i'm lovin' it

LOV Low Oil Volume Fryer

HENNY PENNY®
Global Foodservice Solutions

Henny Penny

Split Vat & Full Vat
Open Fryers – Electric
Model LVE-102
Model LVE-103
Model LVE-104

TECHNICAL MANUAL

TABLE OF CONTENTS

Section **Page**

Section 1. TROUBLESHOOTING 1-1
1-1 Introduction 1-1
1-2 Safety 1-1
1-3 Troubleshooting 1-2
1-4 Error Code Table 1-7

Section 2. INFO, FILTER & TEMP BUTTON STATS 2-1
2-1 INFO Button Stats 2-1
2-2 FILTER Button Stats 2-1
2-3 TEMP Button Stats 2-1
2-4 HP Info Mode 2-2

Section 3. LEVEL 1 PROGRAMMING 3-1
3-1 Modifying Product Settings 3-1
3-2 AIF Clock 3-3
3-3 Deep Clean Mode 3-4
3-4 Fryer Setup 3-5

Section 4. LEVEL 2 PROGRAMMING 4-1
4-1 Advanced Product Settings 4-1
4-2 E-Log (error code log) 4-2
4-3 Passwords 4-3
4-4 Alert Tone (and volume) 4-3
4-5 Filter After 4-4
4-6 Filter Time 4-4

Section 5. LEVEL 3 PROGRAMMING 5-1
5-1 Additional Advanced Product Settings 5-1
5-2 Special Programming 5-2
5-3 Clock Set 5-6
5-4 Data Comm & Heat Control 5-6
5-5 Tech Mode 5-7
5-6 Stats Mode 5-12

Section 6. INFORMATION MODE 6-1
6-1 Info Mode 6-1

Section 7. MAINTENANCE SECTION 7-1
7-1 Intoduction 7-1
7-2 Maintenance Hints 7-1
7-3 Preventive Maintenance 7-1
7-4 Control Panel and Menu Card Replacement 7-2
7-5 High Temperature Limit Control 7-3
7-6 Breakers 7-7
7-7 Main Power Switch 7-8

TABLE OF CONTENTS

Section **Page**

Section 7. MAINTENANCE SECTION (Continued)
7-8 Temperature Probe Replacement 7-8
7-9 Oil Channel Clean-Out 7-10
7-10 Element Safety Switch 7-11
7-11 Contactors 7-12
7-12 Solenoid Valves 7-14
7-13 Drain Valve Actuators 7-15
7-14 Filter Pump & Motor 7-16
7-15 JIB Pump 7-19
7-16 AIF PC Board 7-19
7-17 Transformers 7-20
7-18 Filter Motor Relay 7-21
7-19 Drain Pan Switch 7-22
7-20 Filter and JIB Lights 7-23
7-21 Oil Level Probes 7-24
7-22 Electric Heating Elements 7-26
7-23 Check Valve 7-28

Section 8. PARTS INFORMATION 8-1
8-1 Introduction 8-1
8-2 Genuine Parts 8-1
8-3 When Ordering Parts 8-1
8-4 Prices 8-1
8-5 Delivery 8-1
8-6 Warranty 8-1
8-7 Recommended Spare Parts Lists for Distributors 8-1

Apenndix A A-1 Wiring Diagrams & Scematics A-1

SECTION 1. TROUBLESHOOTING

1-1. INTRODUCTION

This section provides troubleshooting information in the form of an easy to read table.

If a problem occurs during the first operation of a new fryer, recheck the installation per the Installation Section of the Operator's manual.

Before troubleshooting, always recheck the operation procedures per Section 3 of the Operator's manual.

1-2. SAFETY

Where information is of particular importance or safety related, the words DANGER, WARNING, CAUTION, and NOTICE are used. Their usage is described below.

SAFETY ALERT SYMBOL is used with DANGER, WARNING, or CAUTION which indicates a personal injury type hazard.

NOTICE is used to highlight especially important information.

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

DANGER INDICATES AN IMMINENTLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY.

1-3. TROUBLESHOOTING

To isolate a malfunction, proceed as follows:

1. Clearly define the problem (or symptom) and when it occurs.

2. Locate the problem in the Troubleshooting table.

3. Review all possible causes. Then, one-at-a-time work through the list of corrections until the problem is solved.

4. Refer to the maintenance procedures in the Maintenance Section to safely and properly make the checkout and repair needed.

If maintenance procedures are not followed correctly, injuries and/or property damage could result.

Problem	Cause	Correction
POWER SECTION		
With power switch in ON position, the fryer is completely inoperative (NO POWER)	• Open circuit	• Check to see that unit is plugged in • Check the breaker or fuse at supply box • Check voltage at wall receptacle • Check MAIN POWER switch; replace if defective • Check cord and plug • Reset circuit breakers in fryer • Reset transformer circuit breaker
HEATING OF SHORTENING SECTION		
Oil will not heat	• Blown fuse or tripped	• Reset circuit breaker or replace fuse at supply box or control panel
	• Faulty power switch.	• Check power switch per maintenance section onthe power switch
	• Faulty cord and plug	• Check cord and plug • Check power at receptacle
	• Faulty drain switch	• Check drain switch per maintenance section on drain switches
	• Faulty PC Board	• Check control panel per maintenance section and replace as needed.
	• High limit control switch tripped	• Allow unit to cool down (15-20 minutes), reset the high limit using a small screwdriver or Allen wrench, by gently pushing it into the heating element hinge hole; if high limit does not reset, high limit must be replaced 

Problem	Cause	Correction
HEATING OF SHORTENING SECTION (Continued)		
Oil will not heat (Continued)	• Drain valve open	• Close drain valve
	• Possible faulty temperature probe	• Replace temperature probe
	• Faulty contactor	• Check contactor per maintenance section on contactors
	• Breaker on fryer tripped	• Check breakers on fryer per maintenance section on breakers
Oil heating too slow	• Low or improper voltage	• Use a meter and check the receptacle against data plate
	• Weak or burnt out element(s)	• Check heating element(s) per Element Replacement Section
	• Points in contactor bad	• Check contactor per Contactor Replacement Section
	• Wire(s) loose	• Tighten
	• Burnt or charred wire connection	• Replace wire and clean connectors
Oil overheating	• Programming wrong	• Check temperature setting in the program mode
	• Faulty PC board	• Replace control board if heat indicator stays on past ready temperature
	• Faulty temperature probe	• Check probe calibration and replace if temperature is off $\pm$ 5 degress
	• Check contactor for not opening	• Check faulty contactor per Contactor Replacement Section

Problem	Cause	Correction
	OIL LEVEL SECTION	
Oil foaming or boiling over vat	• Water in oil	• At end of a Cook Cycle, drain and clean vat; add fresh oil
	• Improper or bad oil	• Use recommended oil
	• Improper filtering	• Refer to the procedure covering filtering the oil
	• Cold zone (bottom of vat) full of crumbs	• Filter oil
	• Improper rinsing after cleaning the fryer	• Rinse the vat thoroughly to remove any cleaning agent in the vat
Oil will not drain from vat	• Drain valve clogged with crumbs	• Open valve, force crumbs through drain using cleaning brush.
	• Faulty actuator	• Replace actuator per Maintenance Section on the actuator
	• Oil channel clogged	• Access the clean-out plug on the sides of the unit (see Oil Channel Clean-out Section)
Oil leaking through drain valve	• Obstruction in drain	• Remove obstruction
	• Faulty drain valve	• Replace drain valve
	• Locations with RTI, the 3-way valve is stuck open	• The RTI system can be disconnected until RTI repairs the valve
Vat is under-filled	• JIB is low or empty	• Fill the JIB
	• JIB oil line is clogged or collapsed	• Check JIB line
	• Filter pan needs cleaned	• Clean filter pan and change pad
Bubbles in oil during entire filtering process	• Filter pan not completely engaged	• Make sure filter pan return line is pushed completely into the receiver on the fryer
	• Filter pan clogged	• Clean pan and change pad
	• Damaged o-ring on filter line tube on fryer	• Change O-ring

Problem	Cause	Correction
FILTER MOTOR SECTION		
Filter motor runs but pumps oil slowly	• Filter line connections loose	• Tighten all filter line connections
	• Drain pan o-rings damaged or missing	• Install new o-rings
	• Filter paper or pad clogged	• Change filter paper or pad
Filter motor will not run	• Power cord for vat #1 is not plugged-in	• Plug power cord into receptacle
	• Thermal reset button on the rear of the pump motor is tripped	• Allow time for the motor to cool and then, using a screwdriver, press hard against the button until it clicks 
DISPLAYED PROMPT SECTION		
"IS POT FILLED" filter error prompt	• All oil did not completely return after a filter cycle	• Have manager follow prompts • Is JIB full? If not, fill JIB
	• Filter pad clogged	• Replace filter pad/clean pan.
"CHECK PAN" prompt	• Filter pan missingnot	• Find pan and install
	• Filter pan not completely engaged	• Adjust filter pan
	• Filter pan interlock not engaged	• Adjust filter pan to engage interlock
"CHANGE FILTER PAD" prompt appears	• Pad has not been changed within a 24hr period; Main power switch was turned off during filter pad change	• Replace pad with NEW filter pad with main power switch on. *NOTE* 24/7 store : Replace filter twice a day.
	• Drain pan microswitch stuck	• Check microswitch

1-4. ERROR CODES

In the event of a control system failure, the digital display shows an error message. The message codes are shown in the DISPLAY column below. A constant tone is heard when an error code is displayed, and to silence this tone, press any button.

DISPLAY	CAUSE	CORRECTION
"E-4"	Control board overheating	Turn switch to OFF position, then turn switch back to ON; if display shows "E-4", the control board is getting too hot; check the louvers on each side of the unit for obstructions
"E-5"	Oil overheating	Turn switch to OFF position, then turn switch back to ON; if display shows "E-5", the heating circuits and temperature probe should be checked
"E-6A"	Temperature probe open	Turn switch to OFF position, then turn switch back to ON; if display shows "E-6A", the temperature probe should be checked
"E-6B"	Temperature probe shorted checked	Turn switch to OFF position, then turn switch back to ON; if display shows "E-6B", temperature probe should be
"E-10"	E-10A- tripped above 300F E-10B- tripped below 300F E-10C- tripped while cooking E-10D- tripped <5min. of Auto Filter E-10F- tripped during filter cycle E-10M- tripped during melt mode E-10Y- tripped <5min of "YES" to "IS THE POT FULL?" prompt	Allow fryer to cool for 15-20 minutes; reset high limit by pressing down & releasing raisedside of the switch for the vat that is not operating; a single reset switch is found behind the door of each well; if high limit does not reset, high limit must be replaced 
"E-15"	Drain valve open	Clean and/or close fish vat drain valve; if clean and closed, have drain switch continuity checked
"E-18-A" "E-18-B" "E-18-C"	Left level sensor open Right level sensor open Both level sensors open	Turn switch to OFF position, then turn switch back to ON; If display still indicates a failed sensor, check the connectors at the control board; check sensor & replace, if necessory
"E-21"	Slow heat recovery	Have a certified service technician check the fryer for correct gas supply and pressure to the unit; have the gas valves checked; have unit checked for loose or burnt wires
"E-22"	No heat	Check power cord and have heat circuit checked

1-4. ERROR CODES (Continued)

DISPLAY	CAUSE	CORRECTION
"E-31"	Elements are up	Lower elements back down
"E-41" , "E-46"	Programming failure	Turn switch to OFF, then back to ON; if display shows any of these error codes, re-initialize the controls; if error code persists, check control board and replace as needed
"E-47"	Analog converter chip or 12 volt supply failure	Turn switch to OFF, then back to ON; if "E-47" persists, replace the PC board
"E-47"	Analog converter chip or 12 volt supply failure	Turn switch to OFF, then back to ON; if "E-47" persists, replace the PC board
"E-48"	Input system error	Turn switch to OFF, then back to ON; have control PC board replaced if "E-48" persists
"E-54-C"	Temperature input error	Turn switch to OFF, then back to ON; have control PC board replaced if "E-54C" persists
"E-60"	AIF PC board not communicating with control PC board	Turn switch to OFF, then back to ON; if "E-60" persists, check 1.5 amp fuse on AIF PC board on International units only; check connector between the PC boards; replace AIF PC board or control PC board if necessary
"E-62A"	Communication error	-Verify the OQM senser wiring is correct. -Replace cable. -Replace Sensor
"E-62B"	Wrong calibration parameter	Replace OQM Sensor
"E-62C"	Shorted capacitance	Replace OQM Sensor
"E-62D"	Shorted RTD	Replace OQM Sensor
"E-62E"	Open RTD	Replace OQM Sensor
"E-62F"	Open capacitance	Replace OQM Sensor
"E-62G"	Out of range (TPM value over 35)	Replace oil and take a TPM reading, if the error is still present replace OQM sensor.
"E-70-C"	Drain valve jumper wire missing or disconnected	Have the jumper wire checked on the PC board at drain switch interlock position
"E-93-A"	24VDC tripped	Have drain actuator checked

SECTION 2. INFO, FILTER & TEMP BUTTON STATS

2-1. INFO BUTTON STATS

Recovery Information for each Vat/OQM Information

1. Press and release INFO and REC shows in left display and the recovery time that oil temperature went from 250°F (121°C) to 300°F (149°C) shows in the right display. For example, | REC | 5:30 | means it took 5 minutes and 30 seconds for the oil temperature to recover to 300°F (149°C) from 250°F (121°C).

1a. Press and release INFO, the display will show the last TPM reading, date of the last TPM reading, and time stamp of last TPM reading (only if OQM sensor is installed and enabled).

2. Pressing the INFO button twice shows the 2nd language, if programmed.

2-2. FILTER BUTTON STATS

NOTICE

If no buttons are pressed within 5 seconds in any of stats modes, the controls revert back to normal operation.

Cook Cycles Remaining before Filtering

1. Press and release either F FILTER or F FILTER and left display shows "COOKS REMAIN" and right display shows number of cook cycles before the next auto filter, for example:

| REMA IN | 3 | 6 | means after 3 more cook cycles on the left vat, the controls ask operator if they are ready to filter or not. But, 6 more cook cycles remain on the right vat.

Time and Date

2. Press either F FILTER or F FILTER twice and time-of-day and date shows in the displays.

2-3. TEMP BUTTON STATS

Filter Pad Usage

3. Press either F FILTER or F FILTER three times and number of hours the present filter has been used is hown in the displays.

Actual Oil Temperature

1. Press TEMP and actual oil temperature shows in display, for

each vat.

