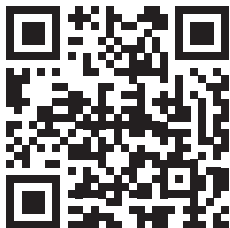
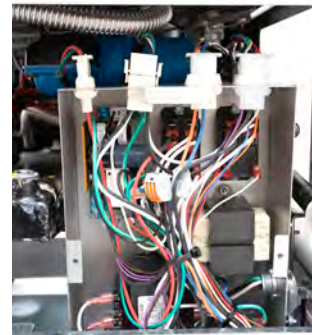
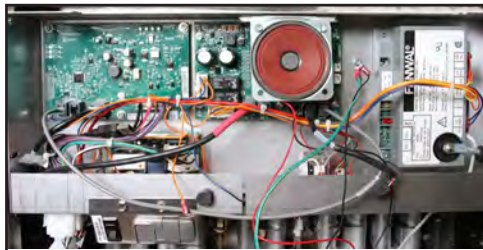
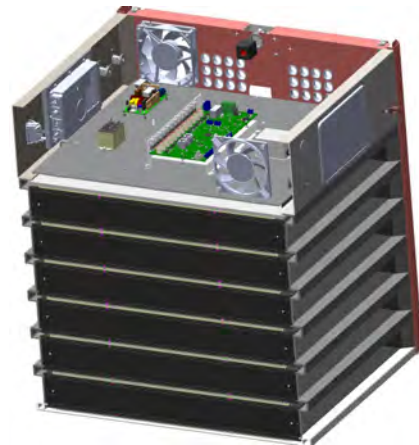
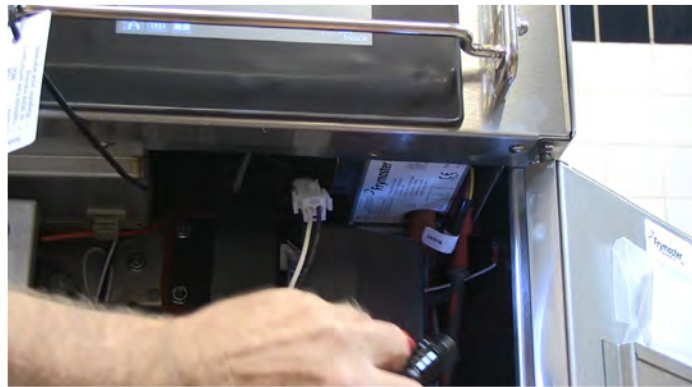


Frymaster®

merco®

One-Day Training Technical Reference Manual



Student Name _____

Instructor Name _____

Date: ___/___/___

<https://www.surveymonkey.com/r/LF8LXWR>

8700 Line Avenue,
Shreveport, LA 71106
800-551-8633

Email: frytechsupport@welbilt.com

Web sites: www.frymaster.com

www.mercoproducts.com

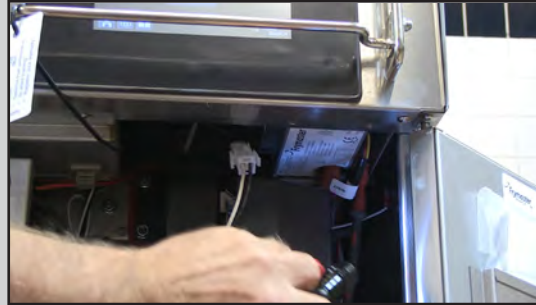
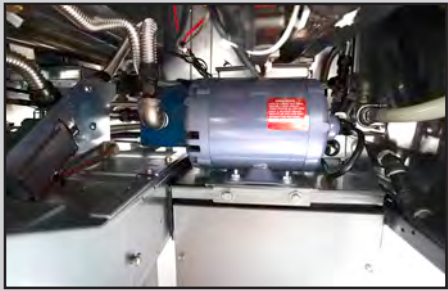
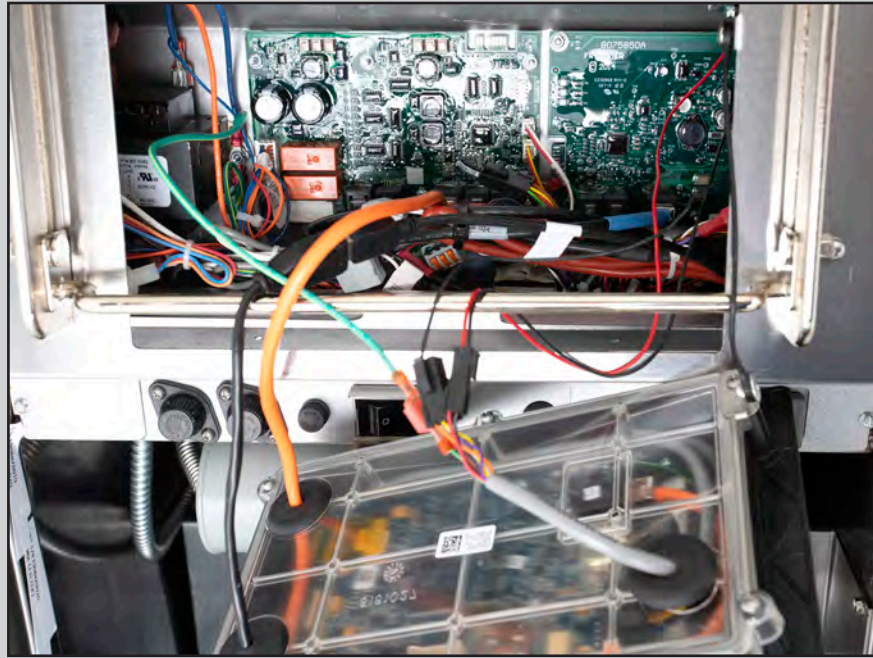
© Frymaster 2024

2024 Edition



8 1 9 8 0 0 4

01/2024



Frymaster-Merco Tech Reference

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Codes/Charts/Tables/McDonald's Hood Wiring/Bulk Oil/Error Codes	8-1
Start Up Forms, Quick References, Filter Stats-Error Forms	9-1

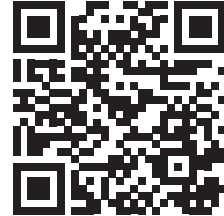
Chapter 1: Frymaster Support

Contacting Technical Service

- Call Center service techs can be reached at 800-551-8633 or via email at: frytechsupport@welbilt.com

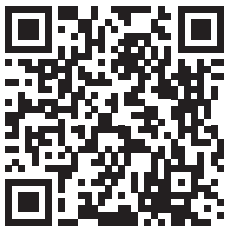
Documentation

- Manuals, bulletins, forms and instructions are posted to the service literature page of www.frymaster.com/service or by scanning the QR code to the right.

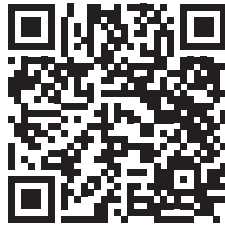


Videos

- Technical and operational videos are posted to Frymaster's YouTube channel and website by scanning the QR codes below or clicking links below QR codes.



[Frymaster Fryers
YouTube Channel](#)



[Frymaster Technical
YouTube Channel](#)



[Frymaster Website
Videos](#)

Software Downloads

- The software downloads page is located on the internet at: <https://www.frymaster.com/Service#Software> or by scanning the QR code to the right.

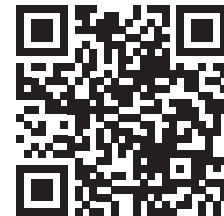
Enter **tech** (all lowercase) for the password.

The software is grouped by fryer types/chains/controllers/etc.

The touch screen software is also grouped by the older controllers (**black surround**) and newer controller (**metal surround**) types. Newer software **WILL NOT** operate on the older controllers and vice versa.

The software is in a compressed zip file that **MUST** be unzipped before loading onto a USB drive.

The instructions for unzipping the files and instructions for loading the software are found under each section of software files.



**Older Touch
Screen Controller**



**Newer Touch
Screen Controller**

Frymaster Support

Serial Numbers

Year Fryer Was Built

13 - 2013
02 - 2002

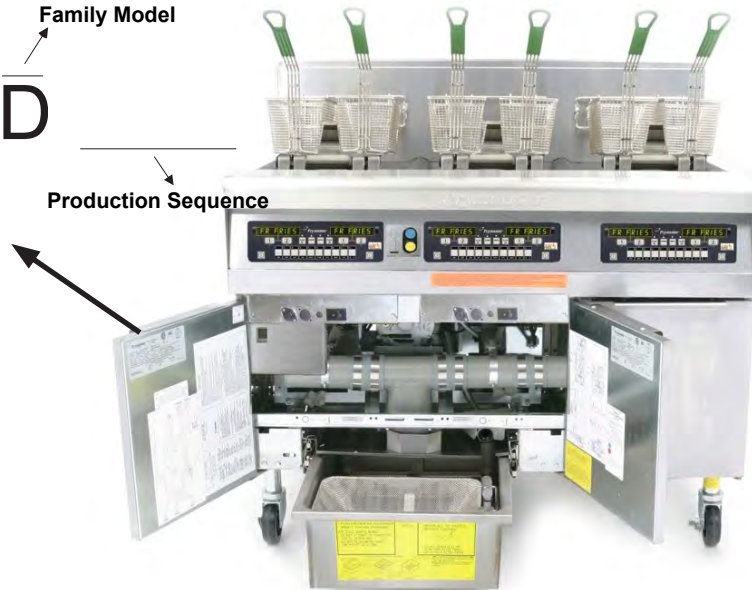
Family Model

12 01 ID

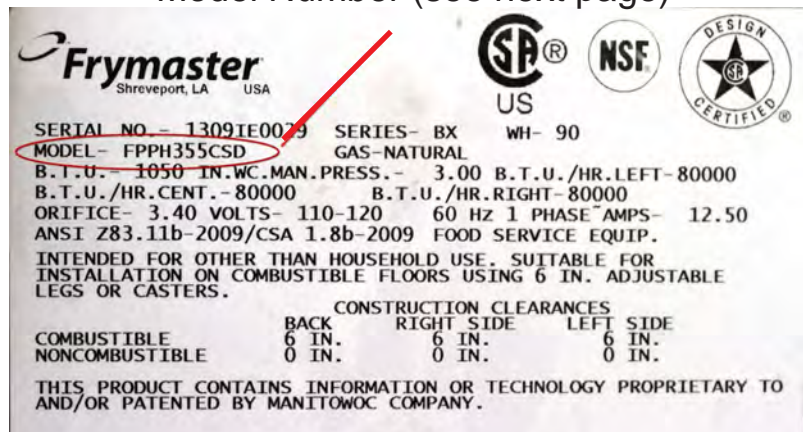
Month Fryer Was Built

01 - January
04 - April
12 - December

Production Sequence

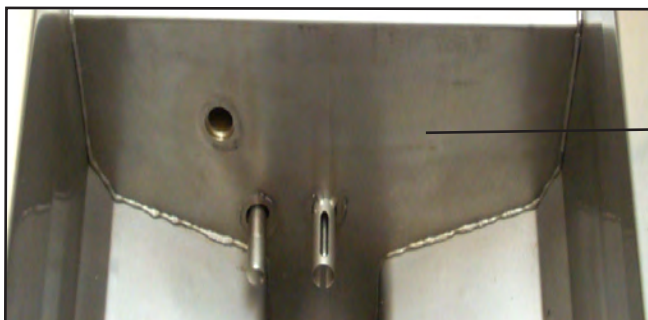


Model Number (see next page)



Frypot Serial Number Placement

The serial number is etched inside the frypot.

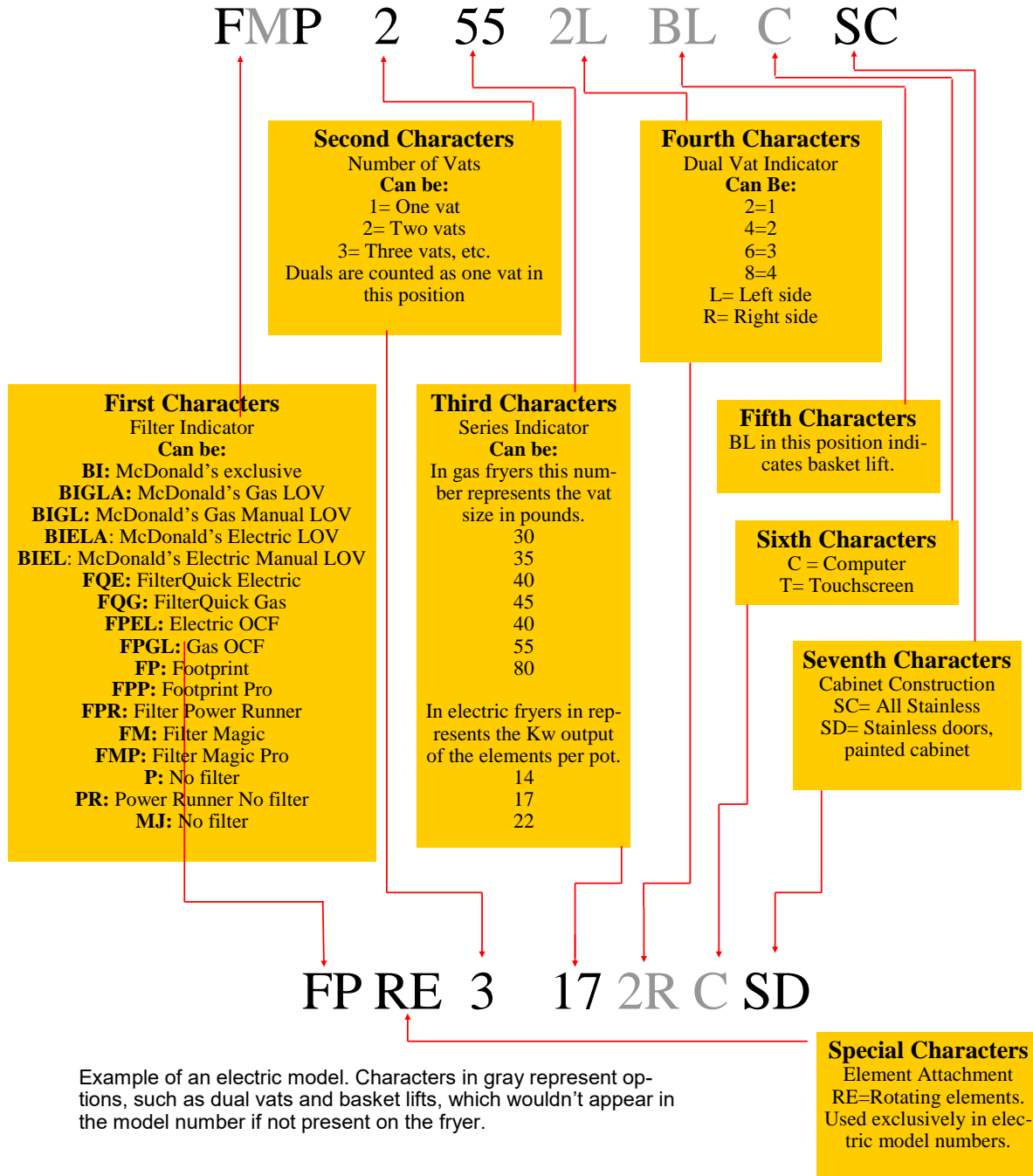


The frypot serial number is located inside the frypot on the front wall.

Frymaster Support

Model Numbers

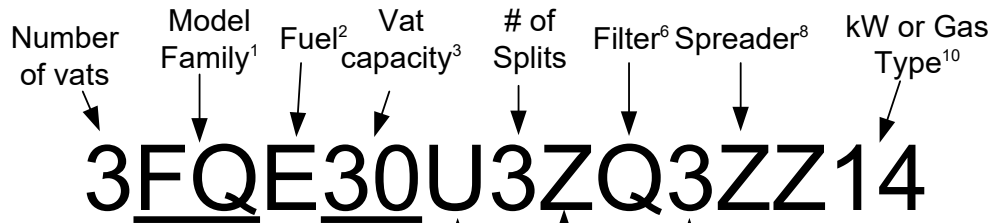
Example of gas H55 model. Characters in gray represent options, such as dual vats and basket lifts, which wouldn't appear in the model number if not present on the fryer.



Example of an electric model. Characters in gray represent options, such as dual vats and basket lifts, which wouldn't appear in the model number if not present on the fryer.

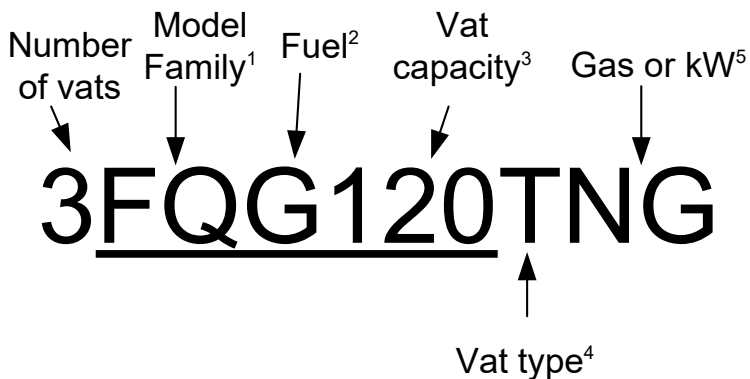
Frymaster Support

Reading FilterQuick 3000 and Touch Screen Model Numbers



- 1 = FilterQuick
- 2 = E-Electric or G-Gas
- 3 = 30, 40, 50, 60, 80 lb frypot capacity
- 4 = U-Open Fryer, T-Tube Fryer
- 5 = L-left of filter; R-right of filter; M-Middle; X-Mixed; Z-all or None if # of Split Vats = 0
- 6 = Q-Quick Filtration Fryer
- 7 = 3-FilterQuick 3000; T-Touchscreen
- 8 = S-Spreader; Z-none
- 9 = B-Basket Lift; Z-none
- 10 = Kilowatts -14, 17, 22kW; Gas-NG (Natural), PG(Propane), BG(Butane), LG(LPMix)

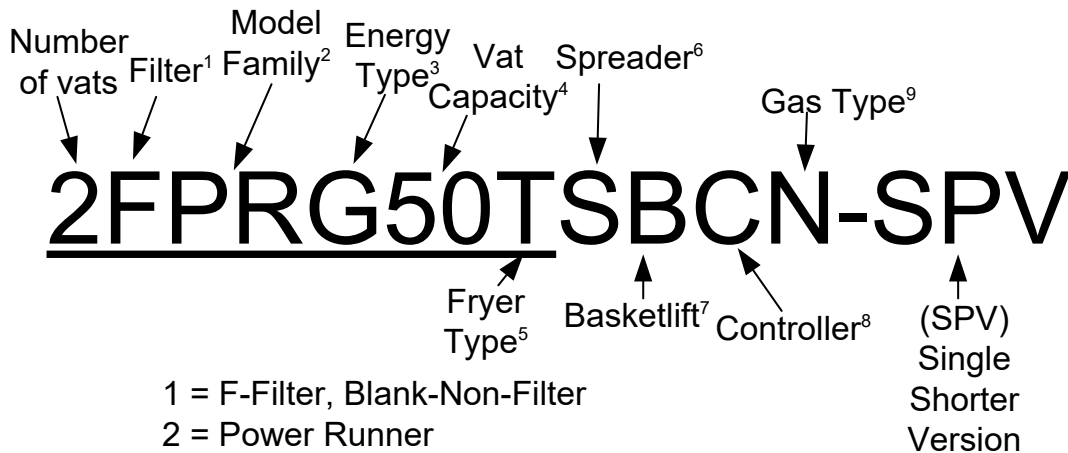
Reading Larger Capacity FilterQuick Touch Screen Model Numbers



- 1 = FilterQuick
- 2 = E-electric or G-gas
- 3 = 80, 100, 120 lbs
- 4 = T for Tube, U for open
- 5 = Gas-N (Natural), P(Propane), B(Butane), LG(LPMix) or Kilowatts -14, 17, 22kW;

Frymaster Support

Reading Power Runner Model Numbers



- 1 = F-Filter, Blank-Non-Filter
- 2 = Power Runner
- 3 = G-Gas, E-Electric
- 4 = 50lb frypot capacity
- 5 = T-Tube Fryer, U-Open Fryer
- 6 = S-Spreader; Blank-None
- 7 = B-Basket Lift; Blank-None
- 8 = M-Millivolt, T-Theratron, D- Digital, C-CM3.5
- 9 = N-Natural Gas, P-Propane Gas, B-Butane Gas

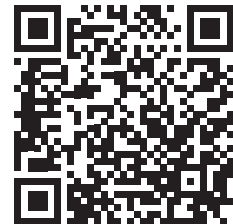
Parts Identification

The most common parts for various types of equipment are located in the Major Components Manual by scanning the QR code to the right or go to <http://fm-xweb.frymaster.com/service/udocs/Manuals/8196321.pdf>.

QR codes and links in each section of the Major Components Manual link to specific parts manuals for the equipment.

Various other tools like searching by serial number, for locating part numbers, are located on the website on the **Parts Identification** page at by scanning the QR code to the right or go to <https://www.frymaster.com/Service/Parts-and-Warranty-61b91ac1f99ed9b26f94762c6dc2bfc5>.

If the part number can't be located in the Major Components manual or by using the tools on the website above, email us at PartsID@frymaster.com with the serial number, part needed, photos of part, fryer and rating plate.



[Major Component Manual](#)



[Parts ID](#)

Chapter 2: High-Efficiency Gas



H55



LOV



OCF



FilterQuick



H55 Service/Parts



McD LOV Gas Service



McD Gas LOV Parts



OCF Gas Service/Parts

FilterQuick 3000
Gas Service



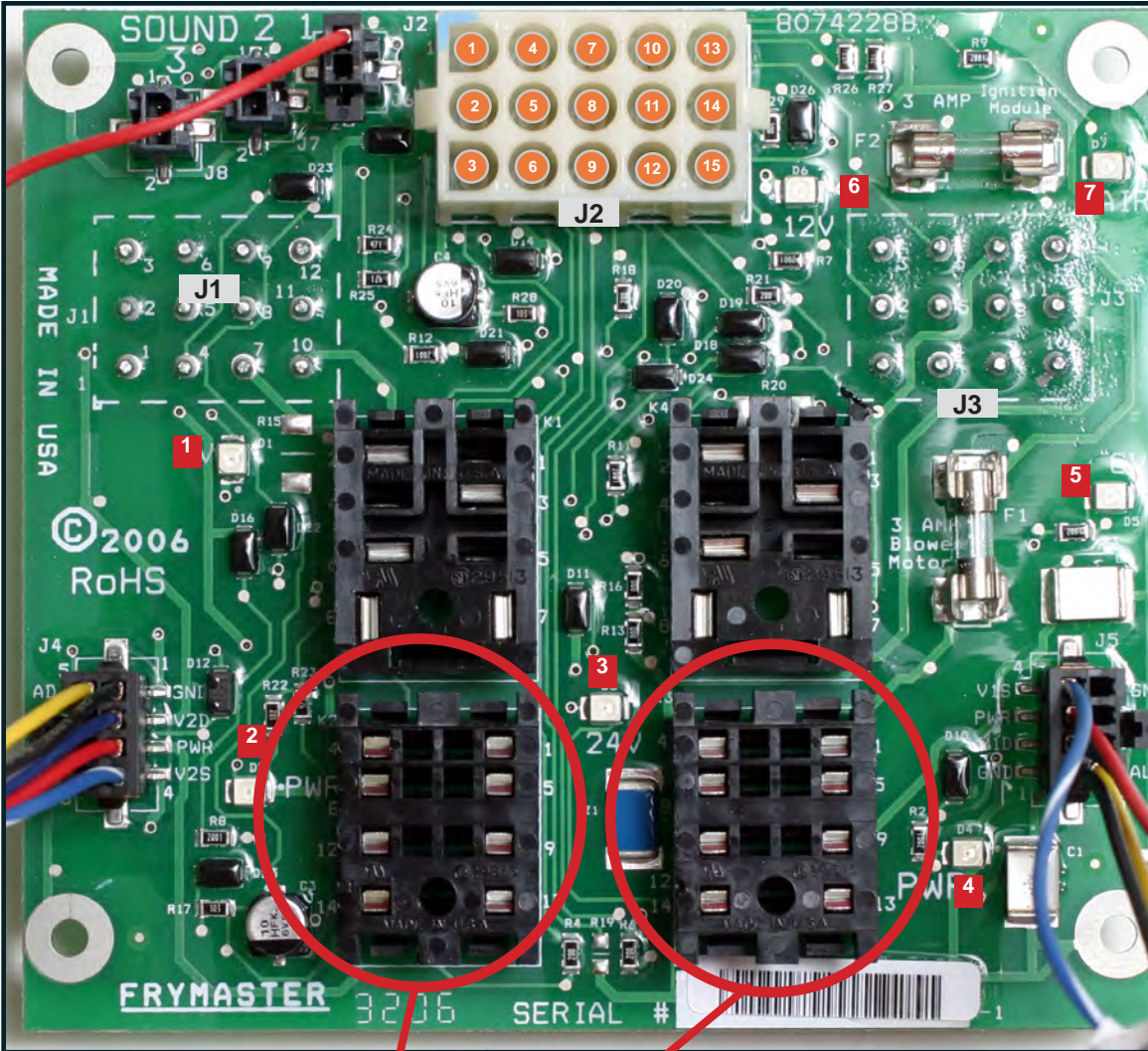
FilterQuick 3000
Gas Parts



Scan with QR-code reader to access manuals.
Cover adjacent QR-codes to retrieve desired
manual.

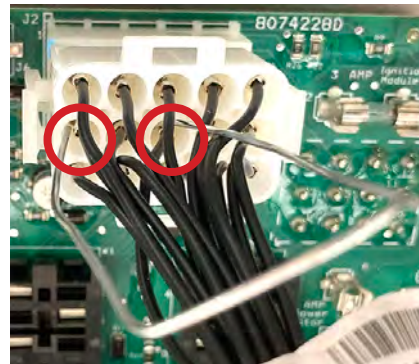
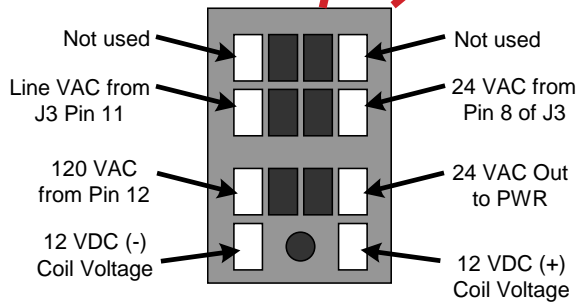
High-Efficiency Gas

Service Interface Boards



High-Efficiency Gas Interface Board. LED's are numbered and identified on page 2-3 chart.

Heat Relays



Grounding Pin 2 and Pin 8 on the interface board puts the controller in set up mode. **NOTE: It is easier to ground on the interface board than on the controller.**

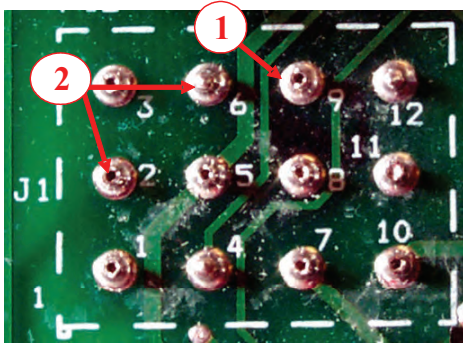
High-Efficiency Gas

LED Indications	
LED*	Illumination indicates
1	24VAC to left gas valve
2	24VAC to left module
3	24VAC from transformer
4	24VAC to right module
5	24VAC to right or full-pot gas valve
6	12 VAC
7	Proves blower is working (CE)

IMPORTANT: Disconnect harness from the controller or interface board before testing probe circuit.

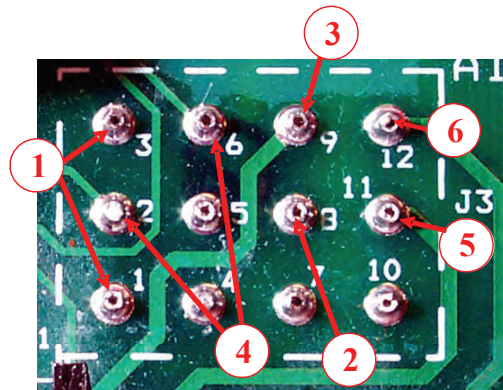
*Numbered on page 2-2

Test Points



J1 Test Points (Split Vat Left Side)

- 1 - High Limit** – Pin 9 to gas valve wire 12C
- 2 - Probe** – Pin 2 to Pin 6



J3 Test Points (Full Vat & Split Vat Right Side)

- 1 - 12 Volt** – Pin 1 to Pin 3
- 2 - 24 Volt** – Pin 8 to Ground
- 3 - High Limit** – Pin 9 to gas valve wire 13C
- 4 - Probe** – Pin 2 to Pin 6
(Disconnect 15-pin harness.)
- 5 - Line Voltage In** – Pin 11 to Ground
- 6 - Line Voltage to blower** – Pin 12 to Ground

High-Efficiency Gas Ignition Module Timelines

Capable Control modules and Honeywells are interchangeable. Replacing a Honeywell with a Capable Control requires a kit.

Fenwal modules were introduced in 2017 for use in the 30-lb fryers.



2000 — 2014

Use	Domestic
Spark Outputs	Single/Dual
Fused	No
Lockout	0.6
Optimal UA output	2.5-3.5



2014 — 2015

Use	All
Spark Outputs	Single/Dual
Fused	No
Lockout	0.15
Optimal UA output	0.4-0.8



LOV, FQ, OCF Only
June 17 — Current

Use	Domestic
Spark Outputs	Single
Fused	No
Lockout	0.5
Optimal UA output	1.7-3.0

Probes

If the probe's resistance is below 1000 Ω at 32°F (0°C) or above 1950 Ω or the wires are shorted — the controller displays a error message:

CM3.5: **Prob**

M2000 **Probe Failure**

FQ3000: **Temp Probe Failure**

Touchscreen: **Probe Error** (See Probe Resistance Charts in Chapter 8)

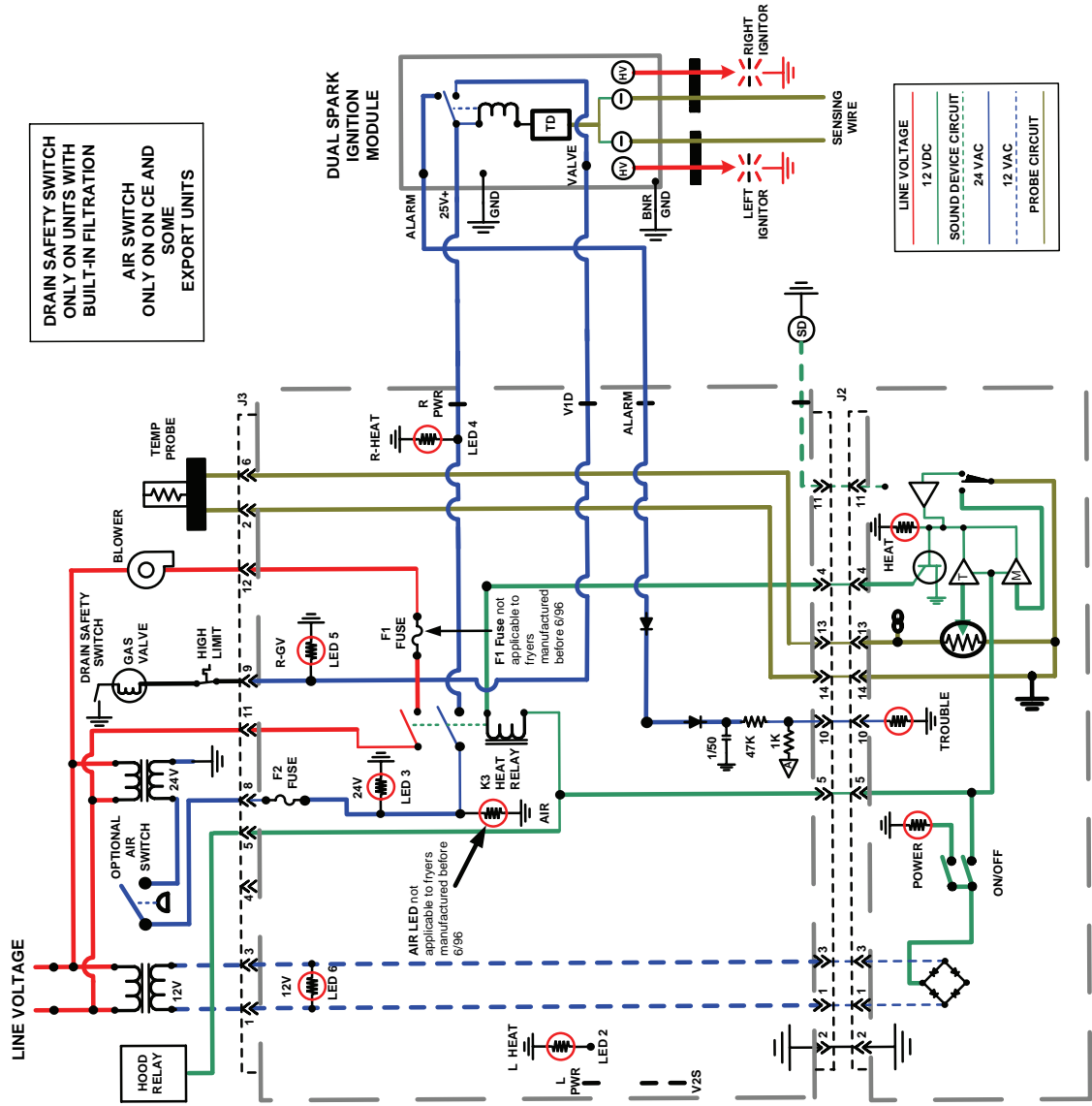


H55 temp probe

High-Efficiency Gas

Domestic Production One Ignition Module

FULL-VAT WITH ONE DUAL-SPARK IGNITION MODULE



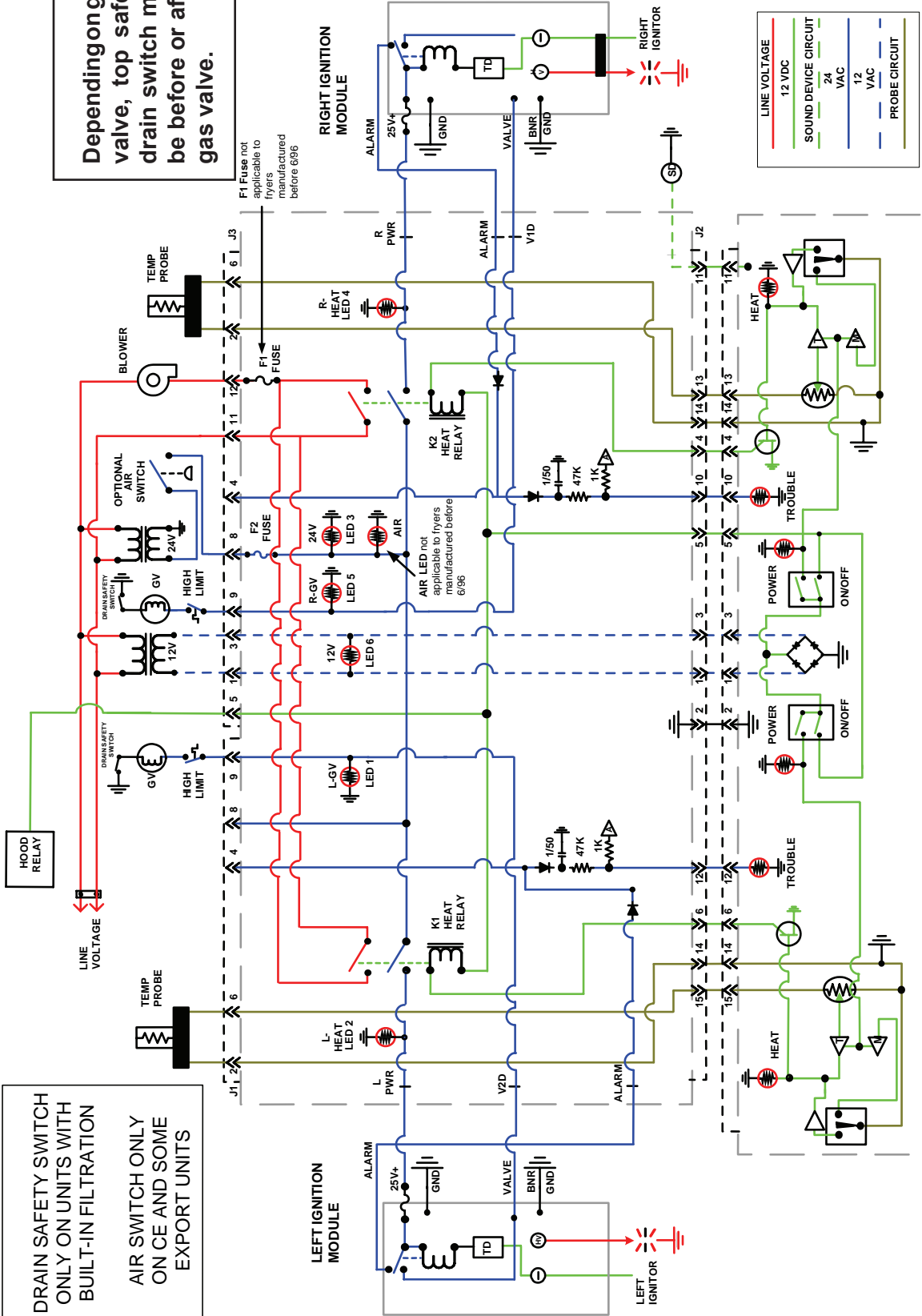
DUAL-VAT – 1986 to CURRENT PRODUCTION

High-Efficiency Gas

This two-module design was always used in CE countries and the Pacific Rim.

Depending on gas valve, top safety drain switch may be before or after gas valve.

DRAIN SAFETY SWITCH ONLY ON UNITS WITH BUILT-IN FILTRATION
AIR SWITCH ONLY ON CE AND SOME EXPORT UNITS



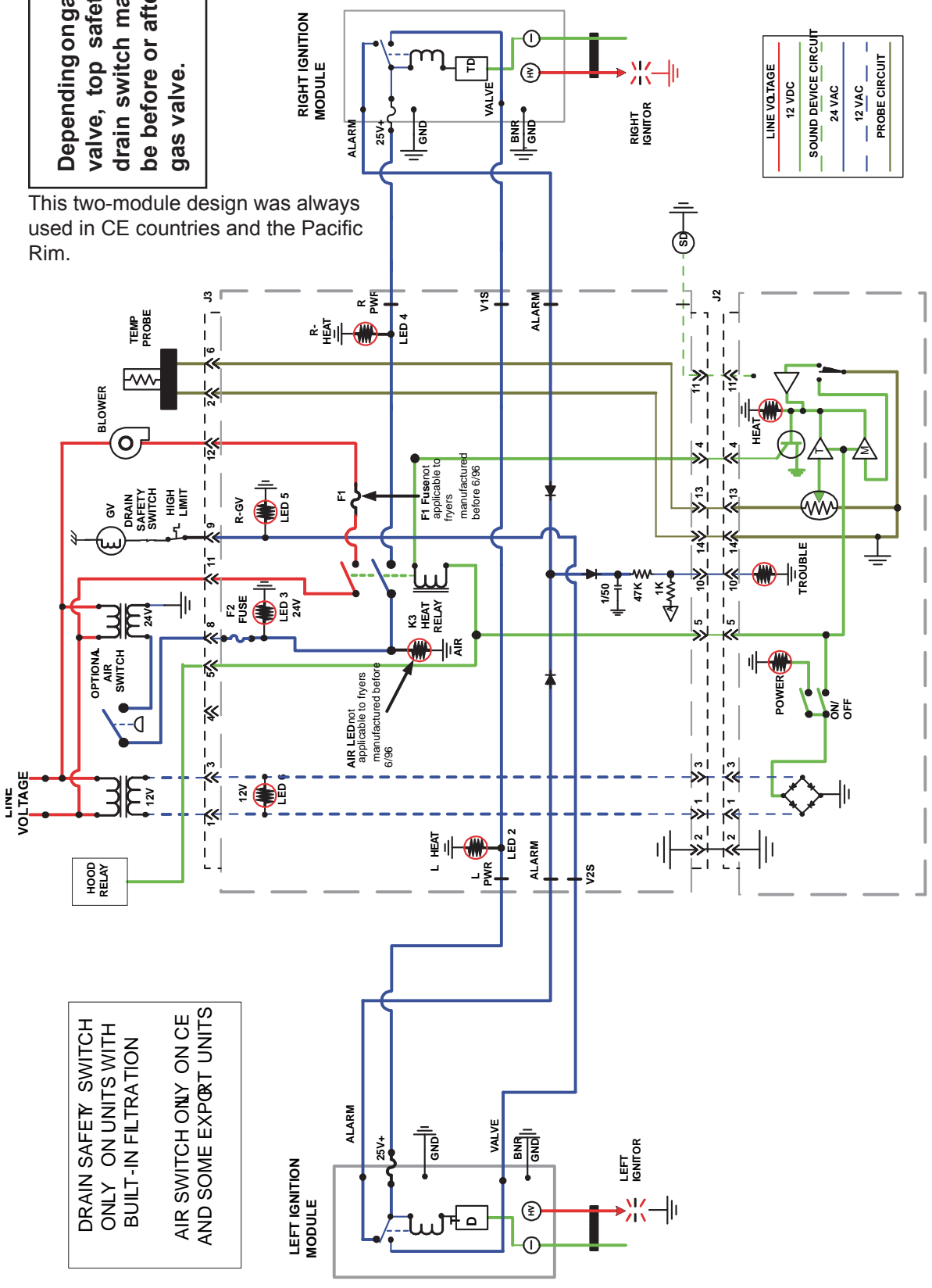
High-Efficiency Gas

Two Ignition Modules

Depending on gas valve, top safety drain switch may be before or after gas valve.

This two-module design was always used in CE countries and the Pacific Rim.

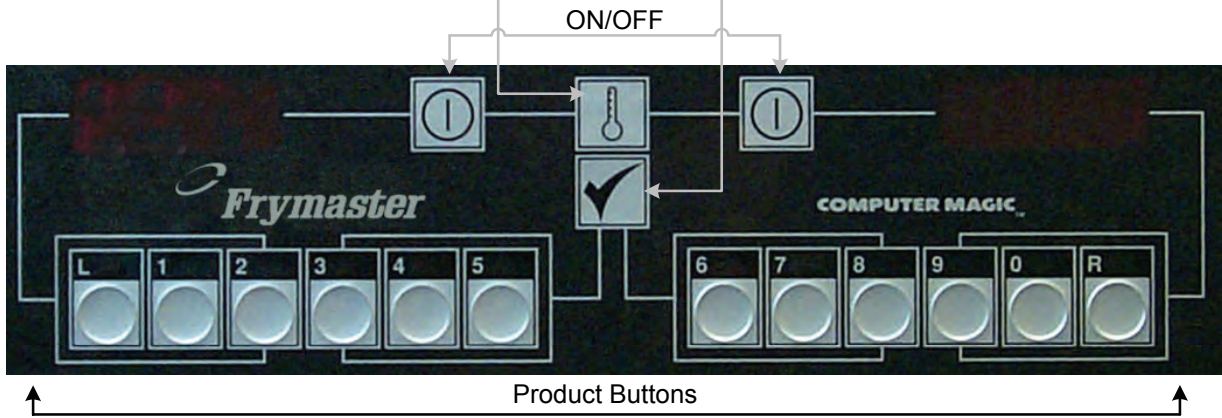
DRAIN SAFETY SWITCH ONLY ON UNITS WITH BUILT-IN FILTRATION
 AIR SWITCH ONLY ON CE UNITS AND SOME EXPORT UNITS



High-Efficiency Gas

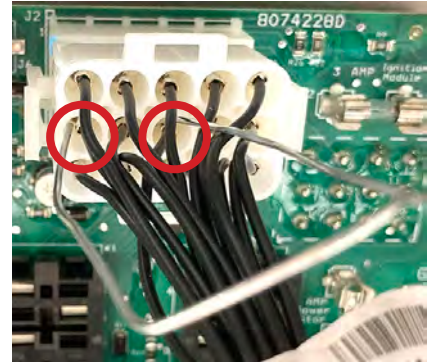
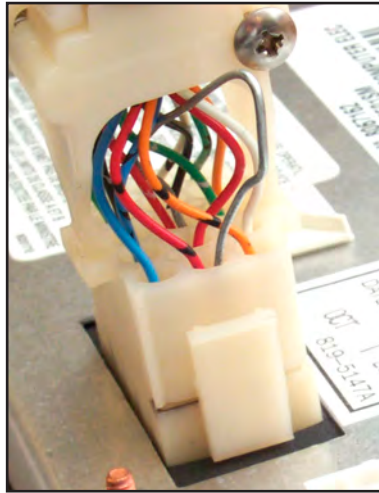
Temperature: Used to check setpoint, actual temp and in programming

Checkmark: Used in programming



CMIII/III.5 Melt Cycles	
Fryer	Melt Cycle
HE Gas	6 on, 24 off
Electric	3 on, 12 off

Pin 8 on the controller plug must be grounded to pin 2 or the chassis of the fryer to put the controller in set-up mode. A paperclip will serve as jumper.



