOR USE WITH LP GAS IN THIS COUNTRY								
LV	MGII	Nat LP	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	N/A
					NOT APPROVED FOR USE WITH LP GAS IN THIS COUNTRY								
MT	MGII	Nat LP	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	N/A
					NOT APPROVED FOR USE WITH LP GAS IN THIS COUNTRY								
NL	MGII	Nat LP	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	N/A
					NOT APPROVED FOR USE WITH LP GAS IN THIS COUNTRY								
NO	MGII	Nat LP	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	N/A
					NOT APPROVED FOR USE WITH LP GAS IN THIS COUNTRY								
PL	MGII	Nat LP	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	N/A
					NOT APPROVED FOR USE WITH LP GAS IN THIS COUNTRY								
PT	MGII	Nat LP	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	N/A
					NOT APPROVED FOR USE WITH LP GAS IN THIS COUNTRY								
RO	MGII	Nat LP	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	N/A
					NOT APPROVED FOR USE WITH LP GAS IN THIS COUNTRY								
SE	MGII	Nat LP	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	N/A
					NOT APPROVED FOR USE WITH LP GAS IN THIS COUNTRY								
SK	MGII	Nat LP	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	N/A
					NOT APPROVED FOR USE WITH LP GAS IN THIS COUNTRY								
SL	MGII	Nat LP	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	N/A
					NOT APPROVED FOR USE WITH LP GAS IN THIS COUNTRY								
TR	MGII	Nat LP	G20	I _{2H}	23.4	21.1	20	10	#46	N22	Ja	2.2	N/A
					NOT APPROVED FOR USE WITH LP GAS IN THIS COUNTRY								

5. Component Replacement Fryer

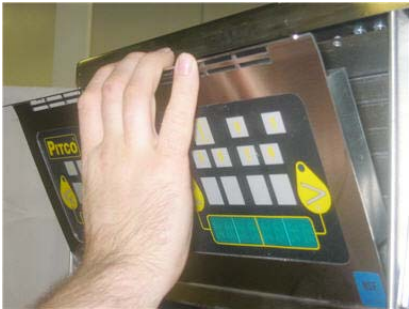
5.1. Front Panel

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

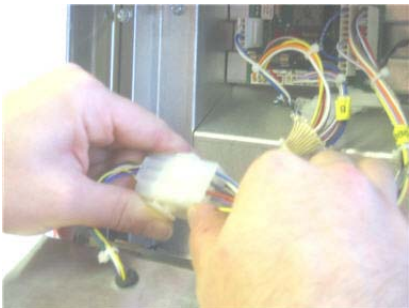
5.1.1. Front Panel Bezel



1. Remove Bezel Screws with Phillips Screwdriver.

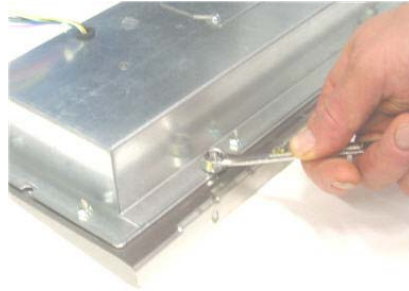


2. Rotate Bezel forward.



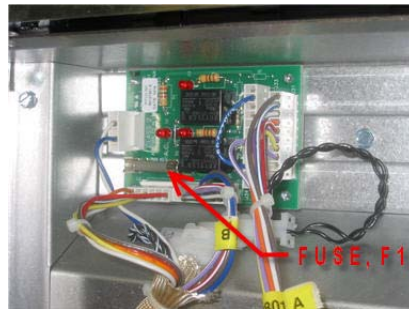
3. Disconnect 12 Position Connector(s) connecting Computer to Wire Reduction Board Harness.
4. Remove Bezel.

5.1.2. Computer Removal



1. Remove two #10-24 nuts securing top of computer to bezel studs.
2. Loosen two #10-24 nuts securing bottom of computer to bezel studs.
3. Remove computer from bezel.

5.1.3. Wire Reduction Board



1. Fuse, F1, is located on Wire Reduction Board. Replace with 2.5 A Fast acting fuse, if needed.
2. Disconnect all harnesses from Wire Reduction Board.



3. With a narrow tip flat-blade screwdriver, remove four wire reduction board-mounting crews. **Note:** Retain wire reduction board insulation and screws for reinstallation.

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

5.1.4. Front Panel and Top Deck

1. Remove front panel bezel.



2. Disconnect electrical harness from wire reduction board.



3. Remove screws securing front panel bottom rail to cabinet using 5/16" hex bit.



4. Remove screws securing front panel heat shield and strain relief retention clip to cabinet using 5/16" hex bit.



5. Remove front panel heat shield from cabinet, lower end first, sliding harness strain relief out of notch in shield. Remove inner burner heat shields.

6. Repeat steps 1-5 for each fryer in the system.



7. Remove screws securing top deck to cabinet using 5/16" hex bit. Remove top deck
8. Installation is the reverse of removal.

5.2. Control Components

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

5.2.1. Ignition Module



1. Using a 5/16" hex bit, remove screw securing ignition module bracket.



2. Disconnect ignition cable from module. Needle nose pliers may be needed to accomplish this.

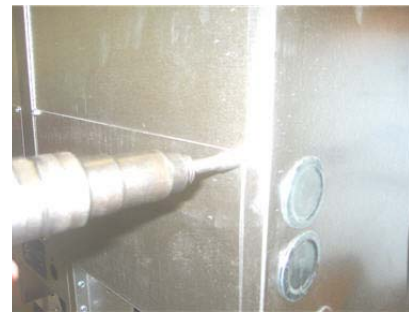


3. Slide module bracket toward you, and then to the right (or left) away from the cabinet side. This will disengage the two tabs at the rear of the bracket allowing removal of the module and bracket.
4. Disconnect the 6 position electrical connector.
5. Remove the module and bracket from the fryer.



6. Remove screws securing module to bracket.
7. Remove harness from module.
8. Installation is reverse of removal.

5.2.2. Transformer Box

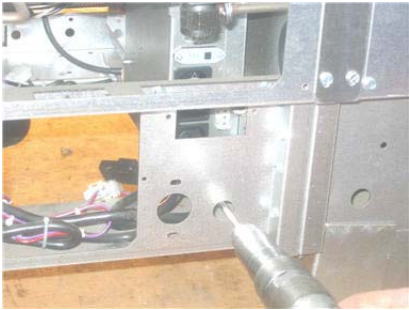


1. Using a 5/16" hex bit, remove 4 screws securing Cabinet Rear Bottom Cover and remove cover.



2. Unplug Electrical Connectors from the rear of the Transformer Box.

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



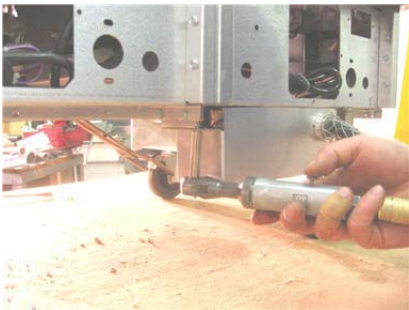
3. Using a 5/16" hex bit, remove the screws from the top and bottom of the transformer Box.
4. Slide Transformer Box toward front of fryer, disengaging tab from top front of mounting bracket.