Set-point Temperature

2. Press TEMP twice and SP shows in the display, along with the set-point (preset) temperature of each vat.

2-4. HP INFO MODE

Cook Cycles Remaining before Filtering

Press and release both F FILTER and F FILTER at the same time to enter HP Info Mode. You can view the following option in HP Info Mode:

1. E-Log
2. Last Load
3. Daily Stats
4. Review Usage
5. Inputs HDE (to check: high limit, drain switch jumper, and tilt switch)
6. Outputs S_H (saftey contactor / heat contactor)
7. Oil Temperature
8. CPU Temp
9. Communication OQM Sensor
10. Analog
11. Activity Log
12. Oil Levels (see if low level sensing temperature difference between probes).
13. Pumps and Valves
14. AIF Info (check for drain pan recognition: Left F button 1X and down arrow 2X.
15. Print Report to USB
16. Remove USB
17. Oil Quality Support
    a. Software Version (SVN); hardware (HVN)
    b. Serial Number
    c. RTC Date
    d. RTC Time
    e. Vat-1
    f. Vat-2
    g. Vat-3
    h. Vat-4
    i. Vat-5
    j. Vat-6
    k. Vat-7
    l. Vat-8
18. oil quality (OQ) history

SECTION 3. LEVEL 1 PROGRAMMING

Level 1 contains the following:
- Modify product settings
- Set the AIF clock for products
- Perform the Deep Clean procedure
- Fryer Setup Mode

3-1. MODIFYING PRODUCT SETTINGS

1. Press and hold TEMP and INFO buttons until LEVEL - 1 shows in the display, followed by ENTER CODE.

2. Enter code 1, 2, 3, 4 (first 4 product buttons). "PRODUCT" and "SELECTN" show in the displays.

3. Press right √ button and 'SELECT PRODUCT' and "-P 1-" (ex: NUGGETS) show in the displays.

Change Product Names

4. Use the ◀ and ▶ buttons to scroll through 40 products, or press desired product button 1 2 3 4 5 6 7 8 9 0

5. Press right √ button and product (ex: NUGGETS) shows in the left display and "MODIFY", and "YES NO" shows in right display. Press the √ button to change this product, or press the **X** button to choose another product.

6. If √ button was pressed, press and release a product button and the flashing letter changes to the first letter under the product button that was pressed. For example, if 

is pressed, the flashing letter changes to an "A".

   Press the same button again and flashing letter changes to a "B". Press it again and the flashing letter changes to a "C". Once the desired letter shows in the display, press ▶ button to continue to the next letter and repeat procedure.

   Press and hold the right **X** button to exit Program Mode, or press ▼ button to continue on to "1. COOK TIME".

To Change Times and Temperatures

7. Press ▼ button until "COOK TIME" shows in display, and then use product buttons 1 2 3 4 5 6 7 8 9 0 to change time in minutes and seconds, to a maximum of 59:59.

3-1. MODIFYING PRODUCT SETTINGS (Continued)

8. Press and release ▼ button and "TEMP" shows in the display, along with the preset temperature on the right side of the display.

   Press the product buttons  to change the temperature. The temperature range is 190°F (88°C) to 380°F (193°C).

Cook ID Change

9. Press ▼ button until "COOK ID" shows in display along with product ID. For example, NUG would be the ID for nuggets. Use product buttons to change the ID, following the same procedure as steps 4 through 6 above.

Alarms (Duty 1 & 2)

10. Press ▼ button until "DUTY 1" shows in left display, and an alarm time in right display. Press product buttons  to set an alarm.

    Ex., If a Cook Cycle was set at 3 minutes, and an alarm was to go off after 30 seconds into the Cook Cycle, "0:30" would be set in display at this time. When the timer counts down to 2:30 the alarm sounds.

    After alarm time is set, press ▼ button and "DUTY 2" shows in display, and a second alarm can be programmed.

Quality Timer

11. Press ▼ button until QUAL TMR shows in display along with preset holding time. Press product buttons to adjust  hold time (2 hrs.,59 min. max.).

AIF Disable

12. Press ▼ button until "AIF DISABLE" shows in display along with "YES" or "NO". Using ◀ and ▶ buttons, change display to "YES" if that product is not to be included in automatic intermittent filtration operation, or "NO" if it is to be included.

Assign Button

13. Press ▼ button until "ASSIGN BTN" shows in display, along with product (ex: NUGGETS). If this product already has a product button assigned to it, that LED will be lit. To assign other product buttons to that product, press and hold product button for 3 seconds and that LED stays lit. To remove a product from a button, press and hold product button with a lit LED and the LED goes out.

3-2. AIF CLOCK

This feature allows the controls to be set for periods of the day that block the automatic "Filter Now" prompts. For example, the controls could be set not interrupt with "Filter Now" prompts during the lunch rush, and during supper rush. But, if filtering is desired during this time, press and hold a F FILTER button to access the filter menu..

Each AIF Blocking period is defined by a start time (a time of day, XX:XX A, etc) and a duration in minutes.

Weekdays M-F are all grouped together. Up to four different AIF blocking periods may be programmed throughout the day for Monday - Friday. (All days share the same settings.)

A separate set of four blocking periods may be programmed for Saturdays, and a final set of four blocking periods may be programmed for Sundays.

1. Press and hold TEMP and INFO buttons until LEVEL - 1 shows in display, followed by ENTER CODE.

2. Enter code 1, 2, 3, 4 (first 4 product buttons). "PRODUCT" and "SELECTN" show in the displays.

3. Press ▼ button once and "AIF CLOCK" shows in displays.

4. Press √ button and use ◀ and ▶ buttons to scroll through "ENABLE" and "DISABLE" and press √ button again to select one.

5. If "ENABLE" is chosen, ▲ and ▼ buttons can be used to scroll through the following list of blocking periods:

Left Display	**Right Display**
M-F 1	XX:XX A XX
M-F 2	XX:XX A XX
M-F 3	XX:XX A XX
M-F 4	XX:XX A XX
SAT 1	XX:XX A XX
SAT 2	XX:XX A XX
SAT 3	XX:XX A XX
SAT 4	XX:XX A XX
SUN 1	XX:XX A XX
SUN 2	XX:XX A XX
SUN 3	XX:XX A XX
SUN 4	XX:XX A XX_

3-2. AIF CLOCK (Continued)

In 12-hour clock mode, there are three items on each line: the start time "XX:XX", the A or P (am/pm) setting, and the "XX" duration. Use the ◀ and ▶ buttons to set these items, which flashes when the item is selected.

To set a new start time setting, use the product buttons, 

to enter the new value.

Press the ▶ button to step over to the AM/PM setting. The A or P can be toggled by pressing the '0' product button.

Press the ▶ button again to step over to the duration value (in minutes). Enter a new value using the product buttons, 

NOTICE

In 24-hour clock mode, there are only two items on each line: the time (XX:XX) and the duration (XX). Again, the ◀ and ▶ buttons step you between these items.

Press the right-side **X** button to exit out of AIF Clock programming mode.

3-3. DEEP CLEAN MODE

This procedure allows a thorough cleaning of the vat by removing caramelized oil from vat. See Section 4-3 in the Operator's Manual for complete set of instructions.

3-4. FRYER SETUP

This mode has the same settings as seen upon initial start-up of the fryer.

1. Press and hold TEMP and INFO buttons until LEVEL - 1 shows in the display, followed by ENTER CODE.

2. Enter code 1, 2, 3, 4 (first 4 product buttons). "PROD-UCT" and "SELECTN" show in the displays.

3. Press ▼ button 3 times and "FRYER SETUP" show in displays.

4. Press √ button and *SETUP* *MODE* shows in displays, followed by, "LANGUAGE" on left display, "ENGLISH" on right display.

Use ◀ or ▶ buttons to change the operation display to, "FRANCAIS", "CAN FREN", "ESPANOL", "PORTUG", "DEUTSCHE", "SVENSKA", "РУССКИЙ".

Press ▼ to continue with other set-up items which include:

- ZONE - USA or NON-USA
- TEMP FORMAT - °F or °C
- TIME FORMAT - 12-HR OR 24-HR
- ENTER TIME - Time of day (use product buttons to change)
- ENTER TIME - AM OR PM
- DATE FORMAT - US OR INTERNATIONAL
- ENTER DATE - Today's date (use product buttons to change)
- FRYER TYPE - GAS or ELEC
- VAT TYPE - FULL OR SPLIT
- DISPOSE BULK OIL - YES/NO (BULK has RTI system)
- SUPPLY BULK OIL - YES/NO (BULK has RTI system)
- DAYLIGHT SAVING TIME - 1.OFF; 2.US (2007 & after); 3.EURO; 4.FSA (US before 2007)
- OIL QUALITY ENABLED (yes or no)
- TPM WARN (value can be set to 0% - 40%)
- TPM MAX (value can be set to 0% - 40%)

Unless otherwise indicated, use ◀ or ▶ to change settings.

SECTION 4. LEVEL 2 PROGRAMMING

Used to access the following:
- Advanced changes to product settings
- Error code log
- Password programming
- Alert Tone/Volume
- No. of cook cycles before filter is suggested
- Automatic filter time

4-1. ADVANCED PRODUCT SETTINGS

1. Press and hold TEMP and INFO buttons until LEVEL - 2 shows in the display, followed by ENTER CODE.

2. Enter code 1, 2, 3, 4 (first 4 product buttons). "PROD" and "COMP" show in the displays.

3. Press right √ button and 'SELECT PRODUCT' and "-P 1-" show in the displays.

4. Use the ◀ and ▶ buttons to scroll through 40 products, or press the desired product button.

5. Press right √ button and product (ex: NUGGETS) shows in left display and "MODIFY" "YES NO" shows in right display. Press the √ button to change this product, or press the **X** button to choose another product.

>Load Compensation, Load Compensation Reference, Full Heat, PC Factor<

6. If √ button was pressed, "LD COMP" shows in display along with load compensation value. This automatically adjusts time to account for size and temperature of cooking load. Press product buttons to 

change this value of 0 to 20.

7. Press ▼ button until "LCMP REF" shows in display along with the load compensation average temperature. (if load compensation is set to "OFF", then "_ _ _" shows in display and setting cannot be programmed) This is the average cooking temperature for each product. Timer speeds up at temperatures above this setting and slows down at temperatures below this setting. Press product buttons 

to change this value.

4-1. ADVANCED PRODUCT SETTINGS (Continued)

8. Press ▼ button until "FULL HT" shows in display along with full heat value in seconds, which means the heat is on as soon as a timer button is pressed, for programmed length of time. Press product buttons 

to change this value of 0 to 90 seconds.

9. Press ▼ button until "PC FACTOR" shows in display along with proportional temperature, which helps to keep oil from over-shooting setpoint temperature. Press product buttons 

to change this value of 0 to 50 degrees.

NOTICE

- Use ▲ button to go back to previous menu items.
- Press X button when finished with the current product, to return to the PRODUCT SELECTN step.
- Press X button a second time to exit PROD COMP mode.

4-2. E-LOG (error code log)

1. Press and hold TEMP and INFO buttons until LEVEL - 2 shows in the display, followed by ENTER CODE.

2. Enter code 1, 2, 3, 4 (first 4 product buttons). "PROD" and "COMP" show in the displays.

3. Press ▼ button and "E-LOG" shows in the display.

4. Press right √ button and "A" plus the present date & time flashes on the display, along with "*NOW*".

5. Press ▼ and if an error was recorded, "B" and date, time, and error code information shows in display. This is the latest error code that the controls recorded.

6. Press ▼ and next latest error code information can be seen. Up to 10 error codes (B to K) can be stored in E-Log Section.

NOTICE

Press and hold right √ button to view a brief description of the error.

4-3. PASSWORDS

The 4-digit passwords can be changed for access to Set-Up, Usage, Level 1, Level 2, & Get Mgr.)

1. Press and hold TEMP and INFO buttons until LEVEL - 2 shows in the display, followed by ENTER CODE.
2. Enter code 1, 2, 3, 4 (first 4 product buttons). "PROD" and "COMP" show in the displays.
3. Press ▼ button twice and "PASSWORD" shows in the display.
4. Press right √ button and "SET UP" shows in display. The Set up password can be changed at this time, or press ▼ once to change USAGE password, twice for LEVEL 1 password, 3 times for LEVEL 2 password, or 4 times for GET MGR password. And then, follow instructions below.
5. If password for the Set Up Mode (for example) is to be changed, press right √ button and "MODIFY? "YES NO" shows in display. Press right √ button to change 4-digit password for Set Up Mode, using the product buttons 1 2 3 4 5 6 7 8 9 0 .
6. Once new password is entered, "CONFIRM PASSWORD" shows in the display. Press √ button to confirm, or press **X** to choose another password.

4-4. ALERT TONE (and volume)

1. Press and hold TEMP and INFO buttons until "LEVEL - 2" shows in the display, followed by "ENTER CODE".
2. Enter code 1, 2, 3, 4 (first 4 product buttons). "PROD" and "COMP" show in the displays.
3. Press ▼ button 3 times and "ALERT TONE" shows in display.
4. Press right √ button; "VOLUME" shows in display, along with volume value. Use product buttons to set volume 1 2 3 4 5 6 7 8 9 0 from 1 (softest) to 10 (loudest).
5. Once volume is set, press √ button and "TONE" shows in display, along with the tone value. Use product buttons to 1 2 3 4 5 6 7 8 9 0 set the tone from 50 to 2000 Hz.
6. Press **X** to exit Alert Tone Mode.

4-5. FILTER AFTER

The number of cook cycles between filtering the oil can easily be programmed for all products.

1. Press and hold TEMP and INFO buttons until LEVEL - 2 shows in the display, followed by ENTER CODE.
2. Enter code 1, 2, 3, 4 (first 4 product buttons). "PROD" and "COMP" show in the displays.
3. Press ▼ button 4 times and "FILR AFTR" shows in left display.
4. Use the product buttons 1 2 3 4 5 6 7 8 9 0 to set the number to cook cycles between filtering procedures from 0 to 99.

4-6. FILTER TIME

The length of time the fryer remains idle between cook cycles before the controls suggest filtering.

1. Press and hold TEMP and INFO buttons until LEVEL - 2 shows in the display, followed by ENTER CODE.
2. Enter code 1, 2, 3, 4 (first 4 product buttons). "PROD" and "COMP" show in the displays.
3. Press ▼ button 5 times and "FILR TIME" shows in left display.
4. Use the product buttons 1 2 3 4 5 6 7 8 9 0 to set a time between cook cycles from 0 to 18:00 hours.

   For example, if "5:00" is programmed in the right display, if the vat was not used for 5 hours after a cook cycle, the controls would display "FILR NOW?" "YES NO".

SECTION 5. LEVEL 3 PROGRAMMING

Used to access the following:

- TECH RESETS-Reset Recovery Faults/Passwords to defaults
- SPCL PROG-Program filter control parameters and other items
- CLOCK SET-Set the time-of-day clock / calendar
- DATA COMM-Data Communications, LonWorks, MMC, etc
- HEAT CTRL-Program heat algorithm control parameters
- TECH MODE-Control of outputs, display & button tests, etc.
- STATS MODE-Review, reset operating stats, diagnostic logs, etc

5-1. ADDITIONAL ADVANCED PRODUCT SETTINGS

1. Press and hold TEMP and INFO buttons until LEVEL - 3 shows in the display, followed by ENTER CODE.

2. Enter code 1, 1, 2, 2, 1, 1, 2, 2 (first 2 product buttons), and "A. TECH" & "RESETS" show in the displays.

>Tech Resets<

3. Press right √ button and "RECOVERY FAULTS" shows in the left display. The right display shows "CLR" and the number of recovery error recorded. Press √ button to reset the number to "0".

4. Press ▼ button and "ALL PASSWORDS RESET" shows in the left display. Press √ button to reset all the passwords set in the controls.

NOTICE

- Use ▲ button to go back to previous menu items.
- Press X button when finished with the current item, to return to the main menu.
- Press X button a second time to exit Level 3 programming.