Grounding Pin 2 and Pin 8 on the interface board puts the controller in set up mode. **NOTE: It is easier to ground on the interface board than on the controller.**

CM3.5 Setup		
Left Display	Right	Action
OFF		Press ✓
CODE		Enter 1656
GRS	1 or 0	Remove ground; 0 = electric; 1 = gas; Press ✓
SPLT	1 or 0	0= Full; 1=Split; Press ✓
CNTR	1 or 0	1= controlling; 0=non-controlling; Press ✓
RCYC	1 or 0	1= melt cycle bypass; 0= no melt cycle bypass. Press ✓
CON	Number	On (in seconds) for melt cycle (see chart) Press ✓
COFF	Number	Off cycle (in seconds) for melt cycle. Press ✓

Useful Codes

Recovery	1652
Programming	1650
Fahrenheit to Celsius	1658
Set-up mode	1656
Constant Temp Display	165L
Boil Out	1653

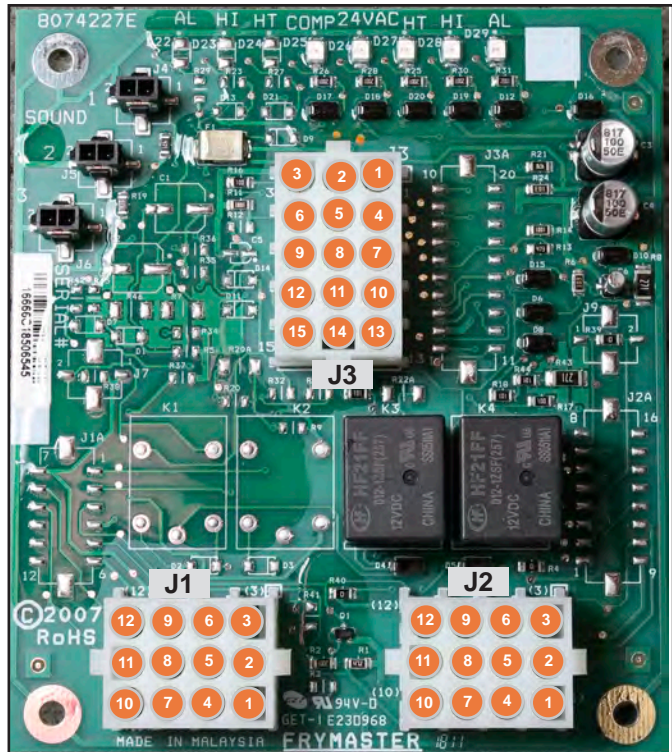
Chapter 3: Electric Fryers



McDonald's
BIRE/MRE
Service and
Parts Manual



RE Service
and Parts
Manual



1814E
Service
and Parts
Manual



RE Series
E4 High
Production
RE (HPRE80)
Electric
Service and
Parts Manual



RE14/17/22 Test Points

May 2006 - Current

Test	Set Meter	Pin	&	Pin	Results
12VAC Power	50VAC Scale	3 of J2	&	1 of J2	12-16VAC
24VAC Power	50VAC Scale	2 of J2	&	Chassis	24-30VAC
Probe Resistance - RT*	R x 1000 Ω	11 of J2 or 13 of J3	&	10 of J2 or 14 of J3	† See chart.
Probe Resistance - LT*	R x 1000 Ω	1 of J1 or 15 of J3	&	2 of J1 or 14 of J3	† See chart.
High-limit Continuity - RT	R x 1 Ω	9 of J2	&	6 of J2	0- Ω
High-limit Continuity - LT	R x 1 Ω	6 of J1	&	9 of J1	0- Ω
Latch Contactor Coil - RT	R x 1 Ω	8 of J2	&	Chassis	3-10 Ω
Latch Contactor Coil - LT	R x 1 Ω	5 of J1	&	Chassis	3-10 Ω
Heat Contactor Coil - RT	R x 1 Ω	7 of J2	&	Chassis	11-15 Ω
Heat Contactor Coil - LT	R x 1 Ω	4 of J1	&	Chassis	11-15 Ω

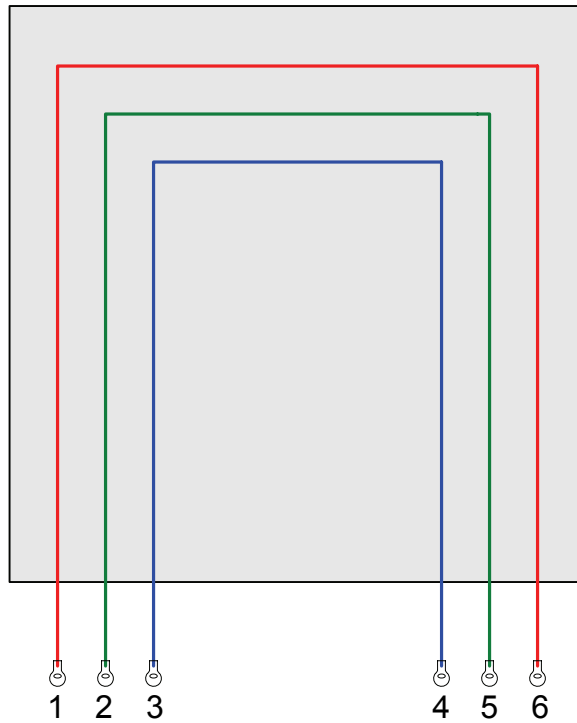
* Disconnect the 15-pin harness from the computer or controller before testing the probe circuit.

† See Probe Resistance Chart in Chapter 7 for the correct resistance value.

Electric Fryers

WATTS	VOLTAGE	OHM TOLERANCE
7000	208V	16.8 – 19.5 Ω
7000	240V	22.4 – 25.9 Ω
7000	480V	89.6–103.7 Ω
8500	208V	13.9 – 16.0 Ω
8500	240V	18.4 – 21.3 Ω
8500	480V	73.0 – 85.2 Ω
11000	208V	10.7 – 12.4 Ω
11000	240V	14.3 – 15.8 Ω
11000	480V	57.0 – 66.0 Ω

NOTE: Current and Resistance readings on the element wires may NOT be exactly as the tables reflect, however they should be within 15% of each other.

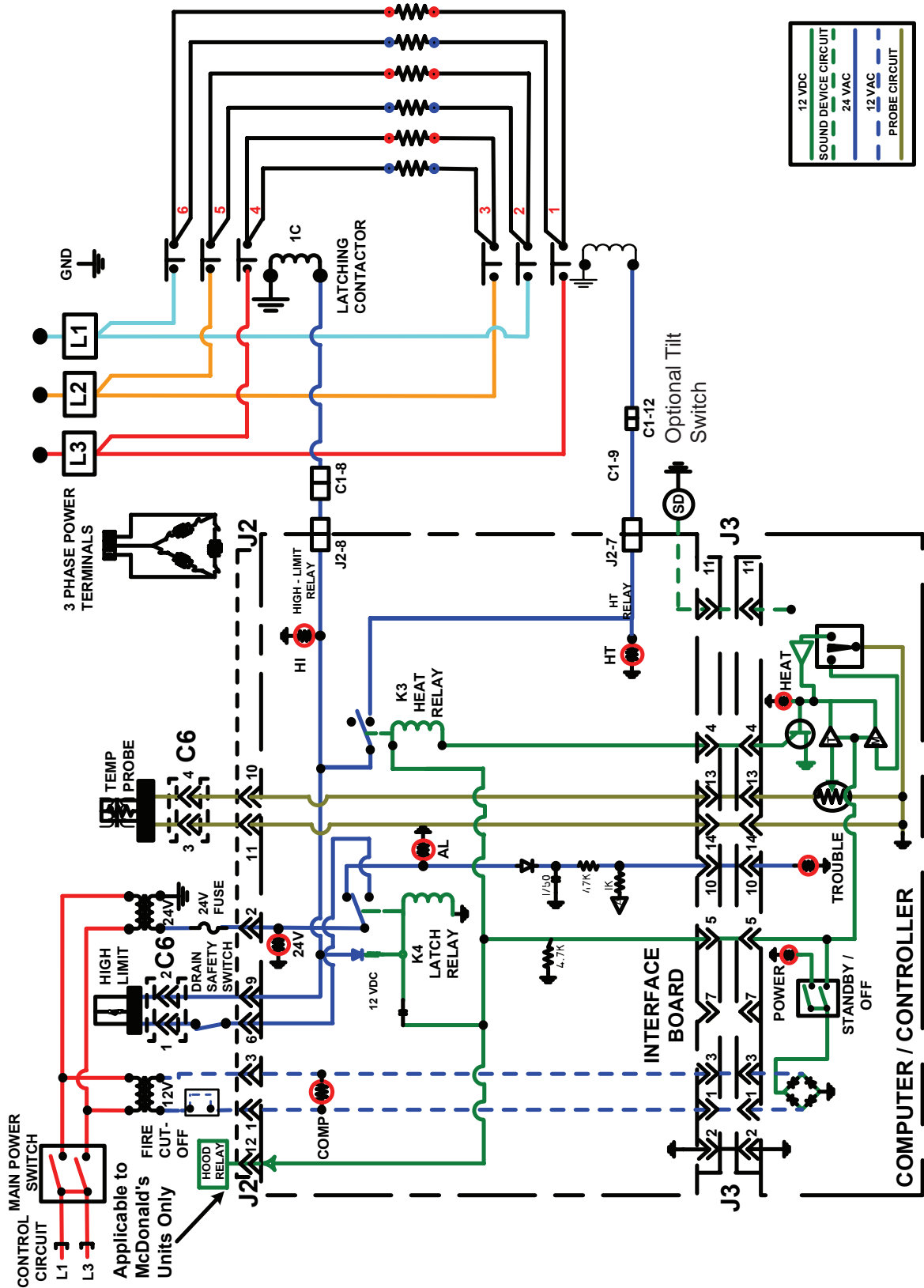


Element wiring connections.

H-SERIES AMP DRAW							
Power	Voltage	14kW Line	14kW Element	17kW Line	17kW Element	22KW Line	22KW Element
DELTA	208	39	11.3	48	13.9	61	17.6
	240	34	9.8	41	11.8	53	15.3
	480	17	4.9	21	6.0	27	7.8
WYE	220/380	21	7	26	8.6	33	11
	230/400	20	6.8	24.6	8.2	31.8	10.6
	240/415	19	6.5	23.6	7.9	30.5	10.2

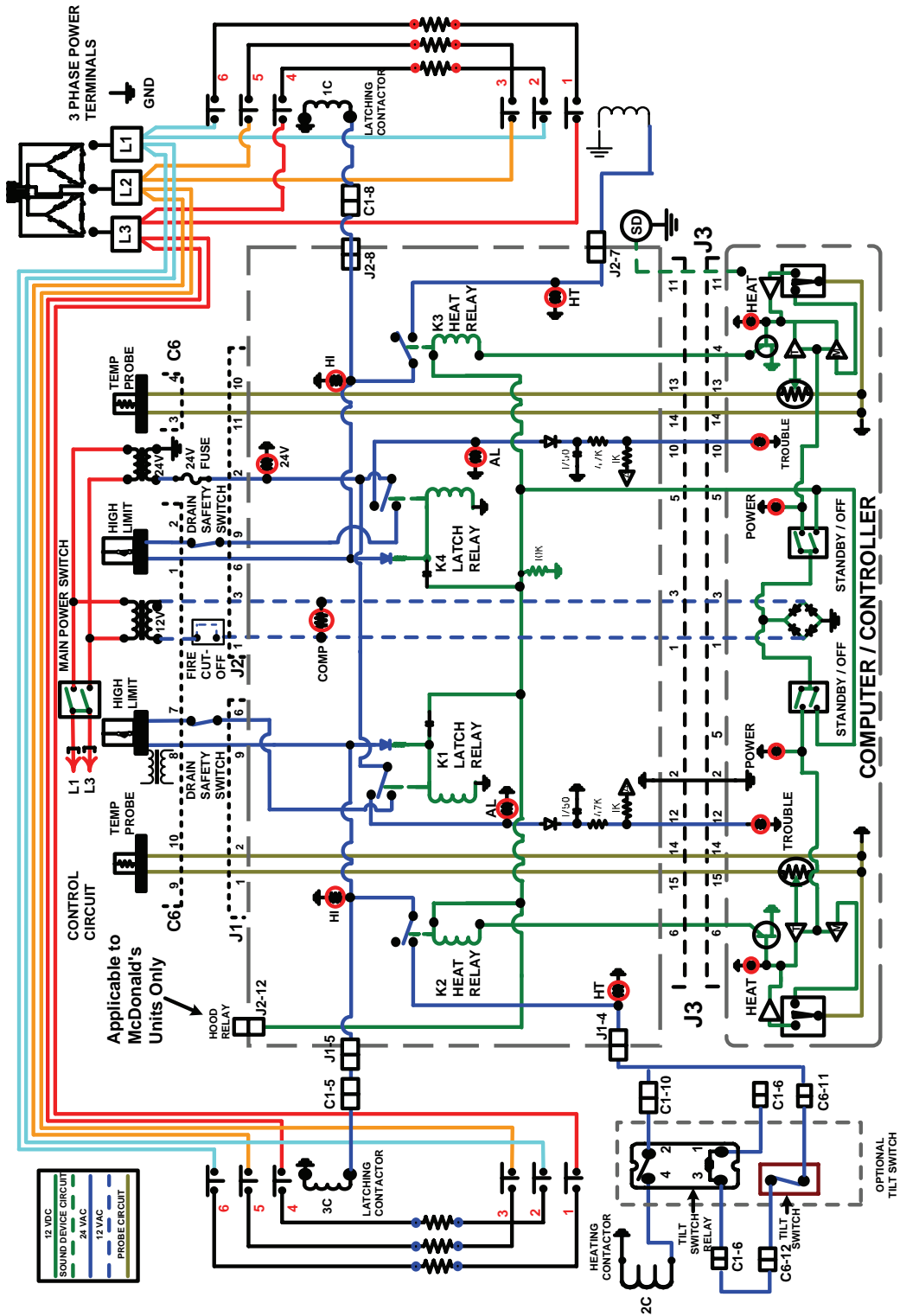
Electric Fryers

Rotating Electric RE14/RE17/RE22 Series (Including McDonald's) - Full-vat



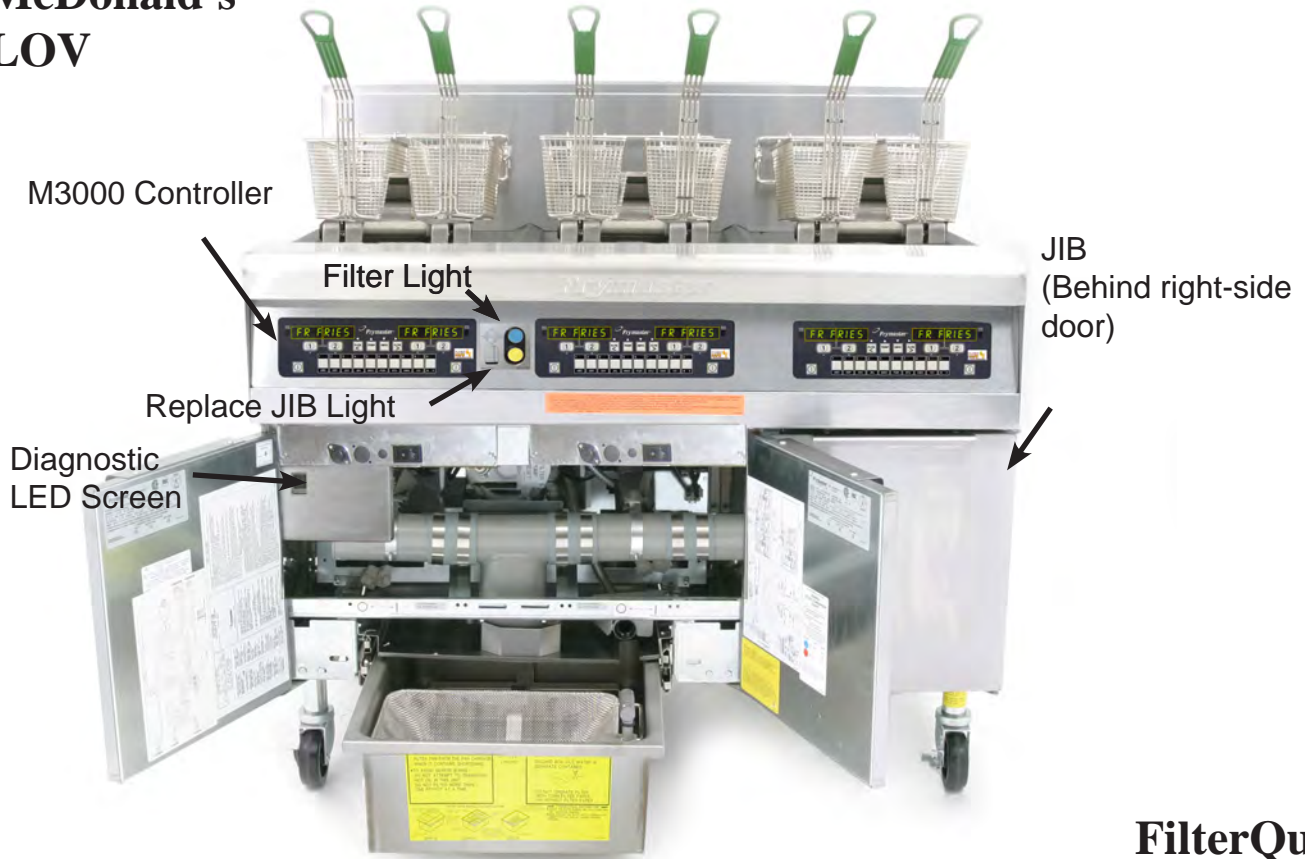
Electric Fryers

Rotating Electric RE14/RE17/RE22 Series (Including McDonald's) - Dual-vat



Chapter 4: Automatic Filtering Fryers

McDonald's LOV



Features

- **Low volume frypot (LOV)** — 30 pounds rather than 50 pounds of oil.
- **Automatic top-off (ATO)** — Automatically maintains an optimal oil level with a reservoir in the cabinet.
- **CAN** — Controller Area Network
- **Manual Interface Board (MIB)** — Controls the filtration and top off system.
- **Automatic Intermittent Filtration Board (AIF)** — Controls the actuators.
- **Automatic filtration** — Performs hands-free filtering at prescribed cook cycle counts or at prescribed times.
- **Oil savings** — The combination of a low-volume fry vat and oil automatically kept at an optimal level, reducing oil usage.



Automatic Filtering Fryers

Online Access to Automatic Filtering Fryer Manuals

Scan with QR-code reader to access manuals. Cover adjacent QR-codes to retrieve desired manual.

McDonald's 3000 30lb Gas Manuals



McDonald's BIGLA30
LOV Gen 2 Gas IO



McDonald's BIGLA30-
LOV Gen 2 Gas Parts



McDonald's BIGLA30
LOV Gen 2 Gas Service

McDonald's 3000 30lb Electric Manuals



McDonald's BIELA14
LOV Gen 2 Electric IO



McDonald's BIELA14 LOV
Gen 2 Electric Parts



McDonald's BIELA14
LOV Gen 2 Electric Service



McDonald's BIELA14 LOV
Gen 2 Electric Wiring

FilterQuick 3000 30lb Gas Manuals



FilterQuick 3000
Gas IO



FilterQuick 3000
Gas Parts



FilterQuick 3000
Gas Service



FilterQuick 3000
Controller Manual

FQ3000 Controller Manual

FilterQuick 3000 30lb Electric Manuals



FilterQuick 3000
Electric IO



FilterQuick 3000
Electric Parts



FilterQuick 3000
Electric Service



FilterQuick 3000
Electric Wiring

FilterQuick 1814 Electric Manuals



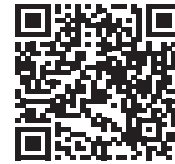
FilterQuick 1814
Electric IO



FilterQuick 1814
Electric Parts



FilterQuick 1814
Electric Service

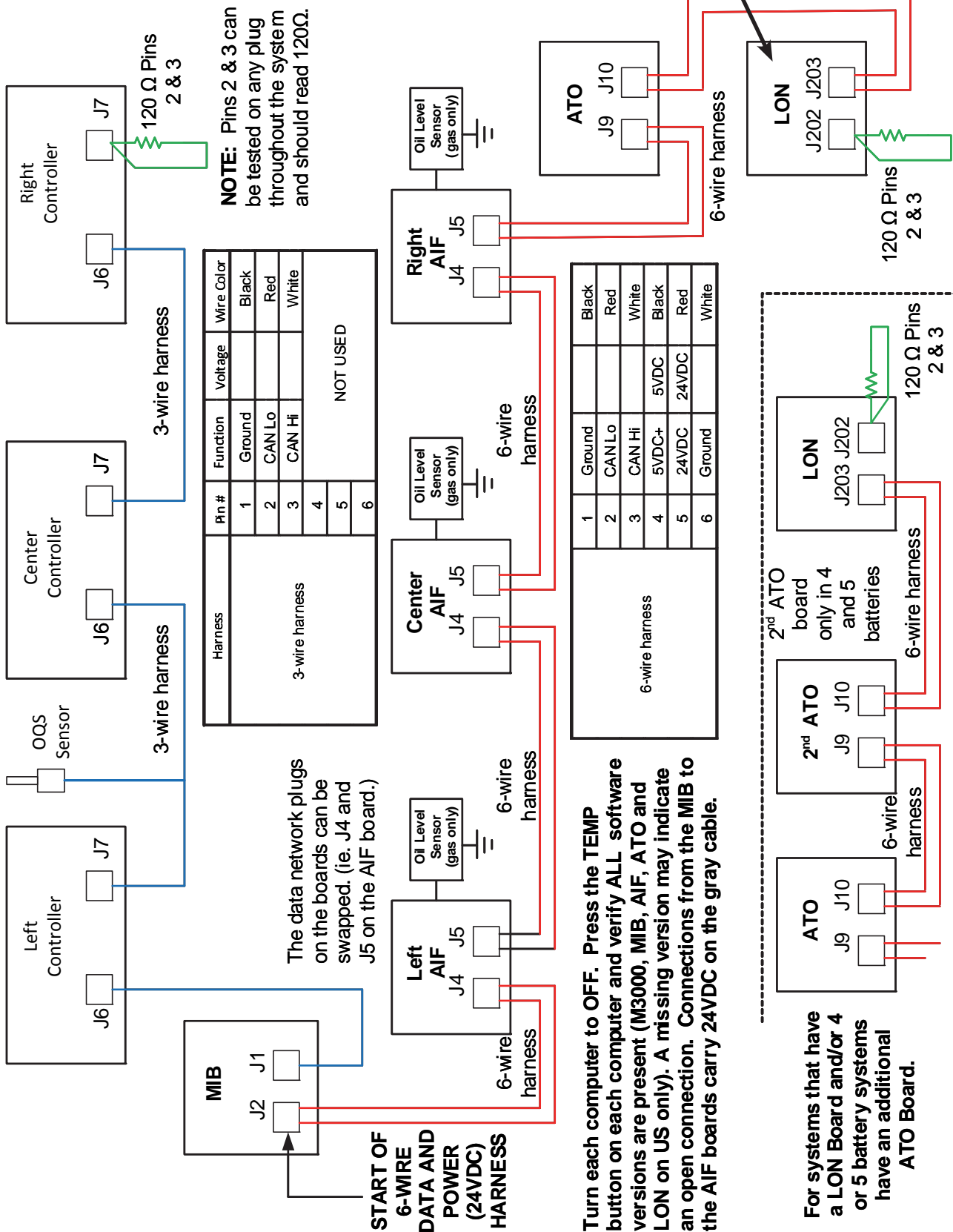


FilterQuick 1814
Electric Wiring

Automatic Filtering Fryers

Data Network Flow Chart

The LON board is no longer used. Click on the QR code for instructions to remove.



Turn each computer to OFF. Press the TEMP button on each computer and verify ALL software versions are present (M3000, MIB, AIF, ATO and LON on US only). A missing version may indicate an open connection. Connections from the MIB to the AIF boards carry 24VDC on the gray cable.

Automatic Filtering Fryers

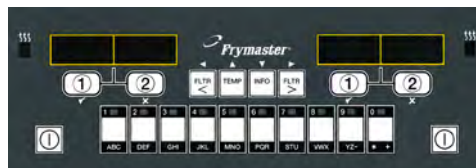
Diagnostics with the Controllers

The FilterQuick 3000 controller has a quick way to compare the resistance value of the ATO RTD to the vat temperature. This is a handy diagnostic tool. With the controller OFF, press and hold the TEMP button. The controller will display AIF and current temperature followed by ATO and current temperature. Compare the resistance of the probe against the controller's temperature reading, using the chart on page 8-2. If the values differ greatly, a harness issue may exist. This diagnostic feature is available on FilterQuick and OCF fryers. It's not on LOV fryers.



With either controller, verify the presence of system boards with this test, which should be the first step in diagnosing system related failures: failure to filter, failure to top off, etc.

With the controller displaying OFF, press the temperature button. The Controller/MIB/AIF/ATO versions scroll. Absence of a component in the display can point to a harness or connection issue. Also ensure each board's version numbers match and are the current version.



MIB Board

Mode Display

Shows status (auto or manual) vat number (when operating valves manuals) and displays error codes.

Vat Selection

Selects vat for manual operation of valves.

Manual/Auto

Switches fryer from auto to manual operation.



The MIB board.

Reset

Short press -resets system, ensures all valves are closed. Long press - (15 sec) resets MIB board and clears all errors.

Drain

Opens and closes drain valves in manual mode.

Return

Opens and closes return valves and turns on filter pump in manual mode.

Automatic Filtering Fryers

Manual Draining, Filling, Filtering with MIB



1. Press the M button, which switches the board to manual. The display becomes the number of the vat to be controlled manually.
2. Press the vat selector button until the desired vat number is displayed.
3. Press the drain button to drain the oil or press and hold the return button to return oil to the vat displayed. Opening the drain and pressing and holding the return button after valve is open allows filtration.
4. Pressing the M button again returns the board to automatic mode.

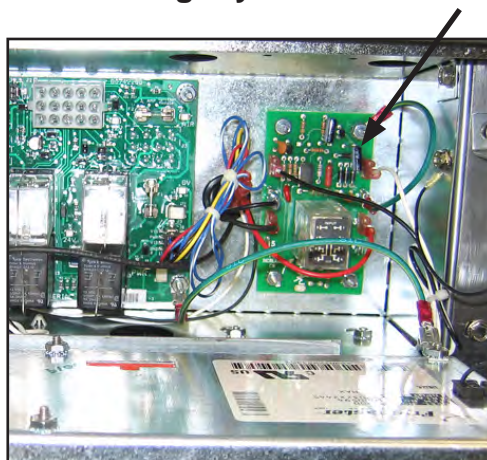
Automatic Filtering Fryers

Oil Return Sensor (OIB) Troubleshooting (Gas Only)

The heated oil-return sensor prevents dry firing of the frypot. It's energized with line voltage when the controller is powered on. The sensor is in series with a 7-second time delay board in the control box that provides 24VAC to the gas valve. In the absence of oil, the sensor heats to its 570°F setpoint, which sets off a 4-second internal relay (in an egg-shaped device connected to the probe) to control its temperature. The 4-second cycling of the power disrupts the 7-second delay relay board providing power to the gas valve. The fryer can't heat without oil in the vat.

McDonald's Fryer: The otherwise unused basket lift relay controls the coil that sends power to the heated probe. Power goes out pin 7 on J1 (DV) or pin 7 on J3 (FV).

FilterQuick: A relay in the control box controls the coil that sends power to the heated probe.



The oil return sensor is controlled by a small board and the electronics inside the egg-shaped device shown above. The board is in the control box; the "egg" is near the probe. The basket lift relay is used to close the coil on the OIB board in the McDonald's unit above. A relay in the box (arrow below) controls the coil on the board in a FilterQuick gas fryer.



Typical sensor-related failures:

- Low temp but no call for heat (heat light).
- Stuck in melt cycle with no call for heat.

If the controller doesn't exit melt cycle or continues to display low temp and does not heat, ensure that the gas supply, gas valve, and other components are working properly. If no heat lamp illuminates because no call for heat is initiated, check for carbon buildup on the OIB sensor.

- Power to oil sensor (from relay used for basket lifts on other interface boards K1(DV) or K4 (FV)). Check pin 7 on J1 (DV) or pin 7 on J3 (FV) for 120VAC.
- Power to heater/relay coil on relay board. Check voltage to the coil on pins 8 and 1 to ensure that 120VAC is present with oil in the vat. If the vat is empty, the power will



Regular cleaning of the Oil is Back sensor is critical. Insulating oil residue affects its operation and oil won't return to the frypot.

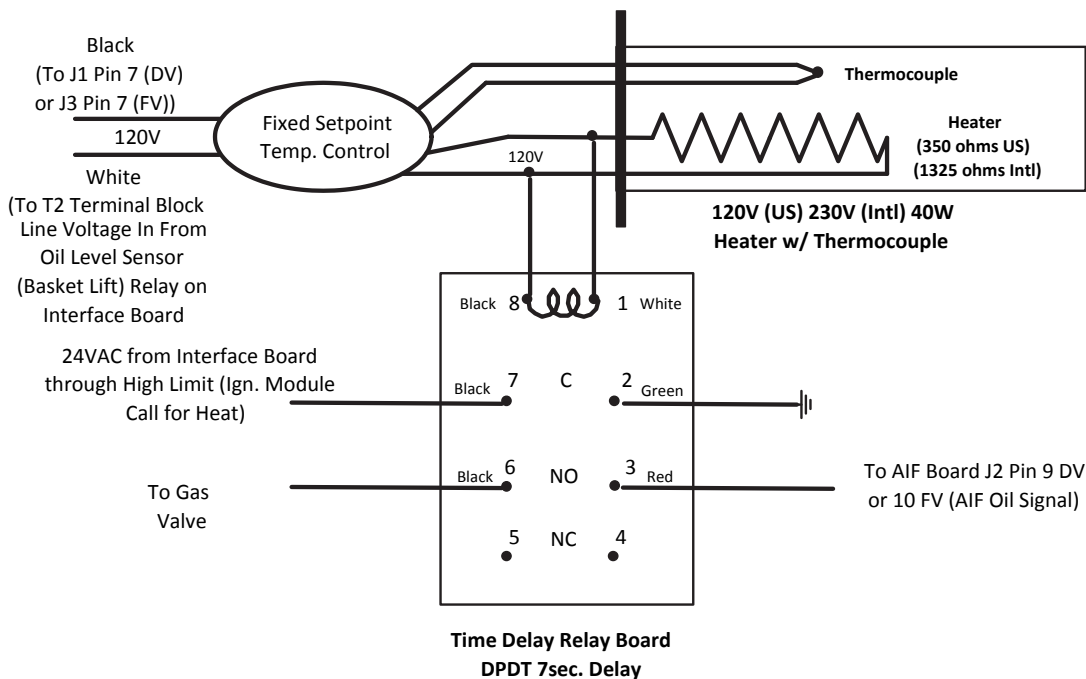
Automatic Filtering Fryers

cycle 4 seconds on, 4 seconds off.

- Check between pin 3 and 2; 5VDC for air and 0VDC for oil. A common message for a shorted harness or issue is **IS DRAIN CLEAR?** with oil in the filter pan.
- Check ground on pin 2 on relay board to stud for a secure ground.
- Check AIF communication harness. Interrupted communication will prevent the fryer from heating.
- If the oil level sensor is cycling 4 sec. on/off and oil is surrounding the sensor and LOW TEMP is displayed, the sensor may have a carbon build up that is insulating the sensor. Use a no-scratch pad to remove carbon build up. Carbon build up on the OIB counts for a large number of customer issues.

LOV: 120V comes from the basket-lift relay, which is energized by 12VDC from the controller.

FilterQuick: 120V comes from the OIB relay, which is energized by 12VDC from the controller.



Automatic Filtering Fryers

McDonald's M3000 Controller Menu Tree

Filter Menu

[Press and hold ◀ FLTR or FLTR ▶]

- Auto Filter
- Maint Filter
- OQS (OQS Only)
- Dispose
- Drain to Pan
- Fill Vat from Drain Pan
- Fill Vat from Bulk (Bulk Only)
- Pan to Waste (Bulk Only)

Programming

Level 1 Program

[Press and hold TEMP and INFO buttons, 2 beeps, displays Level 1, enter 1234]

- Product Selection
 - Name
 - Cook Time
 - Temp
 - Cook ID
 - Duty Time 1
 - Duty Time 2
 - Qual Tmr
 - AIF Disable
 - Assign Btn
- AIF Clock Filet of Fish only
 - Disabled
 - Enabled
- Deep Clean Mode
- High-Limit Test
- Fryer Setup
 - Language
 - Temp Format – F/C
 - Temp
 - Time Format – 12/24
 - Time
 - Date Format – US/Intl
 - Date
 - Fryer Type – Elec/ Gas
 - Vat Type – Split/Full
 - Oil System – JIB/Bulk

Level 2 Program (Manager Level)

[Press and hold TEMP and INFO buttons, 3 beeps, displays Level 2, enter 1234]

- Prod Comp Sensitivity for product
- E-Log Log of last 10 error codes
- Password Setup Change passwords
 - Setup [enter 1234]
 - Usage [enter 4321]
 - Level 1 [enter 1234]
 - Level 2 [enter 1234]
- Alert Tone Volume and Tone
 - Volume 1-9
 - Tone 1-3
- Filter After Sets number of cooks before filter prompt
- Filter Time Sets amount of time between filter cycles
- OQS Setup
 - OQS Setup – Enabled/Disabled
 - Oil Type

Tech Mode

[Press and hold ◀ and ▶ for 10 seconds, 3 beeps, displays TECH MODE, enter 1650]

- Clear Passwords
- Filter Pad Time 25 hours or 12 hours.

Info Mode

[Press and hold INFO for 3 seconds, displays Info Mode]

- Full/Split Vat Configuration
 - Filter Stats
 - Review Usage
 - Last Load

Automatic Filtering Fryers

McDonald's M3000 Setup

Left Display	Right Display	Action
OFF	OFF	Press and hold the TEMP and INFO buttons simultaneously until LEVEL 1 is displayed.
LEVEL 1		Enter 1234.
LEVEL 1 PROGRAM		No action.
PRODUCT SELECTION		Press the ▲ button once to scroll to .
FRYER SETUP		Press the ✓ (1 YES) button.
ENTER CODE		Enter 1234.
LANGUARGE	ENGLISH	Use the ◀ and ▶ buttons to scroll through the language menu. With the desired language displayed press the ✓ (1) button.
TEMP FORMAT	F	Use the ◀ and ▶ buttons to toggle between F and C temperature scales. With the desired selection displayed, press the ✓ (1) button.
TIME FORMAT	12HR	Use the ◀ and ▶ buttons to toggle between 12 HR and 24 HR. Press the ✓ (1) button.
ENTER TIME	HH:MM	Enter time in hours and minutes using the number buttons 0-9. Example: 7:30 AM is entered as 0730 if using the 12 hour format. . 2:30 PM is entered as 1430 if using the 24 hour format. To change AM and PM use the ▲▼ buttons. With the correct time displayed, press the ✓ (1) button.
DATE FORMAT	US	Use the ◀ and ▶ buttons to toggle between US and INTERNTL. Press the ✓ (1) button.
ENTER DATE	MM-DD-YY OR DD-MM-YY	Enter the date using the number buttons 0-9. Example: US Format – Dec. 5, 2022 is entered as 120522. International Format – 5 Dec. 2022 is entered as 051222. With the correct date displayed, press the ✓ (1) button.
FRYER TYPE	ELEC	Use the ◀ and ▶ buttons to toggle between ELEC and GAS. Press the ✓ (1) button.
VAT TYPE	SPLIT	Use the ◀ and ▶ buttons to toggle between SPLIT and FULL. Press the ✓ (1) button.
OIL SYSTEM	JIB	Use the ◀ and ▶ buttons to toggle between JIB and BULK. Press the ✓ (1) button. NOTE: The JIB system uses a disposable JIB (Jug in a Box). The BULK system fills the fryers reservoir.
LANGUARGE	ENGLISH	Use the ▲▼ buttons to scroll and edit any additional fields. Press the ✕ (2) button to exit.
SETUP COMPLETE		
OFF	OFF	

NOTE: If oil type was changed, the fryer must be readdressed by pressing and holding the control power reset button for at least 10 seconds.

Automatic Filtering Fryers

McDonald's M3000 Useful Codes

The following codes are entered when prompted to do so or from an energy misconfigured exception error.

- **1111 – Reset SERVICE REQUIRED Message.** Enter this when the issue is fixed and you are prompted to enter.
- **1234 – Enter SETUP MODE from energy misconfigured exception error.** (This usually can be done without pressing the filter buttons if an error is displayed.)

Passwords

To enter level one, level two passwords – Press and hold the **TEMP** and **INFO** buttons simultaneously until **LEVEL 1** or **LEVEL 2** is displayed. Release the buttons and **ENTER CODE** appears.

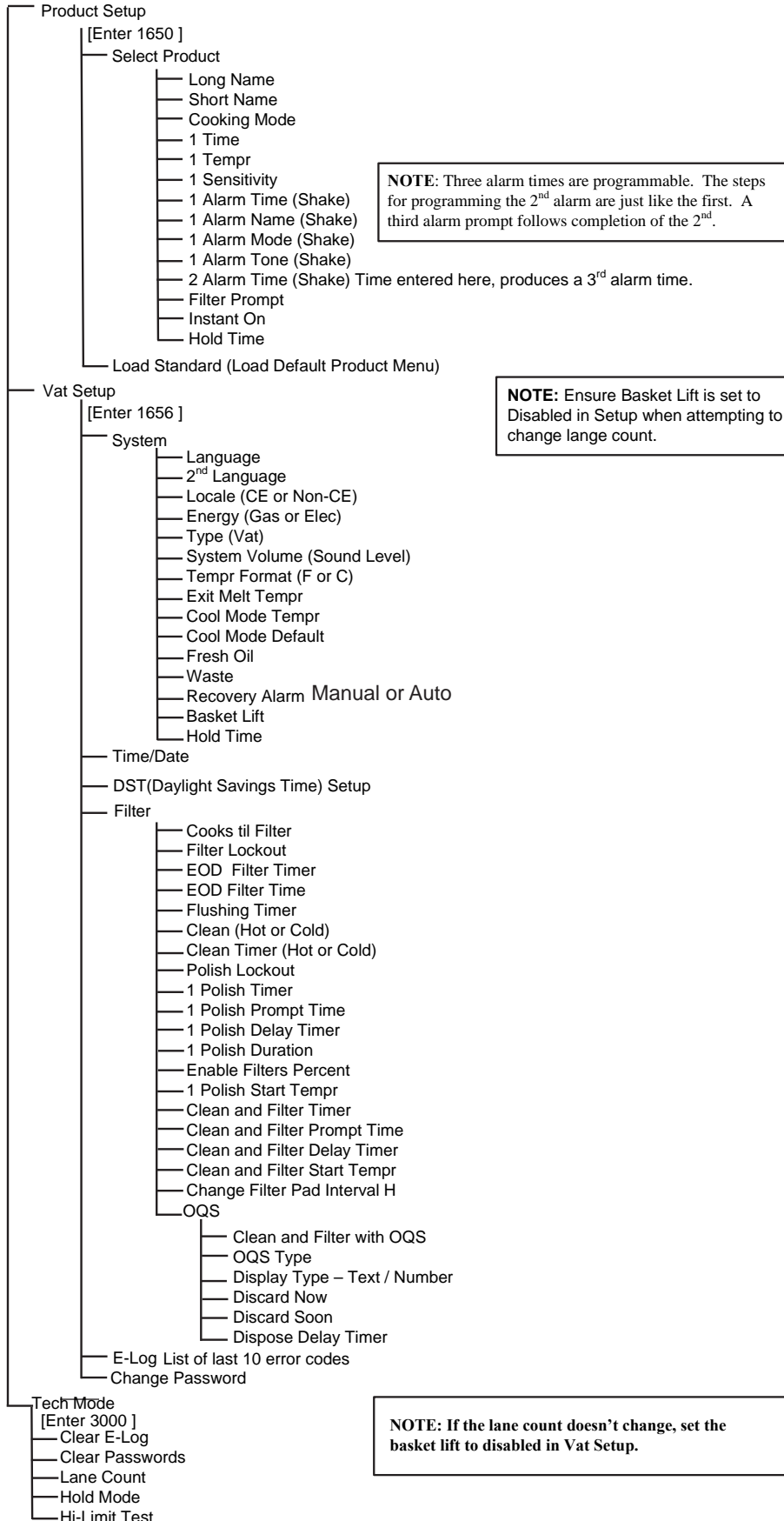
- **1234 – Fryer Setup, Level One, and Level Two.**
- **4321 – Usage Password.**

Automatic Filtering Fryers

FilterQuick 3000 Controller Menu Tree

Main Menu and Tech Modes

[With computer OFF, press and hold ✓(check) button 10 seconds, displays Main Menu - Product Setup]



Automatic Filtering Fryers

Board and Controller Replacement

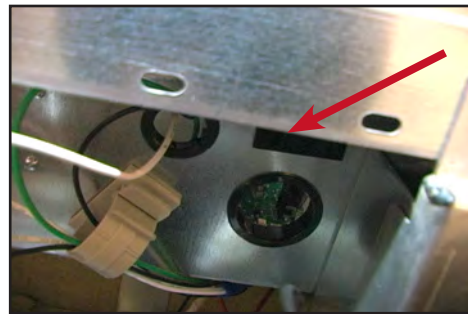
Readdress All Boards

It is necessary to readdress the system when any board or controller has been replaced or when the system has been changed from JIB to BULK oil. A readdress resets power to the entire fryer battery.

The control power reset switch is a momentary rocker switch located behind the control box, above the JIB on electric and under the far left control box on gas, that resets all power to all the controllers and boards in the fryer. Press and hold the switch for at least **15 seconds** to ensure power has sufficiently drained from boards. After releasing the momentary control power reset switch, wait at least 60 seconds before starting a function.



Resetting the power on an electric LOV.



Reset switch on gas LOV.