5.2.3. Transformer

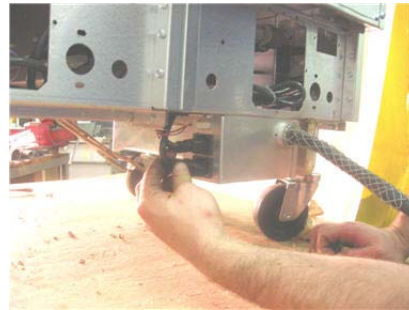


1. Remove Transformer Box from Fryer. (See previous section.)
2. Remove 2 screws securing transformer to box
3. Disconnect wires from transformer, noting location of wires for reinstallation.

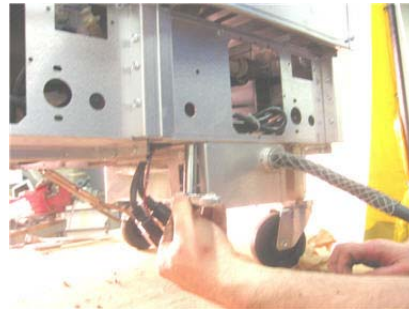
5.2.4. Cord Entrance Box



1. Remove plug guard from cord box using a 5/16" Hex socket.



2. Unplug cords from side of Cord Entrance Box



3. Remove nuts securing box to caster bolts using a 7/16" hex socket

5.2.5. Hood Relay (North America Only)

1. Remove Cord Entrance Box. (See Previous Section.)



2. Remove Hood Relay from Box using 3/8" wrench to hold nut while removing mounting screw using Phillips screwdriver.
3. Disconnect wires from relay noting location of wires for reinstallation.

5.3. Gas Train

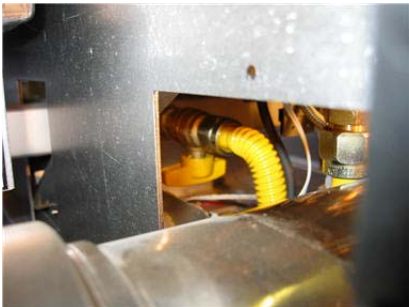
WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PRIOR TO STARTING ANY SERVICE WORK

WARNING! DISCONNECT APPLIANCE FROM GAS SUPPLY OR SHUT MANUAL GAS VALVE PRIOR TO SERVICING GAS TRAIN

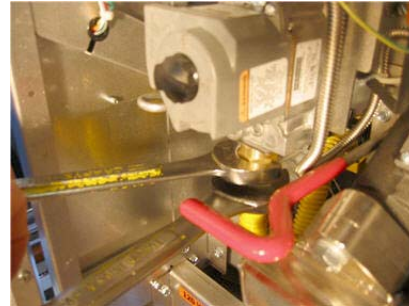
5.3.1. Manual Gas Shutoff



1. Close Manual Gas Shutoff in Gas Supply Piping by rotating yellow handle until it is perpendicular to gas line.



2. Loosen and remove pilot tubing from gas valve using 7/16" wrench
3. For Full Tank Gas Valves:

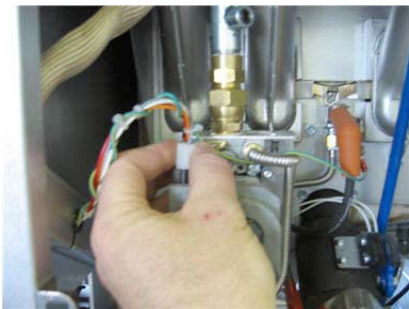


- a. Loosen and remove gas supply tubing at bottom of valve using 1-1/16" open end wrench on supply tubing end connector and 15/16" open end wrench on brass male flare fitting at base of valve



- b. Loosen top valve flare fitting from burner manifold using 1-1/16" open end wrench on female brass flare fitting at top of valve and 15/16" open end wrench on male brass flare fitting attached to burner manifold
- c. Unscrew top flare connection and remove gas valve from fryer.

5.3.2. Gas Valve Removal



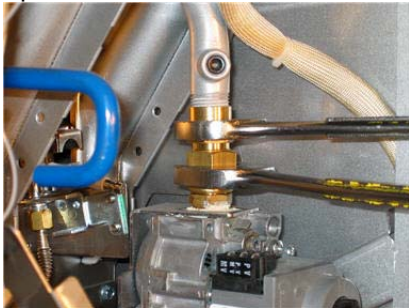
1. Disconnect 6 Pin Plug from Gas Valve



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

WARNING! DISCONNECT APPLIANCE FROM GAS SUPPLY OR SHUT MANUAL GAS VALVE PRIOR TO SERVICING GAS TRAIN

4. For Split Tank Gas Valves:



- a. Loosen and disconnect top valve flare fitting from burner manifold using 1-1/16" open end wrench on female brass flare fitting at top of valve and 15/16" open end wrench on male brass flare fitting attached to burner manifold



- b. Move valve forward to access supply tubing at bottom of valve.



- c. Loosen and remove gas supply tubing at bottom of valve using 1-1/16" open-end wrench on tubing end connector, and remove valve from fryer.



- 5. Remove brass quick disconnect fittings from Gas Valve using 15/16" open end wrench on male flare fitting at bottom of valve, and 7/8" thin open end wrench on male end of female fitting at top of valve.



- 6. For Full Tank valves, remove screw securing heat shield to valve using 1/4" socket.



- 7. Straighten and remove vent tubing.
- 8. Installation is reverse of removal. Be sure to re-install heat shield on valve.
- 9. **Leak test all gas fittings after re-assembly using an appropriate leak detection fluid.**

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

WARNING! DISCONNECT APPLIANCE FROM GAS SUPPLY OR SHUT MANUAL GAS VALVE PRIOR TO SERVICING GAS TRAIN

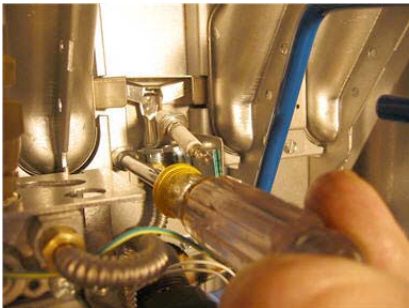
5.3.3. Pilot Removal



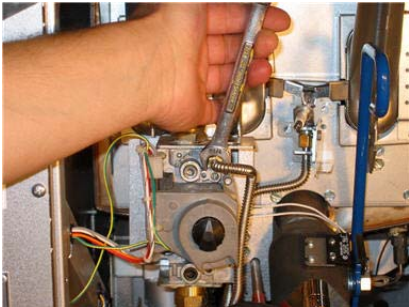
1. Remove screw securing ground wire to pilot bracket using 5/16" socket.



2. Unplug high voltage spark cable from pilot assembly.



3. Remove 2 screws securing pilot assembly to burner bracket using 5/16" hex bit



4. Loosen and remove pilot tubing from gas valve using 7/16" open-end wrench.

5.3.4. Burner Removal

1. Close Manual Gas Shutoff Valve. (See Section 4.3.1.)



2. Loosen and disconnect top valve flare fitting from burner manifold using 1-1/16" open end wrench on female brass flare fitting at top of valve and 15/16" open end wrench on male brass flare fitting attached to burner manifold.