5-2. SPECIAL PROGRAMMING

The Special Program Mode is used to set more detailed programming, such as:

SP-1 • ZONE - USA or Non-USA (default setpoints)
SP-2 • System Initialization
SP-3 • 2nd Language: English, French, Candian-French, German, Spanish, Portuguese, Swedish, Russian, & NONE
SP-4 • 2nd Audio Volume
SP-5 • Quick Configuration - CHKN+FISH; FF/HBR; CHKN; EMPTY
SP-6 • Polish Duration - X:XX M:SS
SP-7 • Drain Valve - NORMAL or MANUAL
SP-8 • Edit S/N (Serial Number)
SP-9 • Decal Layout - UP/DOWN or DOWN/UP
SP-10 • Recovery Test Limit - XXX SEC
SP-11 • Melt Cycle Select - 1.LIQUID; 2.SOLID
SP-12 • Change Pad Reminder Time - XX HRS
SP-13 • Pan Out = Pad Changed Time - XXX SEC
SP-14 • Auto-Fill Enabled? - YES; NO
SP-15 • Auto-Fill Cycle Time? - XXX SEC
SP-16 • Auto-Fill Check JIB - XXX CNT
SP-17 • Oil Full If Delta Above... - XX°F or C
SP-18 • Oil Low If Delta Below... - XX°F or C
SP-19 • Heat Allowed During Fill? - HEAT OK; NO HEAT
SP-20 • Always Ask “IS POT FILLED?” - YES; NO
SP-21 • Oil Drain Time - XXX SEC
SP-22 • Oil WashTime - XXX SEC
SP-23 • Oil Rinse Time - XXX SEC
SP-24 • Oil Type Fill Time - XXX SEC
SP-25 • Repeat Fill Time - XXX SEC
SP-26 • RTD Air Cooling - X.XX°/SC
SP-27 • RTD Cold Oil Surround - X.XX°/SC
SP-28 • RTD Hot Oil Surround - X.XX°/SC
SP-29 • Temp. Probe x Above Min. - XXX °F or C
SP-30 • x Above Min. Hit Limit - XXX CNT
SP-31 • Level RTD Air Cooling - X.XX°/SC
SP-32 • Level RTD Oil Surround - X.XX°/SC
SP-33 • New Pad-Max. Fill Time - XXX SEC
SP-34 • Old Pad-Max. Fill Time - XXX SEC
SP-35 • Fill To Top Time - XXX SEC
SP-36 • Reach Top Plus x Seconds - XXX SEC
SP-37 • Fill Until Pan Empty - XXX SEC
SP-38 • Valve Auto - Cycle Period - X:XX H:MM
SP-39 • Refill Detect By.... - LVL PRBS or PRESSURE
SP-40 • Min. Wash PSI - XX.XX PSI

5-2. SPECIAL PROGRAMMING (Continued)

SP-41 • Max. Bubble PSI - XX.XX PSI
SP-42 • New Pad Max. Wash Time - XXXX SEC
SP-43 • Old Pad Max. Wash Time - XXXX SEC
SP-44 • Min. Fill Time - XXX SEC
SP-45 • New Pad Max. Fill Time - XXXX SEC
SP-46 • Old Pad Max. Fill Time - XXXX SEC
SP-47 • Required Bubble PSI Hits - XXX CNT
SP-48 • Pressure Trip Limit - XXX PSI
SP-49 • Pilot During Filter-PILOT OK or NO PILOT **(GAS FRYERS ONLY)**
SP-50 • Filling - Low Heat On - XXX SEC
SP-51 • Filling - Low Heat Off - XXX SEC
SP-52 • Heat Error Enabled? - YES or NO
SP-53 • Warm Return Line Enabled?/Interval - H:MM (Hours/Minutes - OFF to 4 hours)
SP-54 • Warm Return Line Time - M:SS (Minutes/Seconds - 0:00 to 4 Minutes)
SP-55 • Enable R & D Displays? - YES or NO

NOTICE

Not all Special Program Mode functions are discussed in this section. To ensure proper operation of fryer, please consult Henny Penny Corp. before changing any of these settings. For information on these functions, contact the Service Department at 1-800-417- 8405, or 1-937-456-8405.

To Enter Special Programming:

1. Press and hold TEMP and INFO buttons until LEVEL - 3 shows in the display, followed by ENTER CODE.

2. Enter code 1, 1, 2, 2, 1, 1, 2, 2 (first 2 product buttons).

3. "A. TECH" & "RESETS" show in displays. Press ▼ and "B. SPCL" & "PROG" show in the displays.

Zone - USA/Non-USA (SP-1)

4. Press √ button and "SP-1 ZONE" shows in the left display. Use ◀ and ▶ buttons to set the default set-points to USA specifications or non-USA specifications.

Initialize System (SP-2)

5. Press ▼ button and "SP-2 DO SYSTEM INIT" scrolls in left display. To reset the controls to factory default settings, press and hold √ button and controls count down "IN 3", "IN 2", "IN 1". Once display shows "-INIT-" & *DONE* the controls are reset to factory defaults.

5-2. SPECIAL PROGRAMMING (Continued)

2nd Language (SP-3)

6. Press ▼ button and "SP-3 2ND LANGUAGE" scrolls in left display. Use ◀ and ▶ buttons to set to: ENGLISH; FRANCAIS; CAN FREN; ESPANOL; PORTUG; DEUTSHE; SVENSKA; РУССКИЙ or -NONE-.

   By setting a second language in the controls, 2 languages can now be easlily chosen by pressing ⓘ INFO button twice during normal operation.

   One language shows in left display and a second language shows in the right display. Pressing the √ button selects the language in the displays.

2nd Volume (SP-4)

7. Press ▼ button; "SP-4" and "2ND VOLUME" flash on the left display. Press the ◀ or ▶ buttons to select the desired 2nd volume.

   By setting a 2nd volume in controls, 2 volumes can now be easlily chosen by pressing ⓘ INFO button 3 times during normal operation.

   One volume setting shows in the left display (NONE to 10; 10 being the loudest) and the second volume shows in the right display. To select the volume, press the √ button under the desired volume .

Quick Configuration (SP-5)

8. Press ▼ button and "SP-5 QUICK CONFIG" shows in display. Use the ◀ and ▶ buttons to change the menu selection in the controls to: CHKN+FISH; FF/HBR;CHKN or EMPTY.

Polish Duration (SP-6)

9. Press ▼ button and "SP-6 POLISH" shows in left display. Use product buttons 

to change polish time, from 5 minutes to a maximum of 10 minutes.

Drain Valve (SP-7)

10. Press ▼ button and "SP-7 DRAIN VALVE" scrolls in left display. Use the ◀ and ▶ buttons to change right display to show "NORMAL" or "MANUAL".

    NORMAL means the drain valves are controlled electronically and MANUAL means the drain valves must be opened by hand.

5-2. SPECIAL PROGRAMMING (Continued)

Edit Unit Serial Number (SP-8)

11. Press ▼ button and "SP-8 S/N √ EDIT" shows in left display. Press the right √ button to enter the unit's serial number in the controls, using the product buttons.

"STD" and "CUST" show in the right displays. Press the √ button under the "STD" and the first 2 letters of the serial number is the standard equipment code, press the **X** button and a custom equipment code can be entered. THIS SERIAL NUMBER SHOULD MATCH THE SERIAL NUMBER ON THE DATA PLATE,ON THE DOOR.

Decal Layout (SP-9)

12. Press ▼ button and "SP-9 DECAL LAYOUT?" scrolls in the left display. The words in the right displays should match the arrow type above the TEMP and INFO buttons.
    EX: If the control decal shows ▼ ▲ , the right displays should show DOWN-UP.
    If the displays show UP-DOWN, use the ◀ and ▶ buttons to change the displays to DOWN-UP.

Liquid or Solid Cooking Oil Used (SP-11)

13. Press ▼ button and "SP-11 MELT CYCLE SELECT" scrolls in the left display. Unless solid oil is being used in the vats the right display should show "1.LIQUID".
    If solid oil is used, the unit MUST BE equipped to handle solid oil. Use the ◀ and ▶ buttons to change the right display to "2.SOLID"

Change Pad Reminder Time (SP-12)

14. Press ▼ button; "SP-12 'CHANGE PAD' REMINDER" shows on display. Use product buttons 1 2 3 4 5 6 7 8 9 0 to change the time between changing filter pad reminders.

    For example, if "25 HRS" is programmed in the right display, every 25 hours the display shows "CHANGE PAD" as a reminder to the operator that the filter pad needs changed.

Pan Out of Fryer = Pad Changed (SP-13)

15. Press ▼ button and "SP-13 PAN OUT = CHANGED PAD" scrolls in the left display. Use the product buttons 1 2 3 4 5 6 7 8 9 0 to program the amount of time the drain pan is pulled-out from under the fryer before the controls reset the change pad reminder. This is the amount of time it should take to change filter pad. Range is 15 to 255 seconds.

    For example, if "120 SEC" is programmed in the right display, when the drain pan is out from under the fryer for at least 120 seconds, the controls restarts counting for the change pad reminder.

5-2. SPECIAL PROGRAMMING (Continued)

Auto-Fill Enabled (SP-14)(automatically keeps oil at proper level)

16. Press ▼ button and "SP-14 AUTO-FILL ENABLED?" scrolls in the left display. Use the ◀ and ▶ buttons to set the right display to "YES" or "NO".

    This should always be set to "YES", unless a hardware failure causes a problem, such as a JIB pump or Add Oil valve failure.

5-3. CLOCK SET

1. Press and hold TEMP and INFO buttons until LEVEL - 3 shows in the display, followed by ENTER CODE.

2. Enter code 1, 1, 2, 2, 1, 1, 2, 2 (first 2 product buttons).

3. "A. TECH" & "RESETS" show in the displays. Press ▼ button twice and "C. CLOCK" and "SET" show in the displays.

4. Press √ button and "CS-1 ENTER DATE MM-DD-YY" shows in the left display. Use the product buttons 1 2 3 4 5 6 7 8 9 0 to set the date in the right display.

5. Press ▼ button and "CS-2 ENTER TIME" shows in the left display and the time flashes in the right display. Use the product buttons 1 2 3 4 5 6 7 8 9 0 to change the time.

6. Press ▼ button and "CS-2 ENTER TIME" shows in the left display and "AM" or "PM" flashes in the right display. Use the ◀ ▶ buttons to change from AM to PM or vice-versa.

7. Press ▼ button and "CS-3 TIME FORMAT" shows in left display and "12-HR" or "24-HR" shows in the right display. Use the ◀ ▶ buttons to change from a 12 hour time format a 24 hour time format or vice-versa.

8. Press ▼ button and "CS-4 DAYLIGHT SAVING TIME" shows in the left display. Use the ◀ ▶ right display to daylight saving time for your area: 1.OFF; 2.US (2007 & after); 3.EURO; or 4.FSA (US before 2007)

5-4. DATA COMM & HEAT CONTROL

NOTICE

Data communications and heat controls settings are shown in Level 3 Program Mode. But, to ensure proper operation of fryer, please consult Henny Penny Corp. before changing any of these settings. For more information on these functions, contact Service Department at 1-800-417- 8405, or 1-937-456-8405.

5-5. TECH MODE

The TECH Mode has self-diagnostic information, which can be used by certified technicians for troubleshooting purposes, such as:

T-1 • Software
T-2 • Fryer Type (Split or Full/Gas or Elec.)
T-3 • Push Button Test
T-4 • All On Display Test
T-5 • Display Segments Test
T-6 • Display Digits Test
T-7 • Display Decimal Points Test
T-8 • LED's Test
T-9 • Left Temp. Probe Calibration & Offset
T-10 • Left Level 1 Probe Calibration & Offset
T-11 • Left Level 2 Probe Calibration & Offset
T-12 • Right Temp. Probe Calibration & Offset
T-13 • Right Level 1 Probe Calibration & Offset
T-14 • Right Level 2 Probe Calibration & Offset
T-15 • CPU Control Temp. Calibration/Offset/Highest
T-16 • View A - D Channel
T-17 • Digital Inputs
T-18 • AIF Info
T-19 • Outputs Test
T-20 • Pumps & Valves Test
T-21 • Change Tech Code?
T-22 • Total Initialization

Not all Tech Mode functions are discussed in this section. To ensure proper operation of fryer, please consult Henny Penny Corp. before changing any of these settings. For more information on these functions, contact Service Department at 1-800-417-8405, or 1-937-456-8405.

5-5. TECH MODE (Continued)

1. To enter the TECH Mode, press and hold TEMP and INFO buttons for 5 seconds, until display shows ”LEVEL 3”, followed by “ENTER CODE”.

2. Enter code 1, 1, 2, 2, 1, 1, 2, 2 (first 2 product buttons). “A. TECH” & “RESETS” show in the displays.

3. Press ▼ 5 times; when display shows “F. TECH”, press right √ button and T-1 “SOFTWARE” shows in the display, the first step of the TECH Mode. Use ▼ and ▲ buttons to toggle through the steps.

Press the right **X** button twice, at anytime to return to normal operation.

T-1 - SOFTWARE

- Press 1 to view HP Part No. of eprom
- Press 2 to view software ID
- Press 3 to view software version

T-2 - FRYER TYPE - SPLIT VAT OR FULL VAT/GAS or ELEC

T-3 - PUSH-BUTTON TEST
Press any of the control buttons to test operation. You should hear a beep, and the LED should light and/or a display.

T-4 - ALL-ON DISPLAY TEST
Press any of the product buttons and all the LEDs and display segments should light.

T-5 - SEGMENTS TEST
Press any of the product buttons to view a different segment of the display characters.

T-6 - DIGITS TEST
Press any of the product buttons numerous times to view all segments of each digit across the displays.

T-7 - DECIMAL PTS TEST
Press any of the product buttons numerous times to view all decimal points across the displays.

5-5. TECH MODE (Continued)

T-8 - LED'S TEST
Press any of the product buttons numerous times to view each LED across the control panel.

T-17 - DIGITAL INPUTS - HDE
H = HIGH LIMIT - If "H" is present, the high limit is good. If "-" shows then the high limit is tripped out (overheated) or disconnected.
D = DRAIN SWITCH - If "D" is present, the drain handle (when applicable) is closed. If "-" shows then the drain is open or the switch is faulty.
E = ELEMENT SWITCH - If "E" is present, the element switch is good. If "-" shows in the display, the element is in the upright position, or the switch is faulty.

Press ▶ button and an underscore ("_") indicates the input is not presently detected. A Checkmark ("√") indicates the signal is detecting a normal input. A blinking ("X") indicates the signal is presently detected, but is detected as a half-wave (partially failed) input.

NOTICE

The H, D, E signals above are wired in series. The first signal missing out of this sequence l generally causes all signals to the right of it to be missing as well.

T-18 - AIF INFO (AIF PCB communicating with control PCB?)
An "AIF √ " means normal communications between the AIF PCB and the control PCB. "AIF X" means a problem with the communications between the PCBs.

Press ▼ button and "FILR IN" and "USE BY 1(ex)" shows in the displays. These displays shows which controls are using the filtering system.

"USE BY 0" = not in use
"USE BY 7" = used by AIF
"USE BY 1 to 5" = used by control PCB

Press ▼ button and "CPU POSN" and "1 OF 3(ex)" shows in the displays. These displays shows which controls are plugged into which port on the AIF board.

For example, the left control should be plugged into port 1, and on a 3 control fryer, shows "1 OF 3" on the display.

5-5. TECH MODE (Continued)

If the right control is unplugged, then the left control would show "1 OF 2" instead of "1 OF 3".

Press ▼ button and "INP E_P_" and "JL_R_DT_" shows in the displays.