Automatic Filtering Fryers

Pin Positions

LOV ATO (Automatic Top Off) Pin Positions and Harnesses

Connector	From/To	Harness #	Pin #	Function	Voltage	Wire Color	
J8	RTI Add Solenoid	8074671	1	24VAC Ret	24VAC	Black	
			2				
			3				
	ATO Pump Relay		4	24VAC Ret	24VAC	Black	
			5				
			6				
			7				
	JIB Reset Switch		8	JIB Low Reset	16VDC	Black	
	RTI Add Solenoid		9	24VAC	24VAC	Red	
			10				
			11				
	ATO Pump Relay		12	24VAC	24VAC	Red	
			13				
			14				
			15				
	JIB Reset Switch	16	Ground	16VDC	Red		
J4 (Rear) / J5 (Front)	Transformer	8074553	1	24VAC Ret	24VAC	Orange	
			2	24VAC		Blue	
			3				
			4				
				5	12VAC Ret	12VAC	Red
				6	12VAC		Brown
	Jumper 4 & 5 Battery	8074657	7	Jumper Wire	Ohm	Black	
			8	Jumper Wire		Black	
J3 - Vat #3 J2 - Vat #2 J1 - Vat #1	ATO RTD	8074655 - Vat #1 8074654 - Vat #2 8074621 - Vat #3	1	DV - Probe Ground	Ohm	White	
			2	DV - Probe		Red	
			3	FV - Probe Ground		White	
			4	FV - Probe		Red	
J6	Orange LED	8074555	1	16VDC	16VDC	Black	
			2	16VDC Ret		Red	
J7			1				
			2				
			3	Ground			
			4	RB7/DATA			
			5	RB6/CLOCK			
J10	Network Resistor (pins 2 & 3) or to next ATO Board (4 & 5 vat units)	8074552	1	Ground		Black	
			2	CAN Lo		Red	
			3	CAN Hi		White	
			4	5VDC+	5VDC	Black	
			5	24VDC	24VDC	Red	
			6	Ground		White	
J9	AIF J5	8074546	1	Ground		Black	
			2	CAN Lo		Red	
			3	CAN Hi		White	
			4	5VDC+	5VDC	Black	
			5	24VDC	24VDC	Red	
			6	Ground		White	

Automatic Filtering Fryers

McDonald's LOV MIB (Manual Interface Board) Pin Positions and Harnesses

Connector	From/To	Harness #	Pin #	Function	Voltage	Wire Color
J1	M3000 J7	8074546	1	Ground		Black
			2	CAN Lo		Red
			3	CAN Hi		White
			4			
			5			
			6			
J2	AIF J4	8074547	1	Ground		Black
			2	CAN Lo		Red
			3	CAN Hi		White
			4	5VDC+	5VDC	Black
			5	24VDC	24VDC	Red
			6	Ground		White
J5	Transformer	8074649 RTI 8074844 NON-RTI 8074780 Gas LOV	1	24VAC	24VAC	Black
			2	24VAC Ret		White
	Filter Relay		3	Pump Motor	24VDC	Red
			4	Pump Motor		Green
	Blue LED		5	Blue LED +	24VDC	Red
			6	Blue LED -		Black
	RTI Open Switch		7	Open Switch +		Black
	RTI Closed Switch		8	Closed Switch +		Red
			9			
			10			
	Pan Switch		11	Pan Sw +	24VDC	Black
			12	Pan Sw -		Red
			13			
			14			
	RTI Open Switch		15	Ground -		White
	RTI Closed Switch		16	Ground -		Green
J6	To RTI connection in rear of fryer	8074760	1	From RTI transformer	24VAC	Black
			2	Common		White
			3	To RTI "Add Pump" Relay	24VAC	Green
			4			
			5			
			6			
			7			
			8	From RTI "Waste Tank Full Sensor" Test Pins 2 to 8	24VAC – Full 0VAC – Not Full	Red

Automatic Filtering Fryers

McDonald's LOV AIF (Auto Intermittent Filtration) Actuator Board Pin Positions

Connector	From/To	Harness PN	Pin #	Function	Voltage	Wire Color	
J1	FV Return Actuator	N/A	1	Ret + (Open)	24VDC	Black	
			2	Ret – (Closed)	24VDC	Red	
			3	Ret Position		Purple	
			4	Ground		White	
J2	FV AIF RTD		1	Ground		White	
	DV AIF RTD		2	FV - Temp		Red	
			3	Ground		White	
			4	DV - Temp		Red	
			5				
			6				
			7				
			8				
			Oil Level Sensor (Gas)	9	DV – OLS (Gas)		Black
				10	FV – OLS (Gas)		Red
			Locator Pin	11	Locator Vat #5		Black
				12	Locator Vat #4		
	13	Locator Vat #3					
	14	Locator Vat #2					
	Locator	15	Locator Vat #1				
		16	Locator Signal		Black		
J3	DV Return Actuator	N/A	1	Ret + (Open)	24VDC	Black	
			2	Ret – (Closed)	24VDC	Red	
			3	Ret Position		Purple	
			4	Ground		White	
J4	MIB J2 or AIF J5	8074547 AIF Board Communication and Power	1	Ground		Black	
			2	CAN Lo		Red	
			3	CAN Hi		White	
			4	5VDC+	5VDC	Black	
			5	24VDC	24VDC	Red	
			6	Ground		White	
J5	AIF J4 or ATO J10	8074547 AIF Board Communication and Power	1	Ground		Black	
			2	CAN Lo		Red	
			3	CAN Hi		White	
			4	5VDC+	5VDC	Black	
			5	24VDC	24VDC	Red	
			6	Ground		White	
J6	FV Drain Actuator	N/A	1	Drain + (Open)	24VDC	Black	
			2	Drain – (Closed)	24VDC	Red	
			3	Drain Position		Purple	
			4	Ground		White	
J7	DV Drain Actuator	N/A	1	Drain + (Open)	24VDC	Black	
			2	Drain – (Closed)	24VDC	Red	
			3	Drain Position		Purple	
			4	Ground		White	

Automatic Filtering Fryers

McDonald's LOV M3000 Board, Harnesses, and Pin Positions

Connector	From/To	Harness PN	Pin #	Function	Voltage	Wire Color
J2	Interface Board to Controller	807-4199 SMT Controller to Interface Board Harness	1	12VAC In	12VAC	Black
			2	Ground		
			3	12VAC In	12VAC	
			4	FV Heat Demand		
			5	V Relay	12VDC	
			6	DV Heat Demand		
			7	R/H B/L	12VDC	
			8	Analog Ground		
			9	L/H B/L	12VDC	
			10	ALARM		
			11	Sound Device	5VDC	
			12	ALARM		
			13	FV Probe		
			14	Common Probes		
			15	DV Probe		
			J6	Next M3000 J7 or Network Resistor	807-4546 Controller Communication Harness	
2	CAN Lo					Red
3	CAN Hi					White
4						
5						
6						
J7	MIB J1 or previous M3000 J6	807-4546 Controller Communication Harness	1	Ground		Black
			2	CAN Lo		Red
			3	CAN Hi		White
			4			
			5			
			6			
J9	ONLY USED ON NON-AIF UNITS					
J10	Interface Board Ground to Controller	807-4573 Controller Locator Harness	1	Vat #1		Black
			2	Vat #2		
			3	Vat #3		
			4	Vat #4		
			5	Vat #5		
			6			
J11	SD Card					

Automatic Filtering Fryers

FilterQuick 3000 ATO (Automatic Top Off) Pin Positions and Harnesses

Connector	From/To	Harness #	Pin #	Function	Voltage	Wire Color	
J8	Bulk Fresh Oil Solenoid	8074671	1	24VAC Ret	24VAC	Black	
			2				
			3				
	Top Off Pump Relay		4	24VAC Ret	24VAC	Black	
			5				
			6				
			7				
	JIB Reset Switch		8	JIB Low Reset	16VDC	Black	
	Bulk Fresh Oil Solenoid		9	24VAC	24VAC	Red	
			10				
			11				
	Top Off Pump Relay		12	24VAC	24VAC	Red	
			13				
			14				
			15				
			JIB Reset Switch	16	Ground	16VDC	Red
J4 (Rear) / J5 (Front)	Transformer	8074553	1	24VAC Ret	24VAC	Orange	
			2	24VAC		Blue	
				3			
				4			
				5	12VAC Ret	12VAC	Red
				6	12VAC		Brown
		ATO 4 & 5 Battery Jumper	8074657	7	Jumper	Ohm	Black
		8		Jumper	Black		
J1 - Vat #1 J2 - Vat #2 J3 - Vat #3	ATO RTD	8262569- Probe Kit, 8074845 – 28" Ext., 8074655 – 20" Ext.,	1	DV - Probe Ground	Ohm	White	
			2	DV - Probe		Red	
			3	FV - Probe Ground		White	
			4	FV - Probe		Red	
J6							
J10	Network Resistor (pins 2 & 3) or to next ATO Board (4 & 5 vat units)	8074552 (Network resistor), 8074546 to next ATO board	1	Ground		Black	
			2	CAN Lo		Red	
			3	CAN Hi		White	
			4	5VDC+	5VDC	Black	
			5	24VDC	24VDC	Red	
			6	Ground		White	
J9	AIF J5	8074547	1	Ground		Black	
			2	CAN Lo		Red	
			3	CAN Hi		White	
			4	5VDC+	5VDC	Black	
			5	24VDC	24VDC	Red	
			6	Ground		White	

Automatic Filtering Fryers

FilterQuick 3000 MIB (Manual Interface Board) Display Diagnostics

Connector	From/To	Harness #	Pin #	Function	Voltage	Wire Color	
J1	FilterQuick™ Controller/ J6	8074546	1	Ground		Black	
			2	CAN Lo		Red	
			3	CAN Hi		White	
			4				
			5				
			6				
J2	AIF J5	8074850	1	Ground		Black	
			2	CAN Lo		Red	
			3	CAN Hi		White	
			4	5VDC+	5VDC	Black	
			5	24VDC	24VDC	Red	
			6	Ground		White	
J5	Transformer	8075800 Bulk	1	24VAC In	24VAC	Black	
			2	24VAC In Ret		White	
	Filter Relay	8075780 Non-Bulk	3	Pump Motor + Out	24VDC	Red	
				4		Pump Motor - Out	Green
				5			
				6			
	Bulk Open Switch			7	Open Switch +		Black
	Bulk Closed Switch			8	Closed Switch +		Red
				9			
				10			
	Pan Switch			11	Pan Sw +	24VDC	Black
				12	Pan Sw -		Red
			13				
			14				
	Bulk Open Switch		15	Ground -		White	
	Bulk Closed Switch		16	Ground -		Green	
J6	To Bulk connection in rear of fryer	8075789	1	From bulk oil trans- former	24VAC	Black	
			2	Common Return		White	
			3	To bulk oil fresh oil pump relay	24VAC	Green	
			4				
			5				
			6				
			7				
			8	From bulk oil "Waste Tank Full Sensor" Test Pins 2 to 8	24VAC – Full 0VAC – Not Full	Red	

Automatic Filtering Fryers

FilterQuick 3000 AIF (Auto Intermittent Filtration) Actuator Board Pin Positions

Connector	From/To	Harness #	Pin #	Function	Voltage	Wire Color
J1	FV Return	N/A	1	Ret + (Open)	24VDC	Black
			2	Ret – (Closed)	24VDC	Red
			3	Ret Position		Blue
			4	Ground		White
J2	FV AIF RTD	N/A	1	Ground		Red
	DV AIF RTD		2	FV - Temp		White
	Oil Level Sensor (Gas)		3	Ground		Red
			4	DV - Temp		White
			5	OIB Sensor FV from Pin 5 on J3 of Interface Bd	12VDC	Red
			6	OIB Sensor FV		Black
	Oil Level Sensor communication (Gas)		7	OIB Sensor DV from Pin 5 on J3 of Interface Bd	12VDC	Red
			8	OIB Sensor DV		Black
	Locator Pin		9	DV – OLS (Gas)		Black
			10	FV – OLS (Gas)		Red
			11	Locator Vat #5		Black
			12	Locator Vat #4		
	13		Locator Vat #3			
	14		Locator Vat #2			
	Locator		15	Locator Vat #1		
			16	Locator Signal		Black
J3	DV Return	N/A	1	Ret + (Open)	24VDC	Black
			2	Ret – (Closed)	24VDC	Red
			3	Ret Position		Blue
			4	Ground		White
J4	MIB J2 or AIF J5	8074547	1	Ground		Black
		AIF Board Communication and Power	2	CAN Lo		Red
			3	CAN Hi		White
			4	5VDC+	5VDC	Black
			5	24VDC	24VDC	Red
			6	Ground		White
J5	AIF J4 or ATO J10	8074547	1	Ground		Black
		AIF Board Communication and Power	2	CAN Lo		Red
			3	CAN Hi		White
			4	5VDC+	5VDC	Black
			5	24VDC	24VDC	Red
			6	Ground		White
J6	FV Drain	N/A	1	Drain + (Open)	24VDC	Black
			2	Drain – (Closed)	24VDC	Red
			3	Drain Position		Blue
			4	Ground		White
J7	DV Drain	N/A	1	Drain + (Open)	24VDC	Black
			2	Drain – (Closed)	24VDC	Red
			3	Drain Position		Blue
			4	Ground		White

Automatic Filtering Fryers

FilterQuick 3000 Board, Harnesses, and Pin Positions

Connector	From/To	Harness PN	Pin #	Function	Voltage	Wire Color	
J1	SD Card						
J2	Interface Board to Controller	8075165 SMT Controller to Interface Board Harness	1	12VAC In	12VAC	Orange	
			2	Ground			
			3	12VAC Return In	12VAC		
			4	FV Heat Demand			
			5	V Relay	12VDC		
			6	DV Heat Demand			
			7	R/H B/L	12VDC		
			8	Analog Ground			
			9	L/H B/L	12VDC		
			10	ALARM			
			11	Sound Device	5VDC		
			12	ALARM			
			13	FV Probe			
			14	Common Probes			
			15	DV Probe			
			16				
			17				
			18				
			19	Blower Cool Down Ground			
			20				
J3	Interface Board Ground to Controller	Controller Locator Harness	1	Vat #1		Black	
			2	Vat #2			
			3	Vat #3			
			4	Vat #4			
			5	Vat #5			
			6	Ground			
J4	Drain Switch and LED	1085672	1	Ground		Black	
			2	Push Pull Switch In		Red	
			3	Ground		Black	
			4	Drain Indicator LED		Red	
J6	Next Controller J7 or Network Resistor	8074546 Controller Communication Harness	1	Ground		Black	
			2	CAN Lo		Red	
			3	CAN Hi		White	
			4				
			5				
			6				
J7	MIB J1 or previous Controller J6	8074546 Controller Communication Harness	1	Ground		Black	
			2	CAN Lo		Red	
			3	CAN Hi		White	
			4				

Chapter 5: FilterQuick/McDonald's 30lb Touch Screen Fryers



Features

- **Advanced touchscreen controller**
- **Wireless connectivity for off-site monitoring**
- **Automatic intermittent filtration**
- **Low-volume frypots**
- **Redesigned interface board**
- **Redesigned oil-return monitoring**

Acronyms

- **FQ4000** — Non-McDonald's Touchscreen controller.
- **M4000** — McDonald's Touchscreen controller.
- **UI** — User Interface, another name for touchscreen.
- **SIB** — Smart Interface Board.
- **VIB** — Valve Interface Board (AIF in 3000 series fryers).
- **FIB** — Filter Interface Board (Like MIB & ATO in 3000 series fryers).
- **IOB** — Input/Output Board (For additional inputs/outputs)
- **ATO** — Automatic Top Off system.
- **OQS** — Oil Quality Sensor.
- **CAN Bus** — Data connection between SIB's, FIB, SUI.
- **P-Bus** — Data connection between SIB's and VIB's.
- **MOD-Bus** — 24VDC between VIB and SIB.
- **KCCM/SUI** — **KitchenConnect Control Module/Standard User Interface** Manages fryer network communication.

NOTE: The fryer's top off, oil quality sensor and rotary valve actuators are like those on the auto filtering fryers and are covered in that section.

Touchscreen-Equipped Fryers

Top Off

- ATO probe (highest probe in the vat) attached to the SIB senses no oil.
- SIB messages FIB via CAN bus.
- FIB directs 24VDC on VIB board of affected vat to open valve.
- FIB also sends 24VDC to top off pump.
- Oil returns to ATO probe level.
- SIB messages FIB.

FIB halts pump, messages VIB to close valve.

What Causes Problems

- Dirty ATO probe.
- Mismatched software between boards.
- Bad communication cable connections.
- Heat-damaged P-bus cable.

Failed 24VDC power supply.
Clogged top off lines or empty JIB.

Filtration

- Controller calls for programmed filtration.

- Signals through SIB to FIB.
- FIB ensures filter pan is in place.
- FIB directs 24VDC on VIB to open drain.

FIB, using AIF/VIB probe, ensures oil is out of vat.

- FIB starts filter pump.
- FIB monitors return of oil with VIB probe.
- Controller times down filter cycle and signals FIB.
- FIB closes drain valve; pump stays on.
- FIB monitors return of oil with VIB.
- Return valve is closed; pump turned off.

Vat resumes heating when oil is detected.

What Causes Problems

- Dirty/clogged filter pan.
- Clogged inline filter.
- Dirty AIF probe.
- OIB probe circuit (gas only and explained elsewhere).
- Clogged filter pump.

Communication Cables

CAN Bus

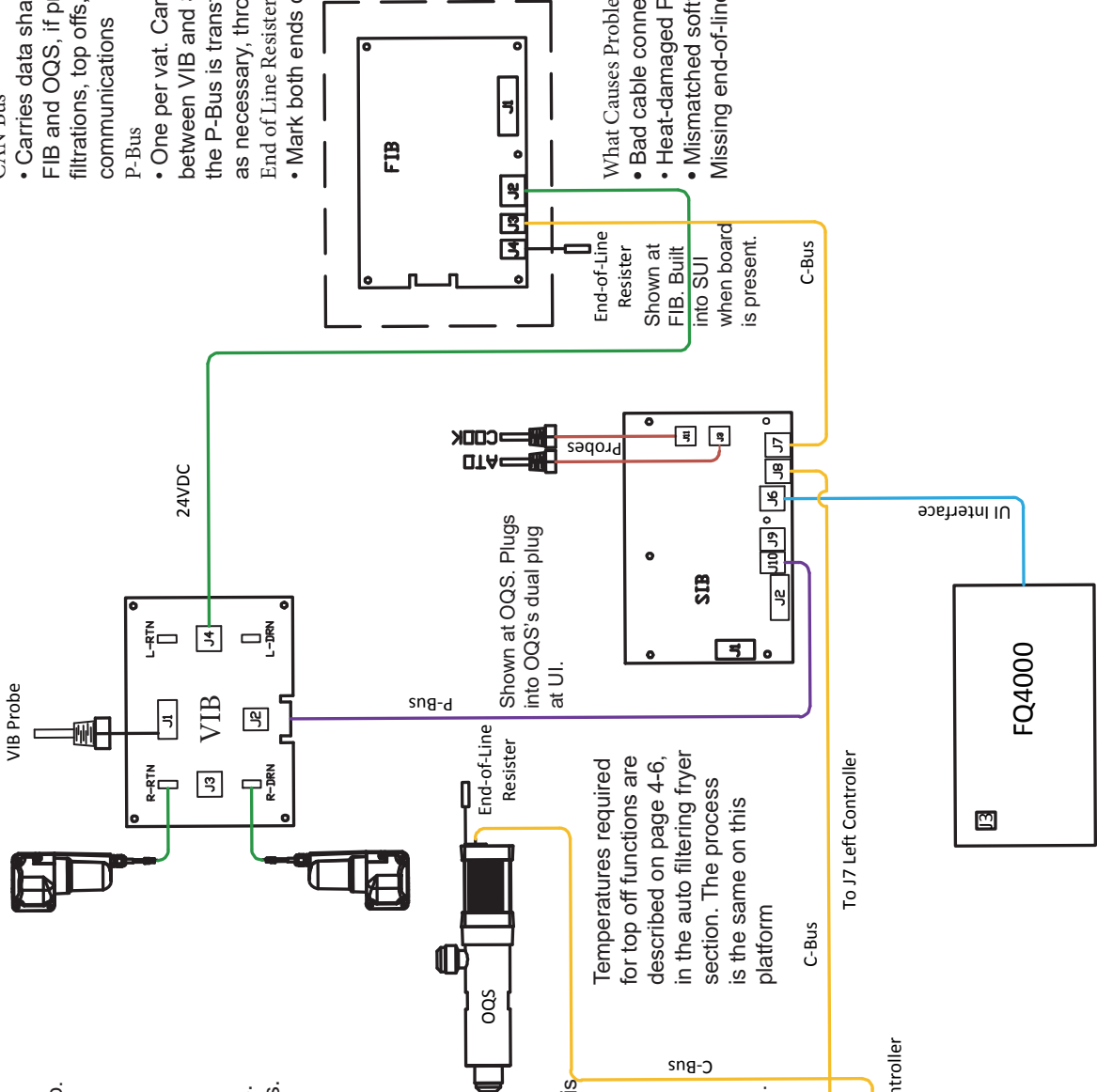
- Carries data shared between SIB's, the FIB and OQS, if present. Data includes: filtrations, top offs, OQS data, controller communications

P-Bus

- One per vat. Carries data/commands between VIB and SIB. Data carried on the P-Bus is transferred to the CAN bus, as necessary, through the SIB.

End of Line Resistors

- Mark both ends of CAN bus.



Temperatures required for top off functions are described on page 4-6, in the auto filtering fryer section. The process is the same on this platform

- ### What Causes Problems
- Bad cable connections
 - Heat-damaged P-bus cables.
 - Mismatched software.

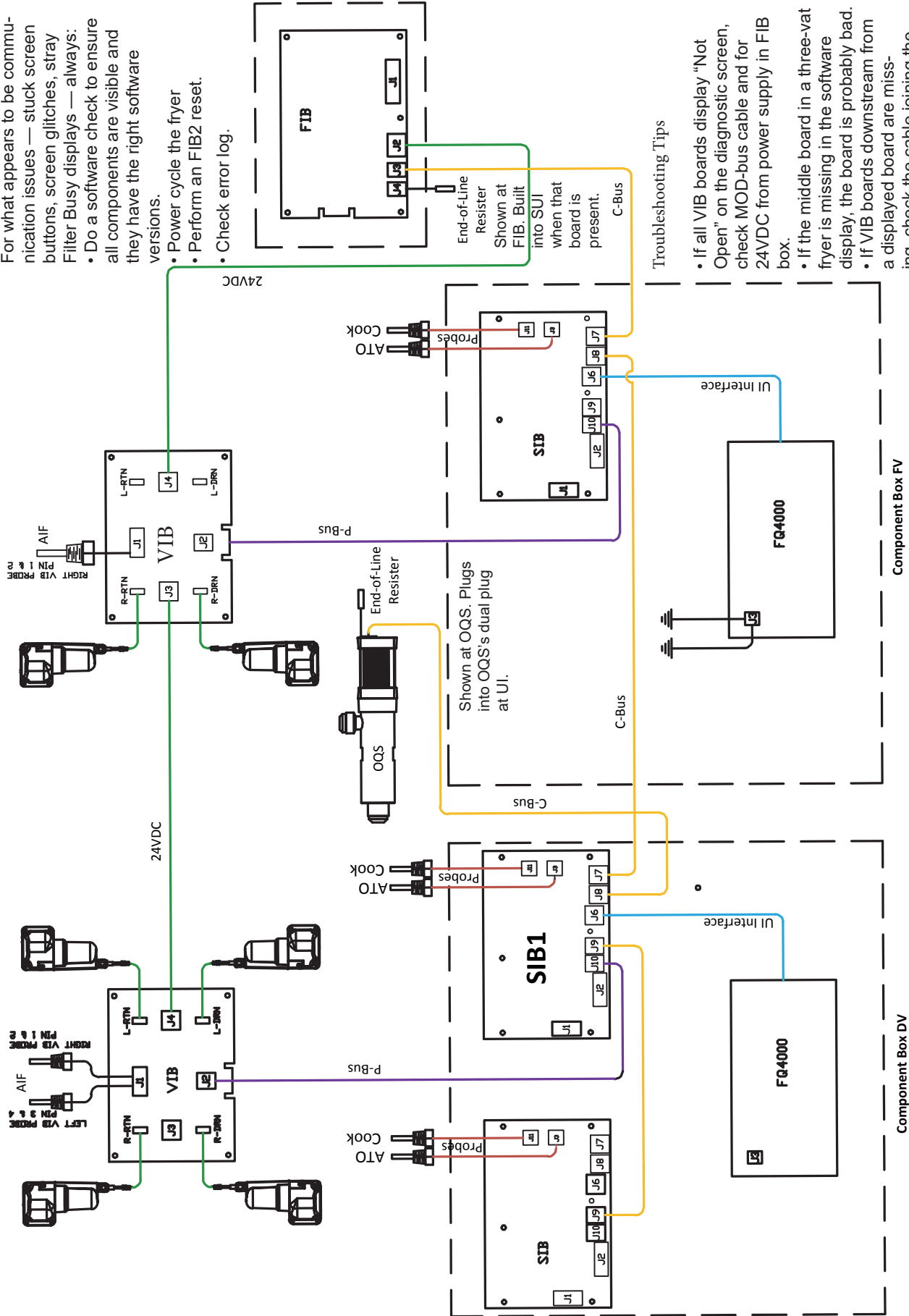
End-of-Line Resistor Shown at FIB. Built into SUJ when board is present.

Touchscreen-Equipped Fryers

Troubleshooting

For what appears to be communication issues — stuck screen buttons, screen glitches, stray Filter Busy displays — always:

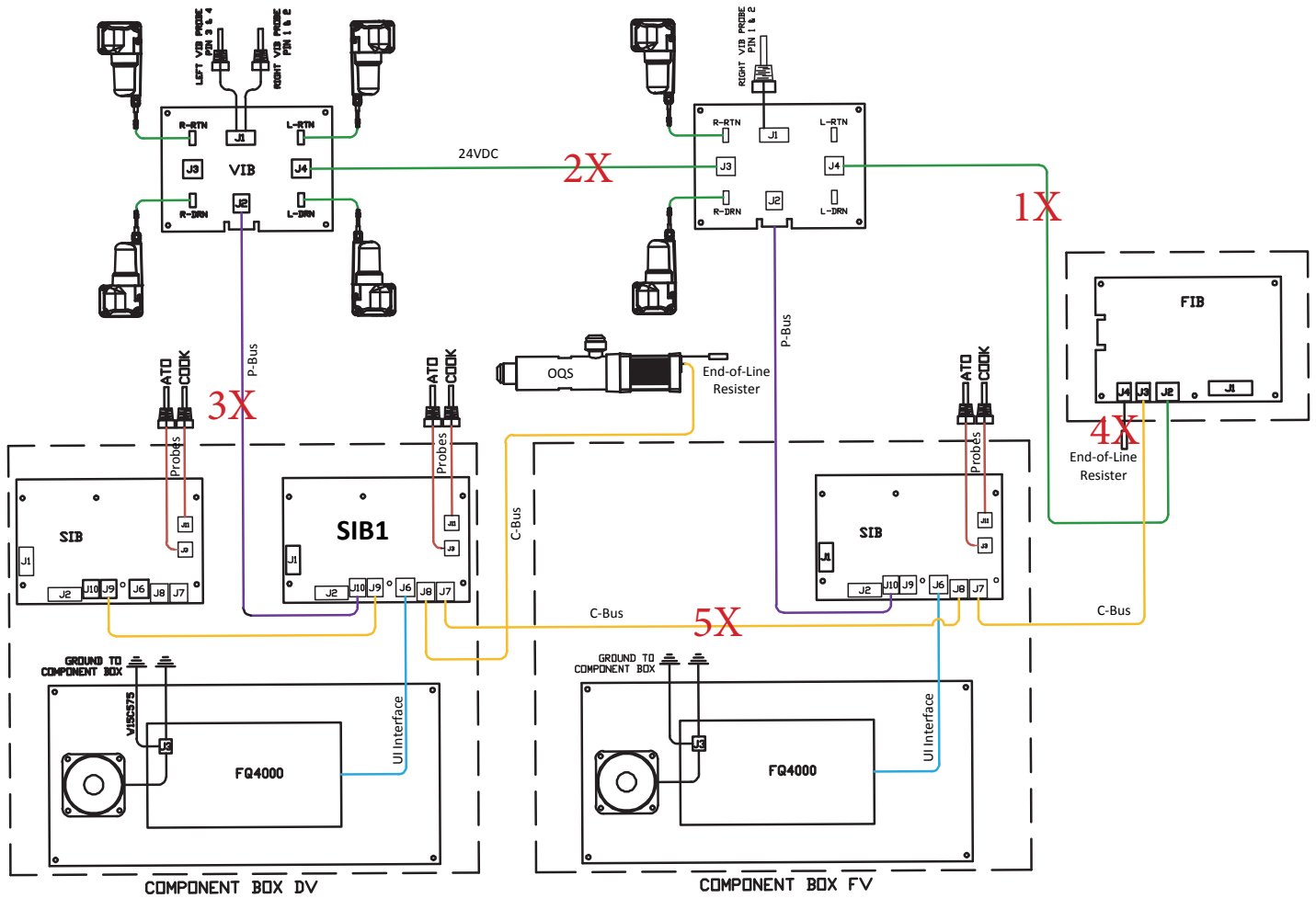
- Do a software check to ensure all components are visible and they have the right software versions.
- Power cycle the fryer
- Perform an FIB2 reset.
- Check error log.



Troubleshooting Tips

- If all VIB boards display "Not Open" on the diagnostic screen, check MOD-bus cable and for 24VDC from power supply in FIB box.
- If the middle board in a three-vat fryer is missing in the software display, the board is probably bad.
- If VIB boards downstream from a displayed board are missing, check the cable joining the displayed board to the missing boards and the P-bus cable between the SIB and the VIB.

Communication Failures Lead to Filtration, Feature Failures



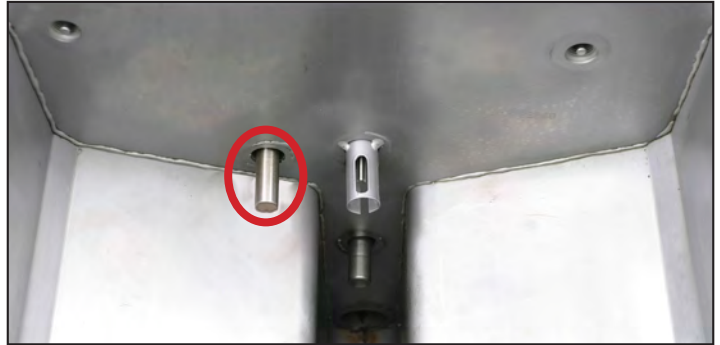
1X	A bad connection between the FIB and the first VIB will deny power to the boards, which control valves for filtration, and top off. On the touchscreen's diagnostic screen, the VIB's will be shown as open. On the software screen, the VIB's are visible. The software check is on the P-Bus.
2X	A bad or broken connection between VIB's will deny power to the actuators downstream from the break. Downstream valves won't open. On the diagnostic screen, valves will be shown as open. On the software screen, the VIB's will be visible.
3X	DC voltage from the FIB flows through the VIB to a gas fryer's oil is back circuit. A break here can cause the fryer not to heat. Power to the OIB's relay is denied, which prevents 24VAC from reaching the gas valve. This break will kill visibility of the VIB's on the software screen.
4X	The end of line resistors establish the two ends of the CAN bus and absorb stray data. A missing resistor in the FIB box will cause errors on the network's messages. Some network communication issues can be related to the communication board, or SUI, that's in the FIB box. If the end of line resistor is plugged into the SUI, the resistor can be moved to the FIB's CAN plug, J3 or J4, and the SUI unplugged. If the end-of-line resistor is built-in to the SUI, a separate end-of-line resistor must be plugged into J3 or J4 on the FIB before removing the SUI. Without an end-of-line resistor, power can be removed from the SUI with it otherwise left in place to determine if the cause is SUI-related.
5X	A bad CAN issue here will cause the left UI to see everything but the FIB. The right will see everything but the OQS, the component with the end-of-line resistor on the other side of the circuit. The mixed view on the controllers is the hint the issue is between the SIB's.

Oil-is-Back Circuit (gas only) Explained

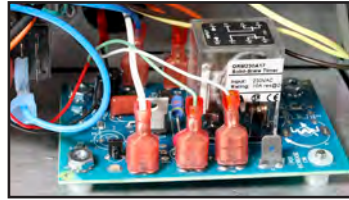
Troubleshooting can be performed using the OIB in component check on page 5-12 to determine if the sensor is reading “AIR” or “OIL”. Also the time delay relay can be energized to check voltages.

The Oil is Back circuit (shown below) is a safety. It prevents the ignition system in a gas fryer from firing when there is insufficient oil in the frypot.

- An additional probe (circled at right) in the gas frypot holds a heater that’s powered by an attached electronic egg and attached to a seven-second delay board.
- With oil in the vat, the probe’s heater is “cooled” and kept below its 570°F setpoint.
- With oil out of the pot, the heater rises in temperature and a four-second relay in the egg begins cycling to lower the heater’s temperature.
- The cycling of the four-second relay disrupts the seven-second relay board.
- The seven-second board opens, denying 24VAC to the gas valve and DC voltage from the VIB to the OIB relay. The UI doesn’t call for heat and no errors are displayed.
- When the probe cools with the return of the oil, the egg’s relay quits cycling, the seven-second relay board closes, DC voltage from the VIB closes the OIB relay circuit, and the valve gets power.
- Failure to regularly clean the OIB probe insulates it from the “cooling” effect of the frypot’s oil and will cause the vat to not heat.
- Open contacts on the seven-second board’s relay.
- Bad ground on OIB circuit.



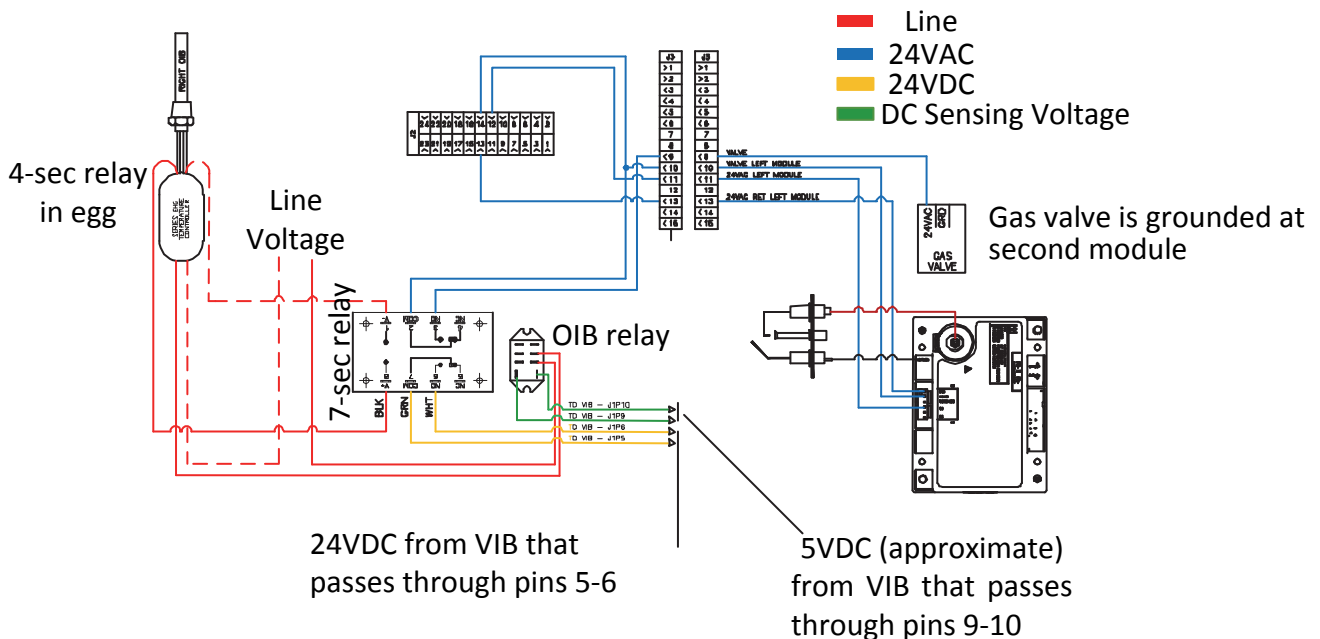
The OIB sensor is circled (above).



The seven-second time-delay board (above) in a McDonald’s touch fryer and the egg-shaped electronics housing on the OIB heater (right).

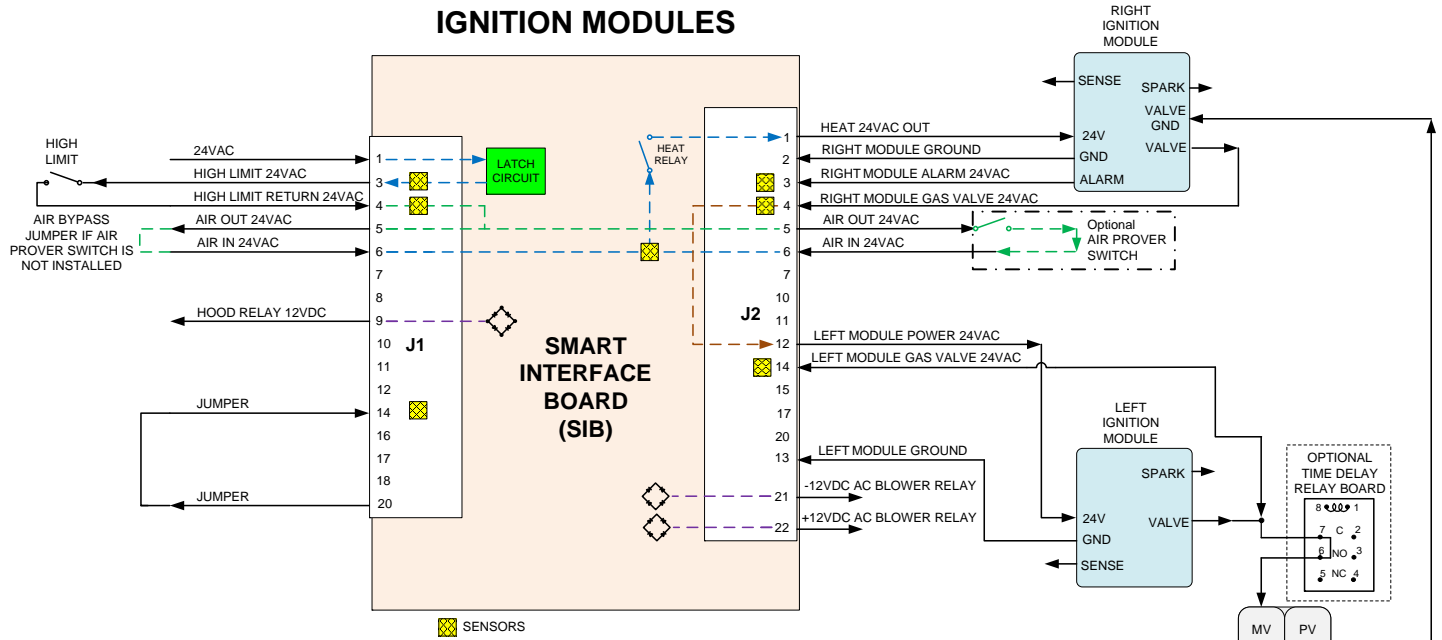


The OIB probe must be regularly cleaned.

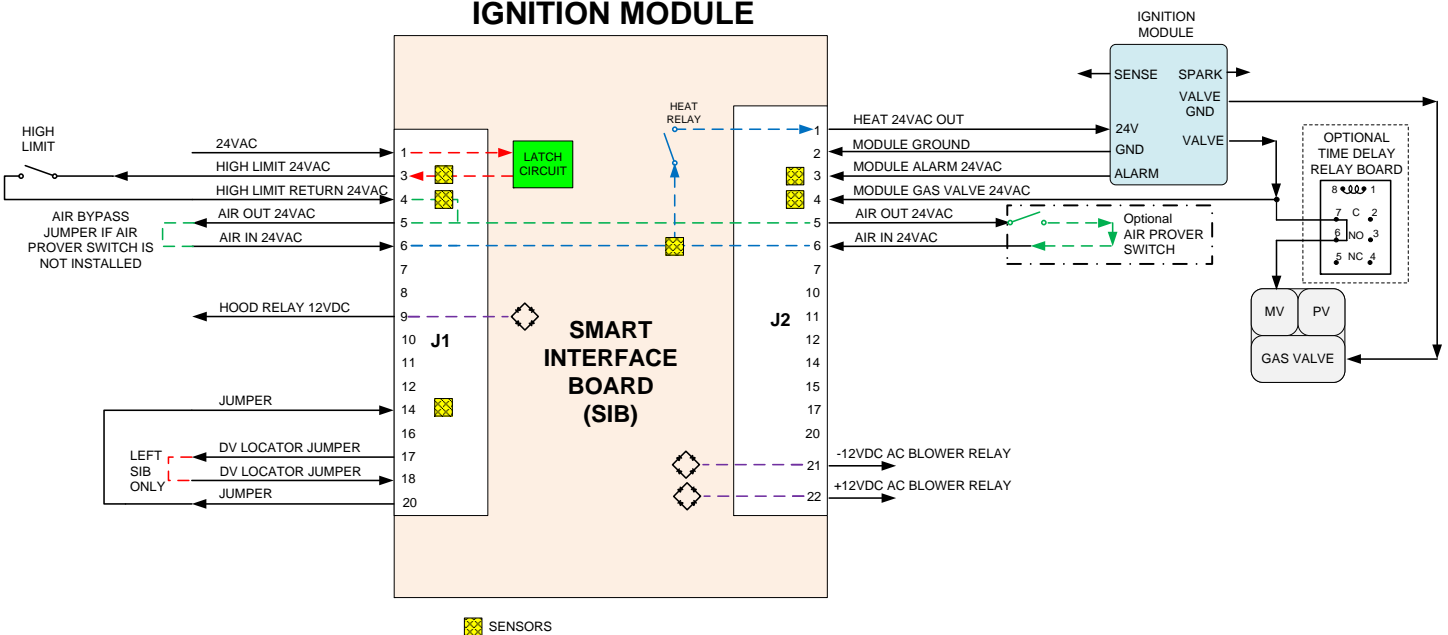


Gas System Flow through the SIB Board

FULL VAT TWO SINGLE SPARK IGNITION MODULES

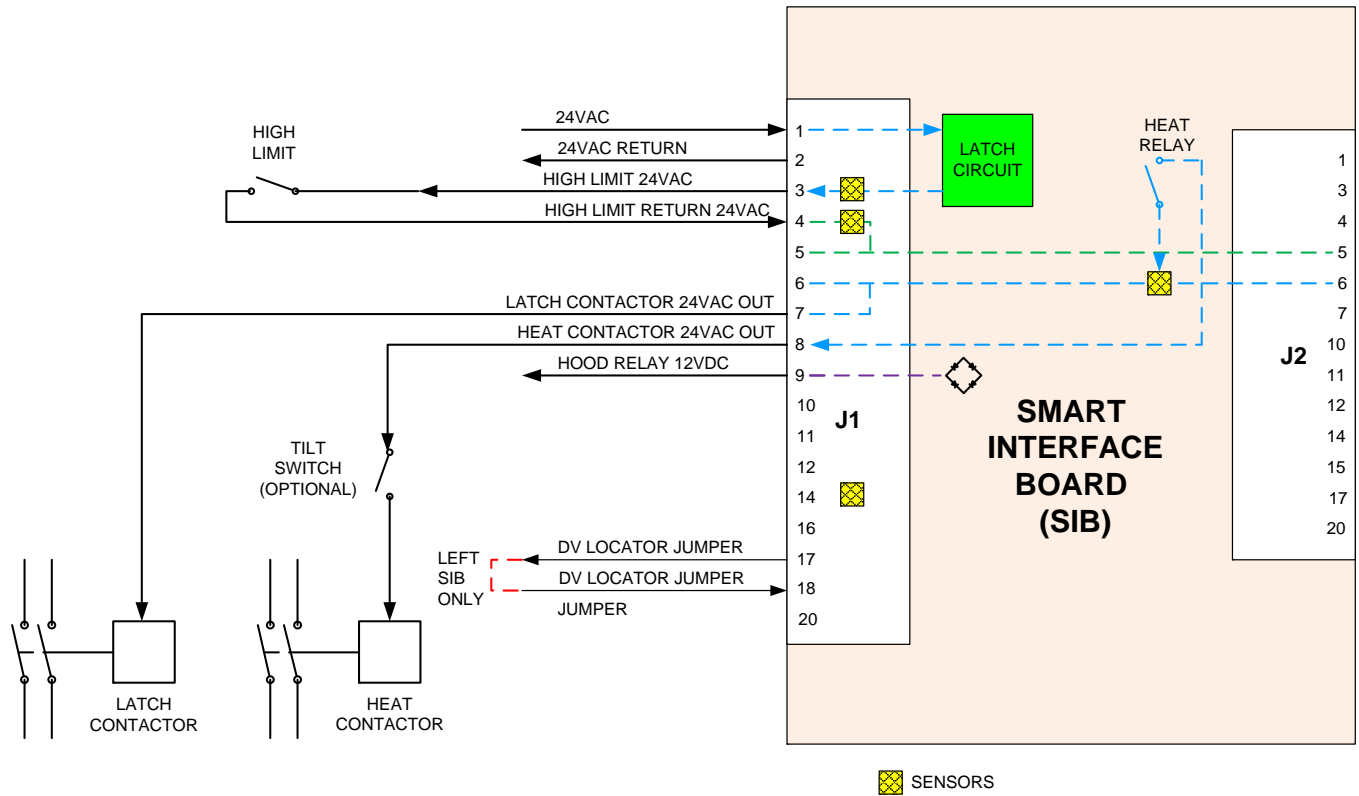


SPLIT VAT SINGLE SPARK IGNITION MODULE



Electric System Flow through the SIB Board

ELECTRIC SYSTEM



Online Access to McDonald's 30lb Touchscreen Fryer Manuals

Scan with QR-code reader to access manuals. Cover adjacent QR-codes to retrieve desired manual.