3. Pull gas valve assembly forward and down to provide access to burner mounting screws.



4. On Full Tank fryers, remove screw securing flame carryover brackets using a 5/16" hex bit.

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

WARNING! DISCONNECT APPLIANCE FROM GAS SUPPLY OR SHUT MANUAL GAS VALVE PRIOR TO SERVICING GAS TRAIN



5. Remove burner mounting screws, (2/burner) using 5/16 hex bit.



6. Remove burners.



7. Note: On split vat fryers it may be necessary to bend up the outside tabs on the burner bracket shield to allow removal of the outside burners.
8. Installation is reverse of removal. Be sure that burner is properly seated on orifice spuds when re-installing burner.

5.3.5. Gas Conversion

1. Note: On some fryers, burner replacement is required when performing gas conversion. If burner removal is required, remove burners per Section 5.3.4.
2. Remove pilot assembly. See Section 5.3.3.
3. Remove gas supply tubing from pilot. Remove pilot orifice and install new pilot orifice.
4. Remove front panel bezel, bottom rail, and heat shield to gain access to burner orifices. See Section 5.1.4



5. Remove burner orifice tips using 7/16" wrench. Install new burner orifices
6. Reinstall pilot assembly.
7. If removed, reinstall main burners.
8. Remove gas valve regulator cap screw.
9. Remove regulator adjustment screw.
10. Remove regulator spring. Install new regulator spring. Reinstall regulator adjustment screw
11. Install manometer at regulated gas pressure tap. Ensure that there is adequate oil in fry tank. Press I/O button to start fryer. Adjust regulated gas pressure to specification for gas being used.
12. Reinstall regulator cap screw.
13. Install Gas Conversion Label on inside door of fryer.

5.4. Tank

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

5.4.1. Probe Replacement

1. Completely drain fry tank into a suitable container.



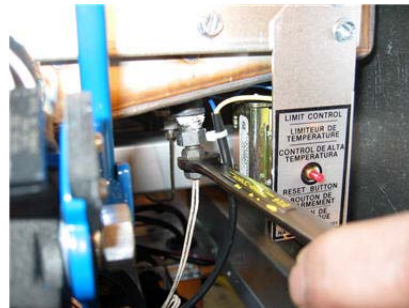
2. Disconnect probe electrical plug, P7, from jack, J7, located above ignition module.



3. Remove 2 screws securing probe bulb clamp inside tank using Phillips screwdriver. Remove bulb clamp.



4. Straighten probe by bending it upwards



5. Loosen Ferrule Nut on probe fitting underneath tank, using 7/16" wrench
6. Unscrew fitting from bottom of tank using 9/16" wrench.
7. Pull probe out through coupling in tank bottom
8. Install new probe from top of tank, sliding wires and probe through probe fitting. Adjust probe height so that it rests on tank tapping pad.
9. Apply pipe thread compound or Teflon tape to pipe threads of new fitting. Slide wires through new fitting, (one at a time). Tighten fitting into tank coupling, using 9/16" wrench.
10. Tighten probe fitting ferrule nut, using 7/16" wrench.
11. Install probe wires, (with pins), into plug connector.
12. Plug probe plug into jack, J7.
13. Reinstall probe bulb clamp securing probe and high limit bulb to tank tapping pad. If necessary, bend probe using flat bladed screwdriver to prevent contact between probe sheath and tank heat tube.
14. Check for leaks at fittings after tank has been refilled.

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

5.4.2. High Limit Replacement

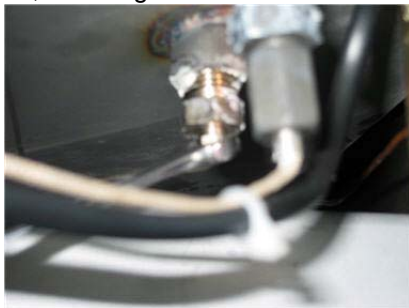
1. Completely drain fry tank into a suitable container.



2. Remove 2 screws securing high limit switch to burner bracket using 5/16" hex bit.



3. Unplug high limit electrical plug, P5, from jack, J5, above ignition module.



4. Unscrew capillary ferrule nut using 5/16" open-end wrench.



5. Remove 2 screws securing bulb clamp to tank tapping pad using Phillips screwdriver. Remove bulb clamp.



6. Unscrew high limit fitting from tank bottom using 9/16" open-end wrench.
7. Pull bulb and capillary through coupling in tank bottom.
8. Installation is reverse of removal. Note the following:
 - Apply pipe thread compound or Teflon tape to pipe threads of high limit fitting prior to installing in tank coupling.
 - Leave ferrule nut loose until bulb has been secured in bulb clamp.
 - Do not overtighten ferrule nut, as it will shear capillary tubing; ¼ turn beyond hand tight should provide sufficient sealing.
 - Check for leaks after tank has been refilled.

5.4.3. Drain Switch Removal



1. Unplug drain switch electrical plug, P8, from jack, J8, above ignition module.



2. Remove screws securing drain switch bracket to drain valve using Phillips screwdriver.

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

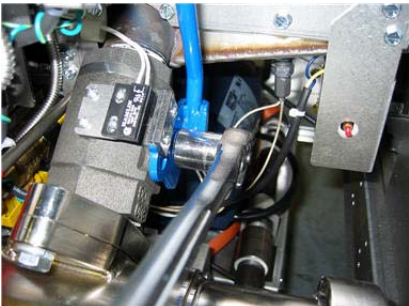
WARNING! DISCONNECT APPLIANCE FROM GAS SUPPLY OR SHUT MANUAL GAS VALVE PRIOR TO SERVICING GAS TRAIN

5.4.4. Tank Removal

1. Completely drain fry tank into a suitable container. (If changing a split tank, drain both halves of the tank.)



2. Close Manual Gas Shut-off in gas supply piping to fry tank being serviced.
3. Remove filter drain line, (if so equipped). See Section 6.2.1.



4. Remove drain valve handle(s) from drain valve(s), using 11/16" socket.



5. Unplug high limit electrical plug(s), P5, probe electrical plug(s), P7, and drain switch electrical plug(s), P8, from jacks above ignition module.

6. Remove pilot assembly(s). See Section 5.3.3.



7. Loosen and disconnect gas valve(s) top flare fitting from burner manifold, using 1-1/16" open end wrench on female brass flare fitting at top of valve and 15/16" open end wrench on male brass flare fitting attached to burner manifold.

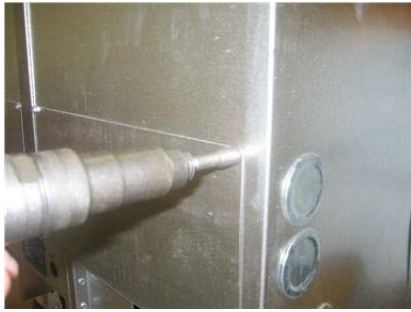


8. On filter equipped fryers, remove return valve handle retainer(s) using 5/16" hex bit.



9. On filter equipped fryers, remove return valve handle support bracket(s) from burner rack using 5/16" hex bit.

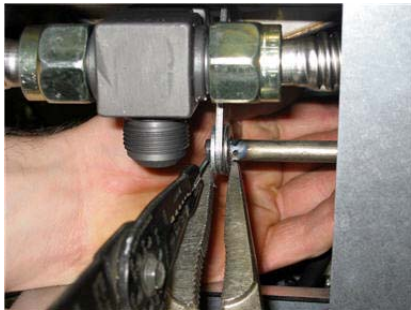
WARNING! SHUT OFF APPLIANCE AND DISCONNECT ALL POWER CONNECTIONS PRIOR TO STARTING ANY SERVICE WORK



10. Remove cabinet bottom rear cover.



14. Remove screws securing splashback to rear of tank using flat bladed screwdriver, and remove splashback.



11. For filter equipped fryers, remove cotter pin securing return valve handle to valve link. Save flat and spring washer for reinstallation.