AIF Board Inputs:

E = Stop button	E* = E-Stop pressed.
P = Drain Pan	M* = drain pan is missing.
JL = JIB	J* = JIB oil level is low.
R = RTI	R* = RTI System Detected
DT = RTI Discard Tank	DT* = tank full

Press ▼ button and "OUT F_J_" and "N_DI_oJF_" shows in the displays.

AIF Board Outputs:
Current outputs status from AIF board.

F = Filter Pump.	(F* = Filter pump is on)
J = JIB Pump.	(J* = JIB pump is on)
N = New Oil Pump.	(N* = RTI new oil pump on)
DI = Discard Valve.	(DIo = RTI disc. valve open/DIc=closed)
JF = JIB Fill Valve.	(JFo = RTI JIB fill valve open/ JFc=closed)

Press ▼ button and "REQ F_J_" and "N_DI_oJF_" shows in the displays.

AIF Board Outputs Requested by the Control Board:
Current outputs status from AIF board.

F = Filter Pump.	(F* = Filter pump is on)
J = JIB Pump.	(J* = JIB pump is on)
N = New Oil Pump.	(N* = RTI new oil pump on)
DI = Discard Valve.	(DIo = RTI disc. valve open/ DIc=closed))
JF = JIB Fill Valve.	(JFo = RTI JIB fill valve open/ JFc=closed)

T-19 - OUTPUTS

S = SAFETY CONTACTOR - Press 

to turn off and on the safety (primary) contactor

H = HEAT CONTACTOR - Press 

to turn off and on the heat contactor.

5-5. TECH MODE (Continued)

T-20 - PUMPS & VALVES

Press √ button and "VALVES" "DcRc" shows in displays.

Press 6 to open and close the drain valves.

Press 7 to open and close the return valves.

"DcRc" means valves are closed, "DoRo" means valves are open. (Driven by the control board)

Press ▼ button and "DISCARDc" and "JIBFILLc" shows in the displays. (Driven by the AIF board)

Press 1 to open and close the RTI discard valve (display shows "DISCARDo" when open)

Press 2 to open and close the RTI JIB fill valve (display shows "JIBFILLo" when open)

Press ▼ button and "PUMP FP_" and "JP_ NP_" shows in the displays. (Driven by the AIF board)

Press 1 to turn off and on the filter pump (display shows "FP*" when on)

Press 2 to turn off and on the JIB pump (display shows "JP*" when on)

Press 3 to turn off and on the RTI new oil pump (display shows "NP*" when on)

Press ▼ button and "LIGHTS" and "FLT_ JLO_" shows in the displays. (Driven by the AIF board)

Press 1 to turn off and on the FILTER light (display shows "FLT*" when on)

Press 2 to turn off and on the JIB LOW light (display shows "JLO*" when on)

5-6. STATS MODE

This mode allows a technician to view advanced information on the operation of the fryer and controls.

1. To enter the TECH Mode, press and hold TEMP and INFO buttons for 5 seconds, until display shows "LEVEL 3", followed by "ENTER CODE".

2. Enter code 1, 1, 2, 2, 1, 1, 2, 2 (first 2 product buttons). "A. TECH" & "RESETS" show in the displays.

3. Press ▼ 6 times, and when display shows "G. STATS", press right √ button and "ST-1 LAST RESET ON..." shows in the display, first step of the TECH Mode. Use ▼ and ▲ buttons to toggle through the steps.

ST-1 • Stats Last Reset Date
ST-2 • Fryer Total Running Hours
ST-3 • Left Vat Melt Cycle Hours
ST-4 • Left Vat Cook Cycle Hours
ST-5 • Left Vat Filter Lockout Hours
ST-6 • Right Vat Melt Cycle Hours
ST-7 • Right Vat Cook Cycle Hours
ST-8 • Right Vat Filter Lockout Hours
ST-9 • Power-Ups Count
ST-10 • Error Counts
ST-11 • Left Vat Heat On Hours
ST-12 • Right Vat Heat On Hours
ST-13 • Highest Left Vat Oil Temperature
ST-14 • Highest Right Vat Oil Temperature
ST-15 • Highest CPU Temperature
ST-16 • System RAM Fade Count
ST-17 • Cook RAM Fade Count
ST-18 • Product RAM Fade Count
ST-19 • Stat RAM Fade Count
ST-20 • RAM Data Error Count
ST-21 • Data Total Loss Count
ST-22 • User Intialization Count
ST-23 • Automatic Initialization Count
ST-24 • Cooks Count per Product
ST-25 • Cook Cycle Stop Counts
- "A" = number of stops in the first 30 seconds
- "B" = 0
- "C" = 0
- "D" = complete cook cycles counted

ST-26 • Reset All Stats

SECTION 6. INFORMATION MODE

6-1. INFO MODE

This mode gathers and stores historic information on fryer and operator's performance. Press and hold INFO for 3 seconds, unitil *INFO* *MODE*" shows on the displays.

Press ▼ or ▲ buttons to access steps and press √ button to view the statistics within each step.

This mode includes the following information:

1. **FILTER STATS -** filtering information for the last 7 days
2. **REVIEW USAGE-** information accumulated since the last time this data was manually reset
3. **LAST LOAD -** information about the most recent Cook Cycle, or the cycle presently in progress

NOTICE

Press **X** button to exit from the Information Mode.

1. FILTER STATS

Press √ button to select Filter Stats and then press ◀ and ▶ to select day you want to view stats. Then press ▼ or ▲ buttons to view the following stats:

- "FILTERED" = No. of times filtered
- "FLT BPSD" = No. of times filtering was skipped
- "FLT AVG" = Average no. of cook cycles between filters

2. REVIEW USAGE

Press √ button to select Review Usage and press ▼ or ▲ buttons to view the following:

FUNCTION	DISPLAY EX:
Day usage data was previously reset	SINCE 9:32P 04-19-10
Total number of cook cycles	TOTAL COOKS 462
Cook Cycles stopped before "PULL"	QUIT COOK 4
Number of hours fryer was on (left)	L ON HRS 165
Number of hours fryer was on (right)	R ON HRS 160
Reset Usage Data	RESET USAGE YES/NO

6-1. INFORMATION MODE (Continued)

3. **LAST LOAD**

Press √ button to select Last Load (ex: -P1- = Product 1;"L1" = left, 1st product) and press ▼ or ▲ buttons to view the following:

FUNCTION	DISPLAY EX:
Product (Last product cooked)	PRODUCT -P1- L1
Time of day last Cook Cycle was started	STARTED 10.25A SEP-08
Actual Elapsed cook Time (Real seconds)	ACTUAL TIME 7:38
Programmed cook Time	PROG TIME 3:00
Max Temp during Cook Cycle	MAX TEMP 327°F
Min Temp during Cook Cycle	MIN TEMP 313°F
Avg Temp during Cook Cycle	AVG TEMP 322°F
Heat On (percentage) during Cook Cycle	HEAT ON 73%
Ready? (Was fryer Ready before start?)	READY? YES

SECTION 7. MAINTENANCE

7-1. INTRODUCTION

This section provides checkout and replacement procedures, for various parts of fryer. Before replacing any parts, refer to Troubleshooting Section to aid you in finding the cause of the malfunction.

7-2. MAINTENANCE HINTS

1. A multimeter will help you to check electric components.
2. When the manual refers to the circuit being closed, the multimeter should read zero unless otherwise noted.
3. When the manual refers to a circuit being open, multimeter should read infinity.

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

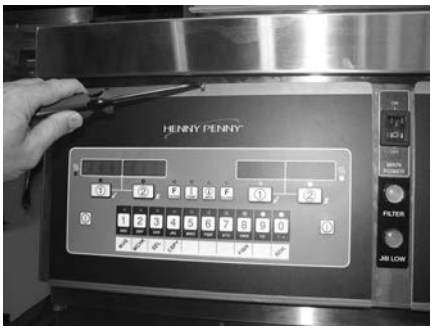
7-3. PREVENTIVE MAINTENANCE

To ensure a long life of fryers and their components, regular maintenance should be performed. Refer to the chart below.

Frequency	Action
Daily	Mainteance Filter (See Maintenance Filtering Instructions Section in Operator's Manual or PM Guide)
Daily	Change Filter Pad (See Changing Filter Pad Section in Operator's Manual or PM Guide)
Weekly	Clean Behind Fryer (See PM Guide)
Quarterly	Change Filter Pan O-Rings (See PM Guide)
Quarterly	Vat Deep Clean (See Deep Clean Mode Section in Operator's Manual or PM Guide)

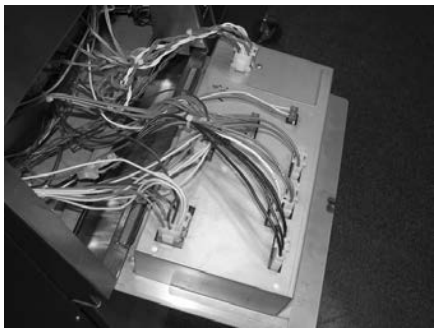
7-4. CONTROL PANEL & MENU CARD REPLACEMENT

Should the control panel become inoperative, or the menu card needs changed, follow these instructions.



1. Remove electrical power supplied to the vat.

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

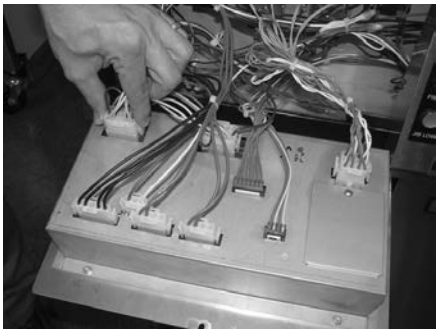


2. Loosen the screw securing the top of the control panel.

3. Pivot the top of the panel down, allowing the panel to be supported by 2 brackets in the slots in the control shroud. (If changing control panel, continue onto step 5.)

4. If changing the menu card, loosen the tape securing menu card at the bottom, side of control panel and pull menu card from panel. Carefully, slide changed menu card back into slot in panel and secure with tape.

5. Unplug the connectors going to the control board.



6. Install a new control panel in reverse order.

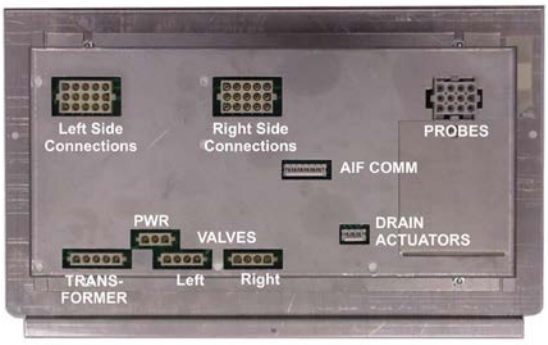


Diagram of Control Panel Connectors

7-5. HIGH TEMPERATURE LIMIT CONTROL

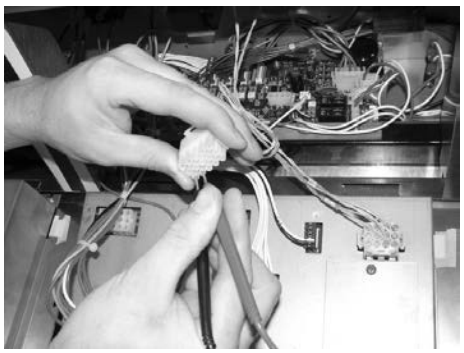
This is a safety, manual reset control, which senses the temperature of the oil. If the oil temperature exceeds 425°F (218°C), this switch opens and shuts off heat to the vat. When the oil temperature drops to a safe operation limit (15 to 20 minutes), manually reset the control by pressing the reset button.

Reset button is located in element hinge. After waiting 15-20 minutes, using a small screwdriver or Allen wrench, gently push it into the hole in element hinge; if high limit does not reset, high limit must be replaced. If high limit resets, the oil starts heating.

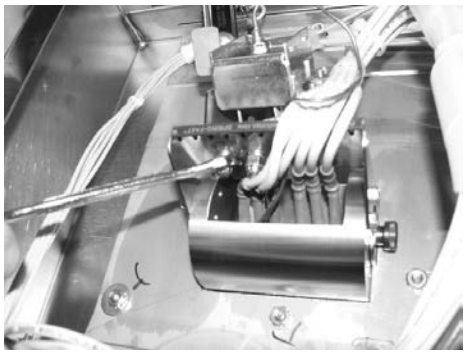
Checkout:

The oil temperature must be below 380°F (193°C) to accurately perform this check.

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.



1. Remove control panel and hinge it down.



2. Refering to decal on rear of control panel, locate P9 connector (left vat-split vat) or P10 connector (full or right vat).

3. Attempt to reset the high limit and then pull connector from the board and check for continuity between 2 appropriate pins. If the circuit is open, continue replacement procedure. (If circuit is closed, high limit is not defective.)

Replacement:

Date: 8/14/09
77285 - HIGH LIMIT - 425 F (SN: BH0908085 & Above)
140054 - KIT - HIGH LIMIT - 425 F (SN: BH0908084 & Below)
- includes, high limit, reset pin, mounting bracket and hardware

If the tube is broken or cracked, the control opens, shutting off electrical power. The control cannot be reset.

1. Using a Phillip's-head screwdriver, or screw gun, remove 9 screws and rear panel.

2. Using 3/8" wrench or socket, remove 2 acorn nuts securing bracket to unit.

7-5. HIGH TEMPERATURE LIMIT CONTROL (Continued)

Replacement (continued)

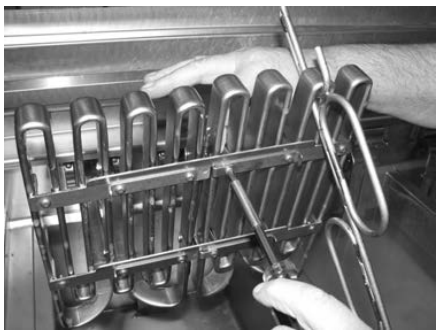
3. Using a Phillip's-head screwdriver, remove 3 screws securing the high limit to the bracket.

4. Use the lift tool and lift the hinged element from the vat.

CAUTION

Avoid putting the lift tool at the center of the elements, in the same area as the high limit bulb, or damage to the high limit could result.

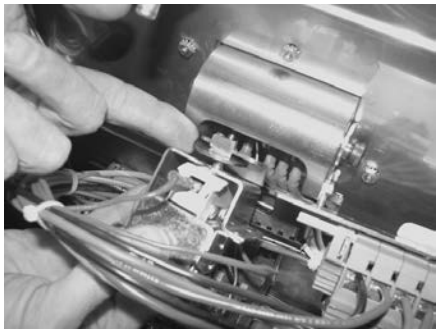
5. Pull the high limit from the bracket, pull back the cardboard protector, and remove the two electrical wires from the high limit control.



6. Drain oil from vat, by pressing and holding a F FILTER button until *FILTER* *MENU* shows in the display. Then once "1.AUTO FILTER" shows in the display, press ▼ 3 times until "4. DRAIN TO PAN" shows in the display. Press √ button and "DRAIN TO PAN" "YES NO" shows in display. Press √ button again display shows "DRAINING", and oil drains from vat. Once oil has drained, display shows "VAT EMTY" "YES NO". Visually check that vat is empty and press √ button, display shows "DRAIN CLOSING..." and drain closes.

7. While holding top-side capillary bracket, use a Phillip's-head screwdriver and remove the screws securing capillary bulb to the lower element bracket. Remove both front and rear capillary brackets.