McDonald's 30lb Gas Manuals



McDonald's BIGLA30-T
LOV Gen 3 Gas IO



McDonald's BIGLA30-T
LOV Gen 3 Gas Parts



McDonald's BIGLA30-T
LOV Gen 3 Gas Service

McDonald's 30lb Electric Manuals



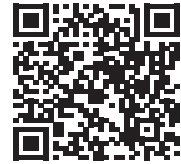
McDonald's BIELA14-T
LOV Gen 3 Electric IO



McDonald's BIELA14-T
LOV Gen 3 Electric Parts



McDonald's BIELA14-T
LOV Gen 3 Electric Service



McDonald's BIELA14-T
LOV Gen 3 Electric Wiring

Online Access to FilterQuick 30lb Touchscreen Fryer Manuals

FQ4000 Controller Manuals



FilterQuick Touch FQ4000
Controller



FilterQuick Touch FQ4000
Taco Bell Controller

Scan with QR-code reader/phone to access manuals. Cover adjacent QR-codes to retrieve desired manual.

FilterQuick 30lb Gas Manuals



FilterQuick Touch
FQG30U-T Gas IO



FilterQuick Touch FQG30U-T
Gas IO Taco Bell



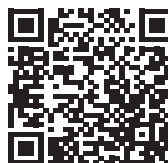
FilterQuick Touch
FQG30U-T Gas Parts



FilterQuick Touch
FQG30U-T Gas Service



FilterQuick Touch
FQGLA-T Gas IO



FilterQuick Touch FQGLA-T
Gas IO - Taco Bell



FilterQuick Touch
FQGLA-T Gas Parts



FilterQuick Touch FQGLA-T
Gas Service

FilterQuick 30lb Electric Manuals



FilterQuick Touch
FQE30U-T Electric
IO



FilterQuick Touch
FQE30U-T Electric
IO Taco Bell



FilterQuick Touch
FQE30U-T Electric
Parts

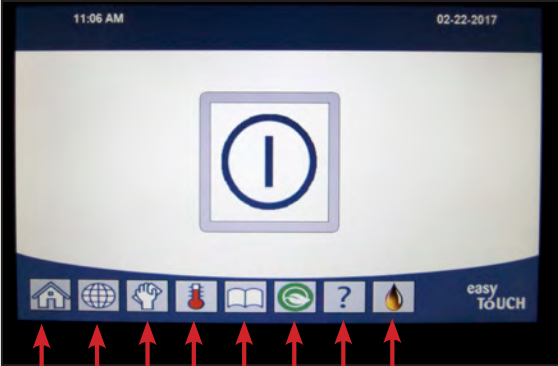


FilterQuick Touch
FQE30U-T Electric
Service



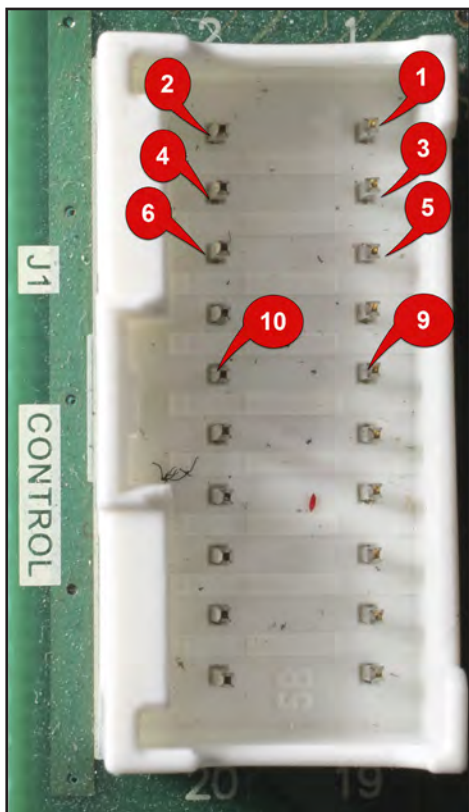
FilterQuick Touch
FQE30U-T Electric
Wiring

Touchscreen-Equipped Fryers

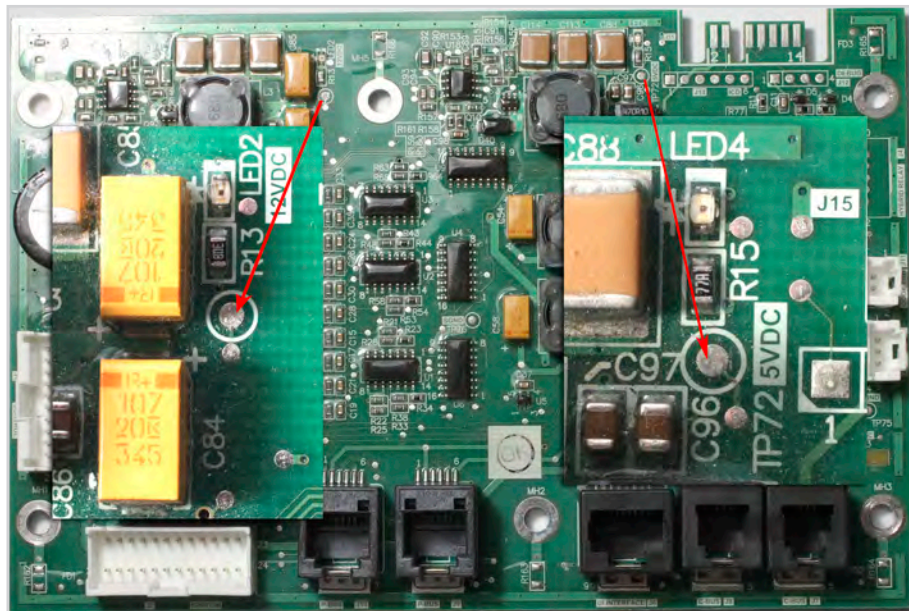


- Manual top off, allows top off pump to be run manually
- Accesses fryer use and maintenance data also software version numbers
- Accesses Cool Mode, a feature that reduces the holding temperature of an idle frypot
- Accesses Menus. Allows changing the displayed array of products, dinner items vs. lunch items for example
- Accesses Temperatures, actual and setpoint
- Accesses Filter menus
- Change displayed language
- Accesses Crew, Menus, Recipes, Settings and Service Modes

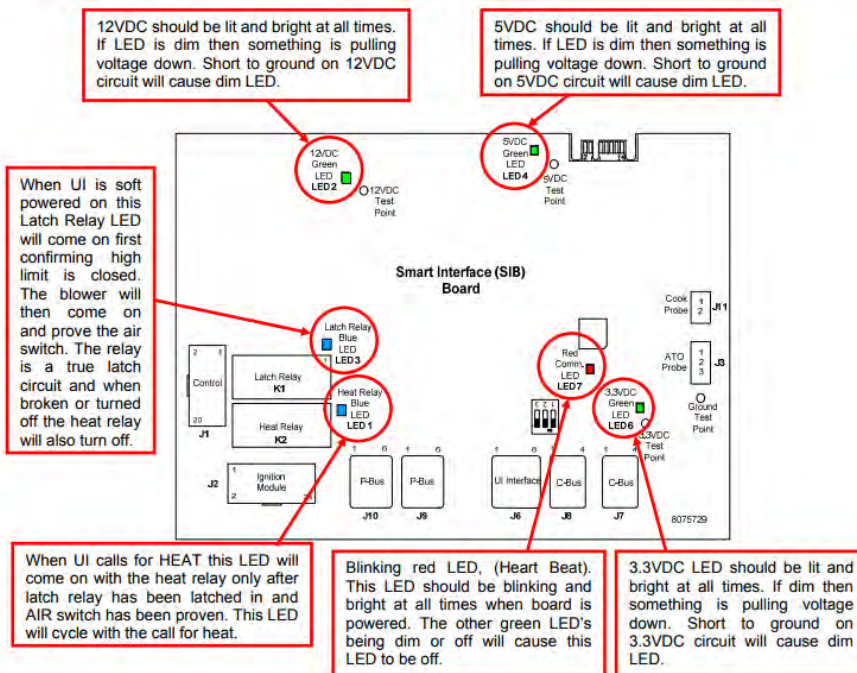
LED's, Pins on the Fryer's SIB Board



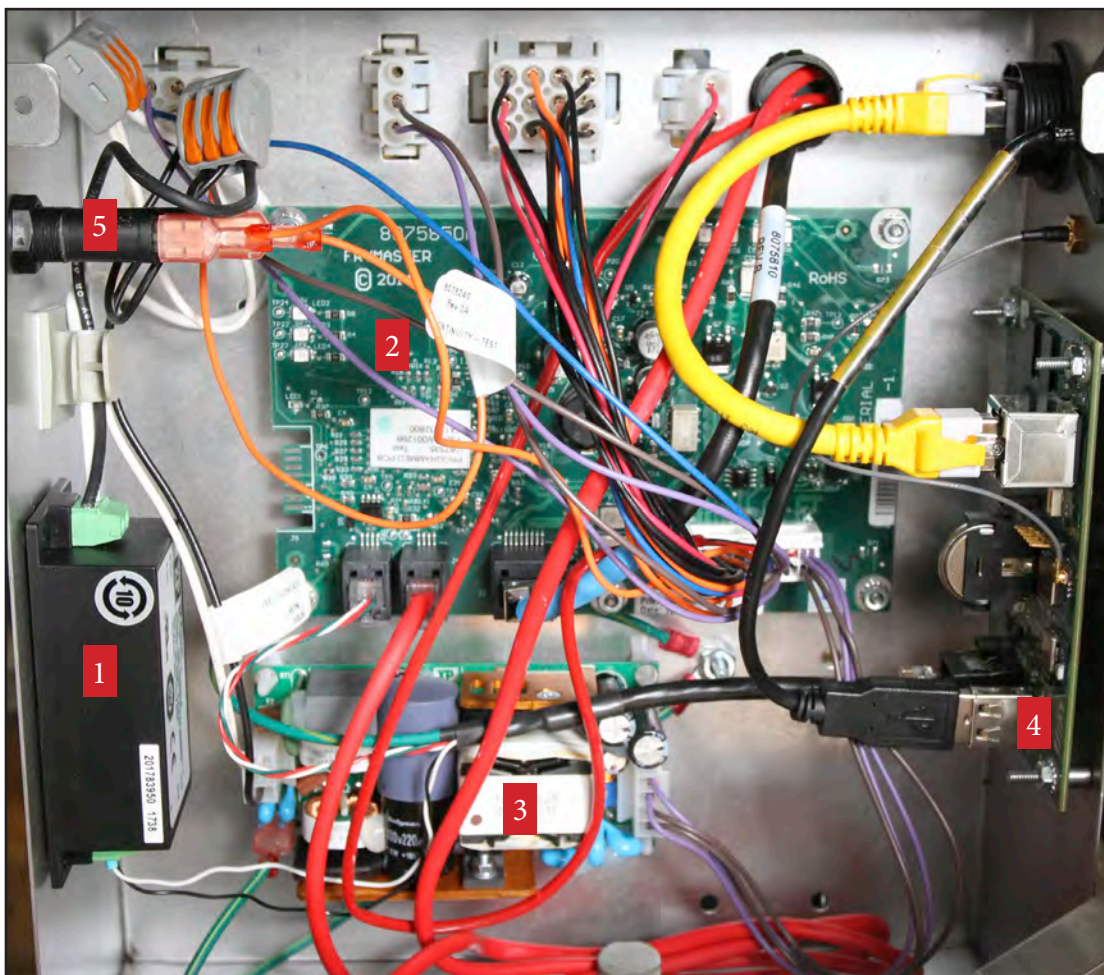
The SIB's J1 (vertical) and J2 (horizontal) plugs are numbered from the top right corner, right to left, as shown above on the J1 plug. The 9 and 10 pins are for the hood relay in McDonald's.



Test points on the SIB have been enlarged and overlaid on the image above. Below are voltage test points and LED's on the board.

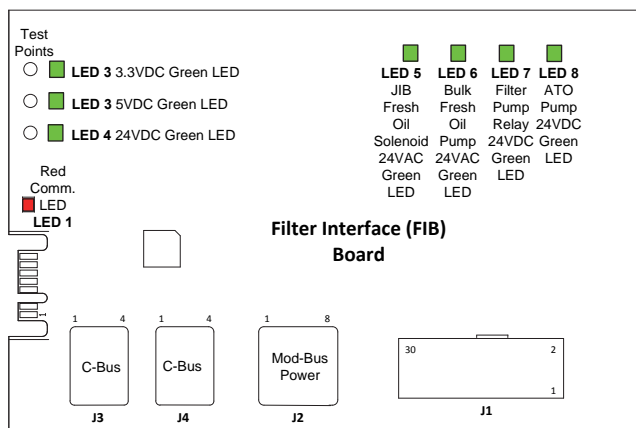


See Pin Outs on pages 5-13—5-18



Annotated View of Filter Interface Board Box

1	24VDC power supply for communication. Removed in late 2022.
2	Filter Interface Board (FIB)
3	24VDC power supply for top off pump, valve actuators, communication
4	SUI communication board
5	Fuse on 24VAC to FIB board



See Pin Outs on pages 5-13—5-18

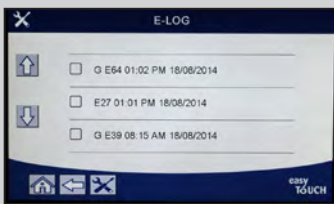
Use Controller's Version, Component Check Features for Diagnostics

Use Software Display for Diagnostics

- Press the Home button
- Press the Question Mark button.
- Press the down arrow to navigate to the Software version icon.
- Press the software icon.
- Press the down arrow to scroll the software versions for each component: SIB, FIB, VIB, SUI, OQS, etc.
- The numbers should match current version numbers.
- The absence of numbers or the presence of all zeros in a component field means that component is not being seen on the network.
- Scroll with the down arrow again to the temperature display for the ATO and the temperature probe.
- The numbers should be very close. A big difference indicates a probe issue or an oil level problem.

How to Use Component Check Feature

- Turn the fryer off.
- Press the Home button.
- At the Crew Mode screen, press the Service icon.
- Press the Service Man Icon.
- Enter 9000 on the keyboard.
- Press the check mark.
- Tap Tech Mode.
- Navigate to the Component Check screen and press the button.
- The controller populates with buttons for fryer components.
- Turn the components on and off as necessary to check component function. Listen closely for relays to open and close.
- Be careful opening drain valves and running pumps. There are no safeties in diagnostic mode.



See Error Code Log, Pages 5-11, 5-12

Use Error Codes to Track Problems

- Press Home button.
- Press Service button.
- Press Manager button.
- Enter 1656 in General Market, 4321 McD's
- Press check mark.
- Scroll recorded error codes with up and down arrow keys.
- The codes are displayed, in the order they were recorded, in windows of three.
- There's a video guide to responding to error codes included on the flash drive.
- Error codes can point to operational issues, such as failure to filter, that lead to required maintenance.

Draining to Pan/Filling From Pan

When a repair, such as a probe replacement, requires draining a vat, the controller is used to move the oil to the filter pan. Follow the steps below to drain the affected frypot.

- Press the Filter button.
- Select vat (if split) to drain from display.
- Scroll to Drain to Pan and select it.
- Press check mark.
- Ensure the filter pan is fully inserted.
- Press Blue button to start draining.
- Insert Pan is displayed if pan is not fully in place.
- Draining is followed by Vat Empty.
- Tap Yes when the vat is empty.
- Follow prompts to return oil to vat when work is finished.

Touchscreen-Equipped Fryers

Circuit Board Pin Outs

McD_T/FQ_T Electric SIB (Smart Interface Board) Pin Positions and Harnesses

NOTE: DO NOT CHECK WITH HARNESES UNPLUGGED (except ATO and Temp Probes) AS SHORTING THE PINS MAY OCCUR WHICH WILL DAMAGE THE BOARD.

Connector	From/To	Harness #	Pin #	Function	Voltage	Wire Color
J1	From Transformer	8075951 Full or Right of Split	1	24VAC Input	24VAC	Orange
			2	Ground -		Blue
	To High Limit	8075952 Left Split	3	24VAC Out	24VAC	Orange
	From High Limit		4	24VAC Input	24VAC	Blue
	To Latch Contactor		7	24VAC Out	24VAC	Orange
	To Heat Contactor		8	24VAC Out	24VAC	Orange
	To Hood Relay		9	12VDC Out	12VDC	Yellow
			10			Yellow
			11			Brown
			14			Blue
			16			Blue
	Left SIB Jumper		17	Ground -		Black
	Left SIB Jumper		18	5VDC Out	5VDC	Black
		20			Orange	
J2	Not Used					
J3	ATO Probe	8263286	1	Ground		Yellow
			2	RTD		Red
			3			
J6	Controller		1	C-BUS +	5VDC	
			2	C-BUS -	5VDC	
			3	5VDC	5VDC	
			4	RS485 -	5VDC	
			5	RS485 +	5VDC	
			6	Signal Ground		
			7	12VDC	12VDC	
			8	Signal Ground		
J7	C-Bus Harness	8075549 or 8075551	1	5VDC+	+5VDC	
			2	CAN High		
			3	CAN Low		
			4	Ground		
J8	C-Bus Harness or Network Resistor (pins 2 & 3)	8075549 or 8075551 or (8075632 Resistor)	1	5VDC+	+5VDC	
			2	CAN High		
			3	CAN Low		
			4	Ground		
J9	P-Bus Power Communication from SIB to VIB or between SIB's RJ11	8075553	1	Ground		
			2	P-BUS power	+5VDC	
			3	Modbus RS485 B		
			4	Modbus RS485 A		
			5	Signal ground		
			6	P-BUS power	+12VDC	
J10	P-Bus Power Communication from SIB to VIB or between SIB's RJ11	8075555	1	Ground		
			2	P-BUS power	+5VDC	
			3	Modbus RS485 B		
			4	Modbus RS485 A		
			5	Signal ground		
			6	P-BUS power	+12VDC	
J11	Cooking Probe	8263450	1	Ground		Yellow
			2	Probe		Red

Touchscreen-Equipped Fryers

McD_T Gas SIB (Smart Interface Board) Pin Positions and Harnesses

NOTE: DO NOT CHECK WITH HARNESES UNPLUGGED (except ATO and Temp Probes) AS SHORTING THE PINS MAY OCCUR WHICH WILL DAMAGE THE BOARD.

Connector	From/To	Harness #	Pin #	Function	Voltage	Wire Color
J1	From Transformer	8076364 Full 8076365 Split	1	24VAC Input	24VAC	Orange
			2	Ground -		Blue
	To High Limit		3	24VAC Out	24VAC	Orange
	From High Limit		4	24VAC Input	24VAC	Blue
	To Hood Relay		9	12VDC Out	12VDC	Yellow
			10			Yellow
			11			Brown
			12			Brown
	Left SIB Jumper		17	Ground -		Gray
	Left SIB Jumper		18	5VDC Out	5VDC	Gray
J2	To 24VAC Rt Ignition Module		1	24VAC Out	24VAC	Orange
	From 24VAC Right Ign Module		2	Ground		Green
	From Right Ignition Module		3	Alarm In	24VAC	Yellow
	From Right Module Gas Valve		4	24VAC In	24VAC	Orange
	To Air Switch		5	24VAC Out	24VAC	Orange
	From Air Switch		6	2VAC In	24VAC	Blue
	To 24VAC Left Ignition Module		12	24VAC Out	24VAC	Red
	From 24VAC Left Ign Module		13	Ground		Green
	From Left Module Gas Valve		14	24VAC In	24VAC	Orange
	To AC Blower Relay		21	AC Blower Relay	-12VDC	Brown
To AC Blower Relay		22	AC Blower Relay	+12VDC	Yellow	
J3	ATO Probe	8263286	1	Ground		Yellow
			2	RTD		Red
			3			
J6	Controller		1	C-BUS +	5VDC	
			2	C-BUS -	5VDC	
			3	5VDC	5VDC	
			4	RS485 -	5VDC	
			5	RS485 +	5VDC	
			6	Signal Ground		
			7	12VDC	12VDC	
			8	Signal Ground		
J7	C-Bus Harness	8075549 or 8075551	1	5VDC+	+5VDC	
			2	CAN High		
			3	CAN Low		
			4	Ground		
J8	C-Bus Harness or Network Resistor (pins 2 & 3)	8075549 or 8075551 or (8075632 Resistor)	1	5VDC+	+5VDC	
			2	CAN High		
			3	CAN Low		
			4	Ground		
J9	P-Bus Power Communication from SIB to VIB or between SIB's RJ11	8075555 or 8075553	1	Ground		
			2	P-BUS power	+5VDC	
			3	Modbus RS485 B		
			4	Modbus RS485 A		
			5	Signal ground		
			6	P-BUS power	+12VDC	
J10	P-Bus Power Communication from SIB to VIB or between SIB's RJ11	8075555 or 8075553	1	Ground		
			2	P-BUS power	+5VDC	
			3	Modbus RS485 B		
			4	Modbus RS485 A		
			5	Signal ground		
			6	P-BUS power	+12VDC	
J11	Cooking Probe	8263285	1	Ground		Yellow
			2	Probe		Red

Touchscreen-Equipped Fryers

FQ_T Gas SIB (Smart Interface Board) Pin Positions and Harnesses

NOTE: DO NOT CHECK WITH HARNESSES UNPLUGGED (except ATO and Temp Probes) AS SHORTING THE PINS MAY OCCUR WHICH WILL DAMAGE THE BOARD.

Connector	From/To	Harness #	Pin #	Function	Voltage	Wire Color
J1	From Transformer	8076243 Full without OIB 8196364 Full with OIB 8076244 Split without OIB 8076365 Split with OIB	1	24VAC Input	24VAC	Orange
			2	Ground -		Blue
	To High Limit		3	24VAC Out	24VAC	Orange
	From High Limit		4	24VAC Input	24VAC	Blue
	From Basket Lift V-Relay		10	12VDC Input	12VDC	Yellow
	To Right Basket Lift		11	12VDC Out	12VDC	Brown
	To Left Basket Lift		12	12VDC Out	12VDC	Brown
	Left SIB Jumper		17	Ground -		Gray
	Left SIB Jumper		18	5VDC Out	5VDC	Gray
J2	To 24VAC Right Ignition Module		1	24VAC Out	24VAC	Orange
	From 24VAC Right Ignition Module		2	Ground		Green
	From Right Ignition Module		3	Alarm In	24VAC	Yellow
	From Right Module Gas Valve		4	24VAC Input	24VAC	Orange
	To Air Switch		5	24VAC Out	24VAC	Orange
	From Air Switch		6	2VAC Input	24VAC	Blue
	To 24VAC Left Ignition Module		12	24VAC Out	24VAC	Red
	From 24VAC Left Ignition Module		13	Ground		Green
	From Left Module Gas Valve		14	24VAC Input	24VAC	Orange
To AC Blower Relay		21	AC Blower Relay	-12VDC	Brown	
To AC Blower Relay		22	AC Blower Relay	+12VDC	Yellow	
J3	ATO Probe	8263286	1	Ground		Yellow
			2	RTD		Red
			3			
J6	From Controller		1	C-BUS +	5VDC	
			2	C-BUS -	5VDC	
			3	5VDC	5VDC	
			4	RS485 -	5VDC	
			5	RS485 +	5VDC	
			6	Signal Ground		
			7	12VDC	12VDC	
			8	Signal Ground		
J7	C-Bus Harness	8075549 or 8075551	1	5VDC+	+5VDC	
			2	CAN High		
			3	CAN Low		
			4	Ground		
J8	C-Bus Harness or Network Resistor (pins 2 & 3)	8075549 or 8075551 or (8075632 Resistor)	1	5VDC+	+5VDC	
			2	CAN High		
			3	CAN Low		
			4	Ground		
J9	P-Bus Power Communication from SIB to VIB or between SIB's RJ11	8075555 or 8075553	1	Ground		
			2	P-BUS power	+5VDC	
			3	Modbus RS485 B		
			4	Modbus RS485 A		
			5	Signal ground		
			6	P-BUS power	+12VDC	
J10	P-Bus Power Communication from SIB to VIB or between SIB's RJ11	8075555 or 8075553	1	Ground		
			2	P-BUS power	+5VDC	
			3	Modbus RS485 B		
			4	Modbus RS485 A		
			5	Signal ground		
			6	P-BUS power	+12VDC	
J11	Cooking Probe	8263285	1	Ground		Yellow
			2	Probe		Red

Touchscreen-Equipped Fryers

McD_T/FQ_T Electric VIB (Valve Interface Board) Actuator Board Pin Positions and Harnesses

NOTE: DO NOT CHECK WITH HARNESES UNPLUGGED AS SHORTING THE PINS MAY OCCUR WHICH WILL DAMAGE THE BOARD.

Connector	From/To	Harness PN	Pin #	Function	Voltage	Wire Color
J1	VIB (AIF) Probes	1087136 Full VIB 1087137 Split VIB 8263287 VIB (AIF) Probe Only	1	Right VIB Probe Ground	Ohm	Yellow
			2	Right VIB Probe		Red
			3	Left VIB Probe Ground		Yellow
			4	Left VIB Probe		Red
			5			
			6			
			7			
			8			
			9			
			10			
			11			
			12			
			13	Ground		
			14	24VDC +		24VDC
J2	P-Bus Power Communication from SIB (RJ11)	8075555	1	Ground		
			2	P-BUS power	+5VDC	
			3	Modbus RS485 B		
			4	Modbus RS485 A		
			5	Signal ground		
			6	P-BUS power	+12VDC	
J3	24VDC Power Input between VIB Boards (RJ45)	8075810	1	Ground		
			2	Ground		
			3	Ground		
			4	Ground		
			5	Power	+24VDC	
			6	Power	+24VDC	
			7	Power	+24VDC	
			8	Power	+24VDC	
J4	24VDC Power Output between VIB Boards (RJ45)	8075810	1	Ground		
			2	Ground		
			3	Ground		
			4	Ground		
			5	Power	+24VDC	
			6	Power	+24VDC	
			7	Power	+24VDC	
			8	Power	+24VDC	
J5	FV (Right) Drain		1	Drain + (Open)	+24VDC	Black
			2	Drain - (Closed)	-24VDC	Red
			3	Drain Position		Blue
			4	Ground		White
J6	DV (Left) Drain		1	Drain + (Open)	+24VDC	Black
			2	Drain - (Closed)	-24VDC	Red
			3	Drain Position		Blue
			4	Ground		White
J7	FV (Right) Return		1	Ret + (Open)	+24VDC	Black
			2	Ret - (Closed)	-24VDC	Red
			3	Ret Position		Blue
			4	Ground		White
J8	DV (Left) Return		1	Ret + (Open)	+24VDC	Black
			2	Ret - (Closed)	-24VDC	Red
			3	Ret Position		Blue
			4	Ground		White

Touchscreen-Equipped Fryers

McD_T/FQ_T Gas VIB (Valve Interface Board) Actuator Board Pin Positions & Harnesses

NOTE: DO NOT CHECK WITH HARNESSES UNPLUGGED AS SHORTING THE PINS MAY OCCUR WHICH WILL DAMAGE THE BOARD.

Connector	From/To	Harness PN	Pin #	Function	Voltage	Wire Color
J1	VIB (AIF) Probes, OIB Probes	1086013 Full VIB 1086014 Split VIB 8263287 VIB (AIF) Probe Only	1	Right VIB Probe Ground	Ohm	Yellow
			2	Right VIB Probe		Red
			3	Left VIB Probe Ground		Yellow
			4	Left VIB Probe		Red
			5	Right OIB Ground		Green
			6	Right OIB Probe		White
			7	Left OIB Ground		Green
			8	Left OIB Probe		White
			9	Right OIB Relay +	24VDC	Red
			10	Right OIB Relay -	24VDC	Black
			11	Left OIB Relay +		Red
			12	Left OIB Relay -		Black
			13	Ground		
			14	24VDC +	24VDC	
J2	P-Bus Power Communication from SIB (RJ11)	8075555	1	Ground		
			2	P-BUS power	+5VDC	
			3	Modbus RS485 B		
			4	Modbus RS485 A		
			5	Signal ground		
			6	P-BUS power	+12VDC	
J3	24VDC Power Input between VIB Boards (RJ45)	8075810	1	Ground		
			2	Ground		
			3	Ground		
			4	Ground		
			5	Power	+24VDC	
			6	Power	+24VDC	
			7	Power	+24VDC	
			8	Power	+24VDC	
J4	24VDC Power Output between VIB Boards (RJ45)	8075810	1	Ground		
			2	Ground		
			3	Ground		
			4	Ground		
			5	Power	+24VDC	
			6	Power	+24VDC	
			7	Power	+24VDC	
			8	Power	+24VDC	
J5	FV (Right) Drain		1	Drain + (Open)	+24VDC	Black
			2	Drain - (Closed)	-24VDC	Red
			3	Drain Position		Blue
			4	Ground		White
J6	DV (Left) Drain		1	Drain + (Open)	+24VDC	Black
			2	Drain - (Closed)	-24VDC	Red
			3	Drain Position		Blue
			4	Ground		White
J7	FV (Right) Return		1	Ret + (Open)	+24VDC	Black
			2	Ret - (Closed)	-24VDC	Red
			3	Ret Position		Blue
			4	Ground		White
J8	DV (Left) Return		1	Ret + (Open)	+24VDC	Black
			2	Ret - (Closed)	-24VDC	Red
			3	Ret Position		Blue
			4	Ground		White

Touchscreen-Equipped Fryers

McD_T/FQ_T Gas/Electric FIB (Filter Interface Board) Filtration & Top-off Pin Positions & Harnesses

NOTE: DO NOT CHECK WITH HARNESSES UNPLUGGED AS SHORTING THE PINS MAY OCCUR WHICH WILL DAMAGE THE BOARD.

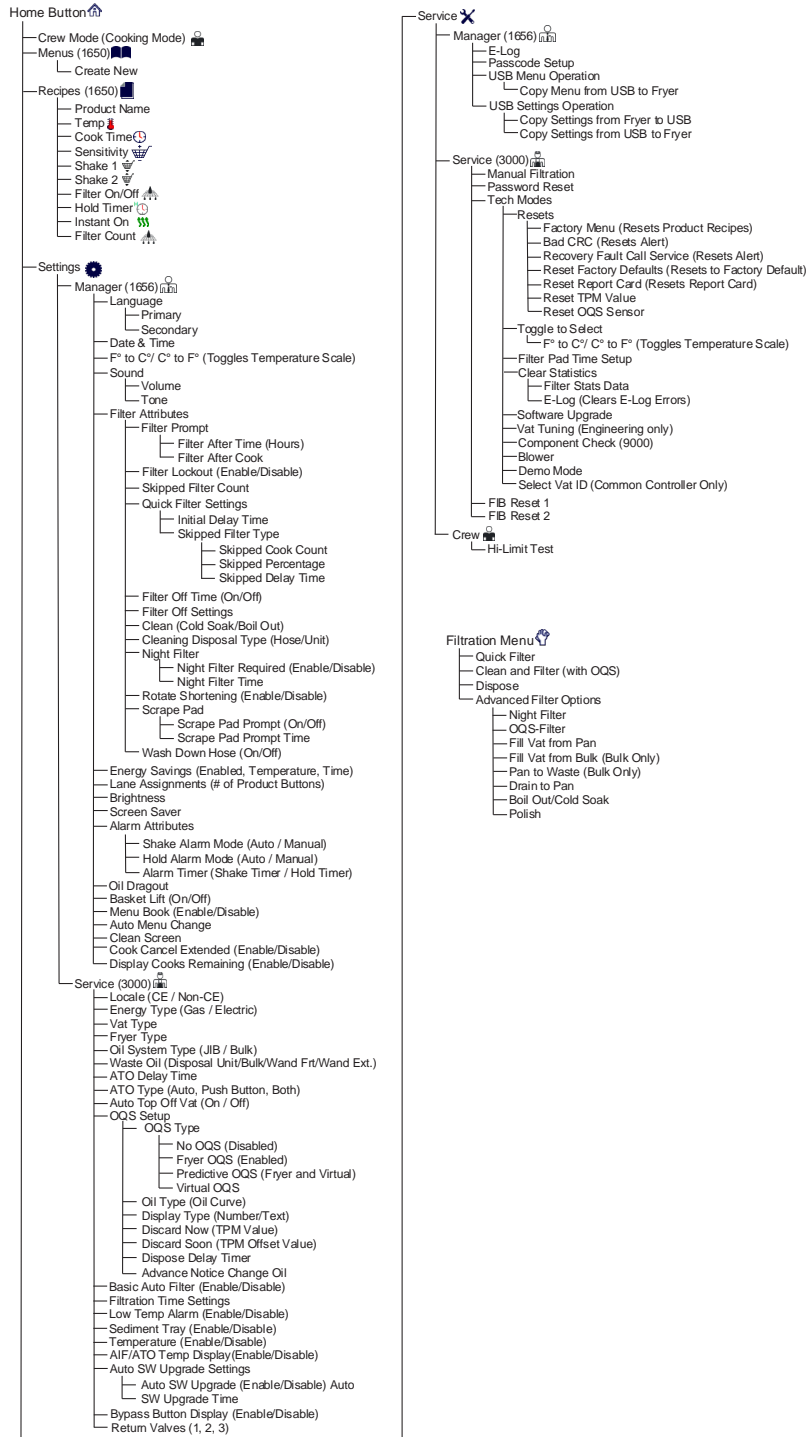
Connector	From/To	Harness #	Pin #	Function	Voltage	Wire Color		
J1	Input from Power Supply	8076240	1	Ground -		Brown		
			2	24VDC Input	+24VDC	Purple		
			3	Ground -		Brown		
			4	24VDC Input	+24VDC	Purple		
	JIB Reset Switch		5	Ground -		3.3VDC	Black	
			6	JIB Low Reset		3.3VDC	Red	
	Filter Pump Relay		9	Pump Motor +		24VDC	Purple	
			10	Pump Motor -		24VDC	Brown	
	Pan Switch		13	Pan Sw Ground -		3.3VDC	Red	
			14	Pan Sw +		3.3VDC	Red	
	ATO Pump Relay		15	Pump Relay Ground -		24VDC	Purple	
			16	ATO Pump Relay		24VDC	Brown	
	Input from 24VAC Transformer		17	24VAC		24VAC	Orange	
			18	24VAC Ret		24VAC	Blue	
	To RTI JIB Add Solenoid		19	24VAC		24VAC	Black	
			20	24VAC Ret		24VAC	Black	
	RTI connector rear of fryer		21	From RTI transformer (1 on Hirschman)		24VAC	Orange	
			22	Common (Ret) (4 on Hirschman)			Blue	
			23	To RTI Fresh Oil Relay (3 on Hirschman)		24VAC	Orange	
			24	From RTI "Waste Tank Full Sensor" Test Pins 22 to 24 (1 to 4 on Hirschman)		24VAC - Full 0VAC - Not Full	Orange	
	Waste Closed Switch		25	Closed Switch +		3.3VDC	Black	
			26	Closed Switch Ground -		3.3VDC	Black	
	Waste Open Switch		27	Open Switch +		3.3VDC	Black	
			28	Open Switch Ground -		3.3VDC	Black	
	Filter Pump Relay Contact Signal When Pump Is On		29	Filter Pump On Contact				
			30	Filter Pump On Contact				
	J2		24VDC Power Output from FIB to Far-Right VIB Board (RJ45)	8075810	1	Ground		
					2	Ground		
					3	Ground		
					4	Ground		
5		Power			+24VDC			
6		Power			+24VDC			
7		Power			+24VDC			
8		Power			+24VDC			
J3	C-Bus from Far-Right SIB Board (RJ11)	8075551	1	5VDC	+5VDC			
			2	CAN High				
			3	CAN Low				
			4	Ground				
J4	C-Bus or Network Resistor (pins 2 & 3) (RJ11)	(8075632 resistor)	1	5VDC+	+5VDC			
			2	CAN High				
			3	CAN Low				
			4	Ground				

Touchscreen-Equipped Fryers

FQE30-T ELECTRIC FILTERQUICK & FQG30-T/FQGLA30 FILTERQUICK GAS FRYERS

FQ4000 Menu Tree General Market (Non-Taco Bell)

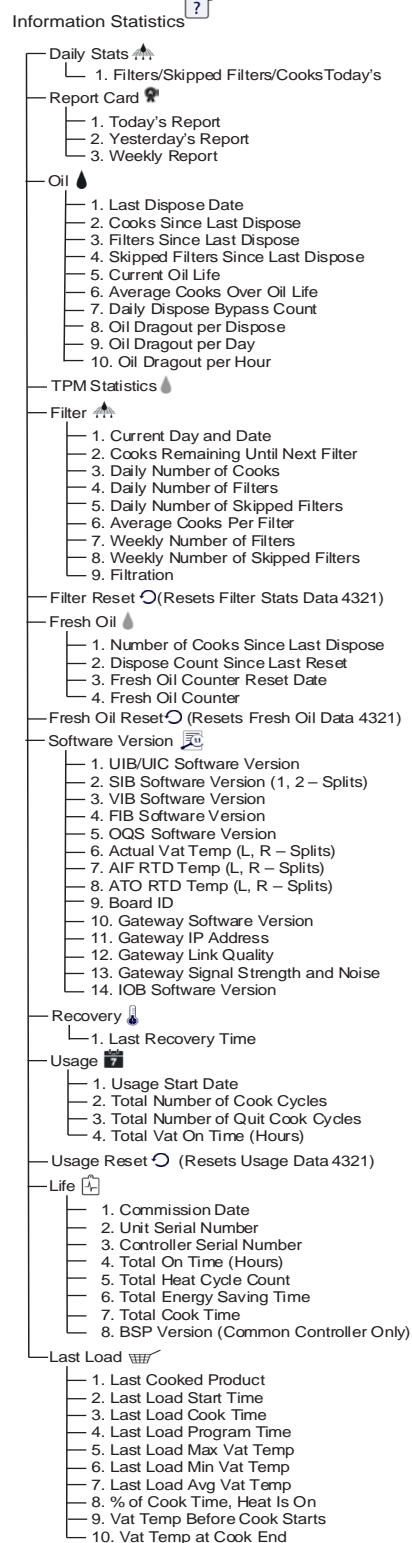
Reflected below are the major programming sections in the FQ4000 and the order in which the headings will be found in the controller.



Touchscreen-Equipped Fryers

FQ4000 Information Statistics Menu Tree General Market/Burger King (Non-Taco Bell)

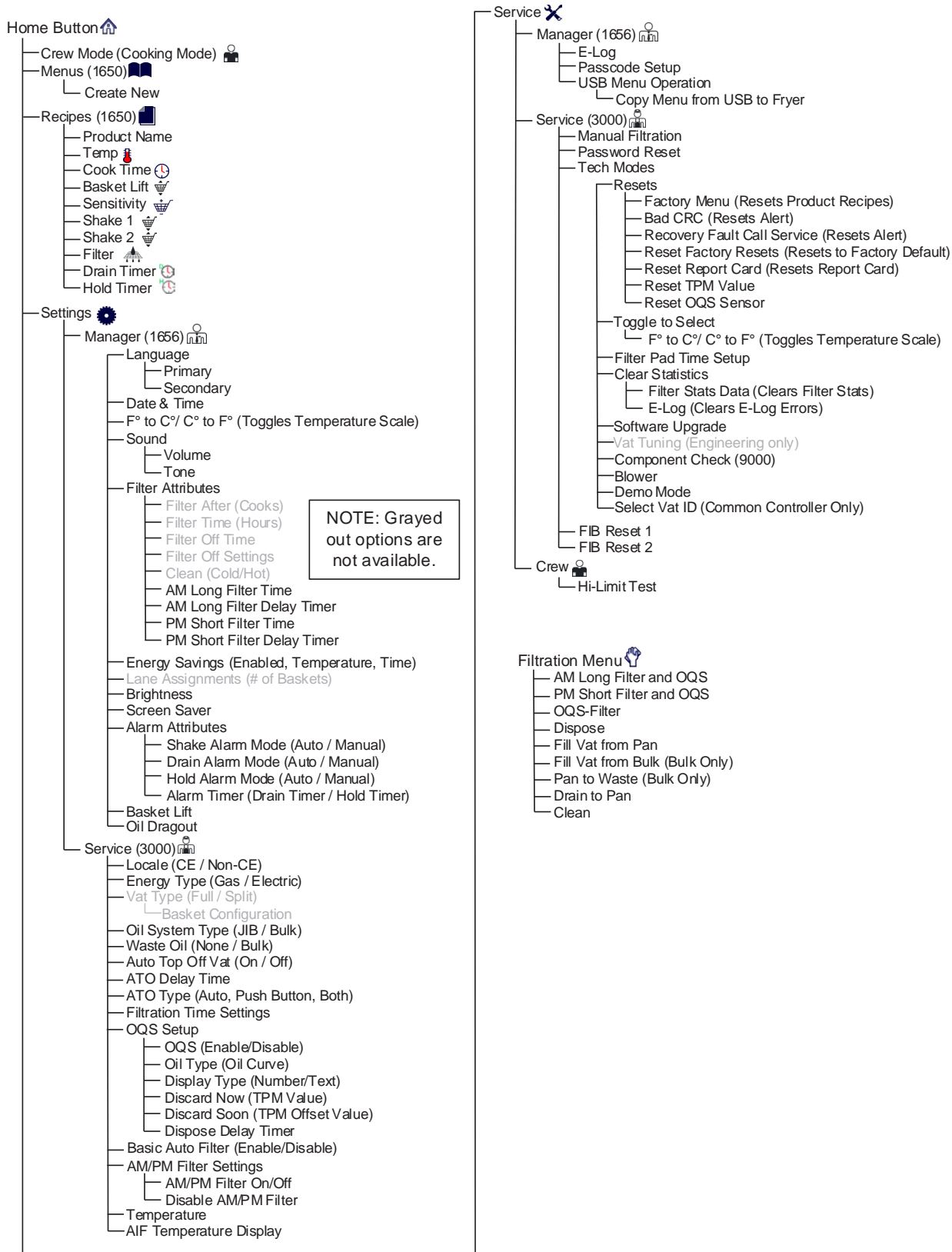
Reflected below are the information statistics in the FQ4000 and the order in which the headings will be found in the controller.



Touchscreen-Equipped Fryers

FQ4000 Menu Tree Taco Bell

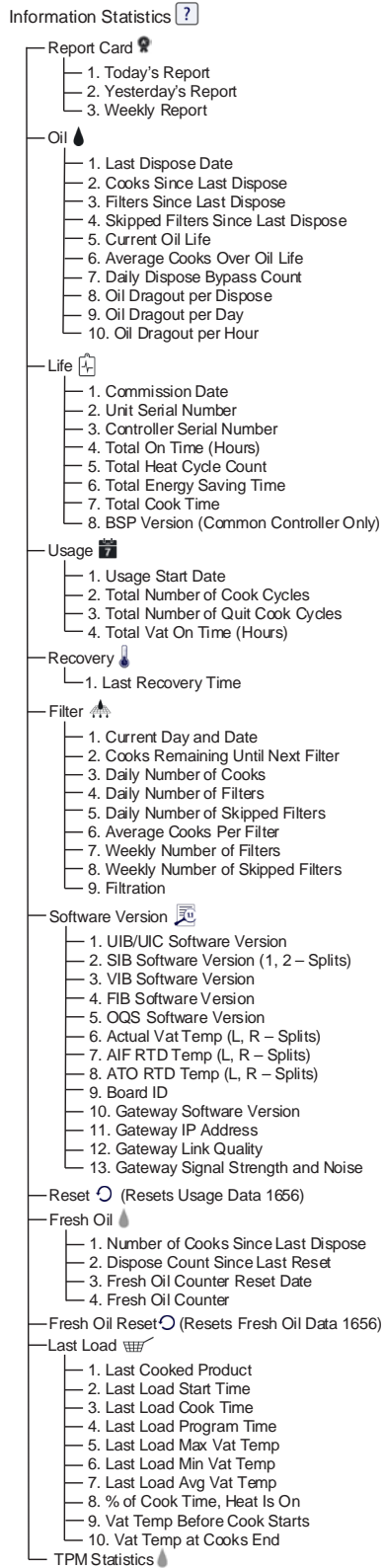
Reflected below are the major programming sections in the FQ4000 and the order in which the headings will be found in the controller.