15. Remove front panel bezel, bottom rail, heat shield, and top deck. (See Section 5.1.4.)



16. Remove channel strip(s) between adjacent fry tank(s).



12. For filter equipped fryers loosen and disconnect return tubing flare fittings to adjacent fryer(s). (On split tanks, leave tubing between the two tank halves intact. This can be removed when tank is out of cabinet.)



17. Cut sealant bead between adjacent fry tank(s), using utility knife.



13. Remove screws securing splashback to cabinet rear using 5/16" hex bit.



18. Remove 4 tank to cabinet mounting screws at front of tank, using 5/16 hex bit.

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19. Remove 2 tank to cabinet mounting screws at rear of tank, using 5/16 hex bit.



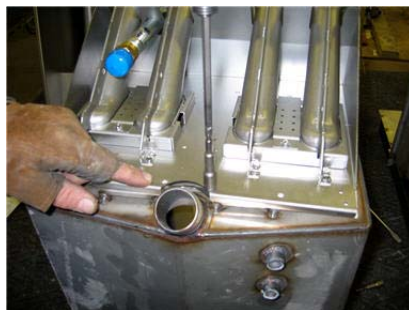
20. Remove fry tank from cabinet.

5.4.5. Tank Disassembly

1. Remove probe clamp(s) from tank(s) using Phillips screwdriver.
2. Remove high limit assembly(s) from tank. See Section 5.4.2.



3. Remove drain valve(s) from tank using pipe wrench.



4. Remove 6 burner rack mounting screws from tank, using 5/16" hex bit. Remove burner rack from tank(s).



5. Remove 4 screws and nuts securing flue to tank using 5/16" hex bit and 3/8" socket or box wrench. Remove flue from tank.



6. For filter equipped fryers, disconnect return valve(s) from tank fitting using 1 1/8" wrench on valve and 1" wrench on tank fitting.



7. For split tank fryers disconnect the return tubing from one of the two return valves.



8. Remove return valve fitting, (if so equipped), from tank using 1" wrench.

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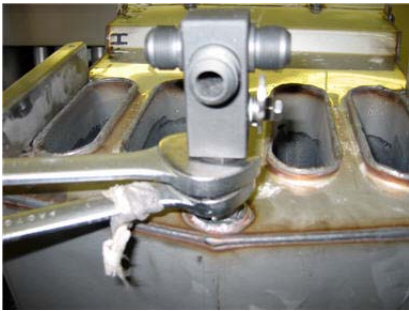
5.4.6. Tank Assembly



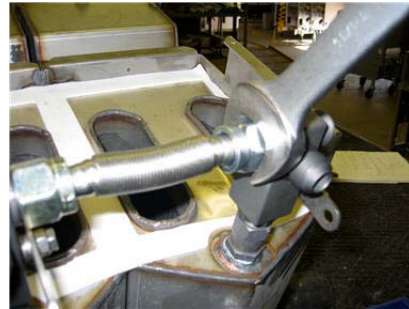
- 1. For filter-equipped fryers apply pipe thread compound or Teflon tape to return valve fitting(s), Install return valve fitting(s) into rear of tank using 1" wrench.



- c. Tighten the return valves using 1 1/8" wrench on return valve and 1" wrench on tank fitting.



- 2. Install return valve(s) onto return valve fitting(s), (if so equipped).

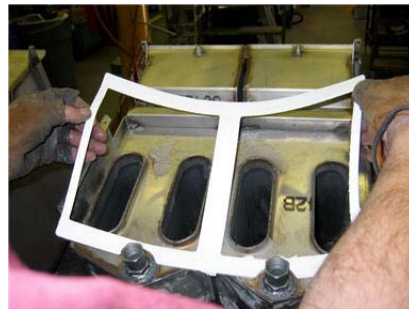


- d. Tighten the return tubing between the return valves, using a 1-1/16" wrench.

- 3. For non-filter fryers, ensure 1/2" plug is installed in rear tank fitting(s).



- a. For split tanks, leave return valves slightly loose so that return tubing between them can be installed. Connect tubing loosely to both valves.



- 4. For split tanks, install flue gasket on rear of tank. Spray glue may be used to hold gasket in place.



- b. Rotate valves into position using a large Phillips screwdriver inserted into the open port on the return valves.

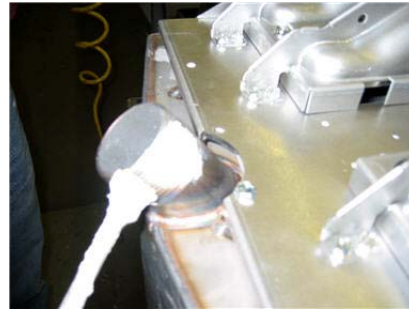


- 5. Install flue.

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6. Attach flue to flue brackets using 5/16" hex bit and 3/8" socket or box wrench to tighten screws and nuts.



9. Apply pipe thread compound or Teflon tape onto tank drain nipple(s).



7. Clean old gasket material from burner rack face. Install new burner gasket onto burner rack. Spray glue may be used to hold gasket in place.



10. Install drain valve(s) onto tank nipple(s) using pipe wrench. On full tanks, tighten until drain valve stem is facing right. On split tanks, drain valve stems should face each other.



8. Install burner rack onto tank front. Secure burner rack to tank using 6 screws and a 5/16" hex bit. On full tanks, leave out 2 screws in lower right front of rack. On split tanks, leave out 2 screws in lower center of rack. (These screws will be installed when the high limit bracket is installed.)



11. Insert probe(s) from top of tank through fitting(s) in tank bottom.



12. On split tanks, install probe clamp using Phillips screwdriver.

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13. Apply pipe thread compound or Teflon tape to pipe threads of fitting. Slide probe wires through fitting, (one at a time).



14. Tighten fitting into tank coupling, using 9/16" wrench.



15. On split tanks, tighten ferrule nut, using 7/16" wrench. Repeat steps 11 –15 for other tank half.



16. Attach high limit bracket to burner bracket using 5/16" hex bit. On split tanks the bracket is installed on the lower center mounting holes of the burner bracket. On full tanks, it is mounted on the lower right two mounting holes.



17. Straighten high limit capillary. Leave a slight bend in capillary just below bulb.



18. Insert high limit bulb and capillary through fitting in tank bottom. On split vats, ensure that right-hand bulb is inserted into right-hand tank, and left-hand bulb is inserted into left-hand tank.



19. Apply pipe thread compound or Teflon tape to pipe threads of high limit fitting, and tighten fitting into tank coupling using 9/16" open-end wrench.



20. Secure high limit bulb to tank tapping pad using bulb clamp and Phillips screwdriver.

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21. On full tanks, slide the probe through the ears of the bulb clamp, and then tighten clamp to tapping pad with high limit bulb secured beneath the clamp.



22. On full tanks, tighten the probe ferrule nut using a 7/16" wrench.



23. Tighten the capillary ferrule nut using a 5/16" open-end wrench. Do not overtighten the ferrule nut, as it will shear capillary tubing. 1/4 turn beyond hand tight should provide sufficient sealing.
24. For split tanks, repeat steps 17 – 20 and 23 for the other tank half.