7-5. HIGH TEMPERATURE LIMIT CONTROL (Continued)



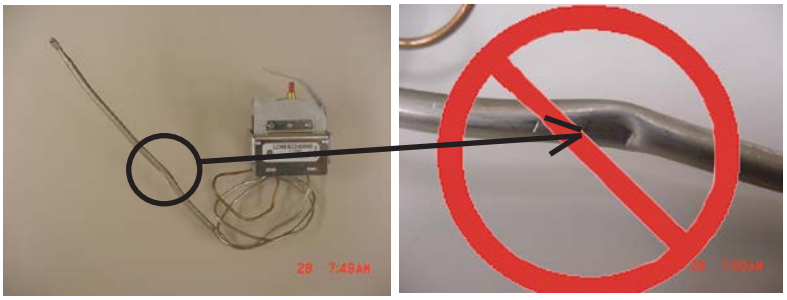
Replacement (continued)

8. Using a Phillip's-head screwdriver, remove the screws securing the capillary bulb to the upper element brackets.

9. Remove high limit bulb from element and carefully straighten the capillary tube and pull the high limit control from the rear of the unit.

   It's important not to damage the capillary bulb when removing or installing the high limit from the unit. Undamaged high limits returned for warranty can be evaluated for cause of failure.

   Capillary bulbs or tubes damaged during installation causes high limit to fail prematurely. See damaged capillary bulb below.



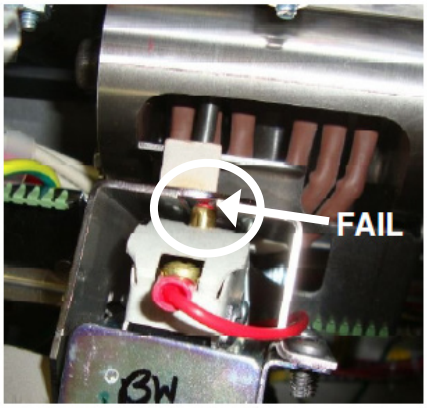
10. Insert new high limit capillary through hole in rear of fryer and slide high limit into bracket. Make sure the plunger on high limit makes good contact with the reset plate and then secure with the 3 screws.

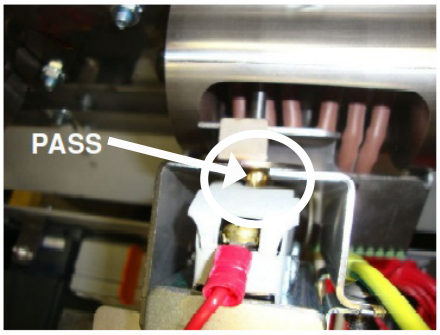
11. Slide bracket and high limit assembly into place and secure with the 2 acorn nuts removed in step 3.

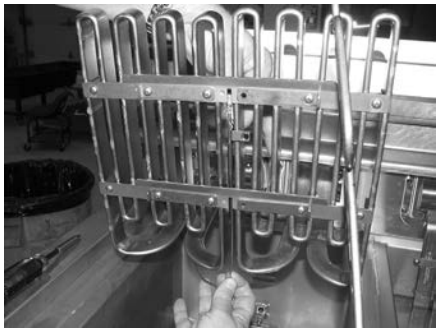
12. Remove basket hanger, lift heating element, and insert allen wrench, screwdriver or extra reset pin into hole in heater element pivot from the front of the fryer.

13. Push the tool in all the way visually making sure plunger engages and pushes red plastic reset button entirely into switch. Hold the tool in the depressed position.

7-5. HIGH TEMPERATURE LIMIT CONTROL (Continued)







Replacement (continued)

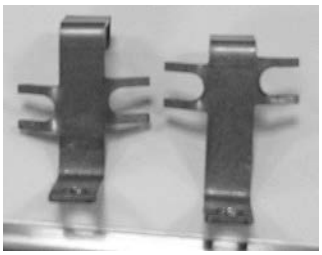
14. While holding tool in fully depressed position, inspect high limit switch reset button position within the bracket.

    a. If any red plastic of reset button can be seen, adjust bracket in or out using needle nose pliers so the angle of the assembly matches the angle of the plunger.

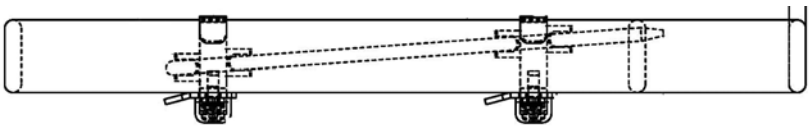
    b. If only brass is visible as shown at left, the adjustment is acceptable.

15. Carefully slide capillary bulb up through the element, from the rear of the elements.

16. Using the capillary brackets removed in step 3 (see below) attach capillary to the lower brackets, aligning the capillary so it does NOT touch the element. (See side-view drawing below for proper installation)



Left-Front/Right-Rear



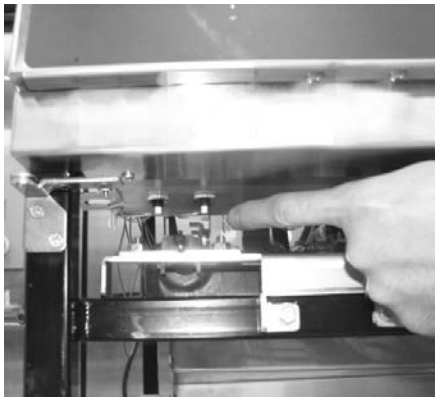
Element Side View

17. Secure the capillary to the upper brackets.

18. Replace basket hanger, rear cover and reconnect power.

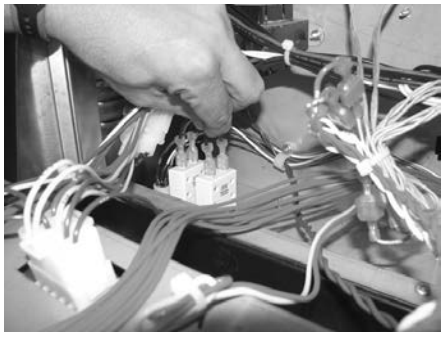
19. Lower element back into vat and fill vat by pressing and holding a F FILTER button until *FILTER* *MENU* shows in display. Then once "1.AUTO FILTER" shows in display, press ▼ 4 times until "5.FILL POT FROM DRN PAN" shows in display. Press √ button and "FILL POT FROM DRN PAN" "YES NO" shows in display. Press √ button again, display shows "FILLING" "STOP?"and oil fills vat. Press √ button again, display shows "FILL POT FROM DRN PAN" "YES NO". When vat is full, press **X** twice to return to normal operation.

7-6. BREAKERS



There are two breakers on electric fryers. To reset the breaker, open the left door and push-up on the plunger of each breaker.

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.



Checking Procedure for Breaker:
Remove left control panel and pull wires from breaker. Using a multimeter or continuity light, check across terminals; circuit should be closed. If not, replace breaker (HP# EF02-125).

To replace breaker, use a 9/16” wrench and loosen the nut securing the breaker from underneath and then pull the breaker from the control panel area.

7-7. MAIN POWER SWITCH

This is a covered rocker switch, which in the ON position, sends power to all the controls and filter motor.

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Remove control panel.
2. From the inside of control area, squeeze in on the tabs on the back of switch and push the switch out the front of the control area.
3. Label and remove wires from the switch.

Checkout:

4. Check across 2 sets of terminals of switch for continuity. With switch in ON position, circuit should be closed. With switch in OFF position, circuit should be open.

If the switch is found to be defective, replace it by connecting the wires to it (as labeled) and push new switch into place.

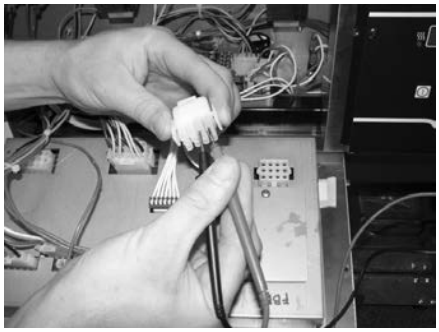
7-8. TEMPERATURE PROBE REPLACEMENT

The temperature probe relays the actual shortening temperature to the control. If it becomes disabled, “E-6” will show in the display. Also, if the temperature is out of calibration more than 10°F, or 10°C, the temperature probe should be replaced. (See Section 5-5. TECH MODE for probe calibration steps.)

Temp. F	Temp. C	Resistance Ohms	Temp. F	Temp. C	Resistance Ohms
50	10.00	1039.02	250	121.11	1464.79
60	15.56	1060.65	260	126.67	1485.71
70	21.11	1082.24	270	132.22	1506.58
80	26.67	1103.80	280	137.78	1527.43
90	32.22	1125.32	290	143.33	1548.23
100	37.78	1146.81	300	148.89	1569.00
110	43.33	1168.26	310	154.44	1589.73
120	48.89	1189.67	320	160.00	1610.43
130	54.44	1211.05	325	162.78	1620.77
140	60.00	1232.39	330	165.56	1631.09
150	65.56	1253.70	340	171.11	1651.72
160	71.11	1274.97	350	176.67	1672.31
170	76.67	1296.20	360	182.22	1692.86
180	82.22	1317.40	365	185.00	1703.13
185	85.00	1327.99	370	187.78	1713.38
190	87.78	1338.57	380	193.33	1733.87
200	93.33	1359.69	390	198.89	1754.31
210	98.89	1380.79	400	204.44	1774.72
212	100.00	1385.00	410	210.00	1795.10
220	104.44	1401.84	420	215.56	1815.44
230	110.00	1422.86	430	221.11	1835.74
240	115.56	1443.85	440	226.67	1856.01

An Ohm check can be performed also. See chart at left and Checkout instructions on next page.

7-8. TEMPERATURE PROBE REPLACEMENT (Continued)



Checkout:

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Remove control panel and hinge it down.

2. Refering to the decal on the rear of the control panel, locate the 12-pin probe connector in the upper, right-hand corner. (An ohm chart is also shown on the decal.)

3. Pull connector from panel and using a multmeter, take an ohm reading on appropriate Oil Temp pins. If ohm reading is significantly different than the chart, continue with replacement instructions.

Replacement:

1. Drain oil from the vat, by pressing and holding F FILTER button until *FILTER* *MENU* shows in the display. Then once "1.AUTO FILTER" shows in display, press ▼ 3 times until "4. DRAIN TO PAN" shows in the display. Press √ button and "DRAIN TO PAN" "YES NO" shows in the display. Press √ button again display shows "DRAINING", and oil drains from vat. Once oil has drained, display shows "VAT EMTY" "YES NO". Visually check that vat is empty and press √ button, display shows "DRAIN CLOSING..." and drain closes.

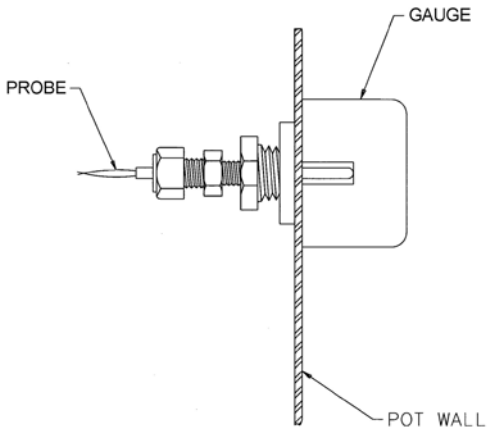
2. Remove 8 screws and rear, bottom panel (8 screws).

3. Using a 1/2" wrench, remove nut on compression fitting, and remove the temperature probe from the vat.

4. Follow the probe wires and disconnect the 2 probe connectors. (These may be found behind control panel or behind the side panels, depending upon which vat is being serviced.)

7-8. TEMPERATURE PROBE REPLACEMENT (Continued)

5. Follow probe installation instructions below:



NOTE:
1.) LOCATE TEMPERATURE PROBE THRU POT WALL.
2.) PLACE GAUGE AGAINST POT WALL AS SHOWN.
3.) PUSH TEMPERATURE PROBE THRU UNTIL IT MAKES CONTACT WITH GAUGE.
4.) TIGHTEN TEMPERATURE PROBE IN PLACE.

CAUTION

Excess force will damage temperature probe. Hand-tighten nut and then 1/2 turn with a wrench.

6. Connect new temperature probe to the 2 fryer connections.

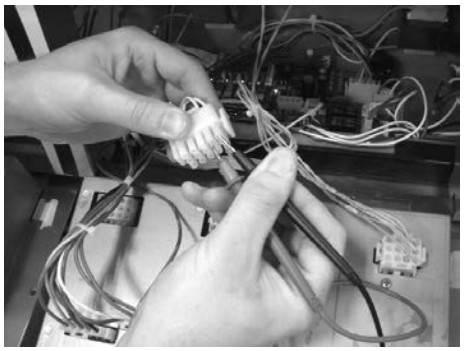
7. Replace rear cover and reconnect power to vat.

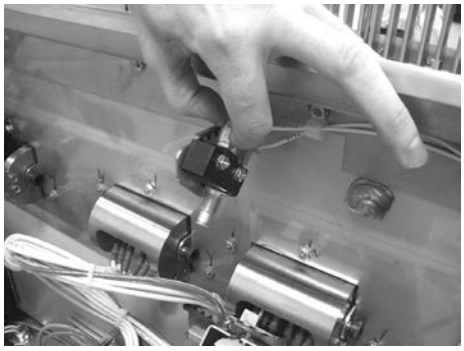
8. Fill vat by pressing and holding F FILTER button until *FILTER* *MENU* shows in the display. Then once "1.AUTO FILTER" shows in the display, press ▼ 4 times until "5.FILL POT FROM DRN PAN" displays. Press √ button; "FILL POT FROM DRN PAN" "YES NO" displays. Press √ button again, display shows "FILLING" "STOP?"and oil fills vat. Press √ button again, display shows "FILL POT FROM DRN PAN" "YES NO". When vat is full, press **X** twice to return to normal operation.

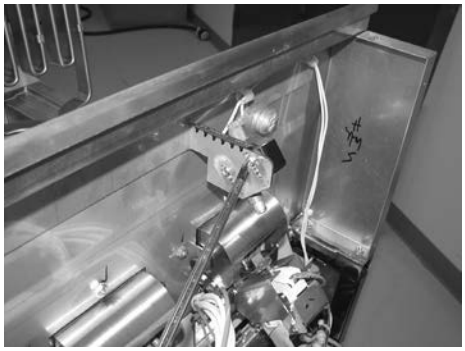
7-9. OIL CHANNEL CLEAN-OUT

Should the drain channel, under the vats, become clogged, access to a clean-out plug is available by removing the right or left side panels.

7-10. ELEMENT SAFETY SWITCH







This switch cuts power to the element when the element is raised.

If a constant "E-31" "HEATING ELEMENTS ARE UP", is shown on the display, when the elements are lowered into the vat, check the element safety switch.

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

Checkout:

1. Remove control panel and hinge it down.

2. Refering to the decal on rear of the control panel, locate P9 connector (left vat-split vat) or P10 connector (full or right vat).

3. Pull connector from the panel and using a multmeter, check for continuity between 2 appropriate pins (labeled HEAT SWITCH). With plunger on the safety switch pushed in (element lowered), the circuit should be closed. With the element raised, the circuit is should be open. If the switch proves to be faulty, continue with replacement instructions.