Touchscreen-Equipped Fryers

FQ4000 Information Statistics Menu Tree Taco Bell

Reflected below are the information statistics in the FQ4000 and the order in which the headings will be found in the controller.



Touchscreen-Equipped Fryers














FQ4000 FS Menu Tree Whataburger

Reflected below are the major programming sections in the FQ4000 and the order in which the headings will be found in the controller.




Filtration Menu

- Quick Filter
- Clean and Filter (with OQS – OQS Only)
- OQS Filter (OQS Only)
- Dispose Oil
- Drain Oil
- Fill Vat from Drain Pan
- Fill Vat from Bulk (Bulk Only)
- Oil Pan to Waste (Bulk Only)
- Boil Out

Home Button

- Crew Mode (Cooking Mode) 
- Menus (1650) 
 - Create New
- Recipes (1650) 
 - Product Name
 - Temp 
 - Cook Time 
 - Load Size 
 - Quality Timer 
 - Shake 1 
 - Shake 2 
 - Filter 
- Settings 
 - Manager (1656) 
 - Language
 - Primary
 - Secondary
 - Date & Time (Set Time, Set Date, DST Setup)
 - F° to C° / C° to F° (Toggles Temperature Scale)
 - Sound
 - Volume
 - Tone
 - Filter Attributes
 - Filter After (Cooks)
 - Filter Time (Hours)
 - Filter Lockout
 - Filtration Lockout Time
 - Energy Savings (Enabled, Temperature, Time)
 - Lane Assignments (# of Baskets)
 - Brightness
 - Screen Saver
 - Service (3000) 
 - Locale (CE / Non-CE/Japan)
 - Energy Type (Gas / Electric)
 - Vat Type (Full / Split)
 - Basket Configuration
 - Oil System Type (JIB / Bulk)
 - Waste Oil (None / Bulk/Front Dispose)
 - Auto Top Off Vat (On/Off/(User Prompted Top Off (Jpn only)))
 - User Prompted Top Off Timer (Jpn only)
 - ATO Delay Time
 - Filtration Time Settings
 - Filtration Type (Solid / Liquid) (Gas only)
 - OQS Setup
 - OQS (Enable/Disable)
 - Oil Type (Oil Curve)
 - Display Type (Number/Text)
 - Discard Now (TPM Value)
 - Discard Soon (TPM Offset Value)
 - Dispose Delay Timer
 - Temperature Display (Enable,Disable)
 - AIF/ATO Temp Display (Enable,Disable)

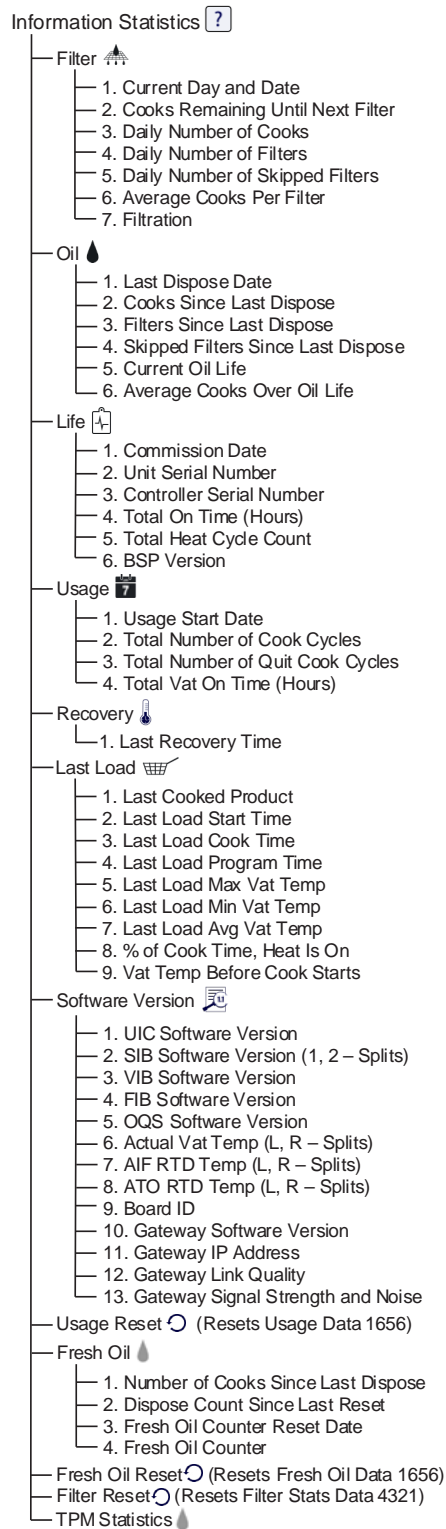
Service

- Manager (1656) 
 - E-Log
 - Passcode Setup
 - USB Menu Operation
 - Copy Menu from USB to Fryer
 - Copy Menu from Fryer to USB
- Service (3000) 
 - Manual Filtration
 - Password Reset
 - Tech Modes
 - Resets
 - Factory Menu (Resets Product Recipes)
 - Bad CRC (Resets Alert)
 - Recovery Fault Call Service (Resets Alert)
 - Reset Factory Default (Resets to Factory Default)
 - Reset OQS Sensor
 - OQS Replacement Prompt (Enable/Disable)
 - Reset OQS Sensor (Reset OQS after Replacement)
 - Reset TPM Value (Resets TPM Value to 1)
 - Toggle to Select
 - F° to C° / C° to F° (Toggles Temperature Scale)
 - Filter Pad Time Setup
 - Clear Statistics
 - Filter Stats Data (Clears Filter Stats)
 - E-Log (Clears E-Log Errors)
 - Software Upgrade
 - Vat Tuning (Engineering only)
 - Component Check (9000)
 - Blower
 - Demo Mode
 - Select Vat ID (Common Controller Only)
 - FIB Reset 1
 - FIB Reset 2
- Crew 
 - Hi-Limit Test

Touchscreen-Equipped Fryers

FQ4000 FS Information Statistics Menu Tree Whataburger

Reflected below are the information statistics in the FQ4000 and the order in which the headings will be found in the controller.

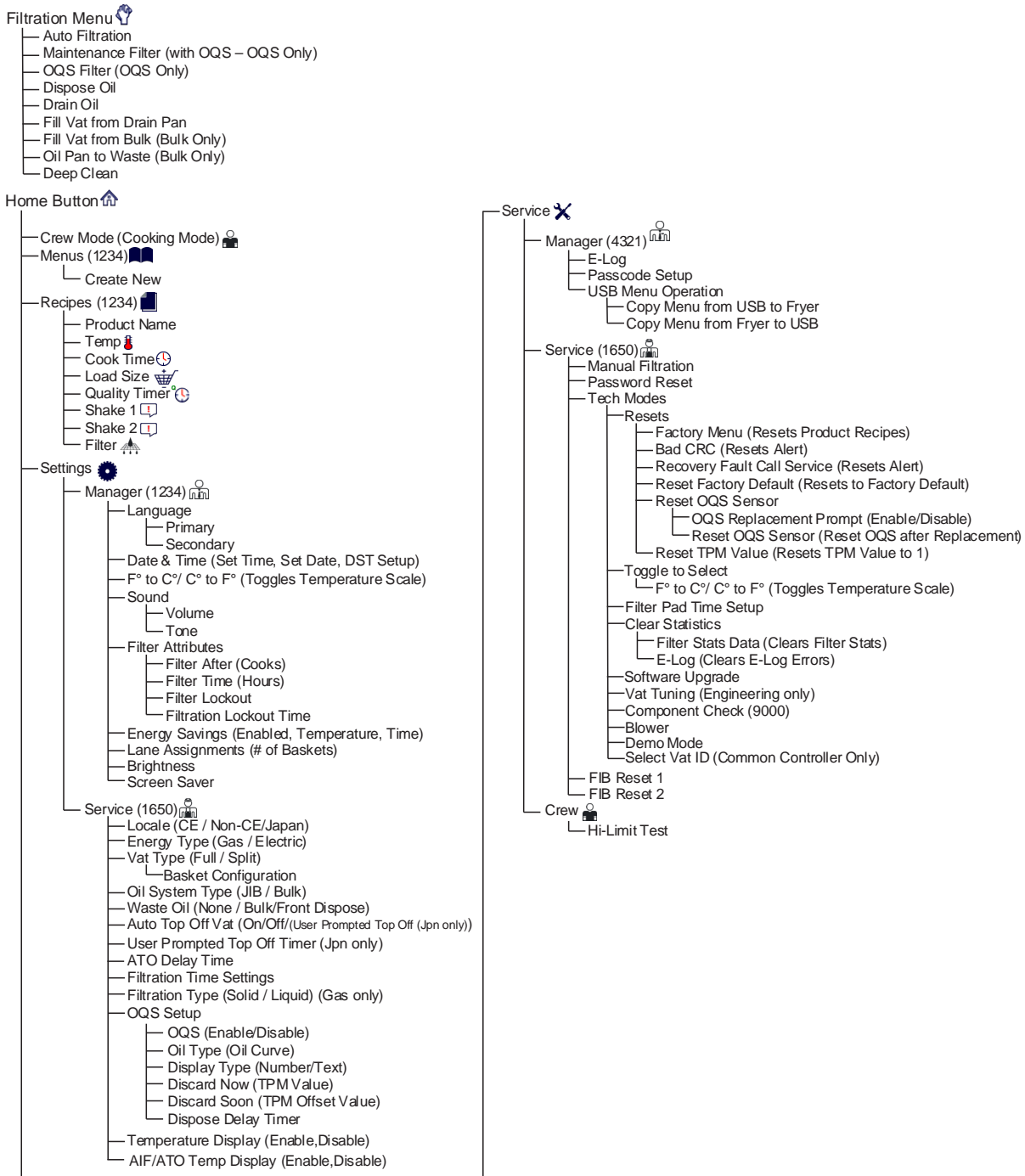


McDonalds BIELA14-T ELECTRIC & BIGLA30-T GAS LOV™ TOUCH FRYERS

M4000 Menu Summary Trees

M4000 Menu Tree

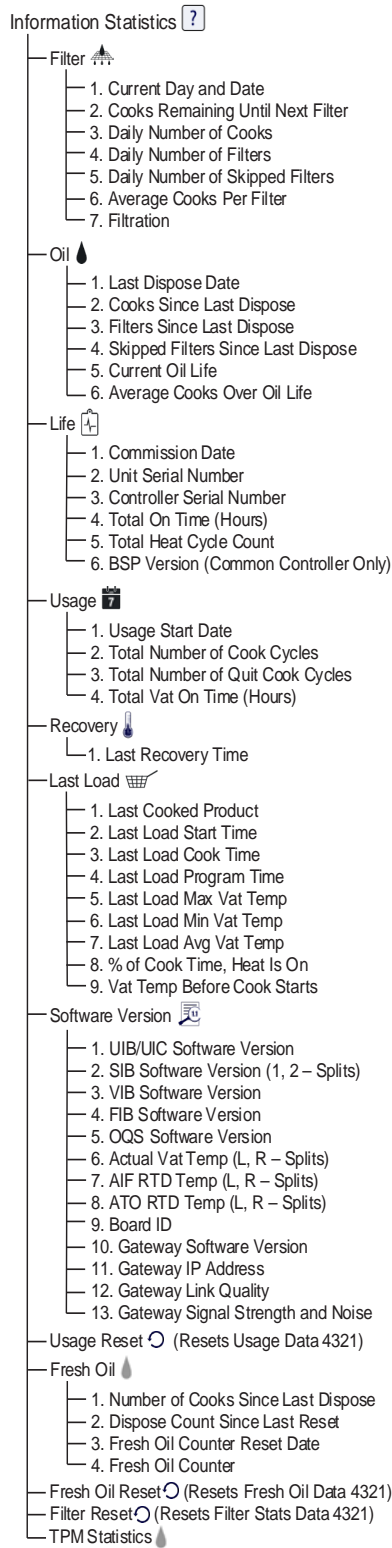
Reflected below are the major programming sections in the M4000 and the order in which the headings will be found in the controller.



Touchscreen-Equipped Fryers

M4000 Information Statistics Menu Tree

Reflected below are the information statistics in the M4000 and the order in which the headings will be found in the controller.



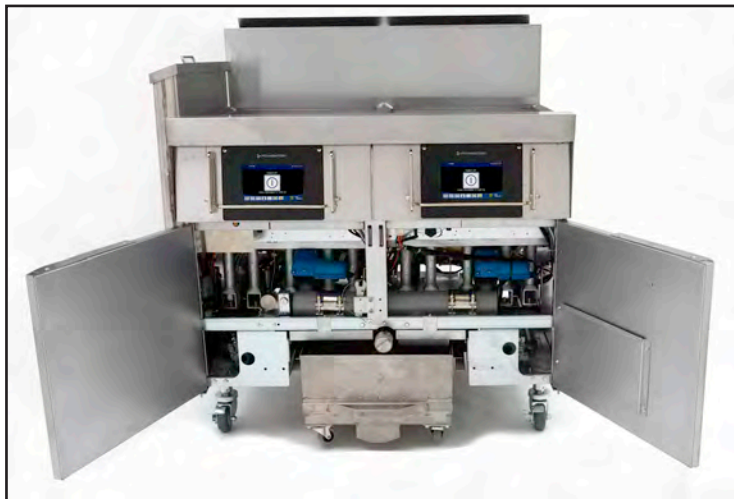
Chapter 6: Large-Capacity FilterQuick Touch



3FQG120T



1FQG60T/80T



2FQG60T/80T



1FQE60T/80T



3FQE60T/80T

Large-Capacity Touchscreen-Equipped Fryers

Online Access to Large Capacity Touchscreen Fryer Manuals

Controller Manuals



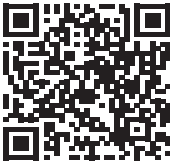
FilterQuick Touch FQ4000
FQ80/100/120 Controller



FilterQuick Touch FQ4000
Segmented Controller

Scan with QR-code reader/phone to access manuals. Cover adjacent QR-codes to retrieve desired manual.

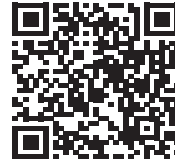
Gas Manuals



FilterQuick Touch FQG60T
(1814T) Gas IO



FilterQuick Touch FQG60T
(1814T) Gas Parts



FilterQuick Touch FQG60T
(1814T) Gas Service



FilterQuick Touch
FQG80T/100T/120T
Gas IO



FilterQuick Touch
FQG80T/100T/120T
Gas Parts



FilterQuick Touch
FQG80T/100T/120T
Gas Service

Electric Manuals



FilterQuick Touch
FQE60U/1814E
Electric IO



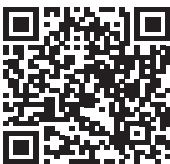
FilterQuick Touch
FQE60U/1814E
Electric Parts



FilterQuick Touch
FQE60U/1814E
Electric Service



FilterQuick Touch
FQE60U/1814E
Electric Wiring



FilterQuick Touch
FQE80U
Electric IO



FilterQuick Touch
FQE80U
Electric Parts



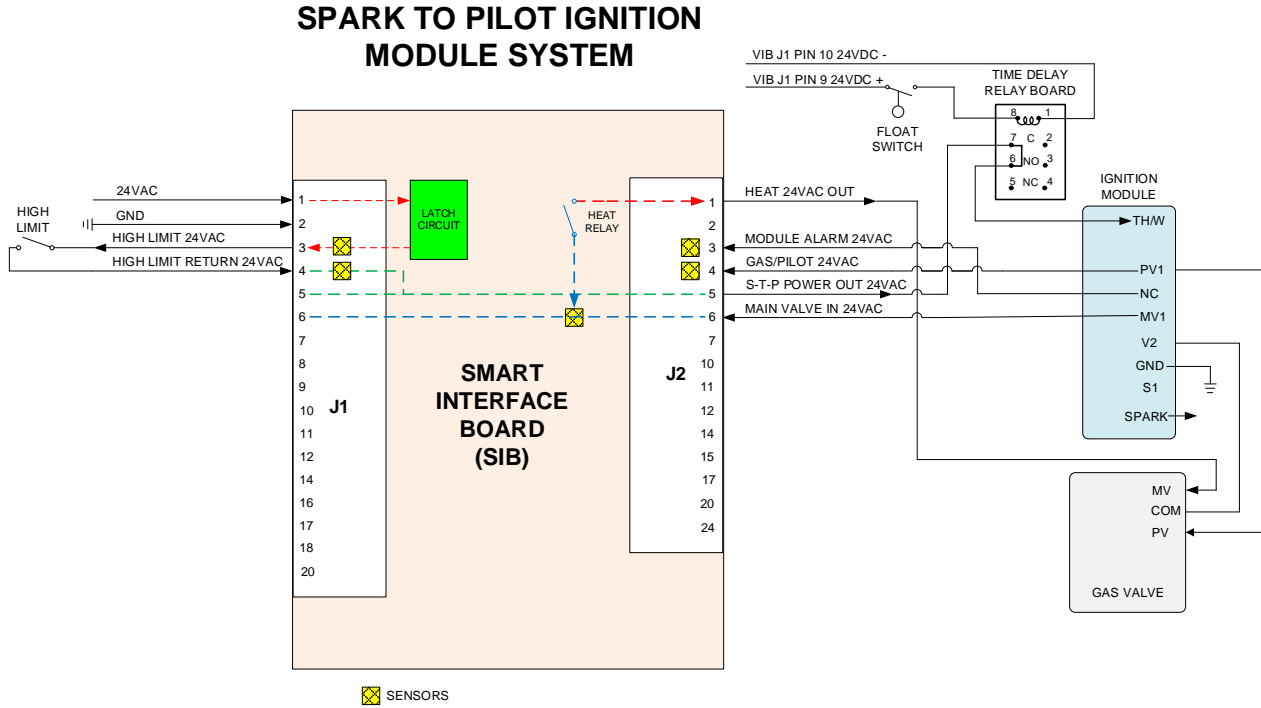
FilterQuick Touch
FQE80U
Electric Service



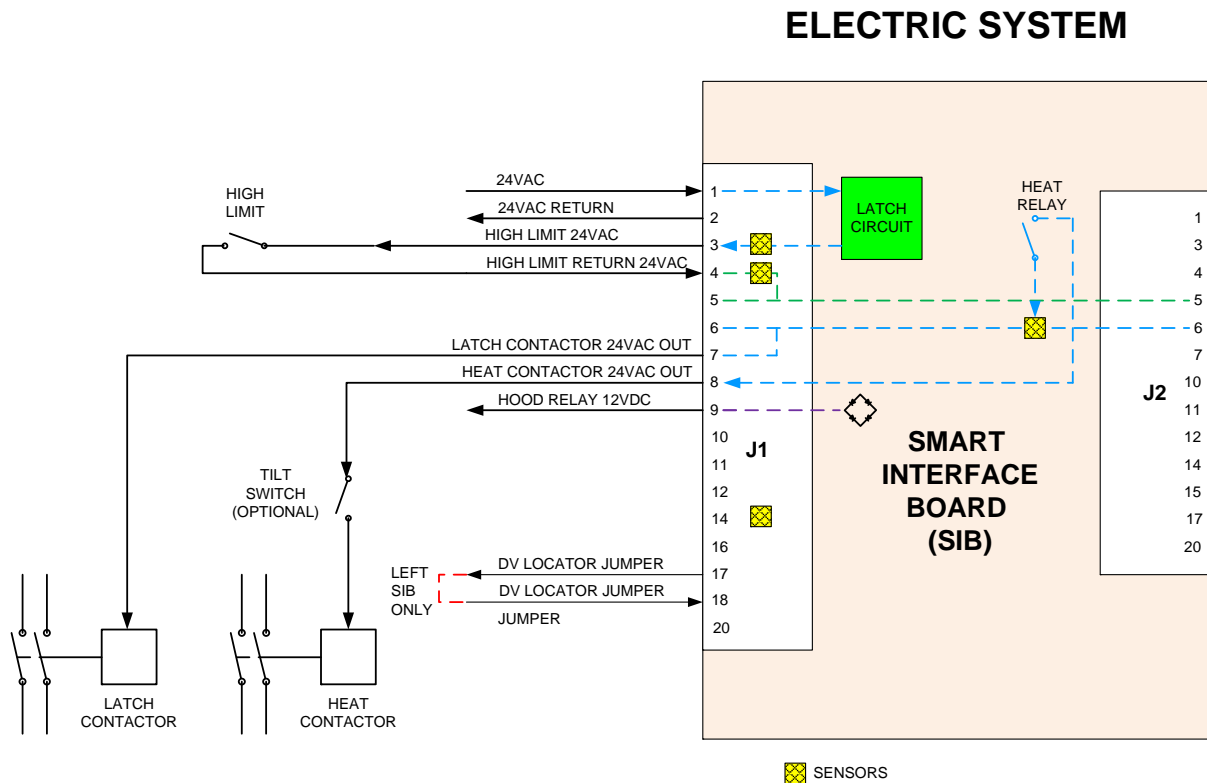
FilterQuick Touch
FQE80U
Electric Wiring

Large-Capacity Touchscreen-Equipped Fryers

Gas System Flow through the SIB board



Electric System Flow through the SIB Board



Large-Capacity Touchscreen-Equipped Fryers

How the Gas Fryer Works

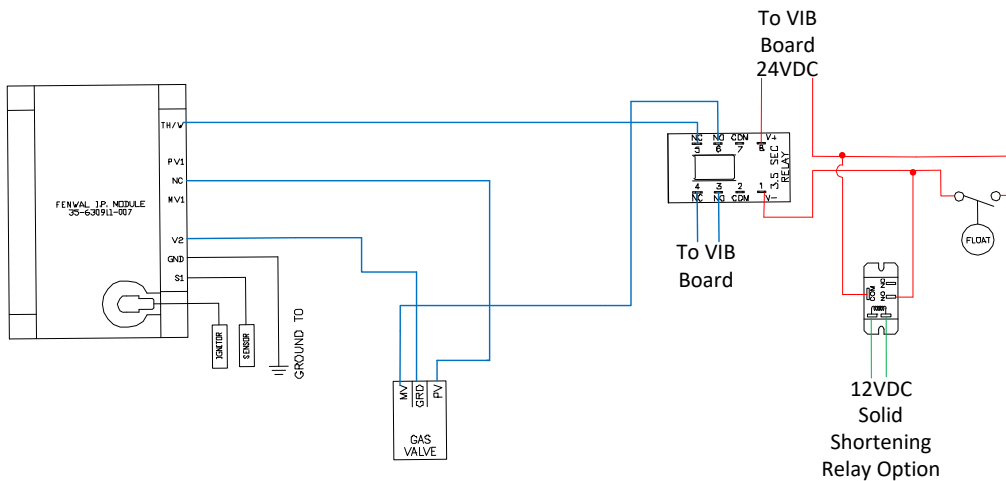
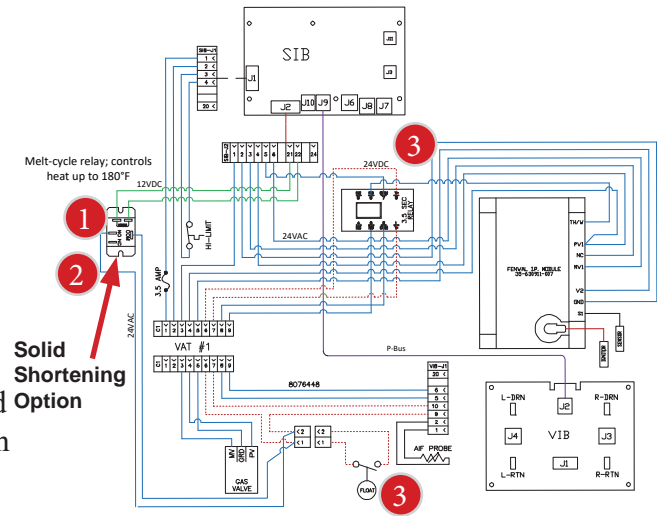
1 On startup, the heat relay closes and the fryer enters a melt cycle, switching heat on and off through a 12-VDC relay, until the oil reaches 180°F.

2 At 180°F, the relay that bypasses the float switch turns off.

3 The float switch circuit now controls the fryer's heating. When the time delay relay on the float switch circuit closes with DC voltage, 24VAC to the ignition module is delayed 3.5 seconds, which ensures the float switch is closed and stable — not moving, switching on and off in oil clogged with un-melted shortening.

— If the float switch is not closed, the fryer will not heat past 180°F.

— With a closed float switch, the fryer enters full burn to setpoint.

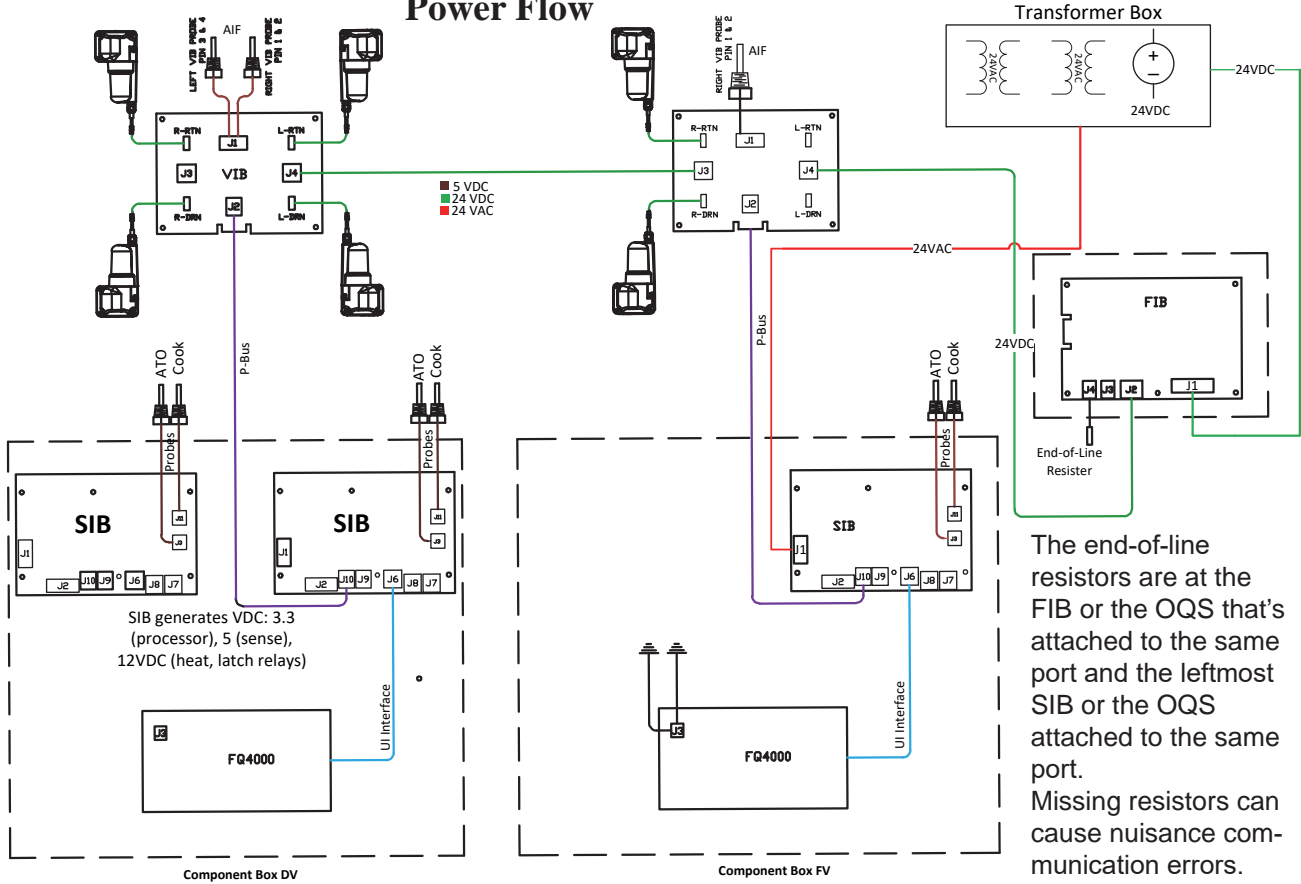


A simplified diagram of the float switch/oil-is-back circuit on the FQG60T/80T/100T/120T.

NOTE: Power on relay coils and return/ground must be applied to activate.

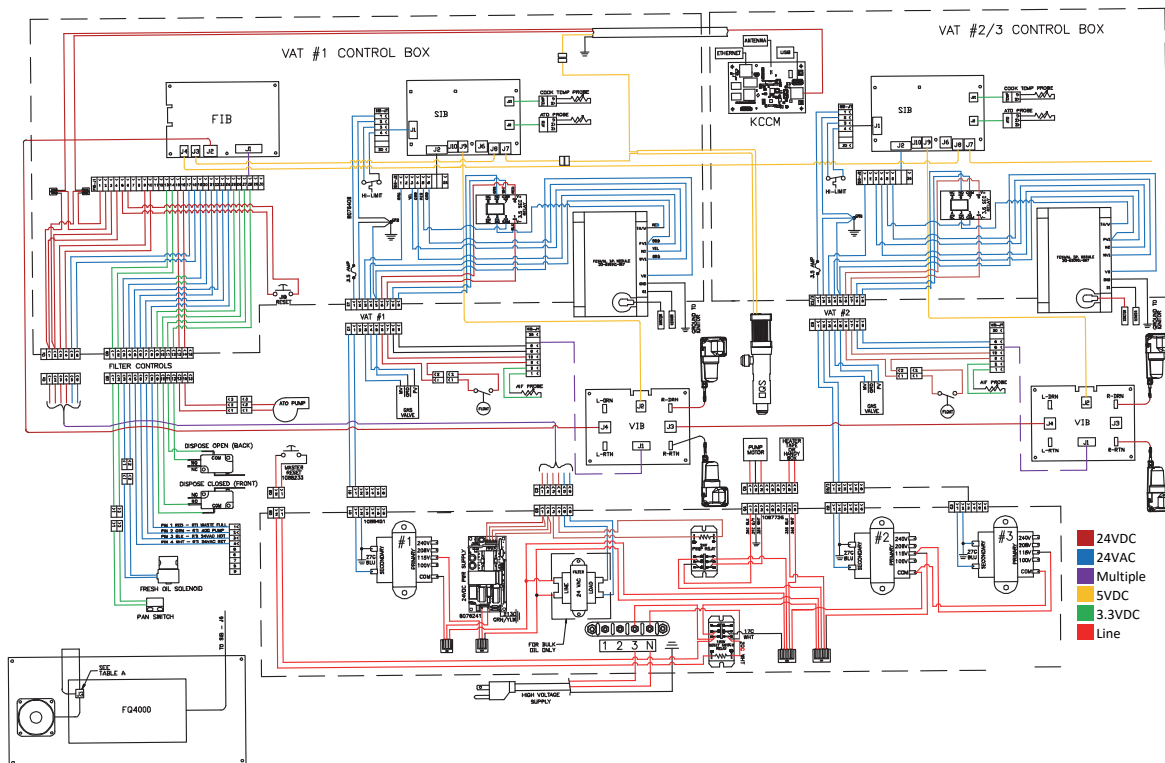
Large-Capacity Touchscreen-Equipped Fryers

Power Flow



The end-of-line resistors are at the FIB or the OQS that's attached to the same port and the leftmost SIB or the OQS attached to the same port. Missing resistors can cause nuisance communication errors.

Gas Wiring Diagram



Large-Capacity Touchscreen-Equipped Fryers

Circuit Board Pin Outs

FQE60/FQE80E Touch SIB (Smart Interface Board) Pin Positions and Harnesses

NOTE: DO NOT CHECK WITH HARNESSES UNPLUGGED (except ATO and Temp Probes) AS SHORTING THE PINS MAY OCCUR WHICH WILL DAMAGE THE BOARD.

Connector	From/To	Harness #	Pin #	Function	Voltage	Wire Color
J1	From Transformer	8075951	1	24VAC Input	24VAC	Orange
			2	Ground -		Blue
	To High Limit		3	24VAC Out	24VAC	Orange
	From High Limit		4	24VAC Input	24VAC	Blue
	To Latch Contactor		7	24VAC Out	24VAC	Orange
	To Heat Contactor		8	24VAC Out	24VAC	Orange
	To Hood Relay		9	12VDC Out	12VDC	Yellow
			10			Yellow
			11			Brown
			14			Blue
			16			Blue
			Left SIB Jumper	17	Ground -	
	Left SIB Jumper	18	5VDC Out	5VDC	Black	
		20			Orange	
J2	Not Used					
J3	ATO Probe	8263544	1	Ground		Yellow
			2	RTD	3.3VDC	Red
			3			
J6	Controller		1	C-BUS +	5VDC	
			2	C-BUS -	5VDC	
			3	5VDC	5VDC	
			4	RS485 -	5VDC	
			5	RS485 +	5VDC	
			6	Signal Ground		
			7	12VDC	12VDC	
			8	Signal Ground		
J7	C-Bus Harness	8075549	1	5VDC+	+5VDC	
			2	CAN High		
			3	CAN Low		
			4	Ground		
J8	C-Bus Harness or Network Resistor (pins 2 & 3)	8076106 (8075632 Resistor)	1	5VDC+	+5VDC	
			2	CAN High		
			3	CAN Low		
			4	Ground		
J9	P-Bus Power Communication from SIB to VIB or between SIB's RJ11	8075810	1	Ground		
			2	P-BUS power	+5VDC	
			3	Modbus RS485 B		
			4	Modbus RS485 A		
			5	Signal ground		
			6	P-BUS power	+12VDC	
J10	P-Bus Power Communication from SIB to VIB or between SIB's RJ11	8075555	1	Ground		
			2	P-BUS power	+5VDC	
			3	Modbus RS485 B		
			4	Modbus RS485 A		
			5	Signal ground		
			6	P-BUS power	+12VDC	
J11	Cooking Probe	8263605	1	Ground		Yellow
			2	Probe	3.3VDC	Red

Large-Capacity Touchscreen-Equipped Fryers

FQE60/FQE80 Touch VIB (Valve Interface Board) Actuator Board Pin Positions and Harnesses

NOTE: DO NOT CHECK WITH HARNESES UNPLUGGED AS SHORTING THE PINS MAY OCCUR WHICH WILL DAMAGE THE BOARD.

Connector	From/To	Harness PN	Pin #	Function	Voltage	Wire Color
J1	VIB (AIF) Probes	1087136 Harness 8263287 VIB (AIF) Probe Only	1	VIB Probe Ground	Ohm	Yellow
			2	VIB Probe		Red
			3			
			4			
			5			
			6			
			7			
			8			
			9			
			10			
			11			
			12			
			13	Ground		
			14	24VDC +	24VDC	
J2	P-Bus Power Communication from SIB (RJ11)	8075555	1	Ground		
			2	P-BUS power	+5VDC	
			3	Modbus RS485 B		
			4	Modbus RS485 A		
			5	Signal ground		
			6	P-BUS power	+12VDC	
J3	24VDC Power Input between VIB Boards (RJ45)	8075810	1	Ground		
			2	Ground		
			3	Ground		
			4	Ground		
			5	Power	+24VDC	
			6	Power	+24VDC	
			7	Power	+24VDC	
			8	Power	+24VDC	
J4	24VDC Power Output between VIB Boards (RJ45)	8075810 or 8076315	1	Ground		
			2	Ground		
			3	Ground		
			4	Ground		
			5	Power	+24VDC	
			6	Power	+24VDC	
			7	Power	+24VDC	
			8	Power	+24VDC	
J5	Drain		1	Drain + (Open)	+24VDC	Black
			2	Drain - (Closed)	-24VDC	Red
			3	Drain Position		Blue
			4	Ground		White
J6	Not Used					
J7	Return		1	Ret + (Open)	+24VDC	Black
			2	Ret - (Closed)	-24VDC	Red
			3	Ret Position		Blue
			4	Ground		White
J8	Not Used					

Large-Capacity Touchscreen-Equipped Fryers

FQE60/FQE80 Touch FIB (Filter Interface Board) Filtration & Top-off Pin Positions & Harnesses

NOTE: DO NOT CHECK WITH HARNESES UNPLUGGED AS SHORTING THE PINS MAY OCCUR WHICH WILL DAMAGE THE BOARD.

Connector	From/To	Harness #	Pin #	Function	Voltage	Wire Color		
J1	Input from Power Supply	8076419	1	Ground -		Brown		
			2	24VDC Input	+24VDC	Purple		
			3	Ground -		Brown		
	JIB Reset Switch		4	24VDC Input	+24VDC	Purple		
			5	Ground -	3.3VDC	Black		
	Filter Pump Relay		6	JIB Low Reset	3.3VDC	Red		
			9	Pump Motor +	24VDC	Purple		
	Pan Switch		10	Pump Motor -	24VDC	Brown		
			13	Pan Sw Ground -	3.3VDC	Red		
	ATO Pump		14	Pan Sw +	3.3VDC	Red		
			15	Pump Ground -	24VDC	Purple		
	Input from 24VAC Transformer		16	ATO Pump	24VDC	Brown		
			17	24VAC	24VAC	Orange		
	To Bulk JIB Add Solenoid		18	24VAC Ret	24VAC	Blue		
			19	24VAC	24VAC	Black		
	Bulk connector rear of fryer		20	24VAC Ret	24VAC	Black		
			21	From Bulk Fresh Oil transformer	24VAC	Orange		
			22	Common (Ret)		Blue		
			23	To Bulk Fresh Oil Relay	24VAC	Orange		
			24	From Bulk "Waste Tank Full Sensor" Test Pins 22 to 24	24VAC - Full 0VAC - Not Full	Orange		
			25	Closed Switch +	3.3VDC	Black		
	Waste Closed Switch		26	Closed Switch Ground -	3.3VDC	Black		
			27	Open Switch +	3.3VDC	Black		
	Waste Open Switch		28	Open Switch Ground -	3.3VDC	Black		
			29	Filter Pump On Contact				
	Filter Pump Relay Contact Signal When Pump Is On		30	Filter Pump On Contact				
	J2		24VDC Power Output from FIB to Far-Right VIB Board (RJ45)	8076315	1	Ground		
					2	Ground		
					3	Ground		
4		Ground						
5		Power			+24VDC			
6		Power			+24VDC			
7		Power			+24VDC			
8		Power			+24VDC			
J3	C-Bus from Far-Right SIB Board (RJ11)	8075549	1	5VDC	+5VDC			
			2	CAN High				
			3	CAN Low				
			4	Ground				
J4	C-Bus or Network Resistor (pins 2 & 3) (RJ11)	8076242 to KCCM board or (8075632 resistor)	1	5VDC+	+5VDC			
			2	CAN High				
			3	CAN Low				
			4	Ground				

Large-Capacity Touchscreen-Equipped Fryers

FQG60T Touch SIB (Smart Interface Board) Pin Positions and Harnesses

NOTE: DO NOT CHECK WITH HARNESES UNPLUGGED (except ATO and Temp Probes) AS SHORTING THE PINS MAY OCCUR WHICH WILL DAMAGE THE BOARD.

Connector	From/To	Harness #	Pin #	Function	Voltage	Wire Color
J1	From Transformer	8076408	1	24VAC Input	24VAC	Orange
			2	Ground -		Blue
	To High Limit		3	24VAC Out	24VAC	Orange
	From High Limit		4	24VAC Input	24VAC	Blue
J2	To 24VAC Gas Valve	8076408	1	24VAC Out	24VAC	Orange
			2	Ground		
	From Ignition Module NC		3	Alarm In	24VAC	Yellow
	From Module / Gas Valve PV1		4	24VAC Input	24VAC	Orange
	To 24VAC Time Delay Relay Board /Ignition Module		5	24VAC Out	24VAC	Red
	From Ignition Module MV1	6	2VAC Input	24VAC	Orange	
J3	ATO Probe	8263286	1	Ground		Yellow
			2	RTD		Red
			3			
J6	From Controller		1	C-BUS +	5VDC	
			2	C-BUS -	5VDC	
			3	5VDC	5VDC	
			4	RS485 -	5VDC	
			5	RS485 +	5VDC	
			6	Signal Ground		
			7	12VDC	12VDC	
			8	Signal Ground		
J7	C-Bus Harness	8076106 or 8075550 or (8075632 Resistor)	1	5VDC+	+5VDC	
			2	CAN High		
			3	CAN Low		
			4	Ground		
J8	C-Bus Harness or Network Resistor (pins 2 & 3)	8075549 or 8075550 or (8075632 Resistor)	1	5VDC+	+5VDC	
			2	CAN High		
			3	CAN Low		
			4	Ground		
J9	P-Bus Power Communication from SIB to VIB RJ11	8075555	1	Ground		
			2	P-BUS power	+5VDC	
			3	Modbus RS485 B		
			4	Modbus RS485 A		
			5	Signal ground		
			6	P-BUS power	+12VDC	
J10	P-Bus Power Communication		1	Ground		
			2	P-BUS power	+5VDC	
			3	Modbus RS485 B		
			4	Modbus RS485 A		
			5	Signal ground		
			6	P-BUS power	+12VDC	
J11	Cooking Probe	8263642	1	Ground		Yellow
			2	Probe		Red

Large-Capacity Touchscreen-Equipped Fryers

FQG60T Touch VIB (Valve Interface Board) Actuator Board Pin Positions and Harnesses

NOTE: DO NOT CHECK WITH HARNESSES UNPLUGGED AS SHORTING THE PINS MAY OCCUR WHICH WILL DAMAGE THE BOARD.

Connector	From/To	Harness PN	Pin #	Function	Voltage	Wire Color
J1	VIB (AIF) Probes, Float Switch, Time Delay Relay	8076434 8263287 VIB (AIF) Probe Only	1	VIB Probe Ground	Ohm	Yellow
			2	VIB Probe		Red
			3	N/A		
			4	N/A		
			5	Time Delay Relay Board		White
			6	Time Delay Relay Board Gnd		Green
			7	N/A		
			8	N/A		
			9	Float Switch +	24VDC	Red
			10	Float Switch -		Black
			11	N/A		
			12	N/A		
			13	Ground		
			14	24VDC +	24VDC	
J2	P-Bus Power Communication from SIB (RJ11)	8075555	1	Ground	+5VDC	
			2	P-BUS power		
			3	Modbus RS485 B		
			4	Modbus RS485 A		
			5	Signal ground		
			6	P-BUS power	+12VDC	
J3	24VDC Power Input between VIB Boards (RJ45)	8076440 from control box or 8075810 between VIB boards	1	Ground		
			2	Ground		
			3	Ground		
			4	Ground		
			5	Power	+24VDC	
			6	Power	+24VDC	
			7	Power	+24VDC	
			8	Power	+24VDC	
J4	24VDC Power Output between VIB Boards (RJ45)	8076440 from control box or 8075810 between VIB boards	1	Ground		
			2	Ground		
			3	Ground		
			4	Ground		
			5	Power	+24VDC	
			6	Power	+24VDC	
			7	Power	+24VDC	
			8	Power	+24VDC	
J5	Drain Valve		1	Drain + (Open)	+24VDC	Black
			2	Drain - (Closed)	-24VDC	Red
			3	Drain Position		Blue
			4	Ground		White
J6	N/A		1	N/A		
			2	N/A		
			3	N/A		
			4	N/A		
J7	Return Valve		1	Ret + (Open)	+24VDC	Black
			2	Ret - (Closed)	-24VDC	Red
			3	Ret Position		Blue
			4	Ground		White
J8	N/A		1	N/A		
			2	N/A		
			3	N/A		
			4	N/A		

Large-Capacity Touchscreen-Equipped Fryers

FQG60T Touch FIB (Filter Interface Board) Filtration and Top-off Pin Positions and Harnesses

NOTE: DO NOT CHECK WITH HARNESSES UNPLUGGED AS SHORTING THE PINS MAY OCCUR WHICH WILL DAMAGE THE BOARD.