5.4.7. Tank Installation



1. Install tank assembly into cabinet.



2. Attach tank to cabinet using 5/16" hex bit to install the 4 mounting screws at the front of the cabinet.



3. Install 2 mounting screws securing tank to cabinet rear.



4. Apply a bead of food safe silicone sealant to the seam(s) between adjacent tanks.

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5. Install channel strip(s) between adjacent fry tanks.



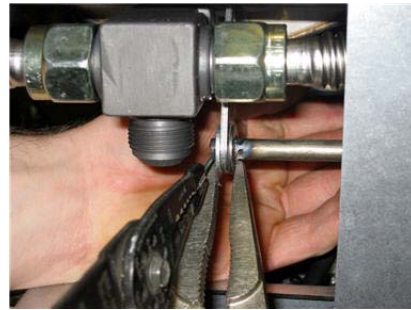
6. Slide splashback in place over rear of cabinet and tank. Install screws securing splashback to rear of tank using a flat bladed screwdriver.



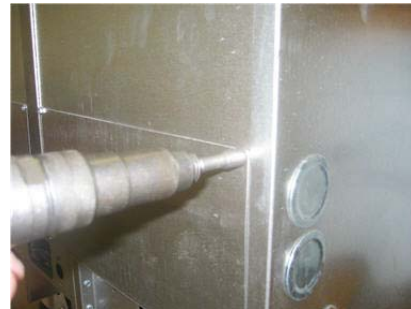
7. Install screws securing splashback to cabinet rear using a 5/16" bit.



8. For filter equipped fryers, reconnect return tubing to return valves using 1-1/16" wrench.

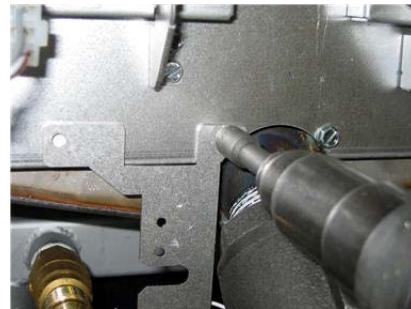


9. For filter equipped fryers, install return valve handle through hole in valve link. Install flat and spring washer, and hold in place with pliers. Install cotter pin through hole in link to secure handle.



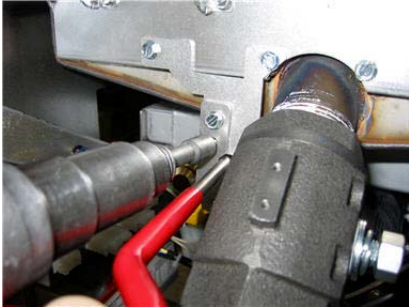
10. Install cabinet rear bottom cover

11. Reinstall top deck, front panel heat shield(s), bottom rail and front panel bezel. See Section 5.1.4.

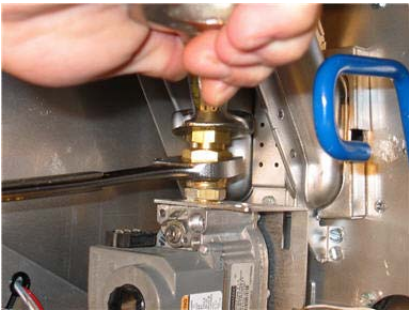


12. For filter equipped fryers, install return valve handle bracket to burner rack using 5/16" hex bit.

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- 13. For filter equipped fryers, place return valve handle rod in slot in bracket, and install retainer using 5/16" hex bit.



- 14. Reconnect gas valve to burner manifold using 1-1/16" open end wrench on female brass flare fitting at top of valve and 15/16" open end wrench on male brass flare fitting attached to burner manifold.
- 15. Reinstall pilot assembly. See Section 5.3.3.



- 16. Reconnect electrical plugs for high limit, P5, probe, P7, and drain switch, P8.



- 17. Reinstall drain valve handle using 11/16" socket.
- 18. Reinstall filter drain line, if so equipped. See Section 6.2.1
- 19. Fill tank with oil/shortening.
- 20. Open Manual Gas Shutoff Valve.
- 21. Leak test all gas fittings (with fryer operating) after re-assembly using an appropriate leak detection fluid.**
- 22. Operate fryer and check for oil leaks. Correct any leaks found

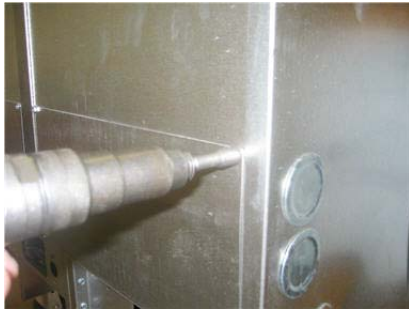
6. Component Replacement – Filter

6.1. Pump and Pump Box

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

6.1.1. Pump Removal

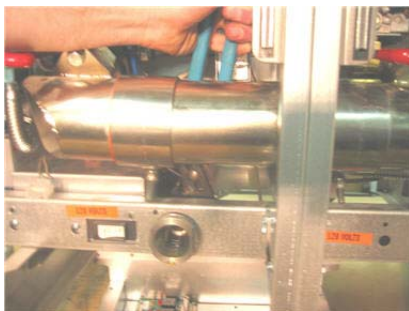
1. Remove Filter Pan and Cover
2. Disconnect pump power cable from rear of pump box.



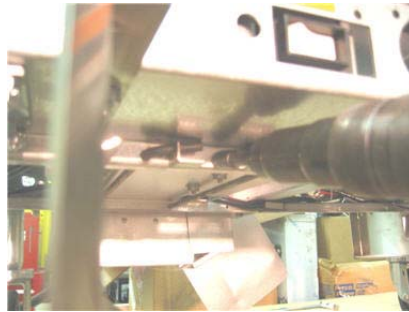
3. Remove cabinet rear bottom cover using a 5/16" hex bit.



4. Disconnect pump return hose from return valve using 1-1/16" wrench.



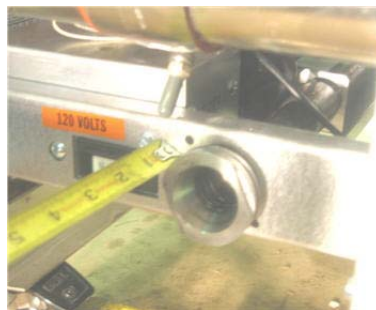
5. Unscrew filter pickup receptacle and pipe nipple from pipe coupling using arc joint pliers.



6. Remove pump rod bracket using 5/16" hex bit
7. While supporting pump, remove pump support rods.



8. Lower and remove pump assembly from cabinet.



9. Installation is reverse of removal. When reinstalling filter pickup receptacle, tighten until receptacle extends 13/16" – 3/4" from cabinet.

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6.1.2. Pump Box

Note: On split tank fryers, it may be necessary to remove pump in order to remove pump box.



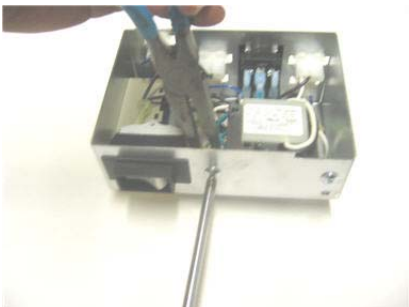
1. Disconnect all electrical connections to pump box.