Replacement:

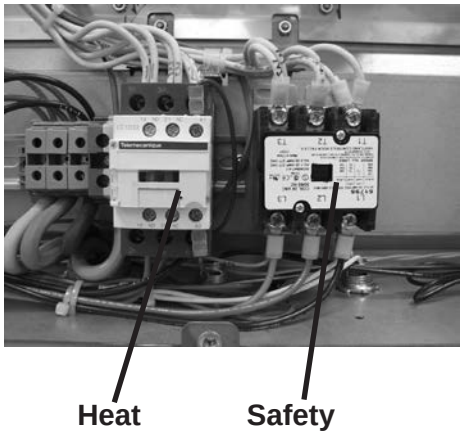
1. Remove the rear panel (9 screws).

2. Pull the wires from the switch.

3. Use Phillip's-head screwdriver and remove the 2 screws securing the switch.

4. Reassemble with new switch, making sure plate pushes the switch plunger, activating the switch, and then reconnect power to the fryer.

7-11. CONTACTORS



The open fryer requires two switching, 24V contactors per vat: a primary and a heat contactor. The primary contactor energizes (contacts close) any time the main power switch is in the ON position, and the temperature of the shortening is below 420° F (215° C). The high limit cuts power at the primary contactor if the temperature of the shortening is above 420° F (215° C). The primary contactor supplies power to one side of the heat contactor.

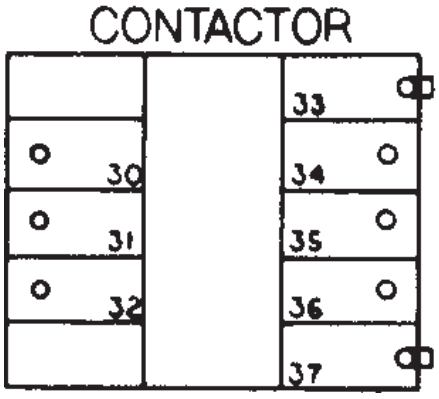
The heat contactor is controlled by the computer controller. When the ⏻ button is pressed and the controller calls for heat, the heat contactor applies power to one side of the heating elements. When the heat contactor and primary contactor are energized (contacts closed) the electric heating elements heat the shortening.

Checkout:

1. Remove electrical power supplied to the fryer.

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

2. Remove the top, rear panel.

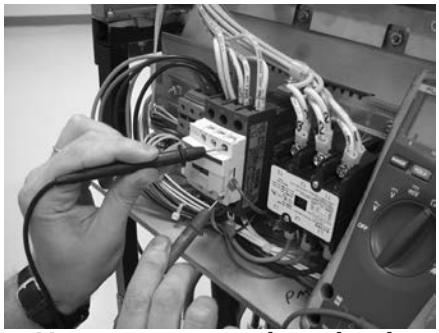


3. Label and remove wires from contactors and perform a check on both contactors as follows:

Test Points	Results
From 30 to 34	open circuit
From 31 to 35	open circuit
From 32 to 36	open circuit
From 33 to 37 (coil)	ohm reading 5 to 6

To avoid electrical shock, make connections before applying power, take reading, and remove power before removing meter leads. The following checks are performed with the wall circuit breaker closed and the main power switch in the ON position.

7-11. CONTACTORS (Continued)



Heat contactor ohm check

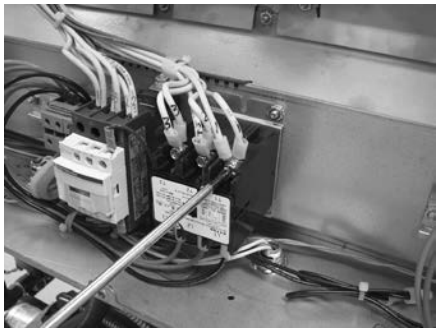
4. With power reapplied and in a heat-up mode, check the power going to both contactor coils. Power should be going to both contactors.

   If no voltage is found going into the primary contactor coil, check wiring, high limit, and element switch.

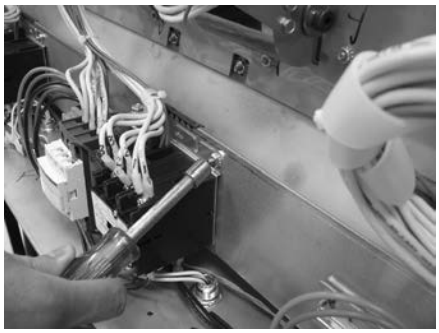
   If no voltage at heat contactor coil check wiring and connections at PC board.

Replacement:
If either contactor proves defective, replace as follows:

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

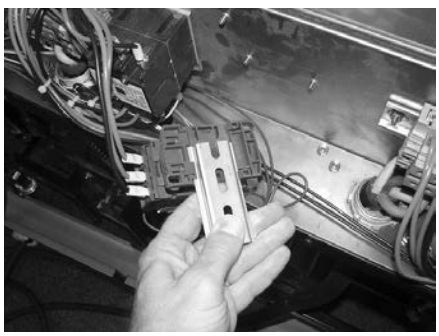


1. Label and remove only those wires directly connected to the contactor being replaced.



2. Using a 3/8” wrench or socket, remove 2 mounting nuts on the base plate of the contactor being replaced and remove contactor.

3. When replacing heat contactor, slide contactor out of mounting rail.



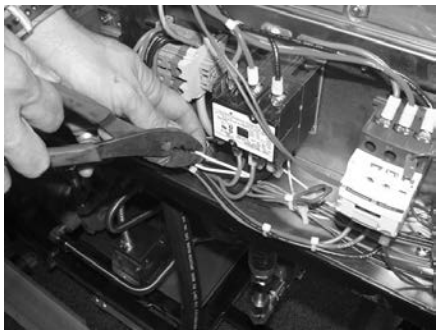
4. Install new contactor in reverse order.

5. Replace rear panel and reconnect power to the fryer and test for proper operation.

7-12. SOLENOID VALVES

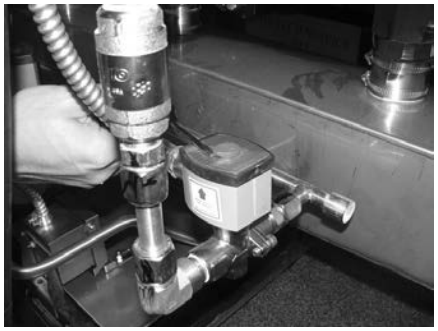
Each vat has a solenoid plumbed-into the oil return lines. They are normally closed, but open when power is supplied, such as, the controls are filling the vats.

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.



1. Remove control panel and hinge it down.

2. Refering to the decal on rear of control panel, locate P3 connector (left vat-split vat) or P4 connector (full or right vat).



3. Pull connector from panel and using a multmeter, take an ohm reading on the appropriate pins. If ohm reading is significantly different than the chart below, continue with replacement instructions.

120Volts-60Hertz	50 Ohms
220-240Volts-50Hertz	230 Ohms

Replacement:

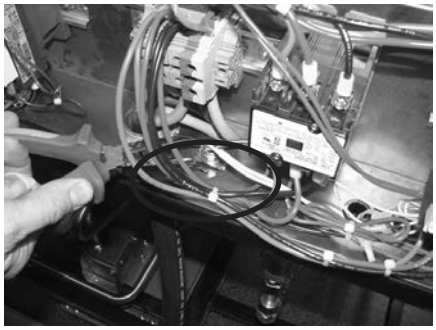
1. Remove the rear panel (9 screws).

2. Remove the plastic retaining clip on top of the coil housing.

3. Push-down and then lift-up on name-plate and remove name-plate, cover and coil housing from solenoid stem.

4. Using a 1” wrench, loosen the fittings on both sides of solenoid stem assembly from fryer.

7-12. SOLENOID VALVES (Continued)



5. Remove elbow from solenoid stem assembly and attach it to new solenoid, using pipe sealent on the threads.

6. Remove the conduit from fryer and pull the coil assembly from the fryer.

7. Disconnect conduit at coil.

8. Thread the wires of new solenoid through the conduit and reattach the conduit to the fryer.

9. Wire nut the solenoid wires onto the fryer wires, and then, attach the solenoid assembly onto the fittings of the fryer.

10. Replace rear covers and reconnect power to the fryer.

7-13. DRAIN VALVE ACTUATORS

Each vat drain valve is opened and closed by an actuator, so if the oil won't drain or pump back into the vat, the actuator may be faulty.

Replacement:

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

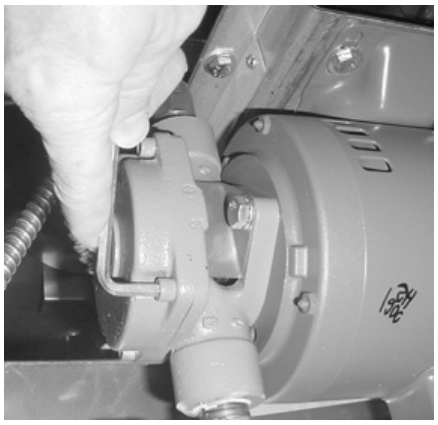
1. Access faulty actuator by removing a side panel or opening doors, depending upon the location of the actuator.

2. Push-out the retaining pins in the front and rear of actuator.

3. Disconnect the wires and air tube.

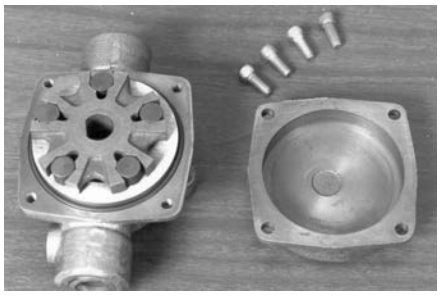
4 Install new actuator in reverse order, and reconnect power to fryer.

7-14. FILTER PUMP & MOTOR



The 2 most common causes for a fryer not to pump oil are that the pump is clogged, or the thermal overload switch has been tripped on the motor. The pump and motor is located on the rear of the fryer.
To remove debris from pump:

1. Loosen four Allen head screws on the end of pump and remove cover. (Removing the bottom rear panel may help in accessing the set screws.)

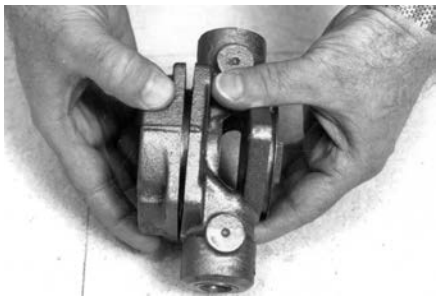


2. The inside is now exposed leaving a rotor and five teflon rollers. Clean the rotor and rollers.

3. To reassemble, place rotor on drive shaft, and place roller into rotor.

NOTICE

A small amount of grease might be needed to hold the bottom roller into place until cover plate is put on. Make sure O-ring is in proper position on plate.



CAUTION

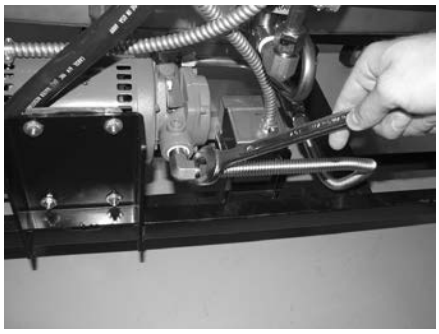
There is an indicator on the side of the two halves of the pump, this mark must be together

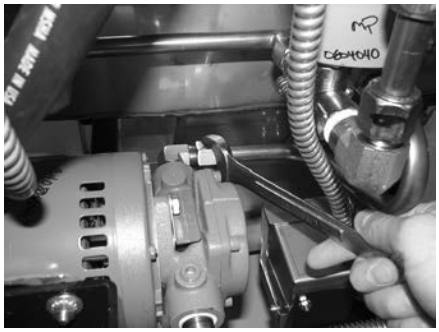
To reset the thermal overload switch:

1. Locate the pump and motor in the rear of fryer and if the motor is hot, allow it to cool for about 5 minutes.

2. Since it takes some effort to reset the switch, use a tool, such as a Phillip's-head screwdriver, to press against the reset button until an audible "click" is heard.

7-14. FILTER PUMP & MOTOR (Continued)



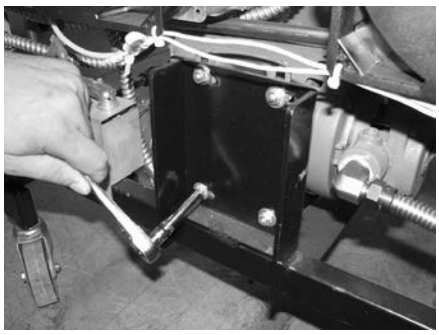


To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

Motor Removal:

1. Remove JIB from fryer.
2. Remove the bottom, rear panel and the right side panel.
3. Using a 5/8” wrench, loosen front, flexible line fitting, on the pump.
4. Using a 1” wrench, loosen the rear pump fitting.
5. Using Phillip’s-head screwdriver, remove rear cover from motor, exposing the wires.
6. Loosen the conduit clamp and pull the wires through the conduit clamp.

7-14. FILTER PUMP & MOTOR (Continued)



7. Using a 7/16 in. wrench, remove 4 bolts securing the motor to the motor bracket and pull the pump and motor assembly from fryer.

8. Pull pump and motor out, from front of fryer, across the JIB shelf.

To replace pump on motor:

1. Using a 1/2 in. wrench, remove the 2 bolts securing pump to the motor and pull the pump from the motor.

2. Install a new seal kit (part no. 17476) onto shaft of motor.

3. Allign the shaft of the motor with the rotor on the inside of pump and push pump onto shaft of motor.

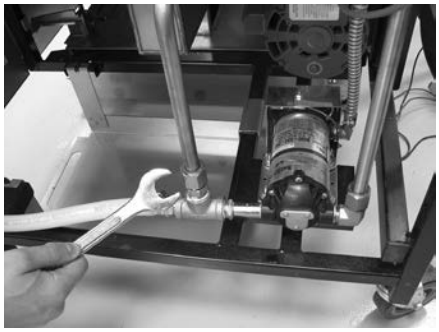
4. Secure the pump onto the motor with the 2 bolts.

7-15. JIB PUMP

This pump keeps the vats filled (Auto Top-Off)

Replacement:

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.



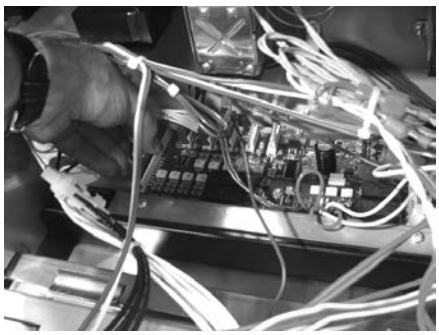
1. Remove the right side panel.
2. Using 1" wrench, loosen both fitting on each side of pump.
3. Using a Phillip's-head screwdriver, remove the 4 screws securing the bottom of pump.
4. Disconnect the wires in the rear of pump and pull assembly from fryer.
5. Pull fittings from faulty pump and attach the fittings to new pump, in the same orientation.
6. Install new pump assembly in fryer, in reverse order and then reconnect power to fryer.

7-16. AIF PC BOARD

This electronic board controls the Automatic Intermittant Filtering process.