Connect or	From/To	Harness #	Pin #	Function	Voltage	Wire Color
J1	Input from Power Supply	8076433	1	Ground -		Brown
			2	24VDC Input	+24VDC	Purple
			3	Ground -		Brown
			4	24VDC Input	+24VDC	Purple
	JIB Reset Switch		5	Ground -	3.3VDC	Red
			6	JIB Low Reset		Black
	Filter Pump Relay		9	Pump Motor +	24VDC	Purple
			10	Pump Motor -		Brown
	Pan Switch		13	Pan Sw Ground -	3.3VDC	Red
			14	Pan Sw +		Red
	ATO Pump		15	Pump Ground -	24VDC	Purple
			16	ATO Pump		Brown
	Input from 24VAC Transformer		17	24VAC	24VAC	Orange
			18	24VAC Ret		Blue
	To Bulk Fresh Oil JIB Add Solenoid		19	24VAC	24VAC	Black
			20	24VAC Ret		Black
	Bulk connector rear of fryer		21	From bulk oil fresh transformer (Pin 1 on 9 pin)	24VAC	Orange
			22	Common (Ret) (Pin 4 on 9 pin)		Blue
			23	To bulk oil Fresh Oil Relay (Pin 3 on 9 pin)	24VAC	Orange
			24	From bulk "Waste Tank Full Sensor" Test Pins 22 to 24 (Pin1 to Pin 4 on 9 pin)	24VAC -Full 0VAC - Not Full	Orange
Waste Closed Switch	25	Closed Switch +	3.3VDC	Black		
	26	Closed Switch Ground -		Black		
Waste Open Switch	27	Open Switch +	3.3VDC	Black		
	28	Open Switch Ground -		Black		
Filter Pump Relay Contact Signal When Pump Is On	29	Filter Pump On Contact				
	30	Filter Pump On Contact				
J2	24VDC Power Output from FIB to VIB Board (J4) (RJ45)	8076315	1	Ground		
			2	Ground		
			3	Ground		
			4	Ground		
			5	Power	+24VDC	
			6	Power	+24VDC	
			7	Power	+24VDC	
			8	Power	+24VDC	
J3	C-Bus from SIB Board (J8) (RJ11)	8075549	1	5VDC	+5VDC	
			2	CAN High		
			3	CAN Low		
			4	Ground		
J4	C-Bus from far right SIB (J80 or Network Resistor (pins 2 & 3) (RJ11)	(8075550 to next vat or 8075632 resistor)	1	5VDC+	+5VDC	
			2	CAN High		
			3	CAN Low		
			4	Ground		

Large-Capacity Touchscreen-Equipped Fryers

FQG100/120T SIB (Smart Interface Board) Pin Positions and Harnesses

NOTE: DO NOT CHECK WITH HARNESSES UNPLUGGED (except ATO and Temp Probes) AS SHORTING THE PINS MAY OCCUR WHICH WILL DAMAGE THE BOARD.

Connector	From/To	Harness #	Pin #	Function	Voltage	Wire Color
J1	From Transformer	8076449	1	24VAC Input	24VAC	Orange
			2	Ground -		Blue
	To High Limit		3	24VAC Out	24VAC	Orange
	From High Limit		4	24VAC Input	24VAC	Blue
J2	To 24VAC Gas Valve	8076449	1	24VAC Out	24VAC	Orange
			2	Ground		
	From Ignition Module NC		3	Alarm In	24VAC	Yellow
	From Module / Gas Valve PV1		4	24VAC Input	24VAC	Orange
	To 24VAC Time Delay Relay Board /Ignition Module		5	24VAC Out	24VAC	Red
	From Ignition Module MV1		6	2VAC Input	24VAC	Orange
J3	ATO Probe	8263286	1	Ground		Yellow
			2	RTD		Red
			3			
J6	From Controller		1	C-BUS +	5VDC	
			2	C-BUS -	5VDC	
			3	5VDC	5VDC	
			4	RS485 -	5VDC	
			5	RS485 +	5VDC	
			6	Signal Ground		
			7	12VDC	12VDC	
			8	Signal Ground		
J7	C-Bus Harness	8076106 or 8075550 or (8075632 Resistor)	1	5VDC+	+5VDC	
			2	CAN High		
			3	CAN Low		
			4	Ground		
J8	C-Bus Harness or Network Resistor (pins 2 & 3)	8075549 or 8075550 or (8075632 Resistor)	1	5VDC+	+5VDC	
			2	CAN High		
			3	CAN Low		
			4	Ground		
J9	P-Bus Power Communication from SIB to VIB RJ11	8075555	1	Ground		
			2	P-BUS power	+5VDC	
			3	Modbus RS485 B		
			4	Modbus RS485 A		
			5	Signal ground		
			6	P-BUS power	+12VDC	
J10	P-Bus Power Communication		1	Ground		
			2	P-BUS power	+5VDC	
			3	Modbus RS485 B		
			4	Modbus RS485 A		
			5	Signal ground		
			6	P-BUS power	+12VDC	
J11	Cooking Probe	8263642	1	Ground		Yellow
			2	Probe		Red

Large-Capacity Touchscreen-Equipped Fryers

FQG100/120T VIB (Valve Interface Board) Actuator Board Pin Positions and Harnesses

NOTE: DO NOT CHECK WITH HARNESSES UNPLUGGED AS SHORTING THE PINS MAY OCCUR WHICH WILL DAMAGE THE BOARD.

Connector	From/To	Harness PN	Pin #	Function	Voltage	Wire Color			
J1	VIB (AIF) Probes, Float Switch, Time Delay Relay	8076448 8263287 VIB (AIF) Probe Only	1	VIB (AIF) Probe Ground	Ohm	Yellow			
			2	VIB (AIF) Probe		Red			
			3	N/A					
			4	N/A					
			5	Time Delay Relay Board		White			
			6	Time Delay Relay Board Gnd		Green			
			7	N/A					
			8	N/A					
			9	Float Switch +	24VDC	Red			
			10	Float Switch -		Black			
						11	N/A		
						12	N/A		
						13	Ground		
						14	24VDC +	24VDC	
J2	P-Bus Power Communication from SIB (RJ11)	8075555	1	Ground	+5VDC				
			2	P-BUS power					
			3	Modbus RS485 B					
			4	Modbus RS485 A					
			5	Signal ground					
			6	P-BUS power	+12VDC				
J3	24VDC Power Input between VIB Boards (RJ45)	8075810 between VIB boards	1	Ground					
			2	Ground					
			3	Ground					
			4	Ground					
			5	Power	+24VDC				
			6	Power	+24VDC				
			7	Power	+24VDC				
			8	Power	+24VDC				
J4	24VDC Power Output between VIB Boards (RJ45)	8076315 from FIB board or 8075810 between VIB boards	1	Ground					
			2	Ground					
			3	Ground					
			4	Ground					
			5	Power	+24VDC				
			6	Power	+24VDC				
			7	Power	+24VDC				
			8	Power	+24VDC				
J5	Drain Valve		1	Drain + (Open)	+24VDC	Black			
			2	Drain - (Closed)	-24VDC	Red			
			3	Drain Position		Blue			
			4	Ground		White			
J6	Left Return Valve		1	Ret + (Open)	+24VDC	Black			
			2	Ret - (Closed)	-24VDC	Red			
			3	Ret Position		Blue			
			4	Ground		White			
J7	Middle Return Valve		1	Ret + (Open)	+24VDC	Black			
			2	Ret - (Closed)	-24VDC	Red			
			3	Ret Position		Blue			
			4	Ground		White			
J8	Right Return Valve		1	Ret + (Open)	+24VDC	Black			
			2	Ret - (Closed)	-24VDC	Red			
			3	Ret Position		Blue			
			4	Ground		White			

Large-Capacity Touchscreen-Equipped Fryers

FQG100/120T Touch FIB (Filter Interface Board) Filtration and Top-off Pin Positions and Harnesses

NOTE: DO NOT CHECK WITH HARNESSES UNPLUGGED AS SHORTING THE PINS MAY OCCUR WHICH WILL DAMAGE THE BOARD.

Connect or	From/To	Harness #	Pin #	Function	Voltage	Wire Color
J1	Input from Power Supply	8076450	1	Ground -		Brown
			2	24VDC Input	+24VDC	Purple
			3	Ground -		Brown
			4	24VDC Input	+24VDC	Purple
	Filter Pump Relay		9	Pump Motor +	24VDC	Purple
			10	Pump Motor -		Brown
	Pan Switch		13	Pan Sw Ground -	3.3VDC	Red
			14	Pan Sw +		Red
	Input from 24VAC Transformer		17	24VAC	24VAC	Orange
			18	24VAC Ret		Blue
	Waste Closed Switch		25	Closed Switch +	3.3VDC	Black
			26	Closed Switch Ground -		Black
Waste Open Switch		27	Open Switch +	3.3VDC	Black	
		28	Open Switch Ground -		Black	
J2	24VDC Power Output from FIB to VIB Board (J4) (RJ45)	8076315	1	Ground		
			2	Ground		
			3	Ground		
			4	Ground		
			5	Power	+24VDC	
			6	Power	+24VDC	
			7	Power	+24VDC	
			8	Power	+24VDC	
J3	C-Bus from far-right SIB Board (J8) (RJ11)	8076341	1	5VDC	+5VDC	
			2	CAN High		
			3	CAN Low		
			4	Ground		
J4	C-Bus from SIB (J8) or Network Resistor (pins 2 & 3) (RJ11)	(8075549 to next vat or 8075632 resistor)	1	5VDC+	+5VDC	
			2	CAN High		
			3	CAN Low		
			4	Ground		

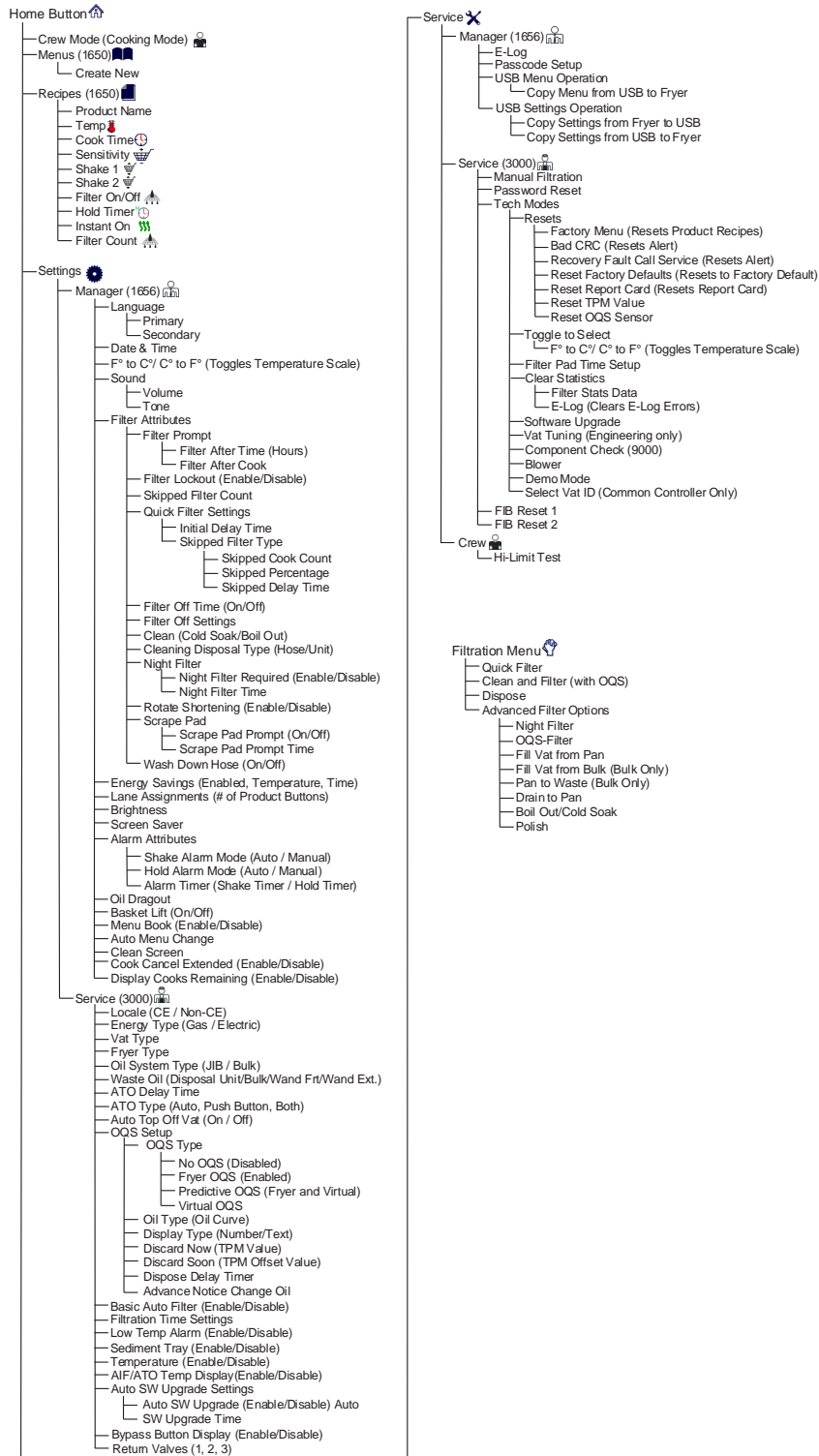
Large-Capacity Touchscreen-Equipped Fryers

FQ(E/G)60T General Market Menu Tree

FQ4000 Menu Summary Trees

FQ4000 Menu Tree General Market

Reflected below are the major programming sections in the FQ4000 and the order in which the headings will be found in the controller.


















Large-Capacity Touchscreen-Equipped Fryers

FQ(E/G)60T General Market Stats Menu Tree

FQ4000 Information Statistics Menu Tree General Market/Burger King (Non-Taco Bell)

Reflected below are the information statistics in the FQ4000 and the order in which the headings will be found in the controller.

- Information Statistics 
- Daily Stats 
 - 1. Filters/Skipped Filters/Cooks Today's
 - Report Card 
 - 1. Today's Report
 - 2. Yesterday's Report
 - 3. Weekly Report
 - Oil 
 - 1. Last Dispose Date
 - 2. Cooks Since Last Dispose
 - 3. Filters Since Last Dispose
 - 4. Skipped Filters Since Last Dispose
 - 5. Current Oil Life
 - 6. Average Cooks Over Oil Life
 - 7. Daily Dispose Bypass Count
 - 8. Oil Dragout per Dispose
 - 9. Oil Dragout per Day
 - 10. Oil Dragout per Hour
 - TPM Statistics 
 - Filter 
 - 1. Current Day and Date
 - 2. Cooks Remaining Until Next Filter
 - 3. Daily Number of Cooks
 - 4. Daily Number of Filters
 - 5. Daily Number of Skipped Filters
 - 6. Average Cooks Per Filter
 - 7. Weekly Number of Filters
 - 8. Weekly Number of Skipped Filters
 - 9. Filtration
 - Filter Reset  (Resets Filter Stats Data 4321)
 - Fresh Oil 
 - 1. Number of Cooks Since Last Dispose
 - 2. Dispose Count Since Last Reset
 - 3. Fresh Oil Counter Reset Date
 - 4. Fresh Oil Counter
 - Fresh Oil Reset  (Resets Fresh Oil Data 4321)
 - Software Version 
 - 1. UIB/UIC Software Version
 - 2. SIB Software Version (1, 2 - Splits)
 - 3. VIB Software Version
 - 4. FIB Software Version
 - 5. OQS Software Version
 - 6. Actual Vat Temp (L, R - Splits)
 - 7. AIF RTD Temp (L, R - Splits)
 - 8. ATO RTD Temp (L, R - Splits)
 - 9. Board ID
 - 10. Gateway Software Version
 - 11. Gateway IP Address
 - 12. Gateway Link Quality
 - 13. Gateway Signal Strength and Noise
 - 14. IOB Software Version
 - Recovery 
 - 1. Last Recovery Time
 - Usage 
 - 1. Usage Start Date
 - 2. Total Number of Cook Cycles
 - 3. Total Number of Quit Cook Cycles
 - 4. Total Vat On Time (Hours)
 - Usage Reset  (Resets Usage Data 4321)
 - Life 
 - 1. Commission Date
 - 2. Unit Serial Number
 - 3. Controller Serial Number
 - 4. Total On Time (Hours)
 - 5. Total Heat Cycle Count
 - 6. Total Energy Saving Time
 - 7. Total Cook Time
 - 8. BSP Version (Common Controller Only)
 - Last Load 
 - 1. Last Cooked Product
 - 2. Last Load Start Time
 - 3. Last Load Cook Time
 - 4. Last Load Program Time
 - 5. Last Load Max Vat Temp
 - 6. Last Load Min Vat Temp
 - 7. Last Load Avg Vat Temp
 - 8. % of Cook Time, Heat Is On
 - 9. Vat Temp Before Cook Starts
 - 10. Vat Temp at Cook End

Large-Capacity Touchscreen-Equipped Fryers

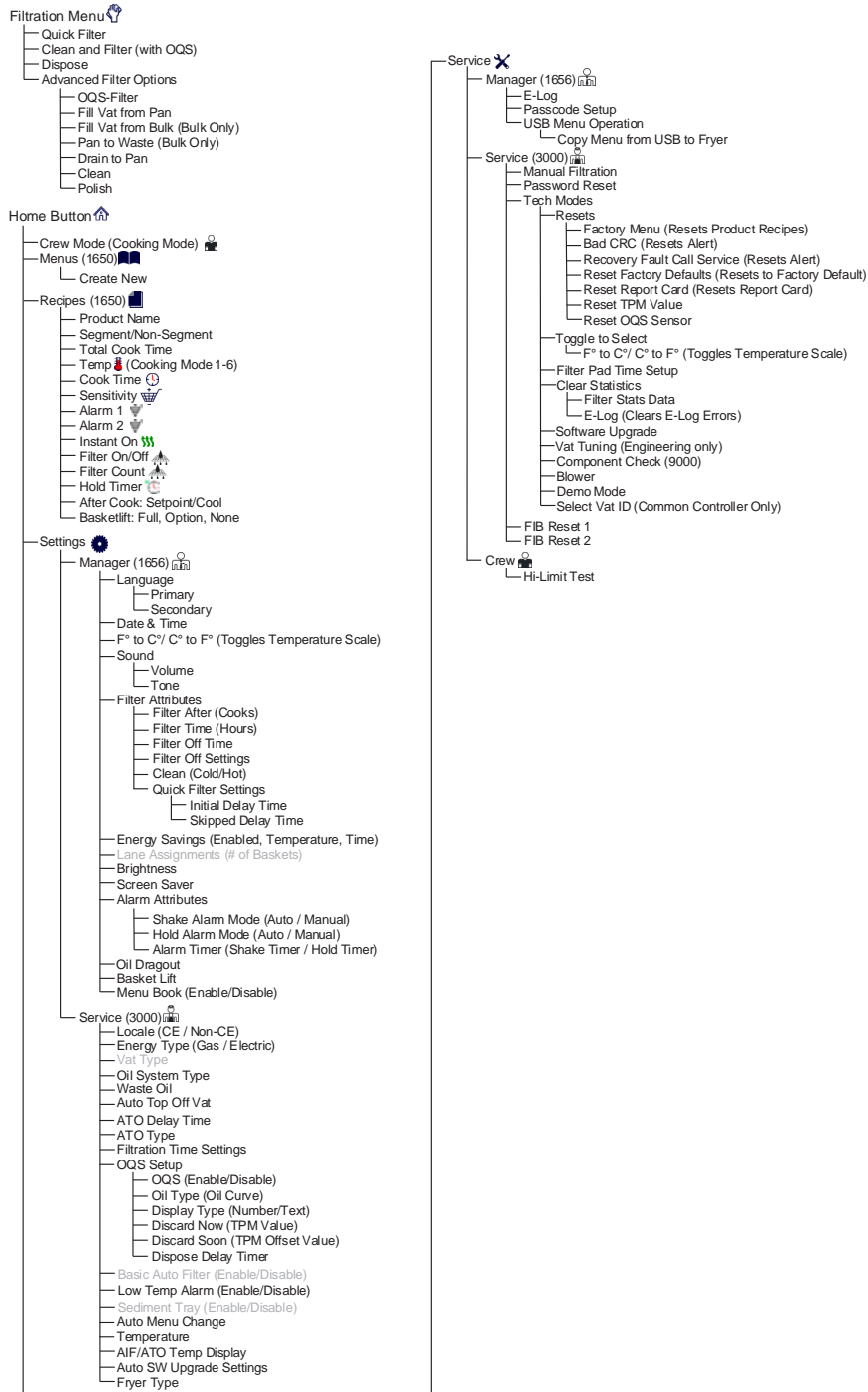
FQ60/80 7-11 Menu Tree

FQ60/80U-T 7-11 FILTERQUICK™ ELECTRIC FRYERS

FQ4000 Menu Summary Trees

FQ4000 Menu Tree

Reflected below are the major programming sections in the FQ4000 and the order in which the headings will be found in the controller.

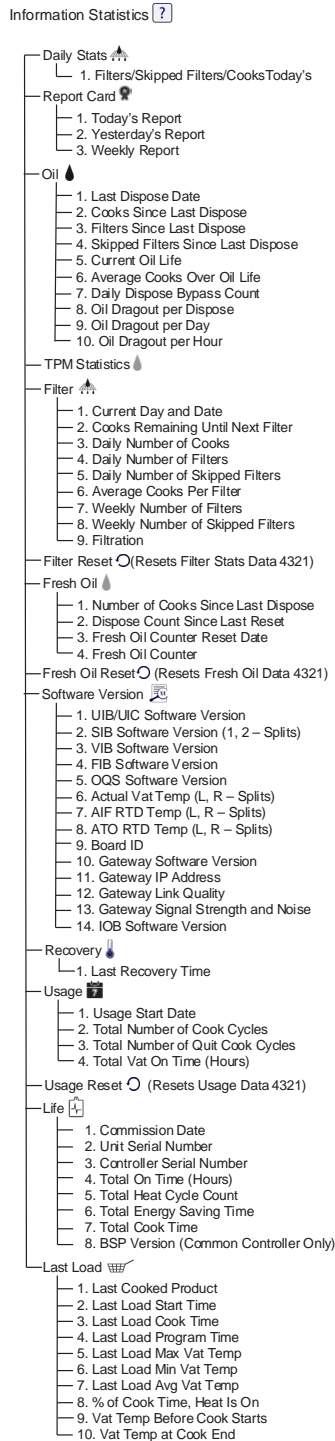


Large-Capacity Touchscreen-Equipped Fryers

FQ60/80 7-11 Stats Menu Tree

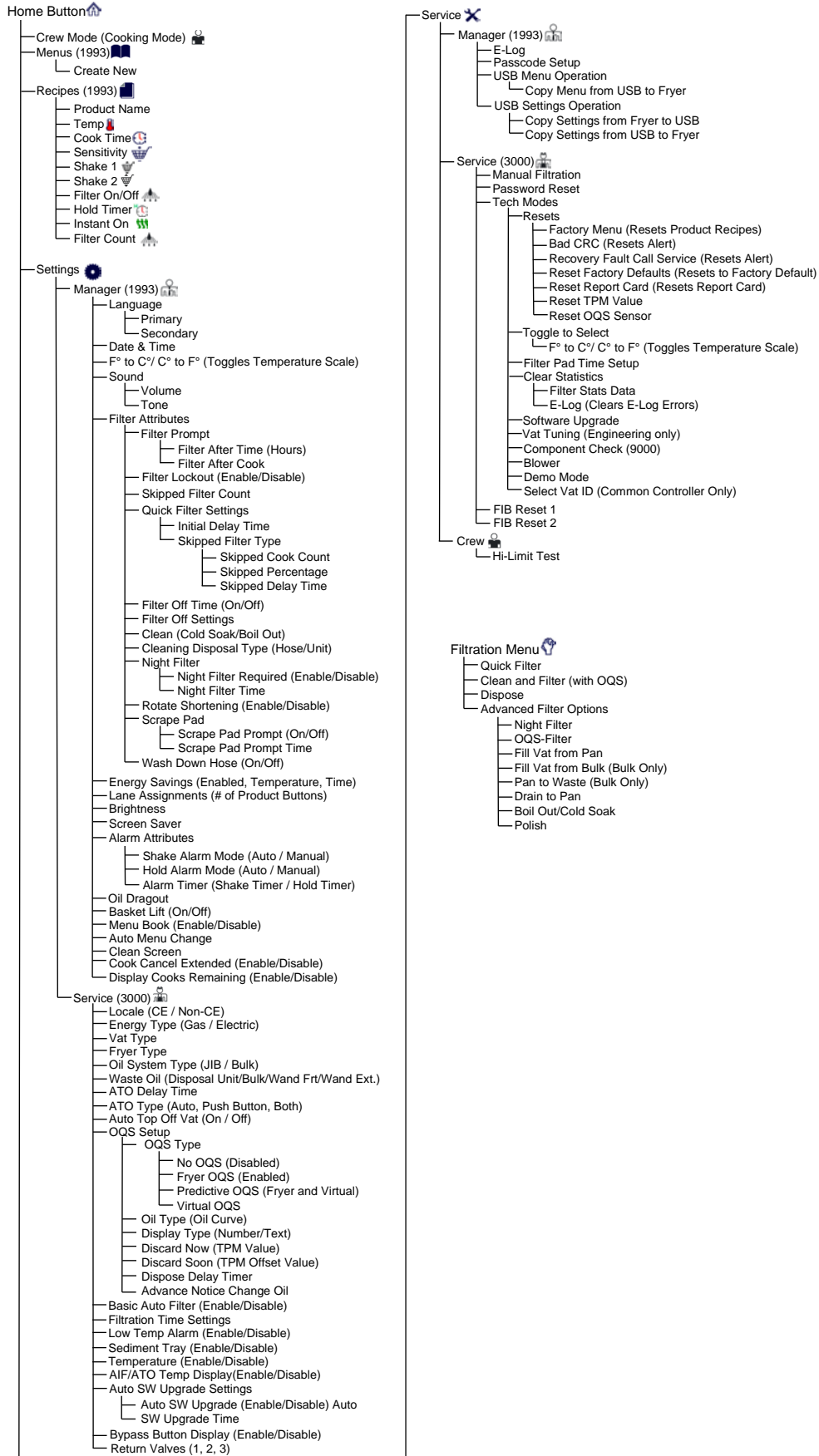
FQ4000 Information Statistics Menu Tree

Reflected below are the information statistics in the FQ4000 and the order in which the headings will be found in the controller.



Large-Capacity Touchscreen-Equipped Fryers

FQ(E/G)80T Raising Canes Menu Tree

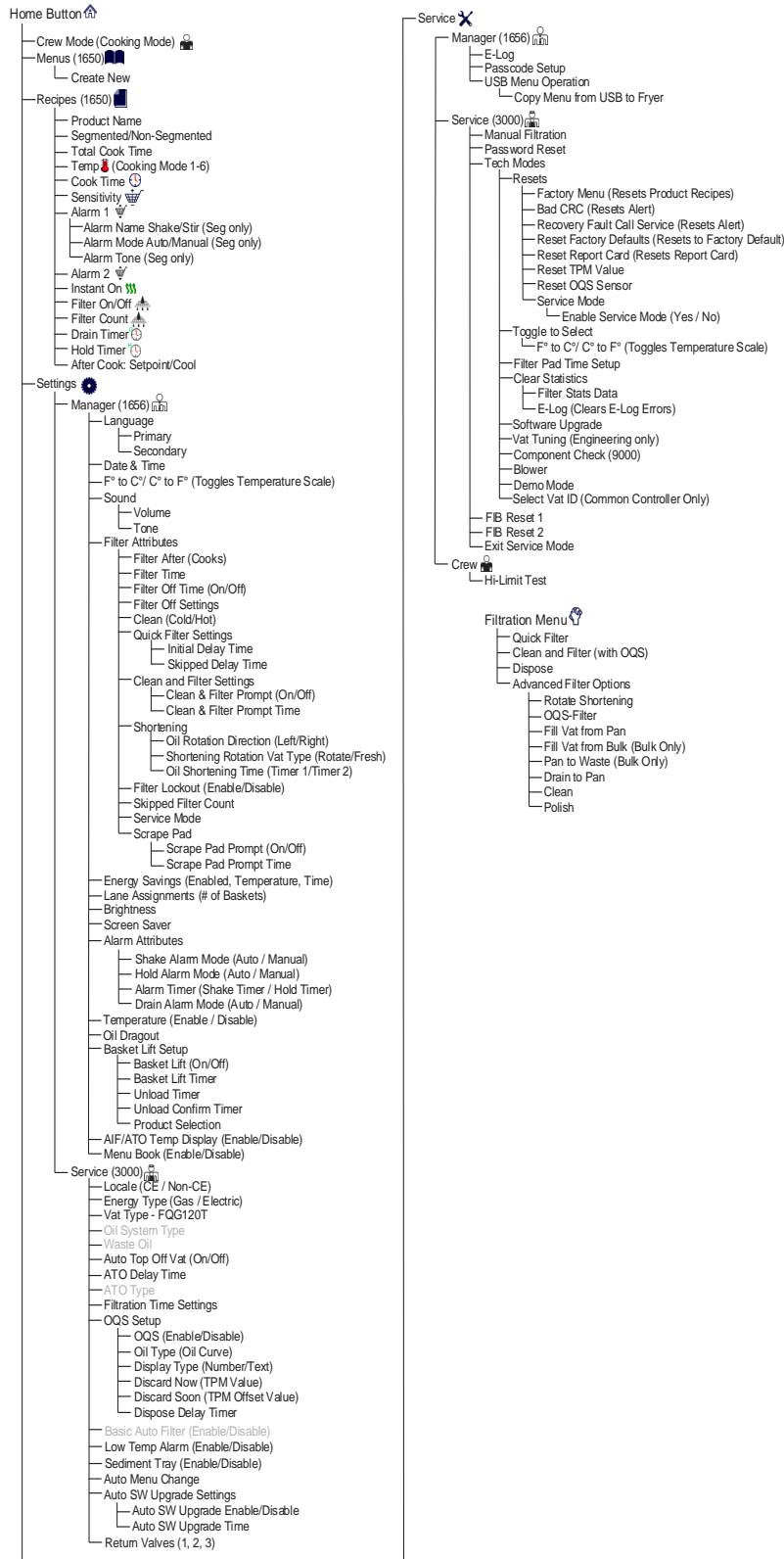


Large-Capacity Touchscreen-Equipped Fryers

FQ80/100/120 Popeye's Menu Tree

FQ4000-80T/100T/120T easyTouch® Menu Tree Popeye's

Reflected below are the major programming sections in the FQ4000 easyTouch® and the order in which the headings will be found in the controller.

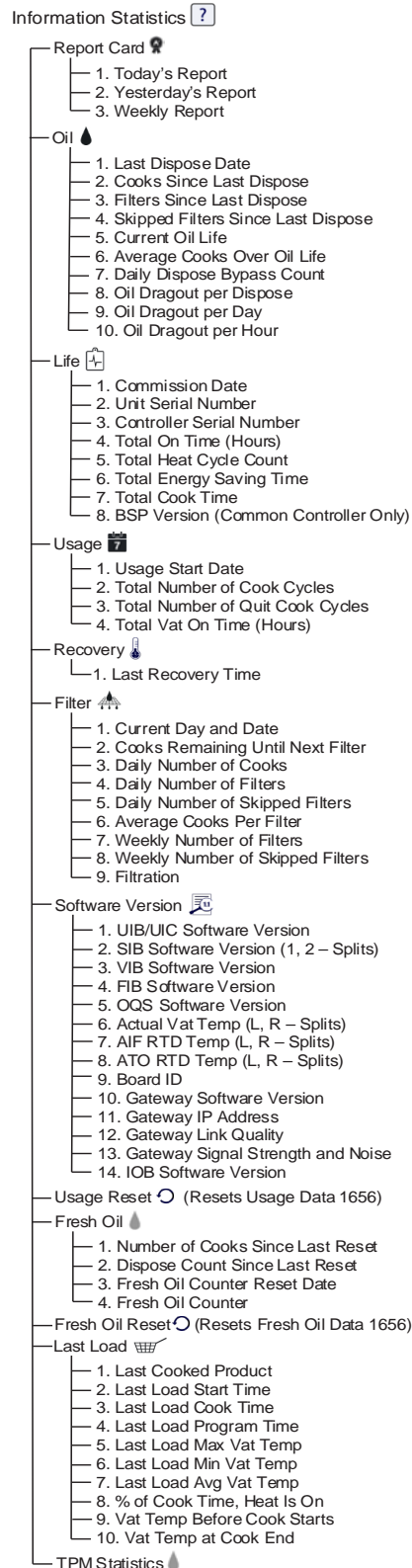


Large-Capacity Touchscreen-Equipped Fryers

FQ80/100/120 Popeye's Stats Menu Tree

FQ4000-80T/100T/120T Information Statistics Menu Tree Popeye's

Reflected below are the information statistics in the FQ4000 and the order in which the headings will be found in the controller.

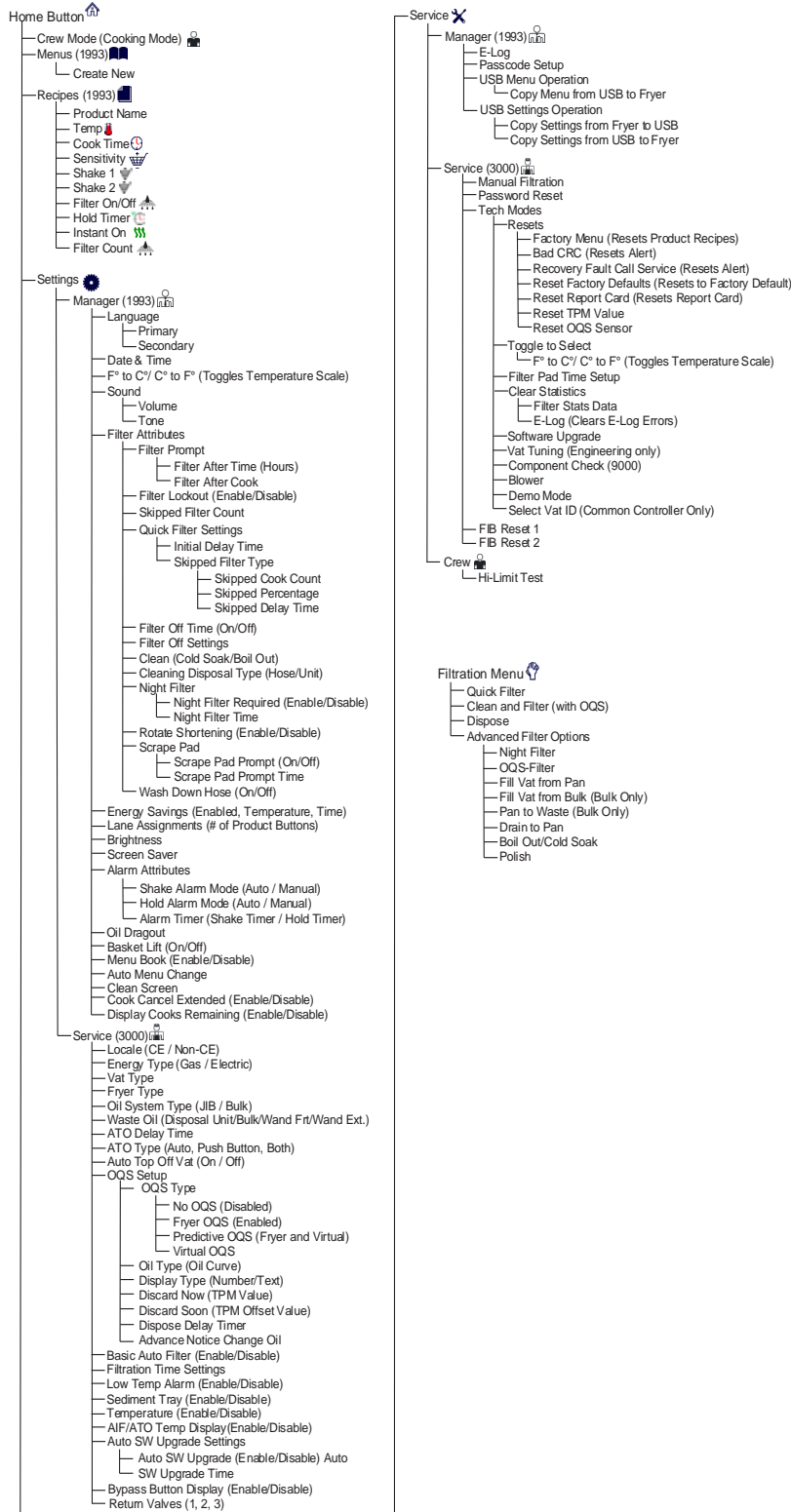


Large-Capacity Touchscreen-Equipped Fryers

FQ80 Raising Cane's Menu Tree

FQ4000 Menu Tree - Raising Canes

Reflected below are the major programming sections in the FQ4000 and the order in which the headings will be found in the controller.

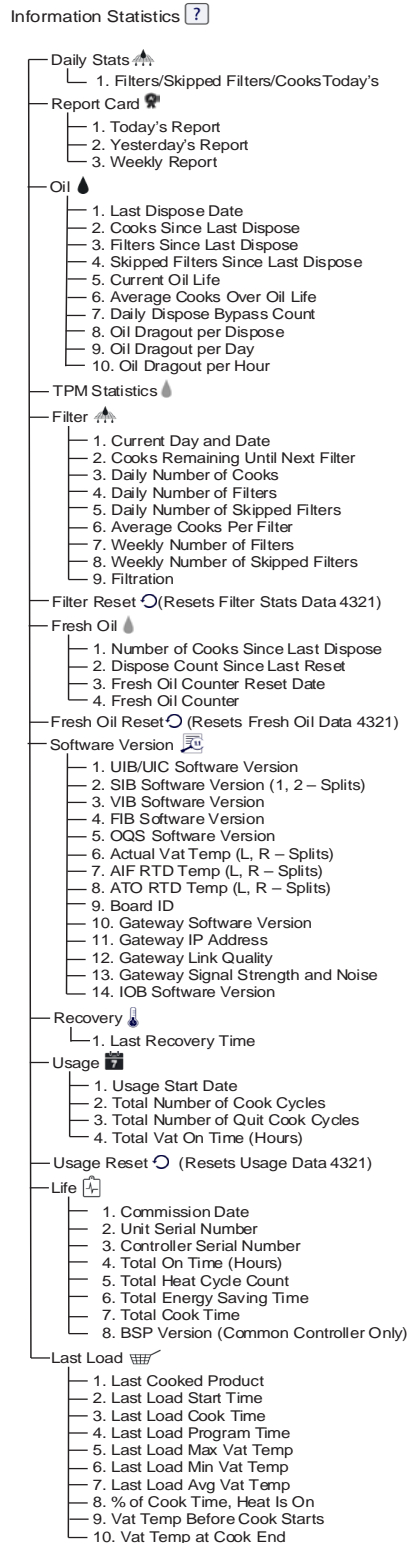


Large-Capacity Touchscreen-Equipped Fryers

FQ80 Raising Cane's Stats Menu Tree

FQ4000 Information Statistics Menu Tree General Market, Raising Canes

Reflected below are the information statistics in the FQ4000 and the order in which the headings will be found in the controller.



Large-Capacity Touchscreen-Equipped Fryers

FQ4000 Password Codes

Press the HOME button to enter MENUS, RECIPES, SETTINGS or SERVICE menus.

- **1650** – MENUS, RECIPES,
- **1656** – SETTINGS (MANAGER), SERVICE (MANAGER)
- **3000** – SETTINGS (SERVICE), SERVICE (SERVICE) Enter Tech Mode
- **9000** – Component Check [SETTINGS (SERVICE), SERVICE (SERVICE) Enter Tech Mode]
- **1111**— Enter to reset fryer after a Service Required error is corrected. The controller displays SYSTEM ERROR FIXED? YES/NO. If yes, enter 1111. If NO is chosen, the system returns to cook mode, if possible, for 15 minutes then redisplay error until issue is fixed.

FQ4000 Raising Canes Password Codes

Press the HOME button to enter MENUS, RECIPES, SETTINGS or SERVICE menus.

- **1993** – MENUS, RECIPES,
- **1993** – SETTINGS (MANAGER), SERVICE (MANAGER)
- **3000** – SETTINGS (SERVICE), SERVICE (SERVICE) Enter Tech Mode
- **9000** – Component Check [SETTINGS (SERVICE), SERVICE (SERVICE) Enter Tech Mode]
- **1111**— Enter to reset fryer after a Service Required error is corrected. The controller displays SYSTEM ERROR FIXED? YES/NO. If yes, enter 1111. If NO is chosen, the system returns to cook mode, if possible, for 15 minutes then redisplay error until issue is fixed.

Chapter 7: Hot Holding

Frymaster and Merco make a variety of hot holding cabinets and bins. The UHCTHD, the six and three slot cabinets found in McDonald's, are joined by similar holding cabinets found in Chick-fil-A's and Arby's.

Some of the cabinets have wireless connectivity and RFID capabilities. The product trays are tracked from the back of the store to the front cabinets. The RFID-equipped trays automatically set the cabinet for the product they carry.

Crispy Max units hold fried food in air-heated perforated bins.

The UHCTHD and the touchscreen-equipped Merco cabinets have a lot in common, especially in regards to navigating the controller. The cabinets differ in the use of Input/Output boards. The McDonald's cabinet has one; the others use one per two slots.



UHCTHD



Crispy Max



Visual Holding

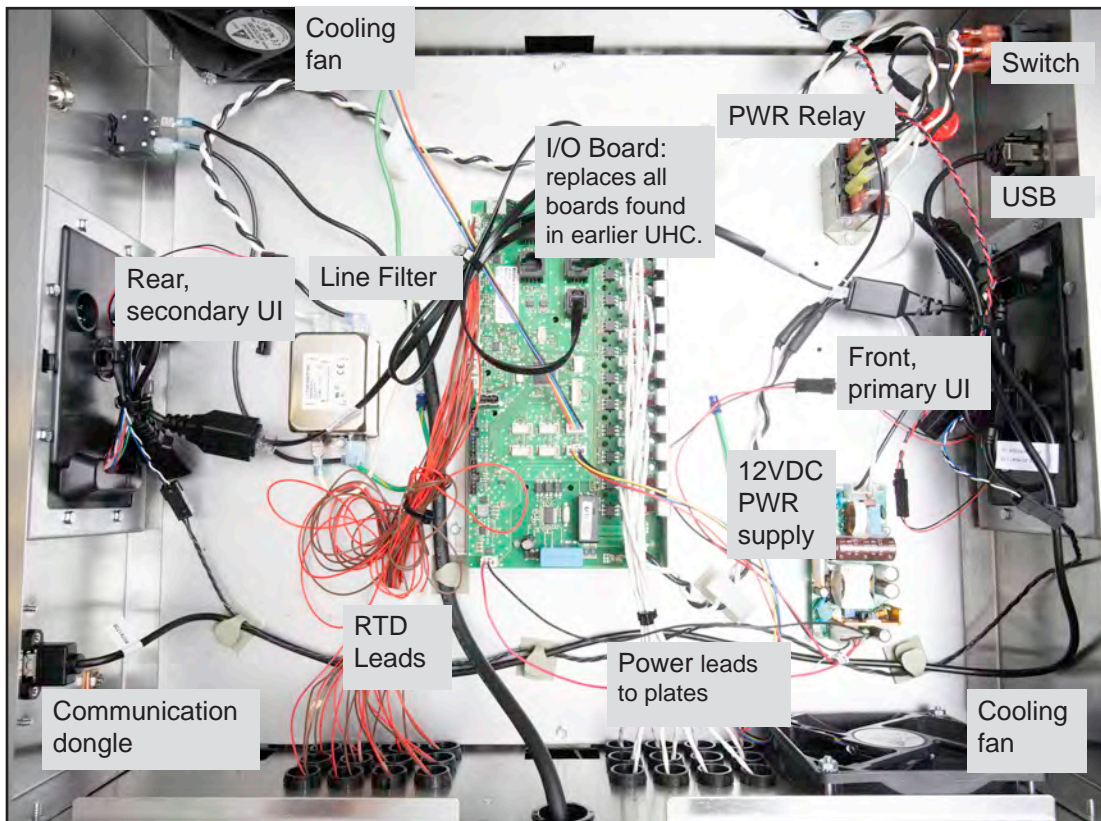
Hot Holding

UHCTHD

The UHCTHD, which replaced bezel controls with a touchscreen controller on the front and back, was introduced to McDonald's in February 2020.