2. Remove screws securing pump box to cabinet bottom brace using a 5/16" hex bit
3. Slide pump box back and out of cabinet.

6.1.3. Pump Transformer

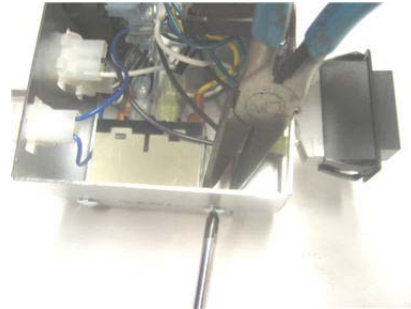
1. Remove Pump Box. See Section 6.1.2.



2. Remove transformer from Pump Box using Phillips screwdriver and needle nose pliers
3. Disconnect wires to pump transformer, noting location for reassembly.

6.1.4. Pump Relay

1. Remove Pump Box. See Section 6.1.2.



2. Remove relay from pump box using Phillips screwdriver and needle nose pliers
3. Disconnect wires to pump relay, noting location for reassembly.

6.1.5. Pump Circuit Breaker

1. Remove Pump Box. See Section 6.1.2.



2. Remove circuit breaker from pump box by squeezing panel retention ears.
3. Disconnect wires to circuit breaker, noting location for reassembly.

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6.2. Drain Line

6.2.1. Drain Line Removal



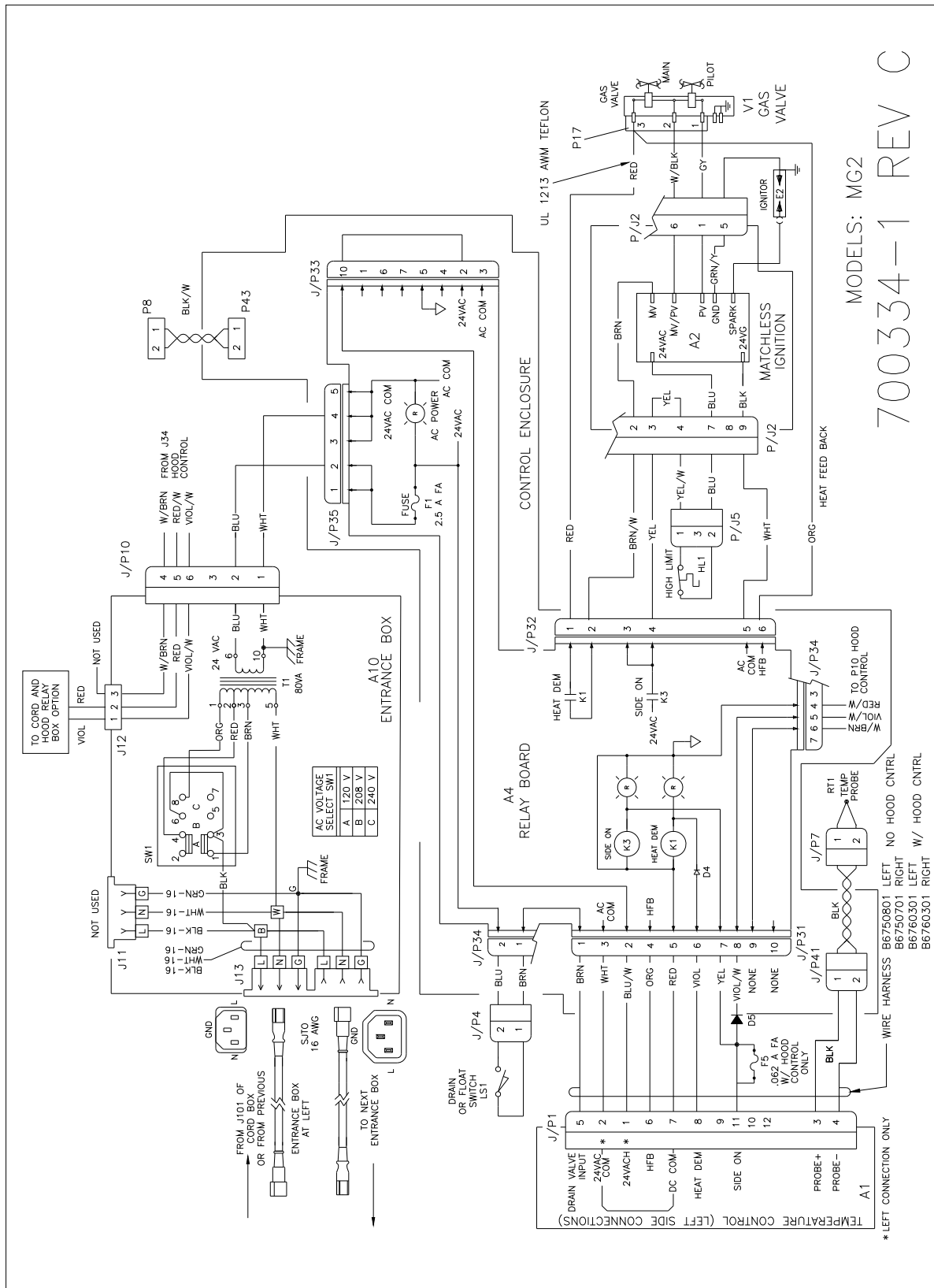
1. Loosen band clamp(s) using 7/16" hex bit. Slide band gasket and clamp to separate joint.