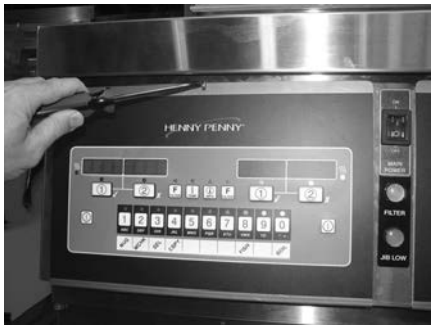
Replacement:

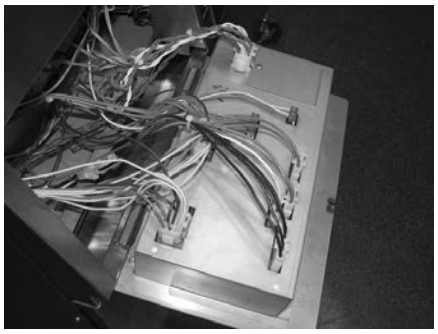
To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

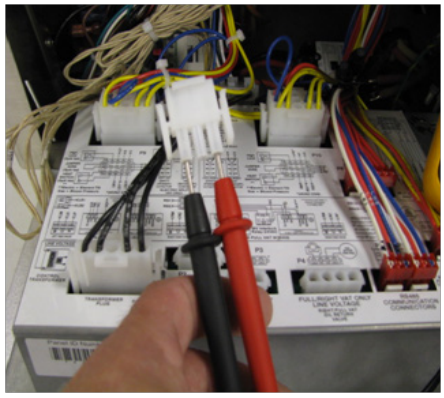


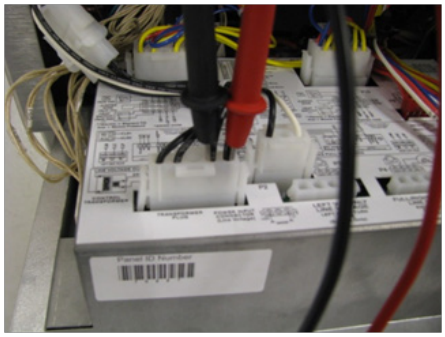
1. Pull-down center control panel (right panel on 2 vat units).
2. Pull connectors from PC board, located behind control panel.
3. Using a 5/16" socket, remove the 6 nuts securing the board and remove it from the fryer.
4. Install in reverse order. The control connectors are colored-coded; Left-Red; Middle-White; Right-Blue.

7-17. TRANSFORMERS









These components drop the line voltage to low voltage compoents such as, control board, AIF board and contactors.

Checkout:

1. Perform Power Section troubleshooting,paragraph 1-3.

To avoid electrical shock or property damage, move power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

2. Loosen the screw securing the top of the control panel.

3. Pivot the top of the panel down, allowing panel to be supported by 2 brackets in the slots in control shroud.

To avoid electrical shock, use care when checking transformer. Following checks are performed with wall circuit breaker closed and main power switch in the ON position.

4. Remove 3 pin connector (P2) from back of control panel.

5. Set multi-meter to AC volts. With power ON, take voltage reading on 2 outside pins. Voltage should be 120VAC-Dom. or 230VAC-Int'l. If no voltage, perform step 1.

6. Reconnect 3 pin connector to the back of control panel.

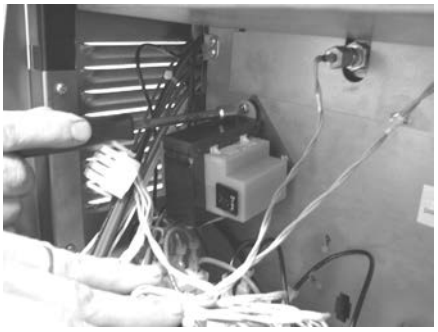
7. With power ON and 5 pin connector (P1) still connected, insert meter probes into back of P1 at positions 4 and 5. Voltage should be 120VAC-Dom. or 230VAC-Int'l.

8. With power ON and P1 still connected, insert probes into back of P1 at positions 1 and 2. Voltage should be 24VAC.

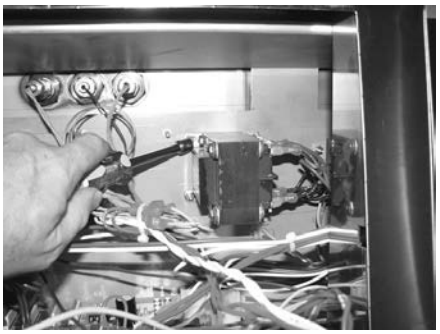
9. If proper voltage is present at positions 4 & 5 of P1 and no voltage at positions 1 and 2, replace the transformer.

10. If proper voltage is present at positions 1, 2, 4, & 5 of P1 and control panel has no display, unplug each connector from control panel, inspect pins and wire connections, repair as needed, and firmly plug each connector into panel.

7-17. TRANSFORMERS (Continued)



Control Transformer



AIF Transformer

Checkout (Continued):

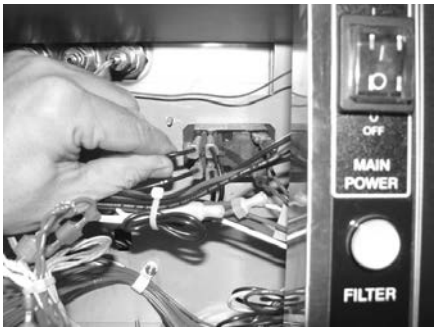
11. If control panel still does not display, replace panel with a known good control panel. If problem follows control panel, replace panel.

Replacement:

1. Disconnect electrical power and using a 5/16” socket, remove nuts securing transformer and remove transformer.
2. Replace transformer in reverse order.

7-18. FILTER MOTOR RELAY

This component is located behind the left control panel and regulates voltage to the filter motor.

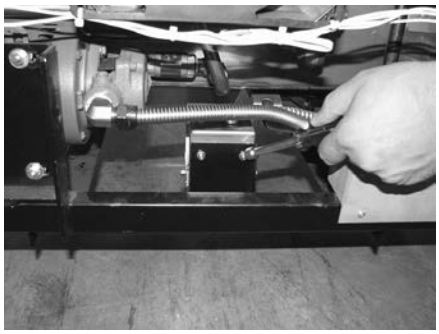


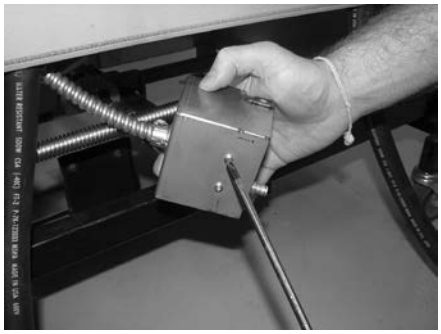
Replacement:

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Pull-down the left control panel.
2. Label and remove wires from relay.
3. Using a 5/16” socket, remove the nuts securing relay and remove relay from fryer.
4. Install new relay in reverse order.

7-19. DRAIN PAN SWITCH





This switch closes when the drain pan is pushed properly in place under the fryer. If the drain pan is not properly in place, or the drain switch is faulty, display prompts such as, "CHECK PAN"; "CHANGE FILTER PAD" shows in the display.

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Remove control panel and hinge it down.

2. Locate the 8-pin connector on the AIF PC board and pull the connector from the board.

3. Check for normally open circuit between pins with wires labeled D1 & D2. If the circuit shows closed, continue with the replacement instructions below.

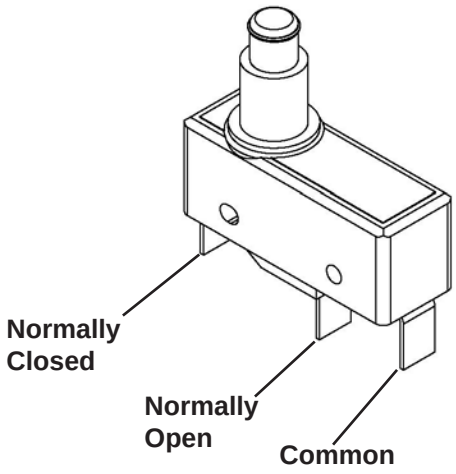
Removal:

1. Drain pan switch is located on the rear of fryer. Using a 3/8" socket or nut driver, remove the nuts securing the drain switch bracket to the fryer.

2. Using a 1/8" Allen wrench, remove shoulder bolt securing the cover and remove cover.

3. Using a Phillips-Head screwdriver, remove screws securing switch to bracket and remove switch.

4. Label and remove wires from switch.



7-20. FILTER AND JIB LIGHTS Replacement:

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Remove control panel.

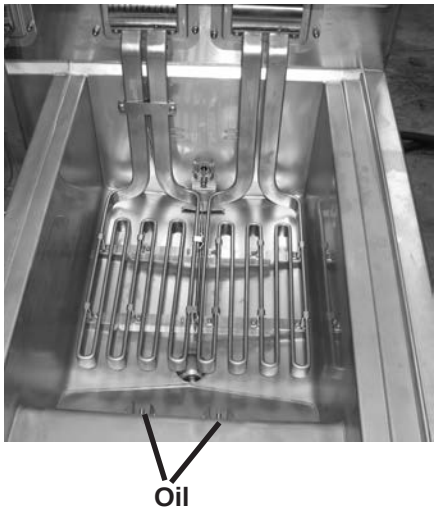
2. Locate wires to light and cut wires.

3. Using a 13/16”, deep-well socket (see photo at left) remove nut on the back side of the panel and pull the light from front of the panel.

4. Install new light with deep-well socket, connect wires with wire nuts and reinstall the control panel.

5. Restore power to the unit.

7-21. OIL LEVEL PROBES



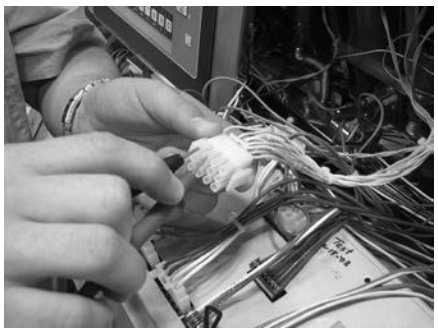
Oil level probes

The oil level probes (left & right-see photo at left) monitor the oil level by temperature differences. If they becomes disabled, the display shows: “E-18A”= left probe; “E18-B”= right probe; “E18C”= both.

Also, if any of the probes are out of calibration more than 10°F, or 10°C, the probe should be replaced. An Ohm check can be performed also. See chart below.

Checkout:

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.



1. Using a Phillip’s-head screwdriver, or cordless drill, loosen screw securing top of the control panel and secure control panel in the slots of the shroud.

2. Pull probe connector from the control panel and locate the terminals in connector for probe being tested. Attach meter leads onto those terminals and refer to chart at left to determine if probe is good or not. (Probe wires are labeled, with #1 being the far left probe.)

Temp. F	Temp. C	Resistance Ohms	Temp. F	Temp. C	Resistance Ohms
50	10.00	1039.02	250	121.11	1464.79
60	15.56	1060.65	260	126.67	1485.71
70	21.11	1082.24	270	132.22	1506.58
80	26.67	1103.80	280	137.78	1527.43
90	32.22	1125.32	290	143.33	1548.23
100	37.78	1146.81	300	148.89	1569.00
110	43.33	1168.26	310	154.44	1589.73
120	48.89	1189.67	320	160.00	1610.43
130	54.44	1211.05	325	162.78	1620.77
140	60.00	1232.39	330	165.56	1631.09
150	65.56	1253.70	340	171.11	1651.72
160	71.11	1274.97	350	176.67	1672.31
170	76.67	1296.20	360	182.22	1692.86
180	82.22	1317.40	365	185.00	1703.13
185	85.00	1327.99	370	187.78	1713.38
190	87.78	1338.57	380	193.33	1733.87
200	93.33	1359.69	390	198.89	1754.31
210	98.89	1380.79	400	204.44	1774.72
212	100.00	1385.00	410	210.00	1795.10
220	104.44	1401.84	420	215.56	1815.44
230	110.00	1422.86	430	221.11	1835.74
240	115.56	1443.85	440	226.67	1856.01

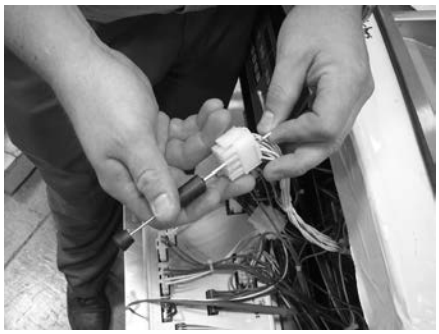
Replacement:

1. Reattach control panel to unit and restore power to the unit.

2. Drain the oil from the vat by pressing and holding a F FILTER button until *FILTER* *MENU* shows in the display. Then once “1.AUTO FILTER” shows in the display, press ▼ 3 times until “4. DRAIN TO PAN” shows in the display. Press √ button and “DRAIN TO PAN” “YES NO” shows in the display. Press √ button again display shows “DRAINING”, and oil drains from vat. Once oil has drained, display shows “VAT EMTY” “YES NO”. Visually check that vat is empty and press √ button, display shows “DRAIN CLOSING...” and drain closes.

7-21. OIL LEVEL PROBES (Continued)

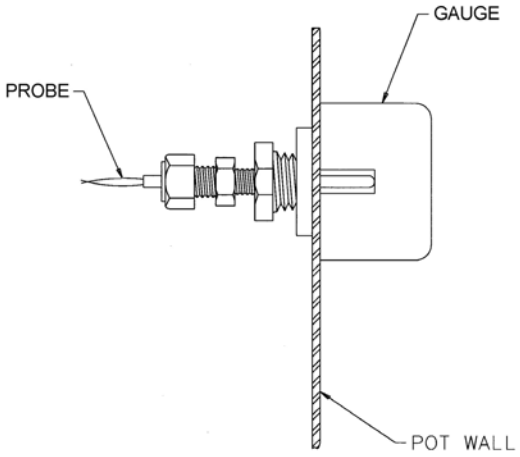
5. Using a 1/2” wrench, remove nut on compression fitting, and remove the temperature probe from the vat.



6. Using a terminal extractor, remove probe terminals from the connector and pull remove probe from unit.

7. Place the nut and new ferrule on new temperature probe and insert temperature probe into the compression fitting.

8. Follow probe installation instructions below:



NOTE:
1.) LOCATE TEMPERATURE PROBE THRU POT WALL.
2.) PLACE GAUGE AGAINST POT WALL AS SHOWN.
3.) PUSH TEMPERATURE PROBE THRU UNTIL IT MAKES CONTACT WITH GAUGE.
4.) TIGHTEN TEMPERATURE PROBE IN PLACE.

CAUTION

Excess force will damage temperature probe. Hand-tighten nut and then 1/2 turn with a wrench.

7-21. OIL LEVEL PROBES (Continued)

9. Connect new temperature probe to connector and fasten connector onto control panel.

10. Replace control panel and reconnect power to vat.

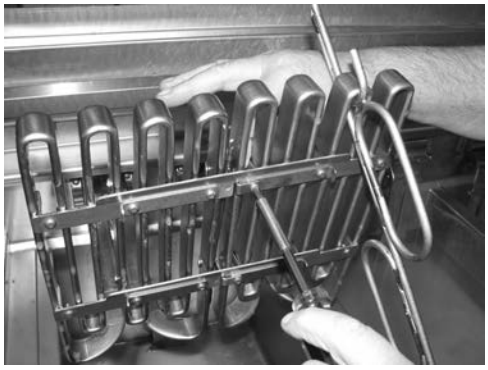
11. Fill vat by pressing and holding a F FILTER button until *FILTER* *MENU* shows in display. Then once "1.AUTO FILTER" shows in the display, press ▼ 4 times until "5.FILL POT FROM DRN PAN" shows in display. Press √ button; "FILL POT FROM DRN PAN" "YES NO" displays. Press √ button again, display shows "FILLING" "STOP?"and oil fills vat. Press √ button again, display shows "FILL POT FROM DRN PAN" "YES NO". When vat is full, press **X** twice to return to normal operation.