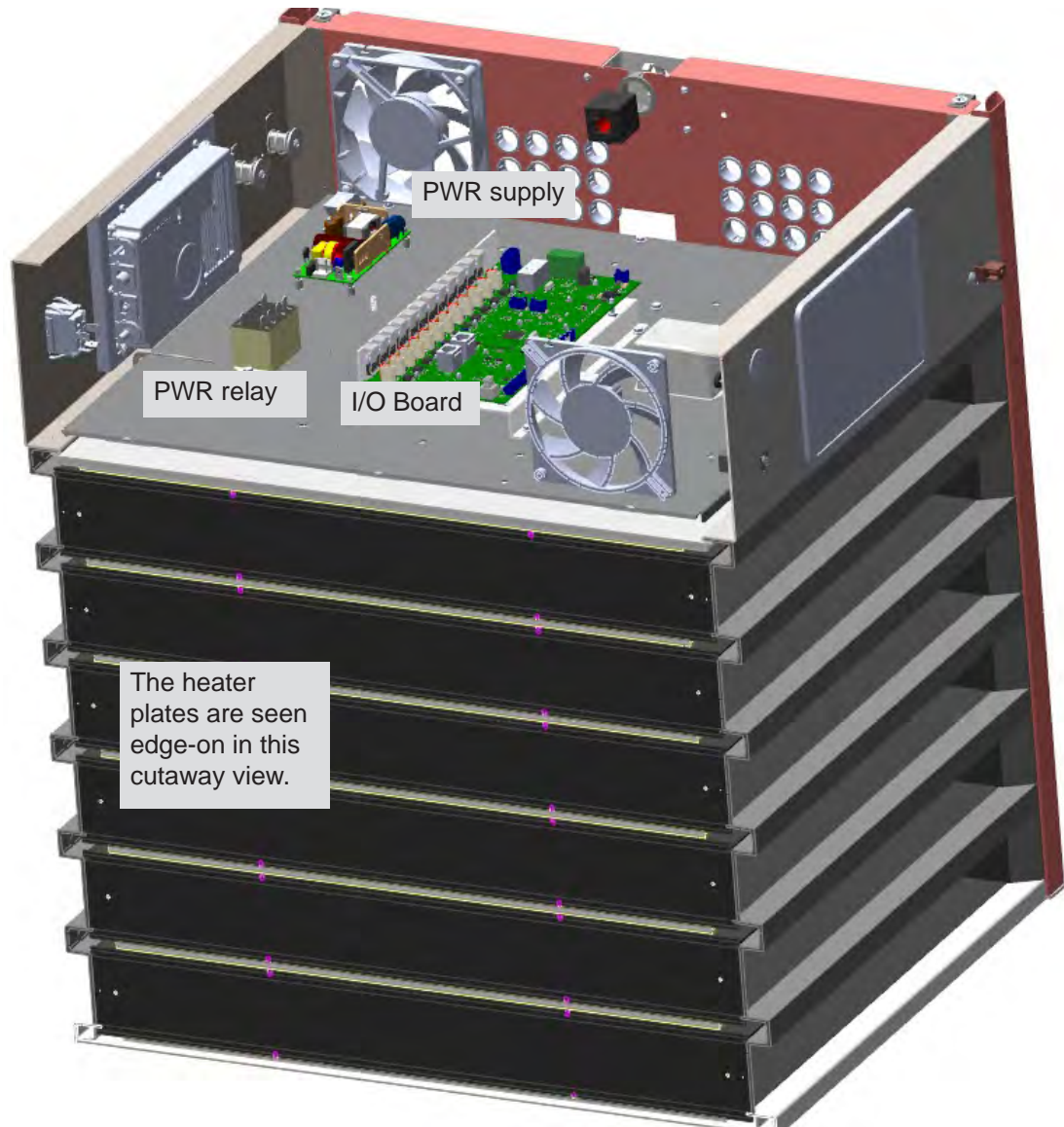
The UHCTHD (right) replaced the earlier 6-slot model (left), which used the bezels to hold timer buttons and as a way to communicate with the cabinet. The bezel-based circuits boards are gone in the new cabinet and all communication is via the front and rear-mounted touch screen.



The new cabinet's component shelf (annotated above) holds all the meaningful circuitry and is accessible without removing the sides. Removing the four recessed screws (below) provides access to the component shelf.



Hot Holding



The cabinet's two versions are shown in cutaway drawings above and right. The component shelf gear is the same on the six and the three-slot models.

The slots (far right) are resistive heaters mounted on aluminum plates held with extruded metal supports.

Replacing a slot requires removing the slot assembly. The heater also contains the RTD, which measures the temperature of the slot.



3-Slot Model



Slot, heater plate

Hot Holding

Normal Operation

How it Works

Line voltage is provided via a filter and a circuit breaker to the I/O board and a 12-volt DC power supply.

The power supply drives the displays, fans and the control voltage on the IO board. RTD's measure temperature at the heater plates and triacs open and close on the IO board providing line voltage to the heater plates as the unit calls for heat.

During normal startup and warming to operational temperatures, the cabinet displays behave as shown at right.



Brown progress bars advance across the screen as the cabinet warms



[UHCTHD Installation Operation Manual](#)



[UHCTHD Service Manual](#)



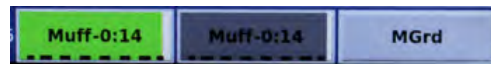
[UHCTHD Parts Manual](#)



At temperature but without a timer started, the slot positions are light gray.



In use, active timers are green; timers nearing or at expiration are yellow; expired product slots are red. When two active slots are timing the same product, the slot with the most remaining time will be dark gray (left).



Scan with QR-code reader/phone to access manuals. Cover adjacent QR-codes to retrieve desired manual.

Hot Holding

The controller is navigated by tapping the icons on the edge of the display

1 The home icon goes to this page, which provides access to many others. Press&Go goes to the operations screen.

2 This icon allows the user to choose the meal window to operate in: breakfast, lunch, etc.

3 This icon puts the cabinet in a cooling mode prior to cleaning and accesses a lock for cleaning.

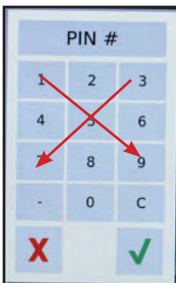
4 The globe allows choice of the language displayed on the cabinet. It doesn't change the menu items.

5 The temperature icon shows the temperature of the heater plates, top and bottom.

6

[Link to Controller Videos](#)

The cabinet's touchscreen is the key to its operation and in many cases diagnosing trouble. The icons along the side (annotated above) are used to access different functions. The system icon (right) opens up a collection of windows, many used during installation. The Error logs page and Zone diagnostics are both useful to a tech. Errors are easily read and the plate temperatures can be checked at Zone Diagnostics. Accessing either screen requires tapping the lock in the bottom left and entering the tech's code: 1-5-9-3-5-7.



The manager's code is 1-9-5-5 on McDonald's cabinets; 2-5-8-0, straight down the middle of the keypad, on non-McDonald's units.

Tapping the settings icon opens a host of options. Zone diagnostics and error logs are of interest to a tech.

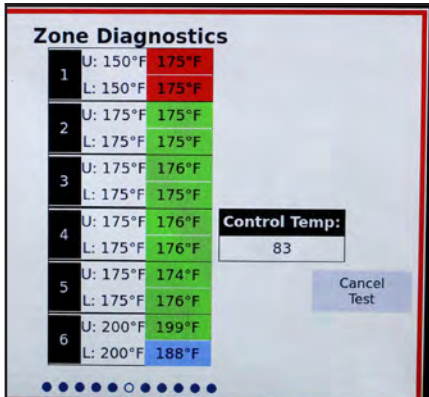
Preferences
Date & Time
Language
Cabinet Names
Wi-Fi Networking
Zone Diagnostics
Errors Log
Holding Log
Password
System Information
Utilities

Zone Diagnostics

Errors Log

Zone diagnostics allow temperature plates to be tested against set temperatures. Error logs are faults spelled out in English; no codes needed to decipher.

Hot Holding



Zone Diagnostics		
1	U: 150°F	175°F
	L: 150°F	175°F
2	U: 175°F	175°F
	L: 175°F	175°F
3	U: 175°F	176°F
	L: 175°F	175°F
4	U: 175°F	176°F
	L: 175°F	176°F
5	U: 175°F	174°F
	L: 175°F	176°F
6	U: 200°F	199°F
	L: 200°F	188°F

Control Temp: 83

Cancel Test

The Zone Diagnostic screen is shown in a test mode, where artificially high or low temperatures are fed into the (left, setpoint column) to see how the cabinet reacts. Temperatures +5°F above setpoint are in red; temperatures -5°F below setpoint are blue.

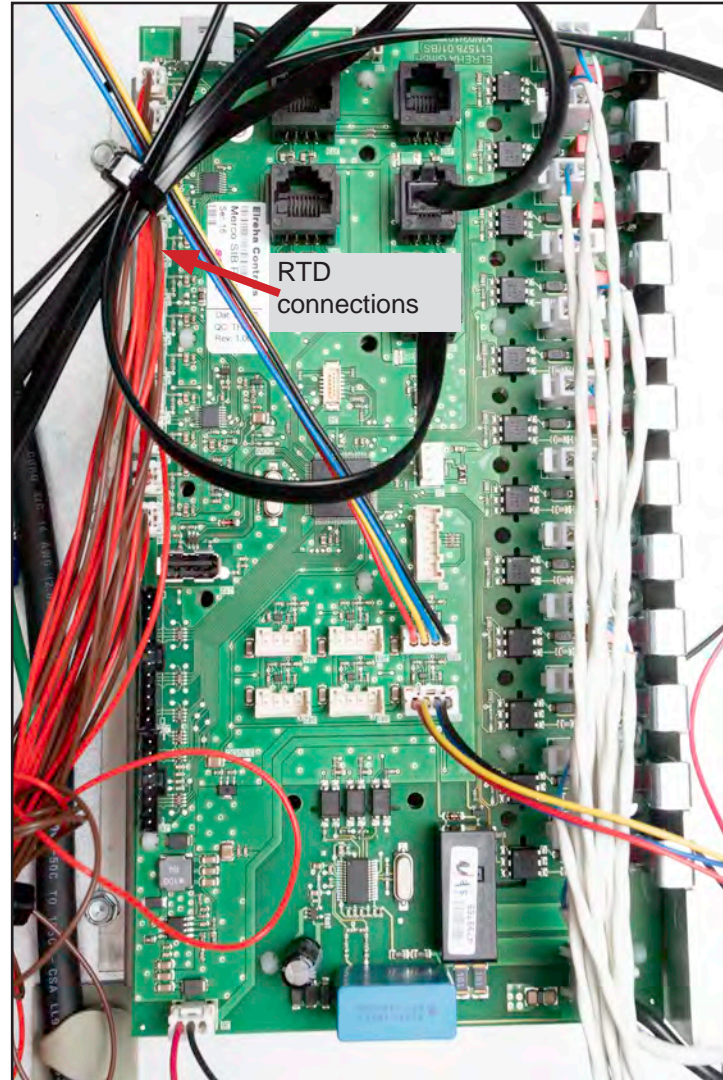
The test is started by tapping the blue box below the Control Temp display. It is canceled in the same way.

The Control Temp display is the temperature in the control shelf area.

Temperatures above 140°F can lead to screen problems.

RTD leads (shown at right) can be switched on the I/O board to determine if problems are associated with the board or the RTD on the heater plate.

The results of the swap can be viewed on the Zone Diagnostics screen.



Troubleshooting

IO Board

1. Check for +12VDC at the power-in terminals and the connector for the power supply.

NOTE: After testing, reconnect all connections to their original positions.

Heater/RTD

RTD Reading is Below or Above Set Point - Zone Error is displayed on screen

1. Document all temperature readings for unit, each zone, upper and lower.

2. If the zone probes are switched, there will be two errors, one high and one low.

3. Check the I/O board where the probes with errors are connected. Ensure the probes are plugged in properly.

4. Heater outputs could be swapped; there will be two errors.

5. The I/O board triac could be shorted or open. An orange LED is associated with each triac. It signals if the triac should be on or off.

6. Isolate each triac wire and check the amperage.

• If the triac is supposed to be open and there is no current, the problem could be a heater.

Check continuity through heating element.

Hot Holding

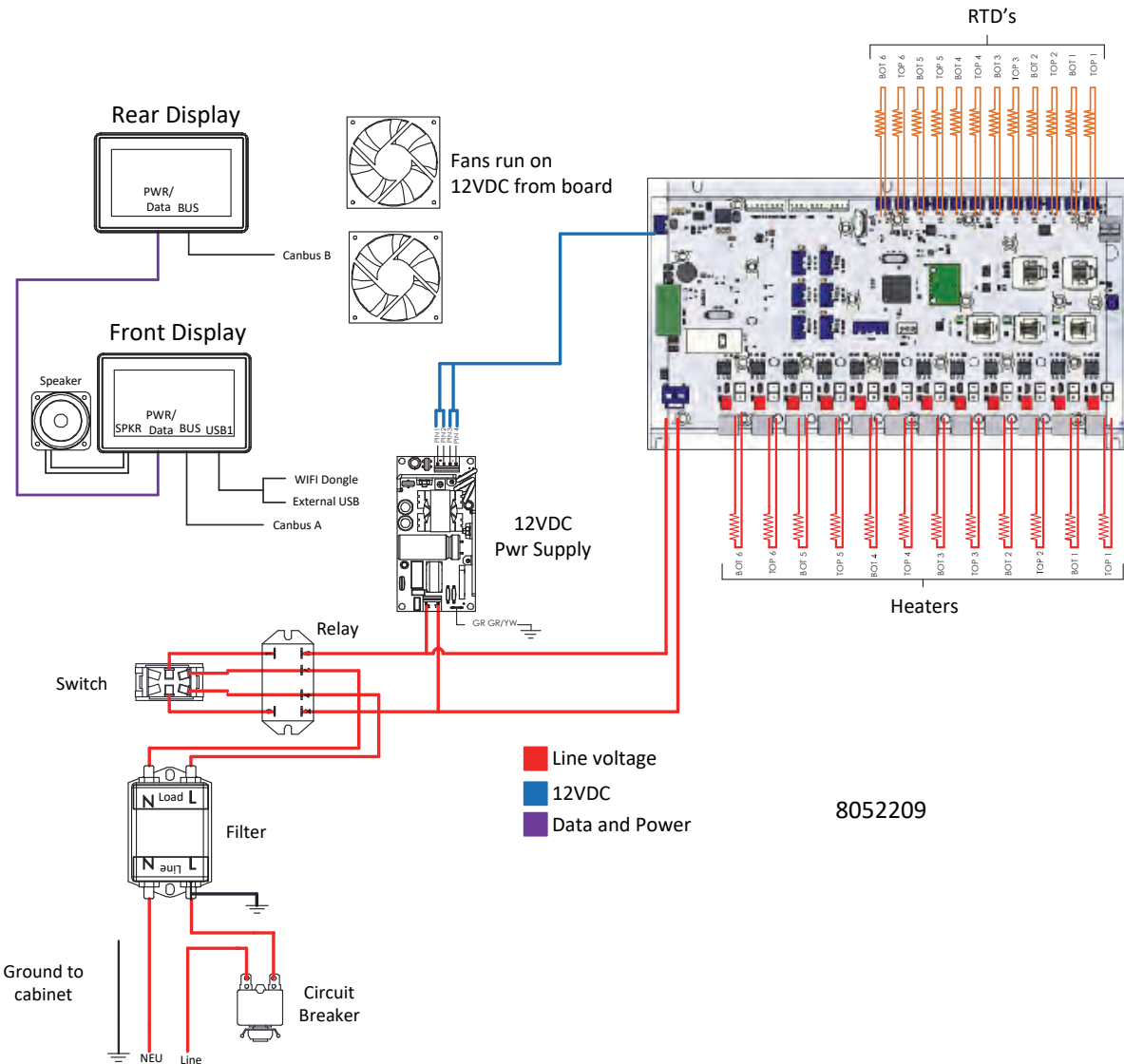
- If the triac light does not match the amperage, the triac is failing and the I/O board needs to be replaced.
- Check input and output of triac, this could signal an I/O board failure.

Shorted Triac

1. Turn the suspect row off and unplug the heater cables and measure voltage on the IO board. With the row off, there should be no line voltage. If the triac is shorted, you will measure AC line voltage. If the triac is half waving, you will get DC voltage of approximately one-half the line AC voltage.

Heater Plate

1. Disconnect power to the cabinet. Remove top panel and left side. Disconnect the heater leads (black and white) and the RTD leads (brown and red) of the suspect plate from the IO board. Measure resistance of the heater across the the black and white leads. Resistance should be 140-150 ohms.
2. Measure resistance across the brown and red RTD leads. Resistance must be within a range of 104-148 ohms. Resistance at room temperature is approximately 107 ohms. If either resistance is incorrect, replace the heater plate.



Wiring Diagram

Hot Holding

Merco Max Visual Holding Cabinets

The cabinets used in Arby's and Chick-fil-A are similar to the model used in McDonald's. The controller and its navigation are essentially the same.

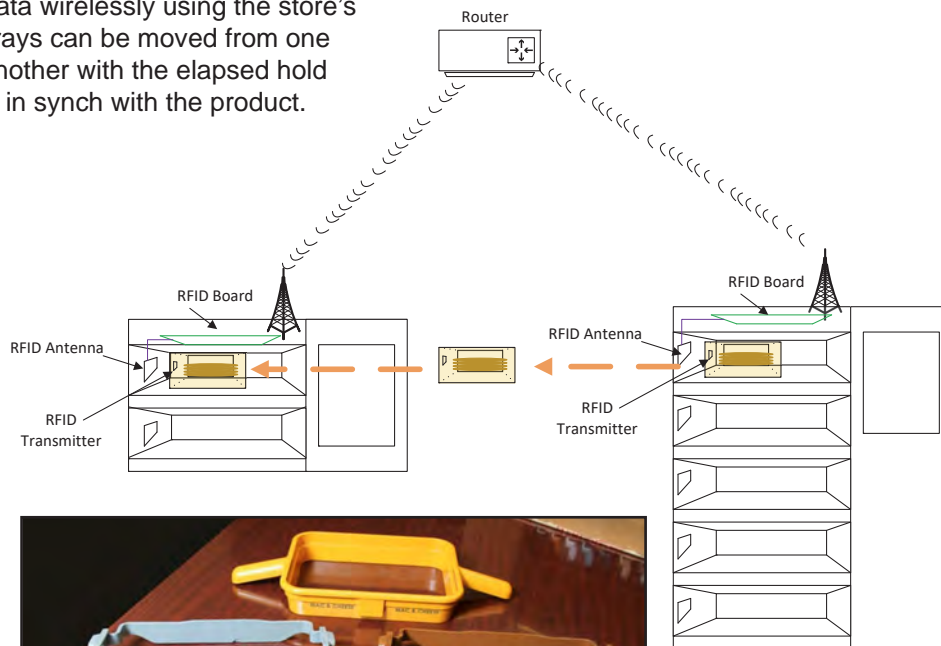
The cabinets differ in their use of lids on the top of the trays and wireless connection between the cabinets, which allows products started in one cabinet to be tracked as they are moved from the back of the store to the front.

Some units also have RFID-equipped trays, which automatically start the timer and adjust temperature parameters for the products they hold as they are placed in the cabinet.

Internet connectivity is an option in all the cabinets.



Cabinets equipped with RFID connectivity will automatically react when a RFID-equipped tray is inserted. The cabinets can share data wirelessly using the store's router and trays can be moved from one cabinet to another with the elapsed hold time staying in synch with the product.



Collars on trays, which have changed shape over time, hold a RFID chip, which identifies product. Chick-fil-A does that for all products. Arby's uses the technology in their roast beef cabinets.

Hot Holding

Online Access to Hot Holding Cabinet Manuals

Scan with QR-code reader/phone to access manuals.
Cover adjacent QR-codes to retrieve desired manual.

Non-Visual Holding Cabinets



MercoMax Forced
Air Holding Cabinet
(MHG) IO 8197404



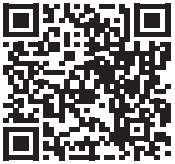
MercoMax Forced Air
Holding Cabinet (MHG)
Service 8197431



MercoMax Forced Air
Holding Cabinet (MHG)
Parts 8197432



MercoEco Holding
Cabinet (MHG)
IO 8197702



MercoMax Forced
Air Holding Cabinet
(MHB) IO 8197385



MercoMax Forced Air
Holding Cabinet (MHB)
Service 8197386



MercoMax Forced Air
Holding Cabinet (MHB)
Parts 8197387

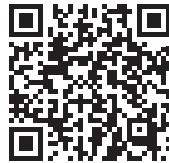


MercoMax Forced
Air Holding Cabinet
(MHS) IO 8197635

Visual Touch Screen Holding Cabinets



Merco Visual Holding Cabinet
(MHA, MHD, MHG, MHL,
MHS, MHT) IO 8197701



Merco Visual Holding Cabinet
(MHA, MHD, MHG, MHL, MHS,
MHT) Service 8197956

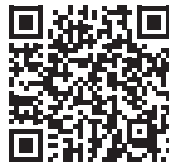


Merco Visual Holding Cabinet
(MHA, MHD, MHG, MHL,
MHS, MHT) Parts 8197937

Visual Touch Screen Holding Cabinets - Chick-fil-A



Merco Visual Holding
Cabinet (MHC) IO
8197455



Merco Visual Holding
Cabinet (MHC) Service
8197460



Merco Visual Holding
Cabinet (MHC) Parts
8197459

Visual Touch Screen Holding Cabinets - Braum's



Merco Visual Holding
Cabinet (MHU) IO
8197485

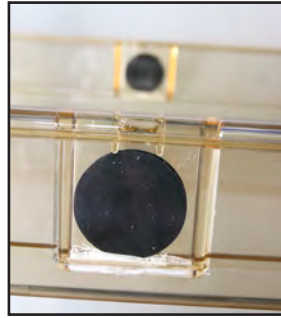
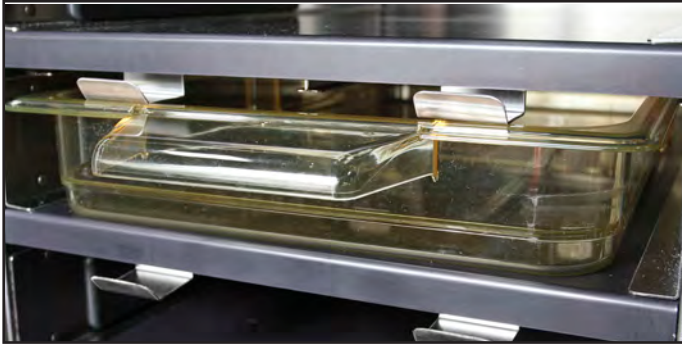


Merco Visual Holding
Cabinet (MHU) Service
8197925



Merco Visual Holding
Cabinet (MHU) Parts
8197497

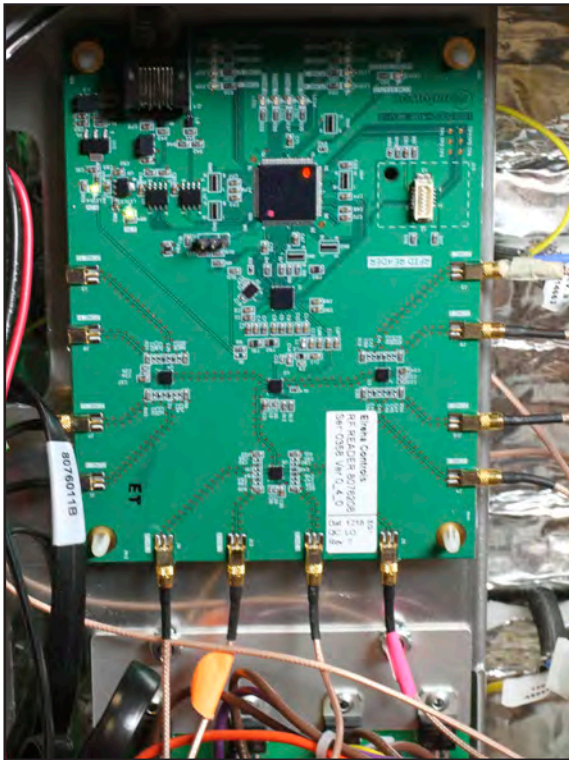
Hot Holding



A tray with RFID chips in the side pocket is shown (above). The chips can be seen in an Arby's roast beef tray with the cover removed (right, above).



Antennas (left) in the cabinet detect the placement of a tray.



A circuit board wired to the antennas in the cabinet is seen on the component shelf of a cabinet (left). The touchscreen display (above) shows a mismatch when a tray chipped for a particular product is placed in the wrong position.

Hot Holding

The components inside the visual holding cabinet are very similar to the UHCTHD. Here it is shown with the right side removed. Similar IO boards are on the left side.

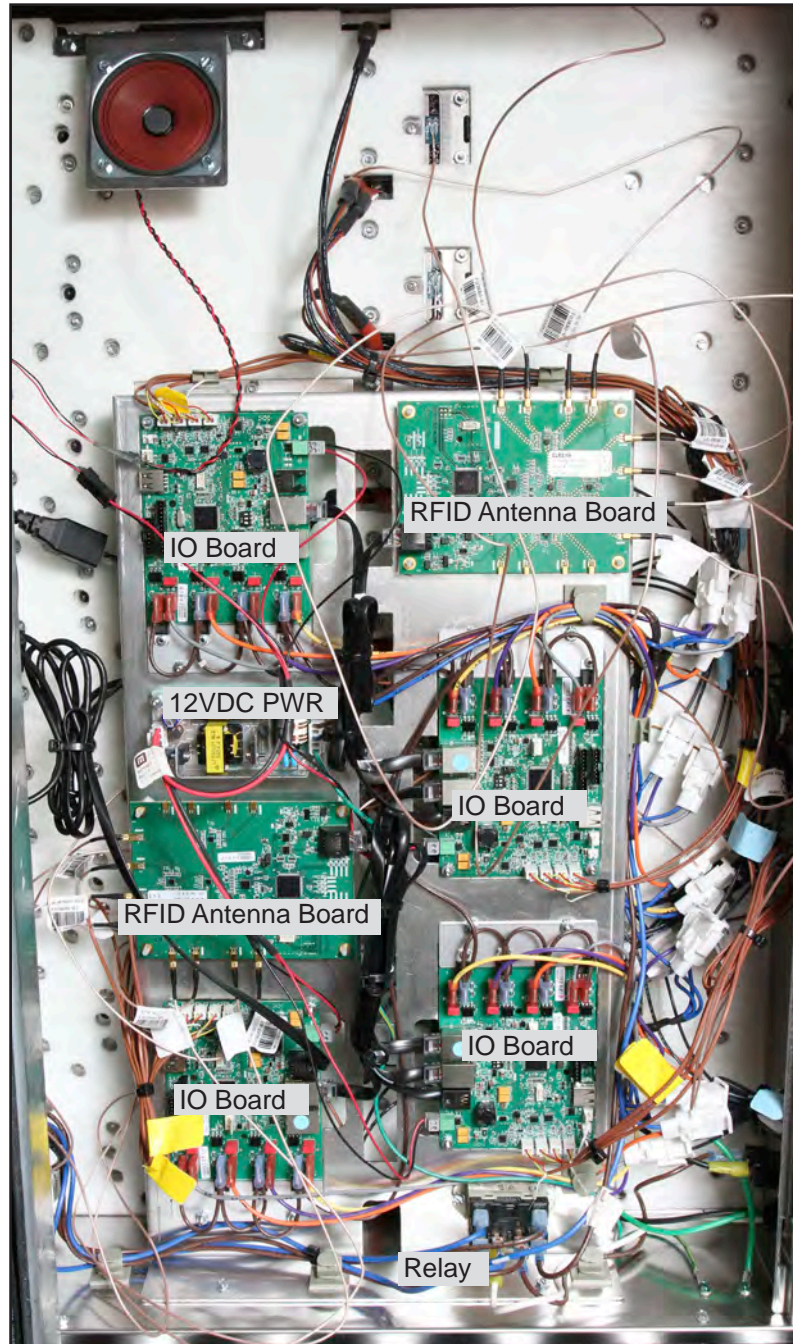
How it Works

Line voltage is provided to the I/O board and a 12-volt DC power supply.

The power supply drives the displays and the control voltage on the IO board.

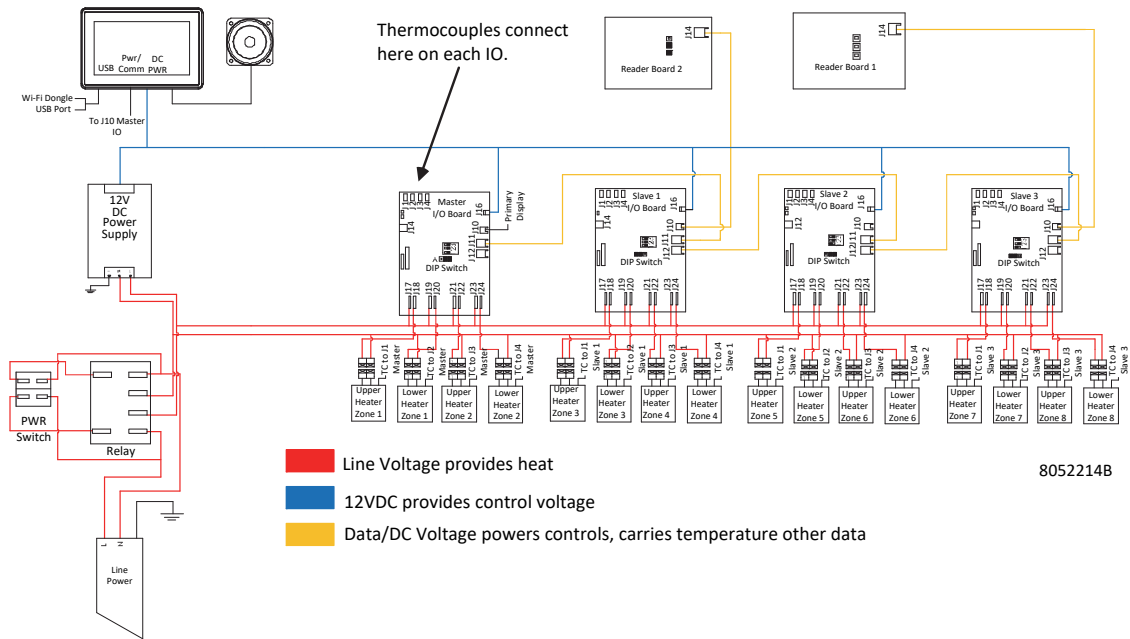
Thermocouples measure temperature at the heater plates and triacs open and close on the IO board, providing line voltage to the heater plates as the unit calls for heat.

Touchscreen navigation and troubleshooting is like that seen on pages 7-4 through 7-7 for the UHCHD-T.



NOTE: McDonald's UHCTHD heater plates use RTD's, Merco heater plates use thermocouples.

Hot Holding



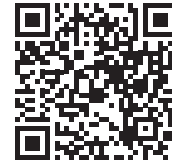
Online Access to Crispy Max Serving Station



CrispyMax IO
8197863



CrispyMax Service
8197929



CrispyMax Parts
8197928

Scan with QR-code reader/phone to access manuals.
Cover adjacent QR-codes to retrieve desired manual.

Hot Holding

Crispy Max

Crispy Max units, in three sizes, heat a perforated basin with air from up to three heater/blowers. The heated air is applied from behind and below the product.

The blowers are protected from grease and salt by a perforated barrier.

Other than an ON/OFF switch, the unit is largely without controls.

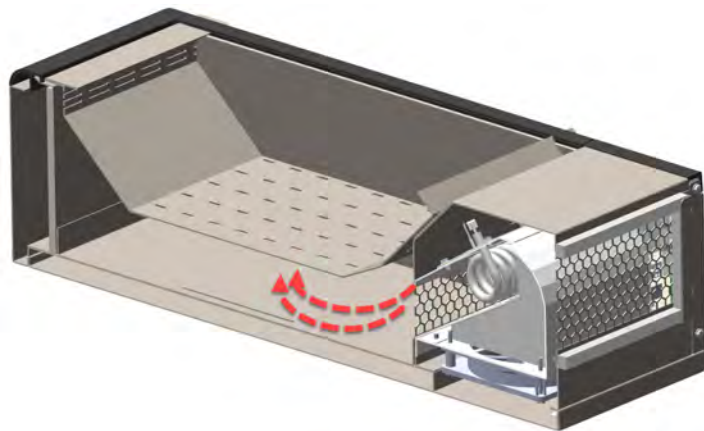
A flashing LED above the switch shows the status of the unit. The sequence of flashes is explained on page 7-16.

When hard power cycled the cabinet will go through a 10-15 minute testing phase. Many people think there is something wrong during this phase. After hard power cycling wait 10-15 minutes before testing to ensure the cabinet is functioning properly.

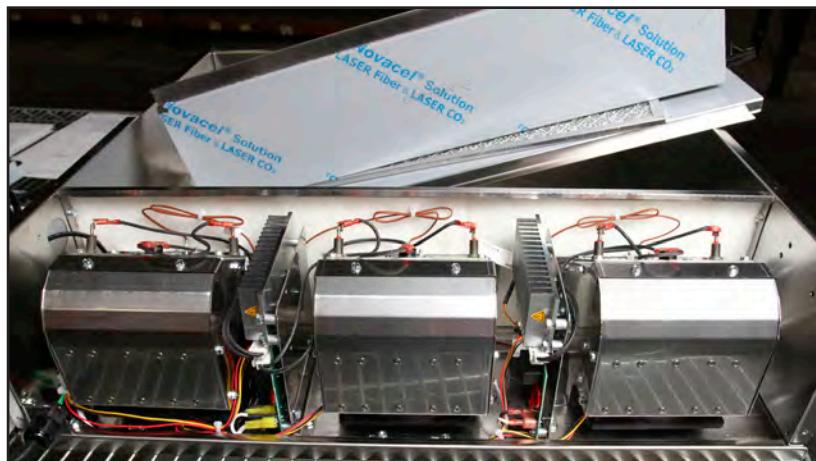
The three-row model is shown partially disassembled (right). The sides must be removed to access the blowers.



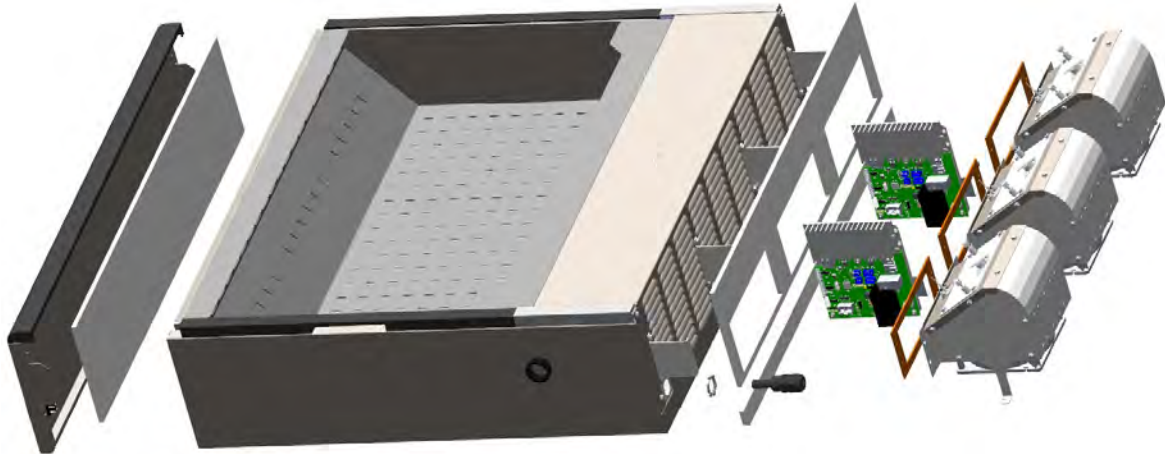
The three-row large unit is shown above. It is 208/240 single phase. The one and two-row models are 120.



A cutaway shows the path of the air under the perforated basin. Allowing oil to gather under the basin is one of the ways the units are damaged.



Hot Holding



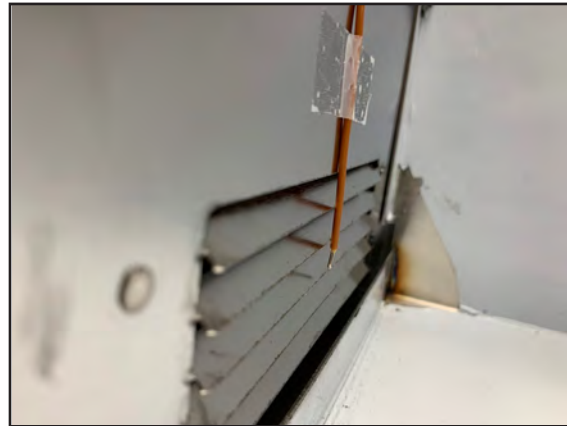
How It Works

Line voltage is supplied to the primary and secondary board, which provide line voltage to the heaters via the hi-limit. DC power is supplied to the fans and control circuits.

The unit's software and boards automatically adjust for consistent performance.

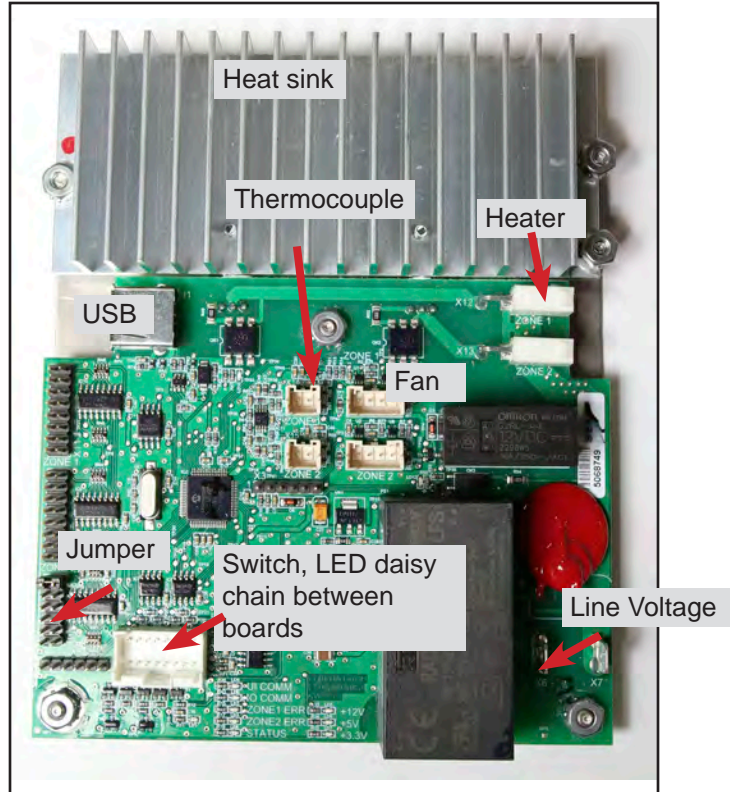
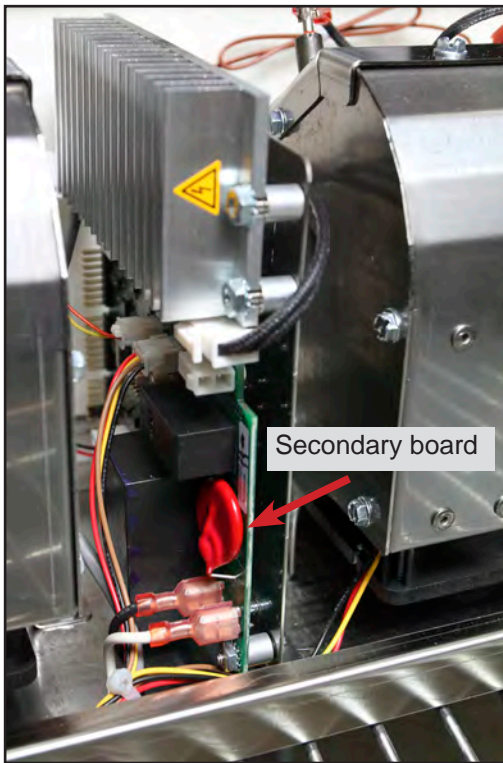
Failure to keep the unit free of oil falling from the perforated basin to the cavity below leads to heater and fan failure.

When oil is allowed to puddle under the basin (right), it degrades the unit's performance. Oil leaks into the fan cavity (below), and the heater, fan and board can be damaged.

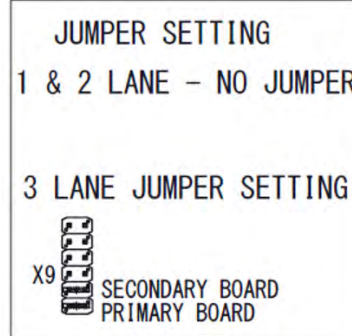
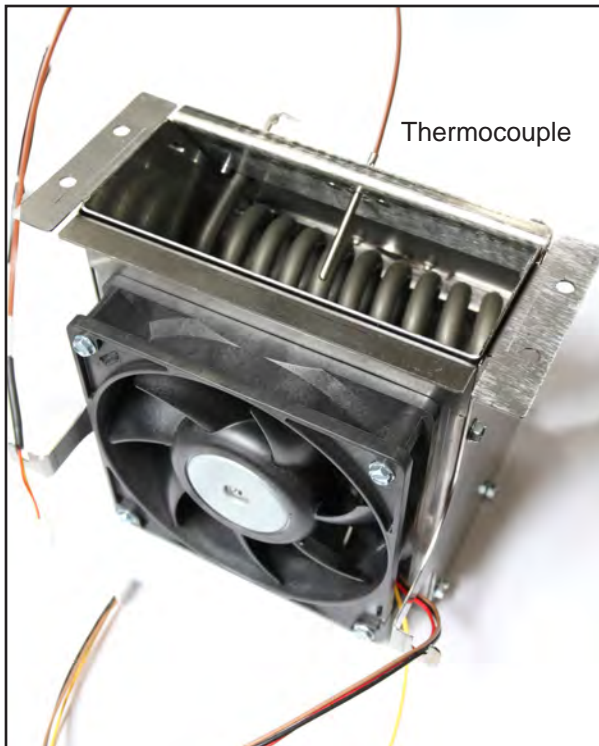


The temperature can be checked, with the food tray removed, with a thermocouple placed on the middle vent. For General Market, the temperature should be between 225°F to 330°F.

Hot Holding



There are no power supplies or generators. The boards generate DC for the fans and switch.



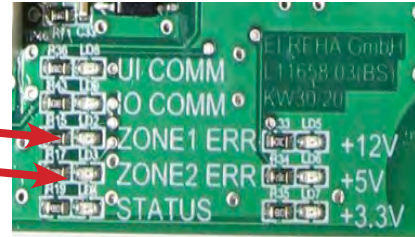
A jumper is used to designate the primary and secondary boards. The jumper position on the board is visible in the photo above.

The fan, heater and thermocouple are all in one unit, although separate parts.