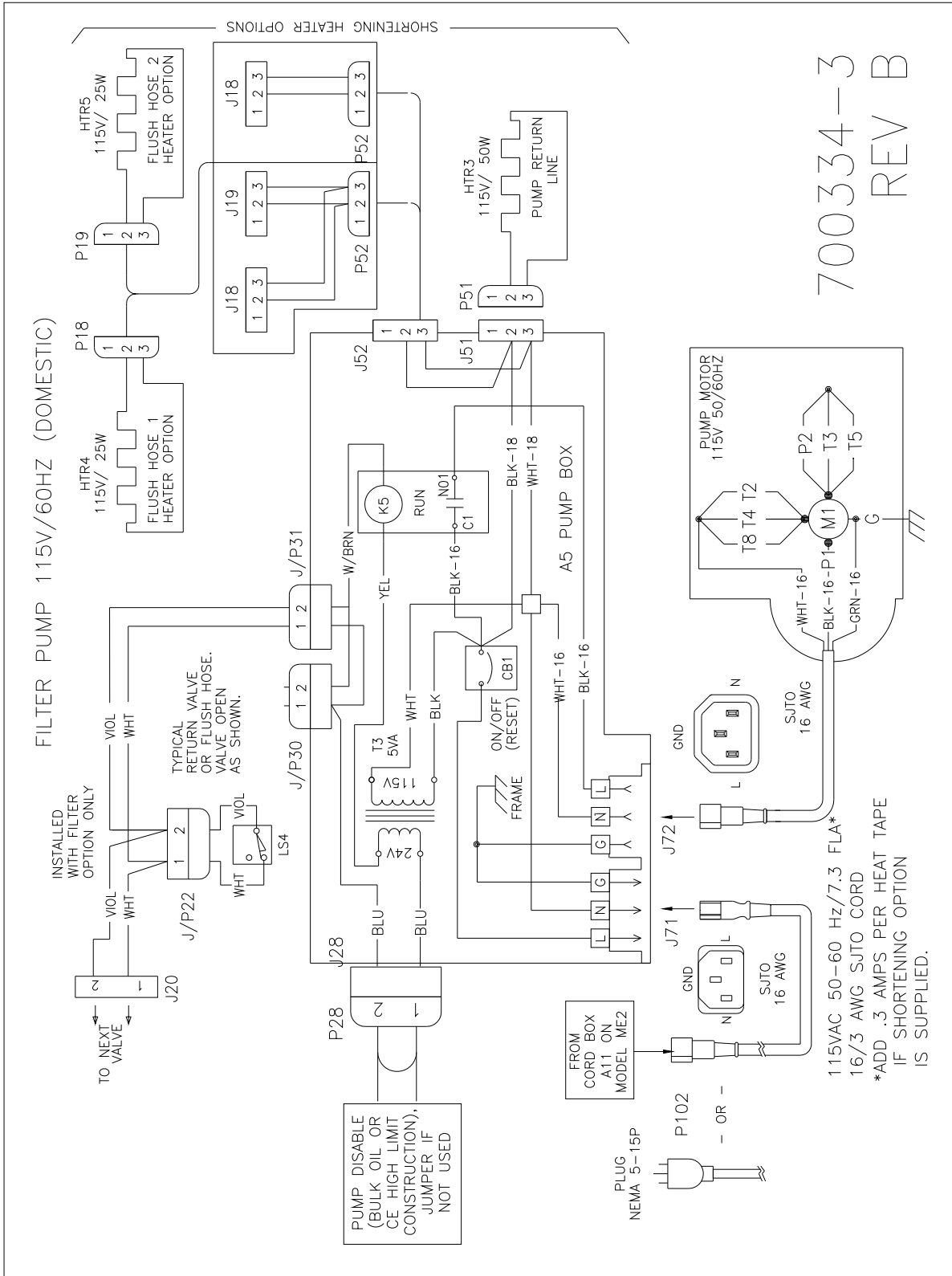
2. Remove screws securing Drain T's and Elbows to drain valve(s) using 9/16" socket.

7. Schematics

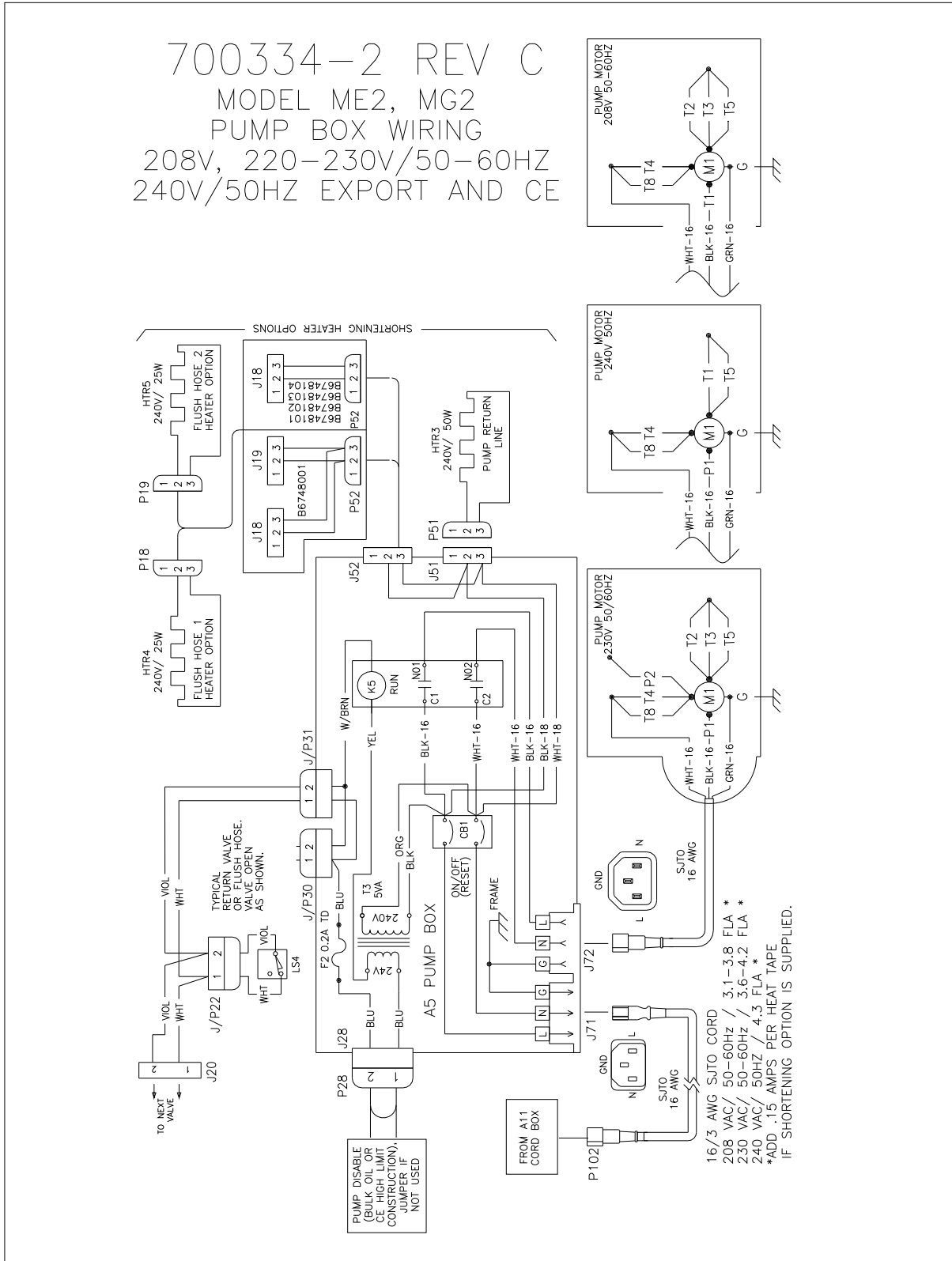
7.1. Control Schematic



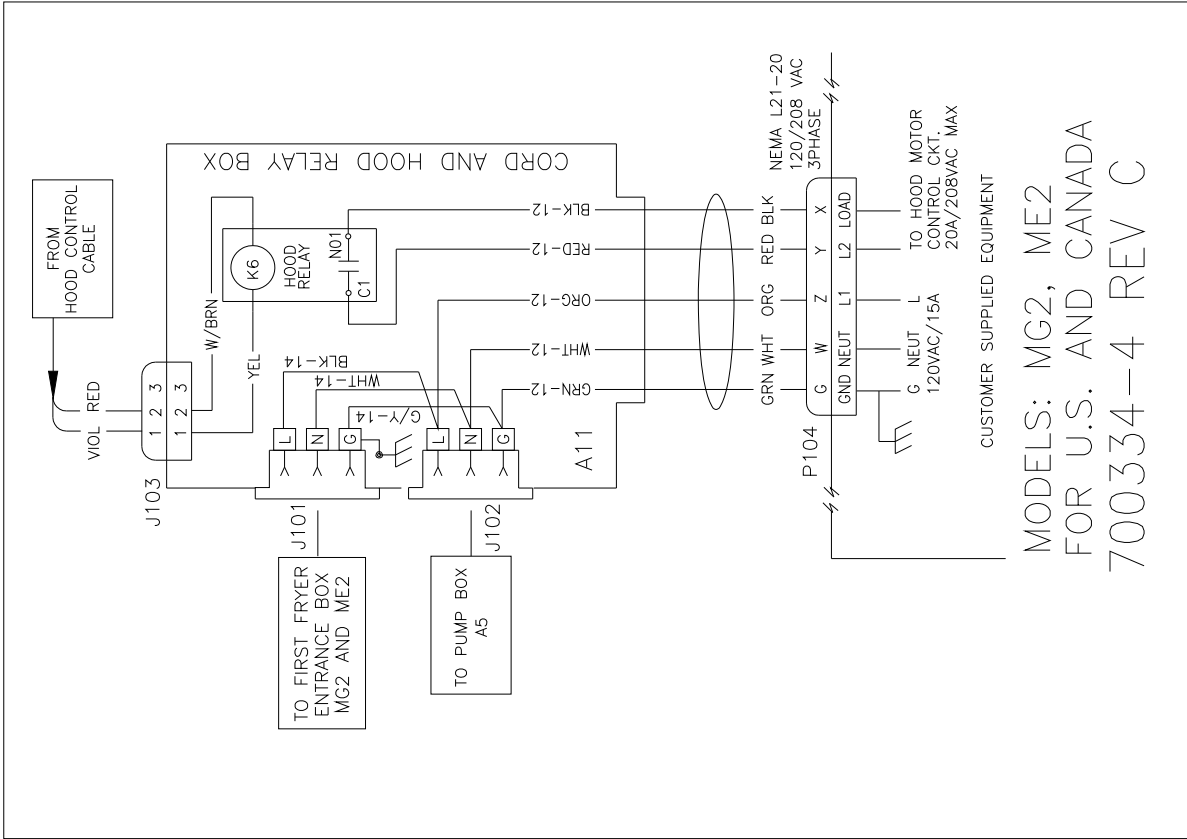
7.2. Filter System 115V



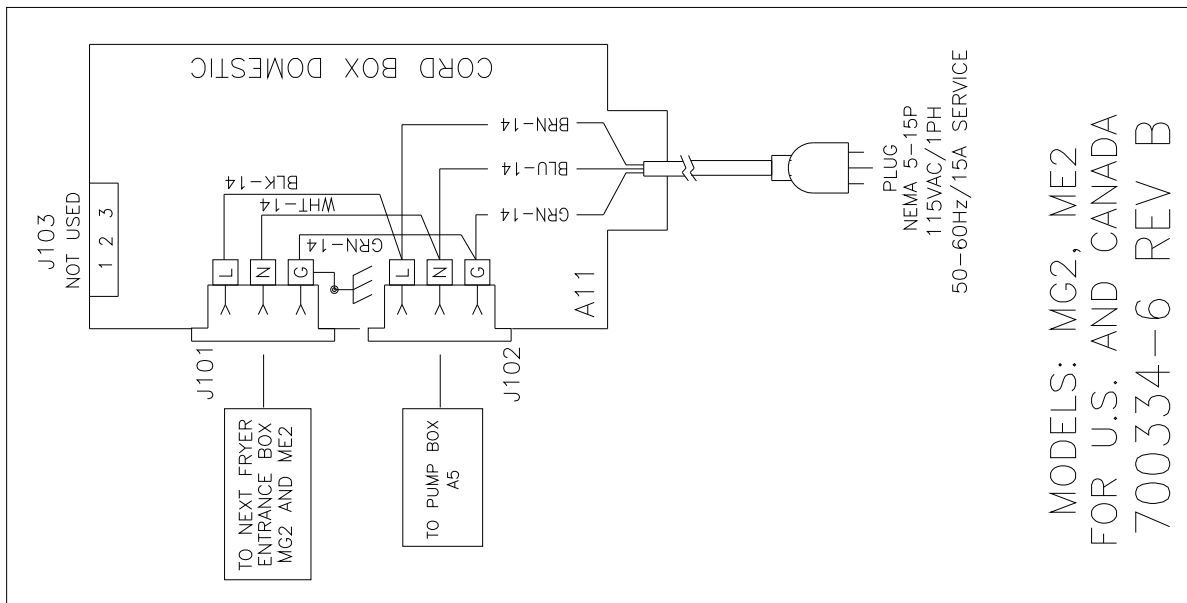
7.3. Filter System 208, 220 – 240 V



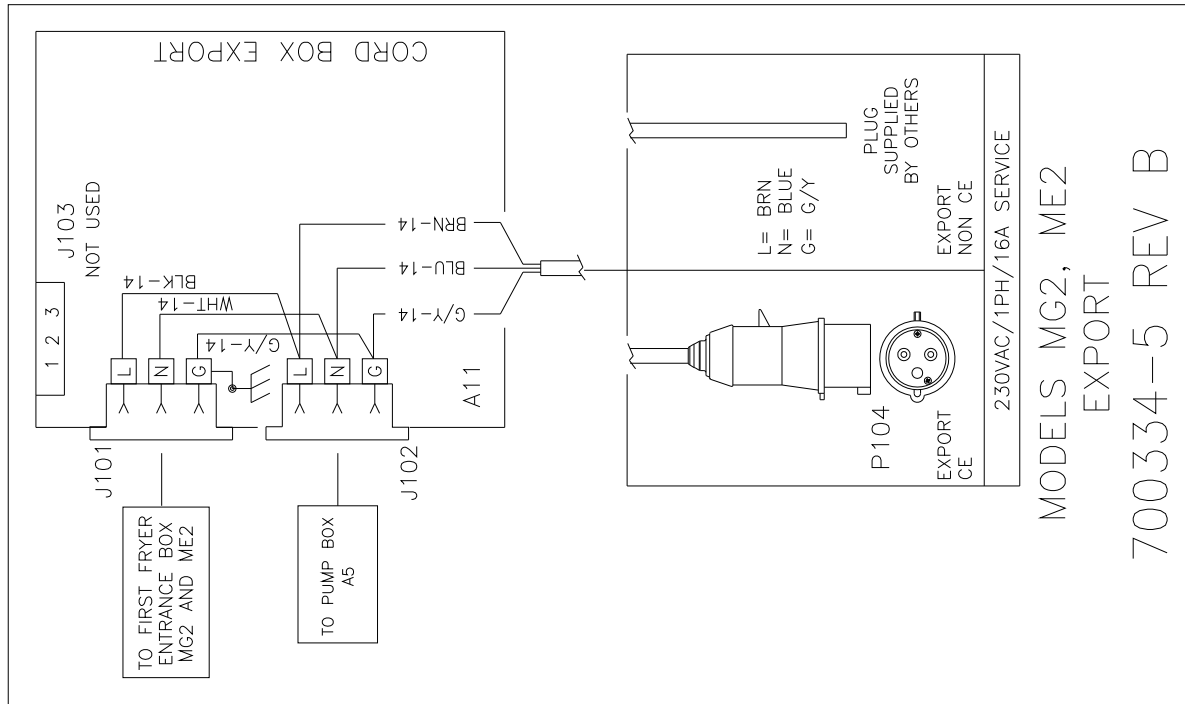
7.4. Cord Box & Hood Control (US & Canada)



7.5. Cord Box w/o Hood Control (US & Canada)



7.6. Cord Box (Export & CE)





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