Hot Holding

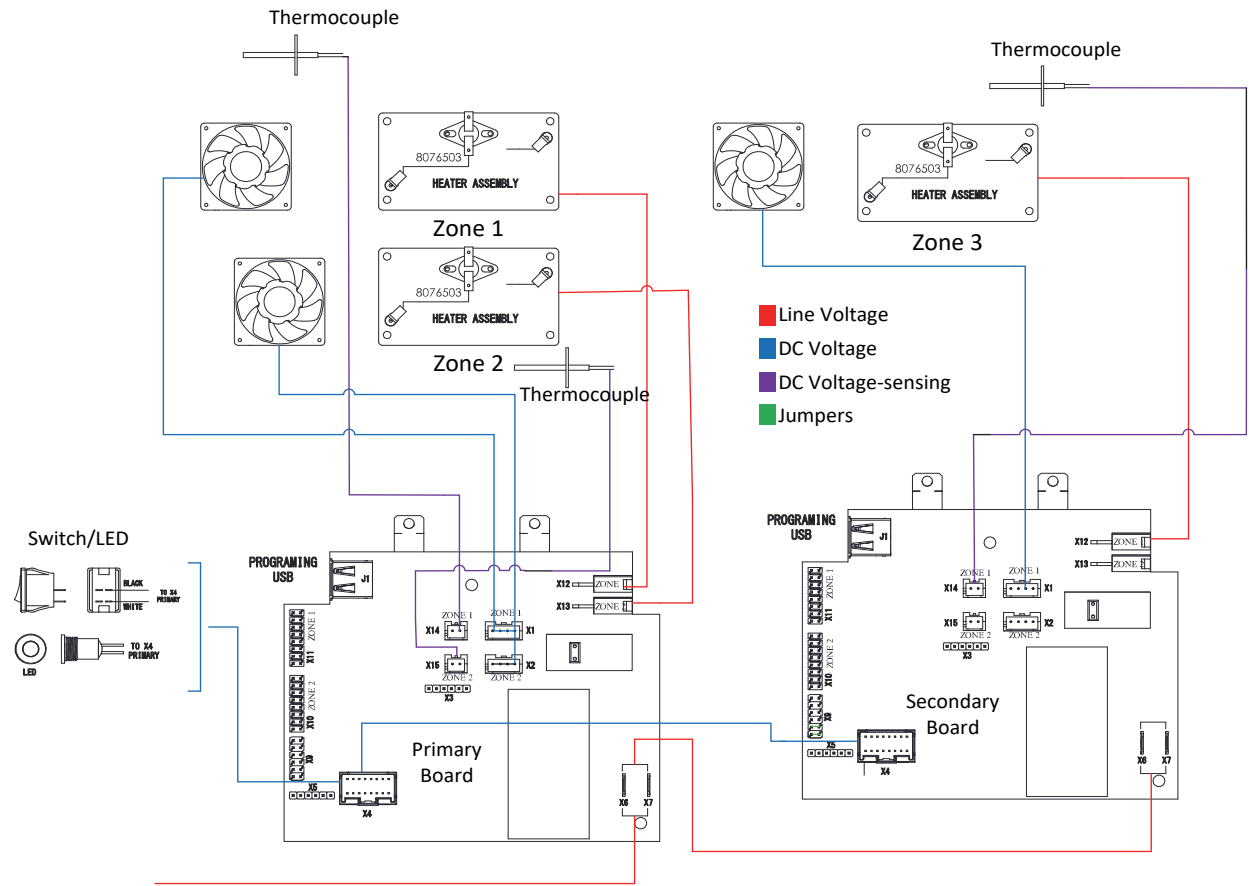


An LED on the front of the unit (left) as well as LED's visible on the control board (right) can be used to diagnose problems with the unit. You have to watch carefully for the flash sequence.



Error	LED	Front LED 1 st Flash	Control Board 2 nd Flash	Service Procedure
Heater Low	Red	Two flashes	One Zone 1 or 2 flash	Check heater, AC Harness or control board
Heater High	Red	Two flashes	Two Zone 1 or 2 flashes	Check heater, AC Harness or control board
Thermocouple Error	Red	Three flashes	One Zone 1 or 2 flash	Check thermocouple and control board operation.
Low Fan Speed	Red	Four flashes	One Zone 1 or 2 flash	Check fan and control board operation.
High Fan Speed	Red	Four flashes	Two Zone 1 or 2 flashes	Check fan and control board operation.
Filter Clog	Yellow	Constant Flashing	None	Check and clean filter.
Heater connection	Red	Six flashes	None	Heater or thermocouple connected to incorrect zone connection. Check wiring diagram for correct connections.
Compartment hot	Red	Seven flashes	None	Ensure the air intake is not blocked.
Communication Error	Red	Five flashes	None	Check DC cable between IO boards and control board operation.
Successful Update	Green	Constant Flashing	None	
Software Load Fail	Red	Constant Flashing	None	Reload menu or software.

Hot Holding



Chapter 8: Charts and Tables

COMPUTER CODES

BK 3 Lane	
Recovery	1652
Program	1650
F° to C°	1658
Set Up	1656
Constant Temp Display	1651
Boil Out	1653
Manual Reset	3322
Language Choice	1655
Sound Level	1655
Total Cook Cycles	5000
Clear Total Cook Cycles	5005
Set to Multi-Product	5050
Set to Dedicated	5060
Enable-Disable Melt Cycle	1751
Enable-Disable Boil Out	1752
Reset Call Tech	1000

K/F3000	
Recovery	0042
Program	3228
Fahrenheit to Celsius	1658
Set Up	3228
Manual Reset	3322
Reset Usage	3228
Tech Mode	1650
Domestic to Int'l Menu	1212
Reset Filter Stats	0469
Reset BADCRC	9988
Reset Service Required	1111
Reset Call Tech	1000
Config Setup	7628

KFC-1	
Recovery	1652
Program	1650
F° to C°	1658
Set Up	1656
Manual Reset	1651

Wingstreet	
Recovery	1652
Program	1650
F° to C°	1658
Set Up	1656
Manual Reset	3322
Setback Temp	1212

M100B	
Recovery	Lt Arrow, 1,2, Temp
Program	Lt Arrow, 1,2
F° to C°	See Man.
Set Up	1,2 Temp
Manual Reset	1658

CM4-S	
Recovery	1652
Program	1650
F° to C°	1658
Set Up	1656
Manual Reset	1651
Heads Cooked	1653
Cooked/Last Filter	1654
Clear Head Counter	1657
Global Count	1658
Clear Filter Prompt	1111
Cancel Filter	1119

CM3.5	
Recovery	1652
Program	1650
F° to C°	1658
Set Up	1656
Constant Temp Display	165L
Boil Out	1653

3000/FQ3000	
Recovery	0042
Program	1650
Fahrenheit to Celsius	1658
Set Up	1656
Reset Usage	1656
Tech Mode	3000
Domestic to Int'l Menu	1212
Reset Filter Stats	0469
Reset BADCRC	9988
Reset Service Required	1111
Reset Call Tech	1000
Config Setup	7628
Reset Stats FQ3000	1656
Reset Factory Menu	3322

FQ4000 Touch Screen	
Menu	1650
Recipes	1650
Settings-Manager	1656
Settings-Service	3000
Service-Manager	1656
Service-Technician	3000
Component Check	9000
Taco Bell Safe Mode E81 Error	4357
Raising Canes	1993

Merco Touch Cabinets	
Manager/Program	2580
Service	159357

NOTE: Some call-for-service resets require terminal plug removal and a power cycle.

M2000	
Recovery	1652
Program	1650
F° to C°	1658
Set Up	1656
Manual Reset	3322
Language Choice	1655
Sound Level	1655
Hi-Limit Test L	8888
Hi-Limit Test R	9999
Reset Call Tech	1000

M3000 LOV	
Recovery	0042
Program	1234
F° to C°	1658
Set Up	1234
Manual Reset	3322
Manager Mode	4321
Reset Usage	4321
Tech Mode	1650
US to Int'l Menu	1212
Reset Filter Stats	0469
Reset Call Tech	1000
Reset BADCRC	9988
Reset Service Required	1111

M4000 Touch Screen	
Menu	1234
Recipes	1234
Settings-Manager	4321
Settings-Service	1650
Service -Manager	4321
Service/Tech Mode-Tech	1650
Component Check	9000
Reset Service Required	1111

UHC-HD	
Program	1955
F° to C°	1955
Set Up	1955
Load Software	98765
View Software Version	090809
Update Language File	090709
Service Test Mode	1111
Switch 6 to 3 Row	11111
LON Works Test Pin	4557
Capture Menu	759248

UHCTHD Touch	
Manager/Program	1955
Importing/Loading Menus	159357
Set Up	1955

Charts and Tables

Frymaster - Probe Resistance Charts

<i>Frymaster Probe Resistance Chart</i>																	
<i>For use with Minco or Hycal Thermistor Probes only (fryer equipped).</i>																	
<i>Not for use with Spaghetti Magic System Probes.</i>																	
F	OHMS	C	F	OHMS	C	F	OHMS	C	F	OHMS	C	F	OHMS	C	F	OHMS	C
32	1000	0	120	1185	49	210	1371	99	310	1574	154	400	1754	204			
50	1040	10	130	1206	54	220	1391	104	320	1594	160	410	1774	210			
60	1061	16	140	1226	60	230	1412	110	330	1614	166	420	1793	216			
70	1080	21	150	1247	66	240	1432	116	340	1634	171	430	1813	221			
75	1091	24	160	1268	71	250	1453	121	350	1654	177	440	1833	227			
80	1101	27	170	1289	77	260	1473	127	360	1674	182	450	1852	232			
90	1122	32	180	1309	82	280	1514	138	370	1694	188	460	1872	238			
100	1143	38	190	1330	88	290	1534	143	380	1714	193	470	1892	243			
110	1164	43	200	1350	93	300	1554	149	390	1734	199	480	1911	249			

Conversion Formulas
PSI = Inches H ₂ O/27.71
PSI x 27.71 = Inches H ₂ O
PSI x 2.036 = Inches Hg
PSI x 51.74 = Millimeters of Hg
PSI x .0689 = Bars
PSI x 68.95 = Millibars
PSI x 6895 = Pa
PSI x 6.895 = kPa

Charts and Tables

UHC, UHC-P, UHC-HD, UHCTHD Touch- Probe Resistance Charts

UHC, UHC-P, UHC-HD, UHCTHD Touch

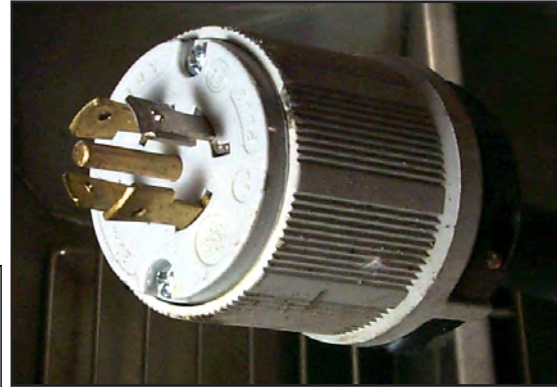
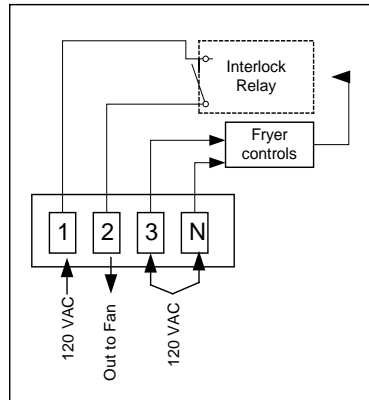
Sensor Temp (°F)	R Sensor	Sensor Temp (°C)
55	104.984	12.77
60	106.065	15.55
65	107.145	18.33
70	108.224	21.11
75	109.302	23.88
80	110.380	26.66
85	111.456	29.44
90	112.532	32.22
95	113.606	35.00
100	114.680	37.77
105	115.753	40.55
110	116.825	43.33
115	117.896	46.11
120	118.966	48.88
125	120.036	51.66
130	121.104	54.44
135	122.172	57.22
140	123.239	60.00
145	124.304	62.77
150	125.369	65.55
155	126.433	68.33
160	127.496	71.11
165	128.559	73.88
170	129.620	76.66
175	130.680	79.44
180	131.740	82.22
185	132.799	85.00
190	133.856	87.77
195	134.913	90.55
200	135.969	93.33
205	137.024	96.11
210	138.078	98.88
215	139.132	101.66
220	140.184	104.44
225	141.235	107.22
230	142.286	110.00
235	143.336	112.77
240	144.385	115.55
245	145.433	118.33
250	146.480	121.11
255	147.526	123.88
260	148.570	126.66

Charts and Tables

McDonald's Hood Wiring

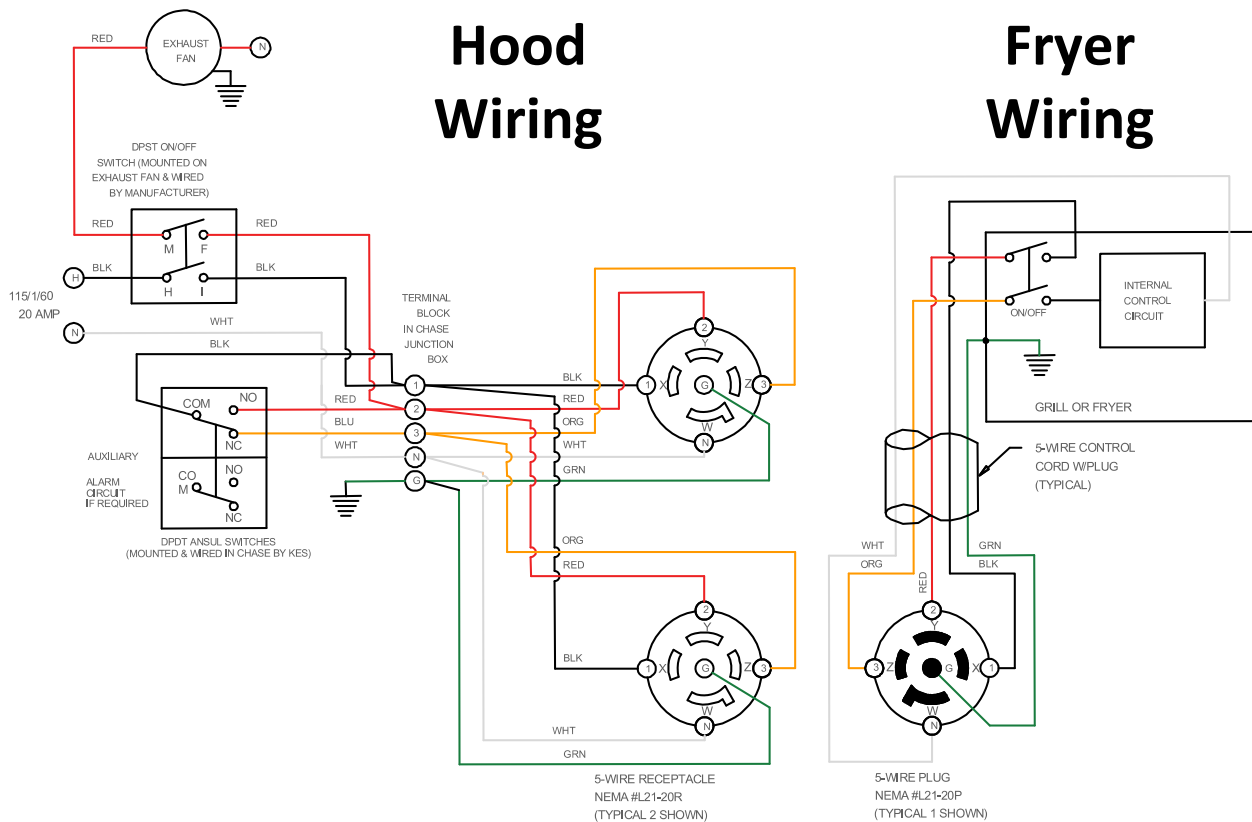
The McDonald's HE, LOV, LOV Touch gas and electric fryers includes an interlock circuit for the exhaust hood. When the fryer is turned on, a relay in the fryer activates the hood system exhaust fan.

McDonald's fryers include a pre-wired interlock cord set. The plug is a five-prong twist lock (NEMA L21-20P) **using 120VAC**, even though it is typically used as a high voltage plug.



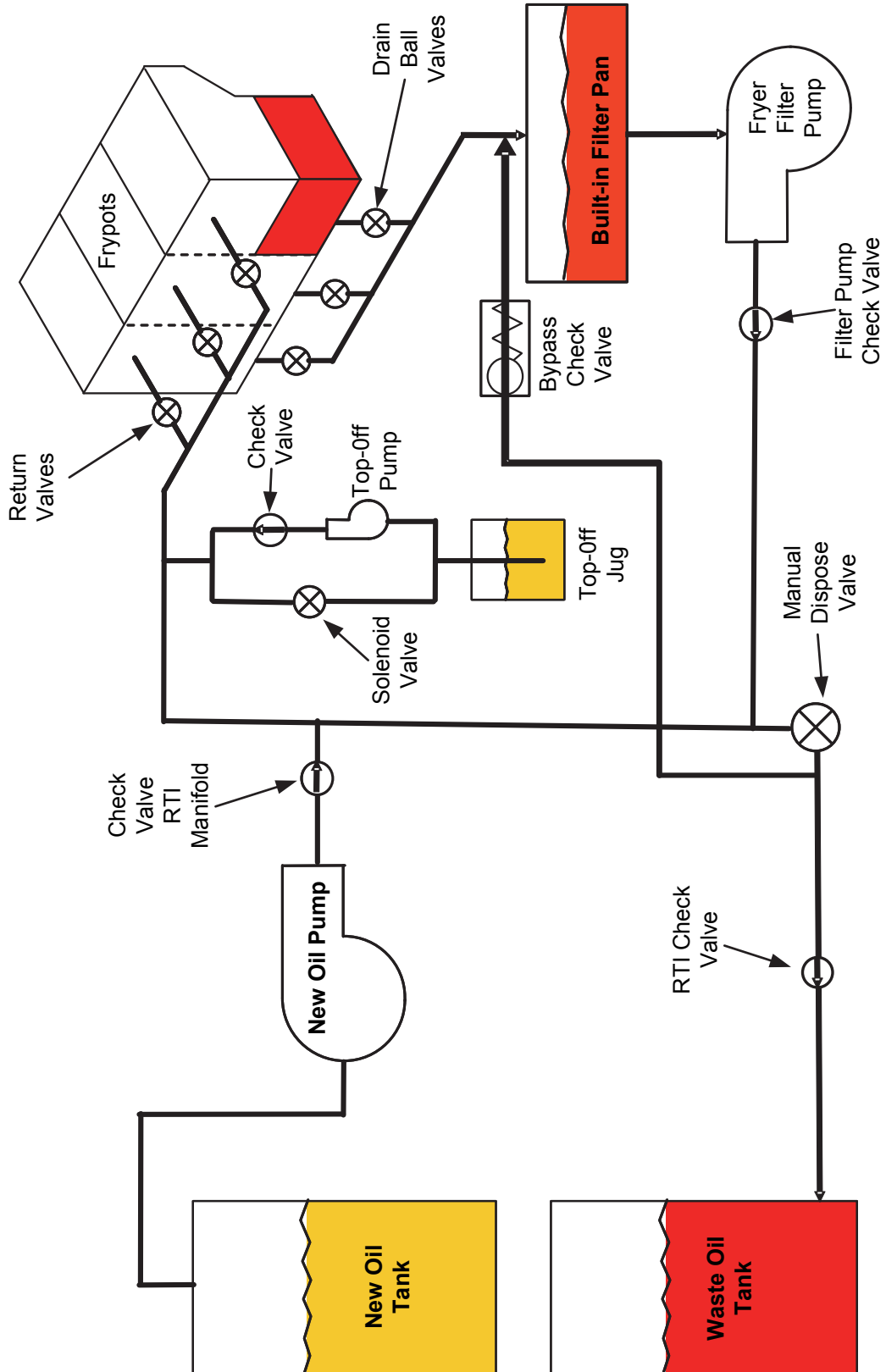
NEMA L21-20P used by McDonald's in the U.S. uses 120VAC.

Depending on the restaurant wiring, the terminal block or the plug may require rewiring to work properly. See diagram for details.



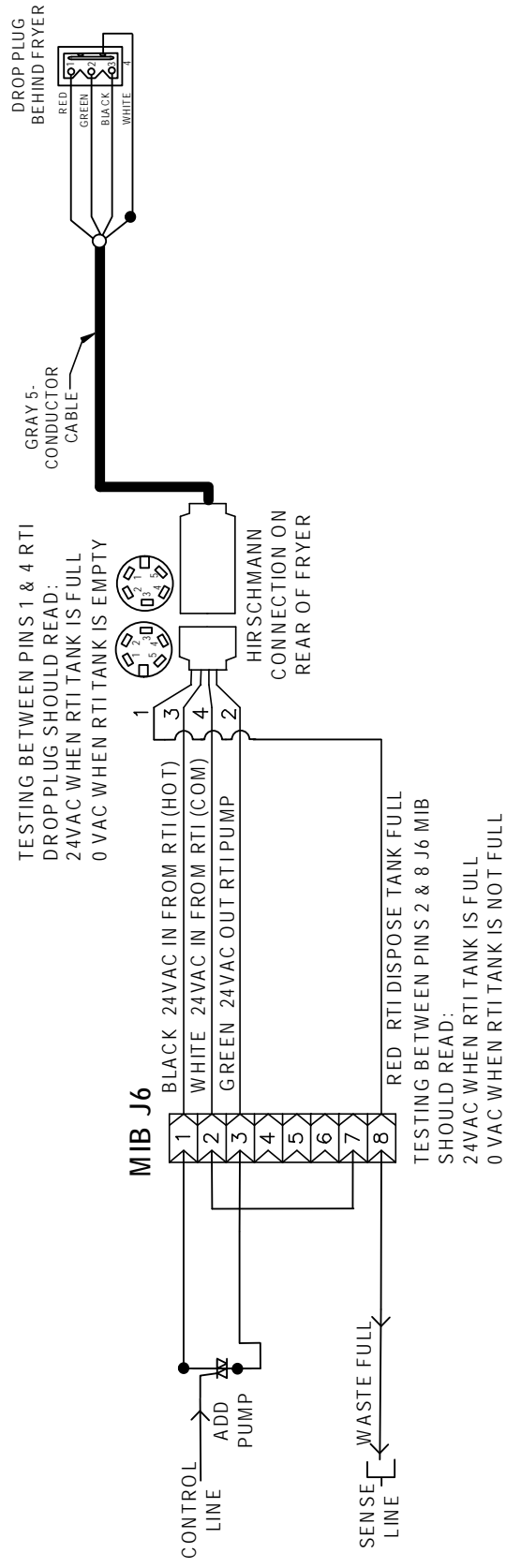
Charts and Tables

Fryer and Bulk Oil System Plumbing Schematic



Charts and Tables

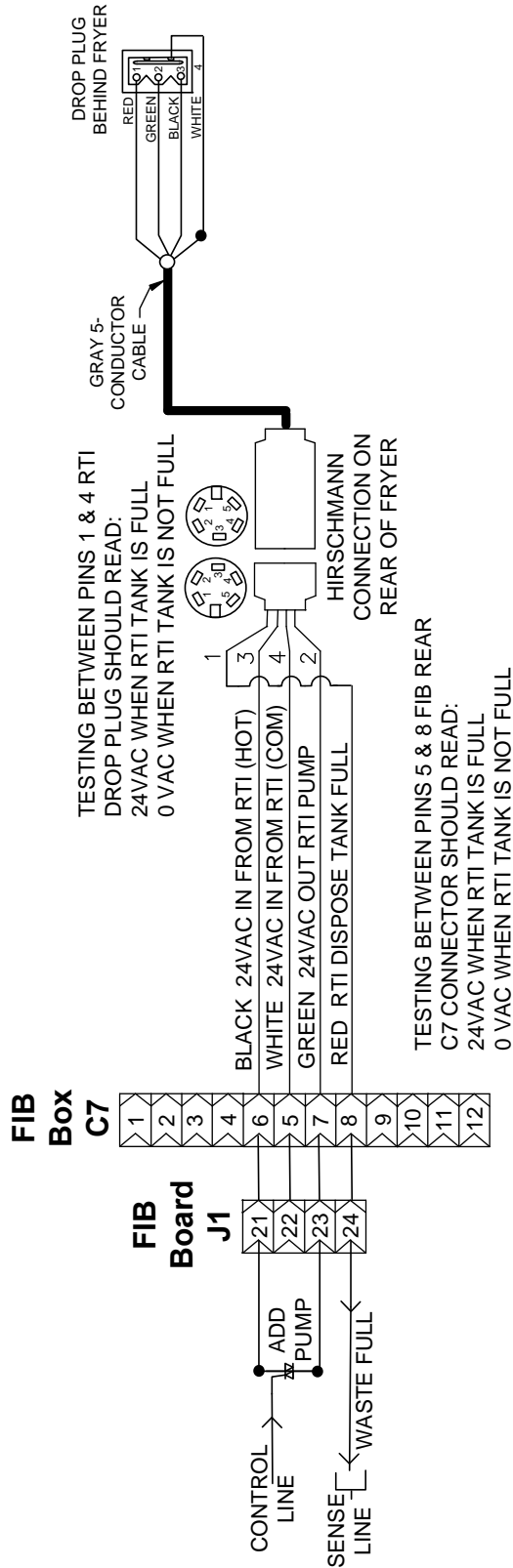
Bulk Oil McDonald's M3000 Wiring



Charts and Tables

Bulk Oil McDonald's M4000 Touch Wiring

BULK OIL LOV-T WIRING

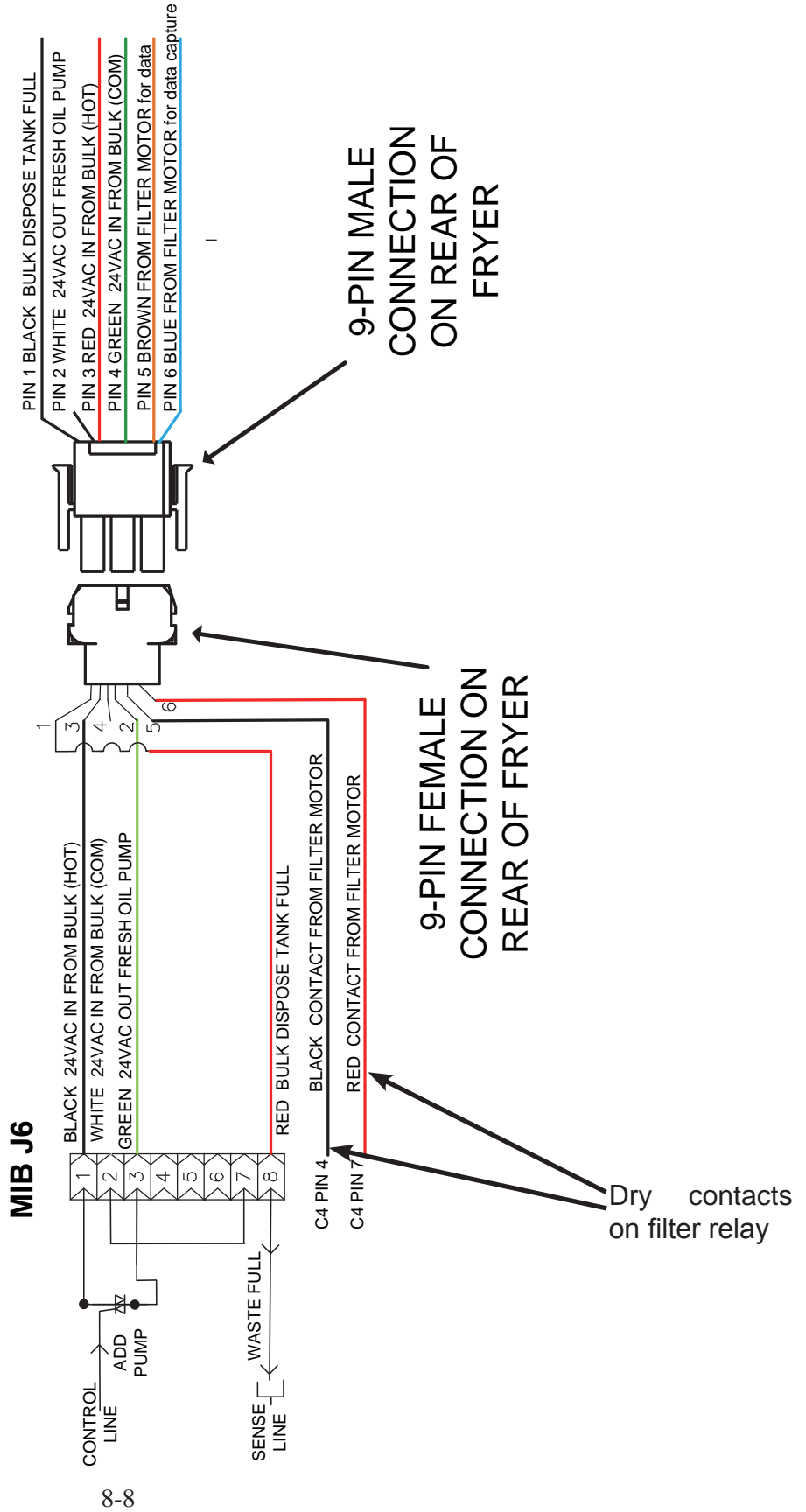


Charts and Tables

Bulk Oil FilterQuick 3000 Wiring

Testing between Pins 2 & 8 J6 MIB should read:
 24VAC When bulk tank is full.
 0 VAC When bulk tank is not full.

Testing between Pins 1 & 4
 9-Pin female plug should read:
 24VAC When bulk tank is full.
 0 VAC When bulk tank is empty.



Charts and Tables

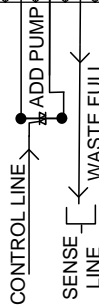
Bulk Oil FilterQuick 4000 Touch Wiring

BULK OIL WIRING

FIB BOX

C7

12 pin



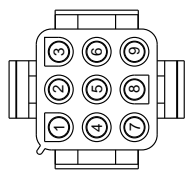
WHITE 24VAC IN FROM BULK (COM)
 BLACK 24VAC IN FROM BULK (HOT)
 GREEN 24VAC OUT FRESH OIL PUMP
 RED BULK DISPOSE TANK FULL

TESTING BETWEEN PINS 5 & 8 FIB C7 SHOULD READ:
 24VAC WHEN BULK TANK IS FULL
 0 VAC WHEN BULK TANK IS NOT FULL

TESTING BETWEEN PINS 1 & 5 9-PIN FEMALE PLUG SHOULD READ:
 24VAC WHEN BULK TANK IS FULL
 0 VAC WHEN BULK TANK IS EMPTY

PIN 1 RED BULK DISPOSE TANK FULL
 PIN 2 WHITE 24VAC OUT FRESH OIL PUMP
 PIN 3 BLACK 24VAC IN FROM BULK (HOT)
 PIN 4 YELLOW 24VAC IN FROM BULK (COM)
 PIN 5 BROWN NOT USED
 PIN 6 BLUE NOT USED

9-PIN FEMALE CONNECTION ON REAR OF FRYER
 9-PIN MALE CONNECTION ON REAR OF FRYER



Charts and Tables

Dean Thermatron and FAST - Probe Resistance Charts

Below are resistance charts applicable to Dean fryers equipped with Thermatron® and FAST controllers.

Electronic Thermostat Systems (Probe wire color: Two Black Wires or Two Brown Wires)		
° Celsius	° Fahrenheit	Ohms (± 3%)
21	70	108130
27	80	84606
32	90	66721
38	100	53020
43	110	42452
49	120	34206
54	130	27735
60	140	22641
66	150	18588
71	160	15349
77	170	12741
82	180	10635
88	190	8925
93	200	7527
99	210	6391
104	220	5470
110	230	4705
116	240	4030
121	250	3441
127	260	2967
132	270	2583
138	280	2255
143	290	1977
149	300	1729
154	310	1496
160	320	1320
166	330	1170
171	340	1051
177	350	942
182	360	840
188	370	750
193	380	676
199	390	605
204	400	541

Charts and Tables

McDonald's LOV/FilterQuick 3000 Error Codes

Refer to page 4-8 or 4-11 Level 2 program on M4000 or Vat Setup for FQ3000, for access to the E-log. The ten most recent errors are listed from AJ, with A being the most recent error.

CODE	ERROR MESSAGE	EXPLANATION
E01	M3000 ONLY REMOVE DISCARD (Right)	A product cook is started on the right side of a split vat or in a full vat that has a different setpoint other than the current vat temperature.
E02	M3000 ONLY REMOVE DISCARD (Left)	A product cook is started on the right side of a split vat or in a full vat that has a different setpoint other than the current vat temperature.
E03	ERROR TEMP PROBE FAILURE	TEMP Probe reading out of range.
E04	HI 2 BAD	High limit reading is out of range.
E05	HOT HI 1	High limit temperature is more than 410°F (210°C), or in CE countries, 395°F (202°C).
E06	HEATING FAILURE	A component has failed in the high limit circuit such as controller, interface board, contactor or open-high limit.
E07	ERROR MIB SOFTWARE	Internal MIB software error.
E08	ERROR ATO BOARD	MIB detects ATO board connection lost; ATO board failure.
E09	ERROR PUMP NOT FILLING	Oil not returning to vat quickly. Possible problems: dirty pad, bad or missing O-rings, tripped or defective filter pump, actuators or linkage.
E10	ERROR DRAIN VALVE NOT OPEN	Drain valve failed to open; valve's position is unknown.
E11	ERROR DRAIN VALVE NOT CLOSED	Drain valve failed to close; valve's position is unknown.
E12	ERROR RETURN VALVE NOT OPEN	Return valve failed to open; valve's position is unknown.
E13	ERROR RETURN VALVE NOT CLOSED	Return valve failed to close; valve's position is unknown.
E14	ERROR AIF BOARD	MIB detects AIF missing; AIF board failure.
E15	ERROR MIB BOARD	Cooking controller detects MIB connections lost; check software version on each controller. If versions are missing, check CAN connections between each controller; MIB board failure.
E16	ERROR AIF PROBE	AIF RTD reading out of range.
E17	ERROR ATO PROBE	ATO RTD reading out of range.
E18	Not Used	
E19	CAN TX FULL©	Connection between controllers lost.
E20	INVALID CODE LOCATION	SD card removed during update.
E21	FILTER PAD/PAPER PROCEDURE ERROR (Change Filter Pad or Paper)	25 hour timer has expired or dirty filter logic has activated.
E22	OIL IN PAN ERROR	The MIB has detected oil may be in the pan.
E23	CLOGGED DRAIN (Gas)	Vat did not empty during filtration.
E24	OIL RETURN (level) SENSOR FAILED (Gas)	Oil return sensor may have failed.
E25	RECOVERY FAULT	Recovery time exceeded maximum time limit.
E26	M3000 ONLY RECOVERY FAULT CALL SERVICE	Recovery time exceeded maximum time limit for two or more cycles.

Charts and Tables

McDonald's LOV / FilterQuick 3000 Error Codes continued

CODE	ERROR MESSAGE	EXPLANATION
E27	LOW TEMP ALARM	Oil temperature has dropped lower than 15°F (8°C) in idle mode or 45°F (25°C) in cook mode.
E28	FilterQuick3000 ONLY HIGH TEMP ALARM	Oil temperature has risen 40°F (22.2°C) higher than setpoint. If temperature continues to rise, the high limit will shut the power off at 425°F (218°C) Non-CE or 395°F (202°C) CE.
E70	OQS Temp High	Oil temperature is too high. Filter between 300°F and 375°F.
E71	OQS Temp Low	Oil temperature is too low. Filter between 300°F and 375°F.
E72	TPM Range Low	The TPM is too low. This may be seen with new oil. The incorrect oil type may be selected in the setup menu. The sensor may not be calibrated for the oil type. See oil type chart in instruction document 8197316. If issue continues contact an FAS.
E73	TPM Range High	The TPM reading is too high. Dispose the oil.
E74	OQS Error	The OQS has an internal error. If issue continues contact an FAS.
E75	OQS Air Error	The sensor is detecting air in the oil. Check the O-rings and check/tighten prescreen filter to ensure no air is entering the OQS sensor. If issue continues contact an FAS.
E76	OQS ERROR	The OQS sensor has a communication error. Check connections to the OQS sensor. Power cycle the entire fryer battery. If issue continues contact an FAS.
E77-E80	Not applicable to operations. Engineering Use only.	

Charts and Tables

McDonald's LOV M4000 / FilterQuick 4000 Touch Screen Error Codes

To access the error log, press the home button. Press the service button. Press the manager button. Enter 1650 for McD M4000 LOV or 1656 for FilterQuick 4000 and press the check button. Press the E-log button. The ten most recent errors, with the most recent at the top, are listed. A “G” indicates a global error. Side-specific errors in split vats have a L or a R. Press the left down arrow to scroll errors. If no errors are present the screen will be blank.

Code	Error Message	Description EXPLANATION
E13	TEMPERATURE PROBE FAILURE	TEMP Probe reading out of range
E16	HIGH LIMIT 1 EXCEEDED	High limit temperature is past more than 410°F (210°C), or in CE countries, 395°F (202°C)
E17	HIGH LIMIT 2 EXCEEDED	High limit switch has opened. Press the red high limit reset button under the control box if applicable.
E18	HIGH LIMIT PROBLEM DISCONNECT POWER	Vat temperature exceeds 460°F (238°C) and the high limit has failed to open. Immediately disconnect power to the fryer and call service.
E19	HEATING FAILURE – XXX F or XXX C	Heating Control latch circuit failed. Heat Contactor failed to latch.
E25	HEATING FAILURE - BLOWER	The air pressure switch(s) failed to close.
E27	HEATING FAILURE - PRESSURE SWITCH - CALL SERVICE	The air pressure switch has failed closed.
E28	HEATING FAILURE – XXX F or XXX C	The fryer has failed to ignite and has locked out the ignition module.
E29	TOP OFF PROBE FAILURE - CALL SERVICE	ATO RTD reading out of range
E32	DRAIN VALVE NOT OPEN - FILTRATION AND TOP OFF DISABLED - CALL SERVICE	Drain valve was trying to open and confirmation is missing
E33	DRAIN VALVE NOT CLOSED - FILTRATION AND TOP OFF DISABLED - CALL SERVICE	Drain valve was trying to close and confirmation is missing
E34	RETURN VALVE NOT OPEN - FILTRATION AND TOP OFF DISABLED - CALL SERVICE or RIGHT VALVE NOT OPEN for multi- return valve systems.	Return valve or Right valve (multi-return valve systems) was trying to open and confirmation is missing
E35	RETURN VALVE NOT CLOSED - FILTRATION AND TOP OFF DISABLED - CALL SERVICE or RIGHT VALVE NOT CLOSED for multi- return valve systems.	Return valve or Right valve (multi-return valve systems) was trying to close and confirmation is missing
E36	VALVE INTERFACE BOARD FAILURE - FILTRATION AND TOP OFF DISABLED - CALL SERVICE	Valve Interface Board connections lost or board failure.
E37	AUTOMATIC INTERMITTENT FILTRATION PROBE FAILURE - FILTRATION DISABLED - CALL SERVICE	AIF (VIB Probe) RTD reading out of range.
E39	CHANGE FILTER PAD	25-hour timer has expired, or dirty filter logic has activated.
E41	OIL IN PAN ERROR	The system detects that oil may be present in the filter pan.
E42	CLOGGED DRAIN (Gas)	Vat did not empty during filtration
E43	OIL SENSOR FAILURE - CALL SERVICE	Oil level sensor may have failed.
E44	RECOVERY FAULT	Recovery time exceeded maximum time limit.
E45	RECOVERY FAULT – CALL SERVICE	Recovery time exceeded maximum time limit for two or more cycles. Reset the error code by going to: HOME -> SERVICE -> SERVICE ->3000-> TECH MODE -> RESETS -> RECOVERY FAULT CALL SERVICE -> YES.
E46	SYSTEM INTERFACE BOARD 1 MISSING - CALL SERVICE	SIB board 1 connection lost or board failure.
E51	DUPLICATE BOARD ID - CALL SERVICE	Two or more controllers have the same location ID.
E52	USER INTERFACE CONTROLLER ERROR - CALL SERVICE	The controller has an unknown error.
E53	CAN BUS ERROR - CALL SERVICE	Communications are lost between boards.
E55	SYSTEM INTERFACE BOARD 2 MISSING - CALL SERVICE	SIB board 2 connection lost or board failure.

Charts and Tables

McDonald's LOV M4000 / FilterQuick 4000 Touch Screen Error Codes continued

Code	Error Message	Description <small>EXPLANATION</small>
E61	MISCONFIGURED ENERGY TYPE	The fryer is configured for the incorrect energy type.
E62	SLOW HEATING FAILURE XXXF OR XXXC - CHECK ENERGY SOURCE - CALL SERVICE	The vat is not heating properly.
E63	RATE OF RISE	Rate of rise error occurred during a recovery test.
E64	FILTRATION INTERFACE BOARD FAILURE - FILTRATION AND TOP OFF DISABLED - CALL SERVICE	Filtration Interface Board connections lost or board failure.
E65	CLEAN OIB SENSOR – XXX F OR XXX C - CALL SERVICE or OIL LEVEL NOT DETECTED	Gas -The oil is back sensor does not detect oil. Ensure the vat is full of oil and it's above the sensor and press X (NO). Press √ (YES) to clean the oil sensor.
E65 Large Capacity Gas Fryers	E65	<p>The float switch does not detect oil.</p> <ol style="list-style-type: none"> 1. Ensure the frypot is full of oil. 2. Float switch may be stuck up or down. 3. Clean the float switch. <p>Ensure when removing the float switch that its position is clearly marked and replaced properly. Installing the float upside down will change the switch from N/O to N/C. This could allow the empty frypot to ignite. Ensure the float switch moves freely up and down.</p>
E66	DRAIN VALVE OPEN – XXXF OR XXXC	Drain valve is opened during cooking.
E67	SYSTEM INTERFACE BOARD NOT CONFIGURED - CALL SERVICE	Controller is turned on when the SIB board is not configured.
E68	OIB FUSE TRIPPED – CALL SERVICE	The VIB board OIB fuse has tripped and didn't reset.
E69	RECIPES NOT AVAILABLE	The controller has not been programmed with product recipes. Replace controller with factory programmed controller.
E70	OQS TEMP HIGH	Oil temperature is too high for a valid OQS reading. Filter at a temperature between 300°F (149°C) and 375°F (191°C).
E71	OQS TEMP LOW	Oil temperature is too low for a valid OQS reading. Filter at a temperature between 300°F (149°C) and 375°F (191°C).
E72	TPM RANGE LOW	The TPM is too low for a valid OQS reading. This may also be seen with fresh new oil. The incorrect oil type may be selected in the setup menu. The sensor may not be calibrated for the oil type. See oil type chart in instruction document 8197316. If issue continues contact an FAS.
E73	TPM RANGE HIGH	The TPM reading is too high for a valid OQS reading. Dispose the oil.
E74	OQS ERROR	The OQS has an internal error. If issue continues contact an FAS.
E75	OQS AIR ERROR	The OQS is detecting air in the oil. Check the O-rings and check/tighten prescreen filter to ensure no air is entering the OQS sensor. If issue continues contact an FAS.
E76	OQS ERROR	The OQS sensor has a communication error. Check connections to the OQS sensor. Power cycle the entire fryer battery. If issue continues contact an FAS.
E81	SAFE MODE FAILURE ERROR	The system has detected the fryer is not heating properly due to low oil conditions. Ensure the fryer has oil to the bottom fill line or higher. If not, add oil to the bottom fill line. Unlock code is 4357.
E82	LOW OIL DETECTED	This is only visible in the cloud. It's not visible on the UI. The vat doesn't have enough oil to cover the AIF/ATO probes. Fill the vat with oil.
E83	TOP OFF EMPTY	This is only visible in the cloud. It's not visible on the UI. The JIB is out of oil. Replace the JIB and top off the vat.

Charts and Tables

McDonald's LOV M4000 / FilterQuick 4000 Touch Screen Error Codes continued

Code	Error Message	Description <small>EXPLANATION</small>
E85	LEFT RETURN VALVE or LEFT VALVE NOT OPEN VALVE NOT OPE - FILTRATION AND TOP OFF DISABLED - CALL SERVICE	Left return valve was trying to open, and confirmation is missing
E86	LEFT RETURN VALVE or LEFT VALVE NOT CLOSED - FILTRATION AND TOP OFF DISABLED - CALL SERVICE	Left Return valve was trying to close, and confirmation is missing
E87	RIGHT RETURN VALVE or CENTRAL VALVE NOT OPEN - FILTRATION AND TOP OFF DISABLED - CALL SERVICE	Right return valve or Central Valve was trying to open, and confirmation is missing
E88	RIGHT RETURN VALVE or CENTRAL VALVE NOT CLOSED - FILTRATION AND TOP OFF DISABLED - CALL SERVICE	Right return valve or Central Valve was trying to close, and confirmation is missing

Start Up (Commission) Forms, Quick References, Filter Statistics-Error Forms

Scan with QR-code reader to access manuals. Cover adjacent QR-codes to retrieve desired manual.

Chapter 9 Start Up (Commission) Forms



Click on the QR Code to access a collection of Startup (Commission) Forms.

<http://fm-xweb.frymaster.com/service/udocs/Manuals/8198004SUF.pdf>

Chapter 10 Quick References



Click on the QR Code to access a collection of Quick References

<http://fm-xweb.frymaster.com/service/udocs/Manuals/8198004QR.pdf>

Chapter 11 Filter Statistics - Error Forms



Click on the QR Code to access a collection of Filter Statistics - Error Forms

<http://fm-xweb.frymaster.com/service/udocs/Manuals/8198004FS.pdf>



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