7-22. ELECTRIC HEATING ELEMENTS

1. Drain the oil from the vat by pressing and holding a F FILTER button until *FILTER* *MENU* shows in the display. Then once "1.AUTO FILTER" shows in the display, press ▼ 3 times until "4. DRAIN TO PAN" shows in the display. Press √ button and "DRAIN TO PAN" "YES NO" shows in the display. Press √ button again display shows "DRAINING", and oil drains from vat. Once oil has drained, display shows "VAT EMTY" "YES NO". Visually check that vat is empty and press √ button, display shows "DRAIN CLOSING..." and drain closes.

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

2. Using the lift tool, lift the hinged element from the vat and position tool to support and keep the element raised up.



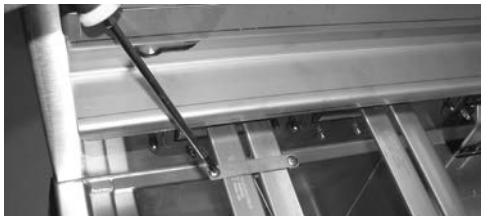
CAUTION

Avoid putting the lift tool at the center of the elements, in the same area as the high limit bulb or damage to the high limit could result.

3. Remove 2 screws, 2 high limit guards, and high limit sensing bulb from heating elements as needed.

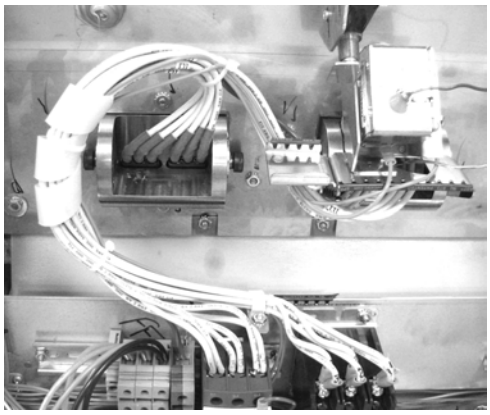
4. Remove remaining 4 or 6 screws, spreader straps, element feet, and spreader bars from the heater being replaced.

7-22. ELECTRIC HEATING ELEMENTS (Continued)



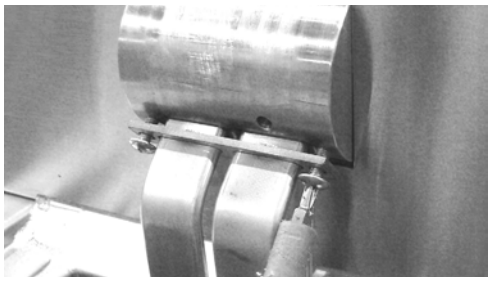
5. Remove 2 screws and front and rear capillary brackets if replacing left heater of a full vat or a split vat heater.

6. Using a Phillip's-head screwdriver, or screw gun, remove 9 screws and rear panel.

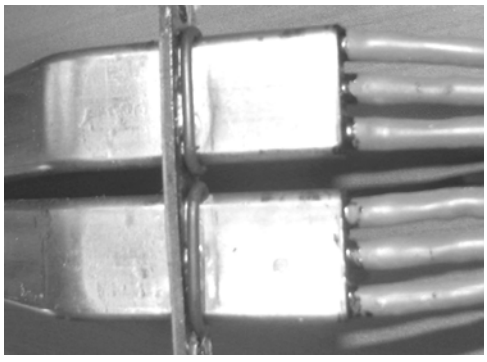


7. Trace lead wires of heater element to be replaced, to its respective contactors, tag each wire, and disconnect heater lead wires from contactors.

8. Remove fasteners and cable clamps, wire ties, and cable wrap from heater lead wires as needed.

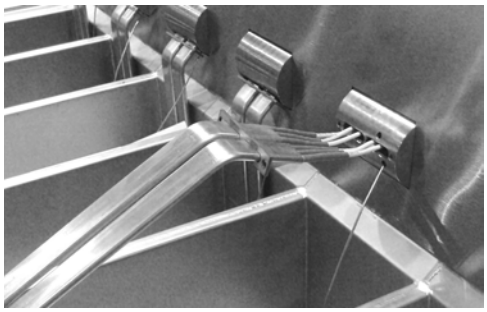


9. Remove 2 screws, and while raising heater element up out of vat, carefully pull lead wires through pivot housing to remove heater element.

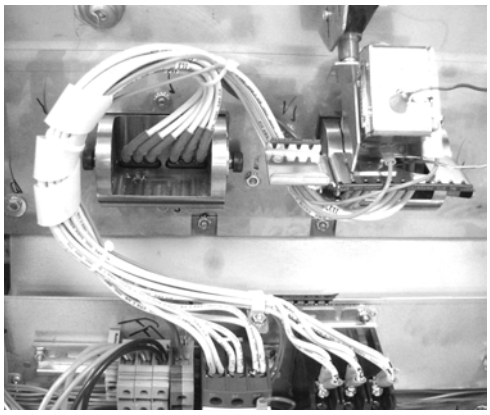


10. Install new o-rings over new heater lead wires and position them against the heater mounting plate.

7-22. ELECTRIC HEATING ELEMENTS (Continued)



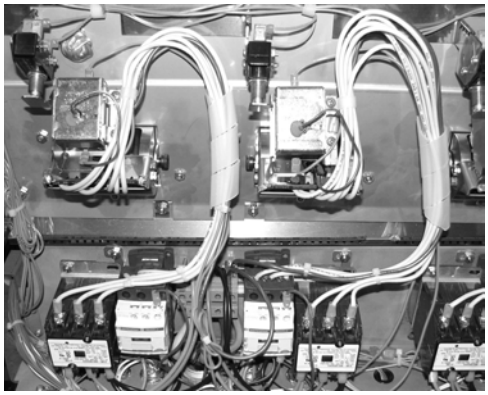
11. Place new heater element near vat, pass lead wires through pivot housing, lower heater into vat, align holes of heater retainer plate with the holes in the pivot housing and install 2 screws.



FULL VAT

12. Route lead wires to contactors and connect the wires to each contactor terminal.

13. Gather any slack in the lead wires as close to element pivot housing as possible similar to the arrangements shown at left for a full vat or split vat. This will allow the leads to move freely with the normal up and down movement of the heating element.



SPLIT VAT

CAUTION

Route and gather the excess heater element wiring to eliminate any strain to the wires, or the wire leads may pull out of the heating element causing element failure and electrical shorts.

14. Install cable wraps, cable clamps and fasteners, and new wire ties in the same general locations from where they were removed in step 8.

15. Reassemble the remaining parts in the reverse order and turn power on to the fryer.

16. Fill vat by pressing and holding a F FILTER button until *FILTER* *MENU* shows in display. Then once "1.AUTO FILTER" shows in the display, press ▼ 4 times until "5.FILL POT FROM DRN PAN" shows in display. Press √ button; "FILL POT FROM DRN PAN" "YES NO" displays. Press √ button again, display shows "FILLING" "STOP?"and oil fills vat. Press √ button again, display shows "FILL POT FROM DRN PAN" "YES NO". When vat is full, press **X** twice to return to normal operation.

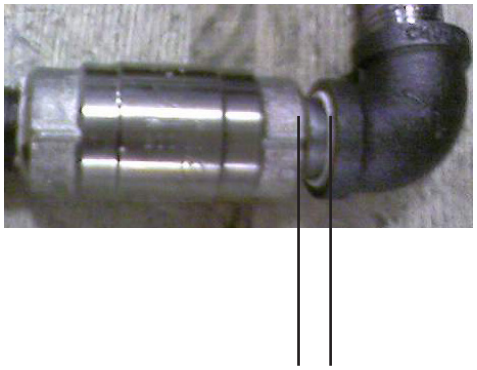
7-23. CHECK VALVE

A check valve is installed in the fill line to each vat to keep oil from flowing out of the vat.

Replacement

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Disassemble fittings as necessary, remove old valve.
2. Apply Loctite Primer (Henny Penny part no. MS01-572) to internal threads of both the inlet and outlet of new valve.
3. Reassemble fittings to check valve and install valve. Be sure to allow a 1/4in. gap between check valve and elbow.



SECTION 8. PARTS INFORMATION

8-1. INTRODUCTION

This section lists the replaceable parts of the Henny Penny Model LVE fryer.

8-2. GENUINE PARTS

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

8-3. WHEN ORDERING PARTS

Once the parts that you want to order have been found in the parts list, write down the following information:

Item Number 2
Part Number 60241 Example:
Description High Limit

From the data plate, list the following information:
Product Number 01100
Serial Number 0001 Example:
Voltage 208

8-4. PRICES

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

8-5. DELIVERY

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

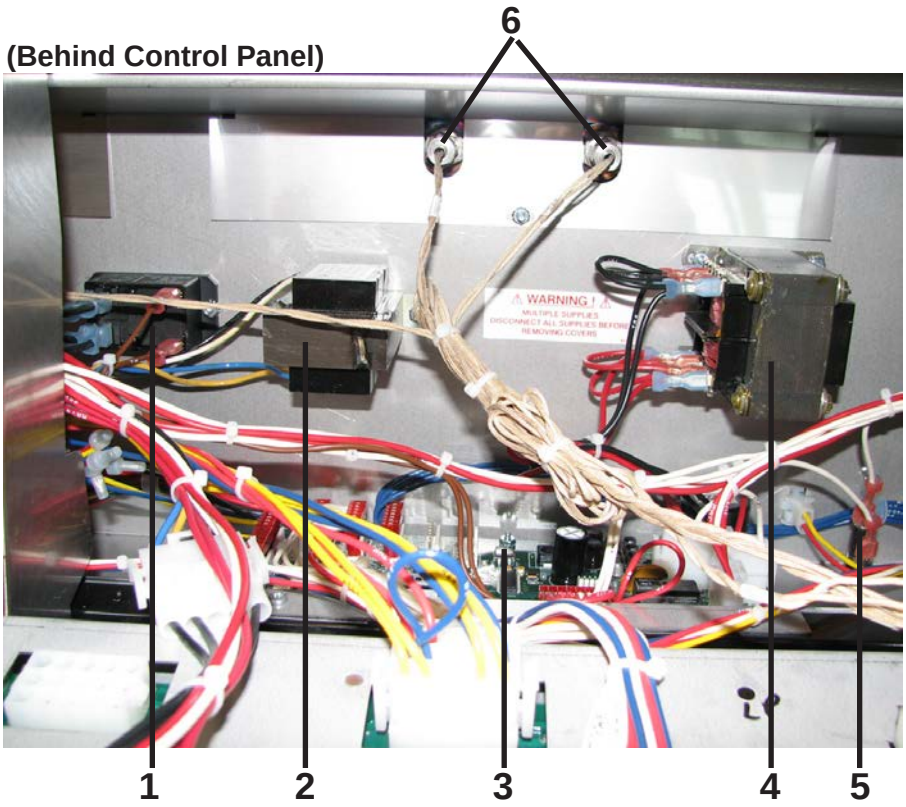
8-6. WARRANTY

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

8-7. RECOMMENDED SPARE PARTS FOR DISTRIBUTORS

Recommended replacement parts are indicated with A or B in the parts lists:
A = parts to be stocked on service vans or trucks
B = parts to be stocked at the distributor/KES location.
Inventory on all other parts not identified, should be based upon usage in the territory. Please use care when ordering recommended parts, because all voltages and variations are marked. Distributors should order parts based upon common voltages and equipment sold in their territory.

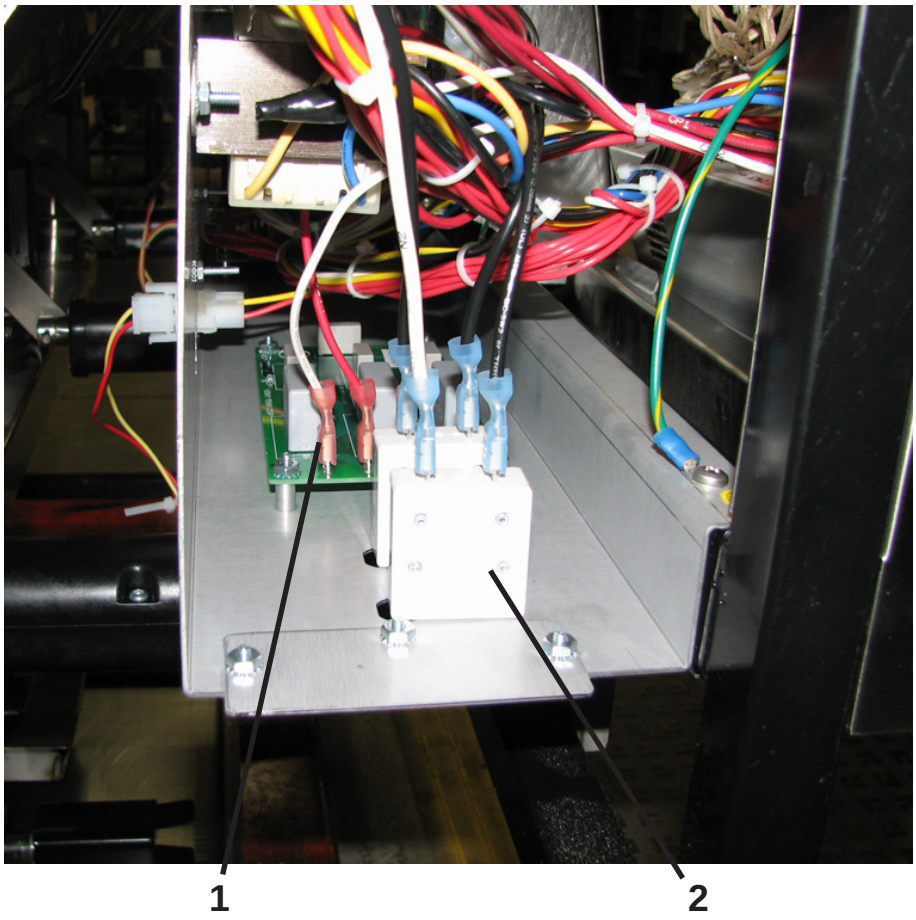
(Behind Control Panel)



Item No.	Part No.	Description	Quantity
B 1	ME90-008	RELAY - PUMP MOTOR- 12 VDC - 30 AMP	1
A 2	140082	KIT-TRANSFORMER-120V/75VA-SN: BH1002029 & Below	1/vat
A 2	84391	TRANSFORMER-120V/75VA-SN: BH1002030 & Above	1/vat
A 2	140061	KIT-TRANSFORMER-230V/75VA-SN: BH1002033 & Below	1/vat
A 2	84135	TRANSFORMER (CE)-230V/75VA-SN: BH1002034 & Above	1/vat
B 3	76463RB	PC BOARD - AIF	1
B 4	TS22-012	TRANSFORMER - AIF	1
A 5	EF02-104	FUSE HOLDER - 20A-250V	1
A	FA52-010	FUSE - 1 AMP (208/240V FRYERS)	1
A	FA52-015	FUSE - 1.5 AMP (380/400/415V FRYERS)	1
A 6	14974	LEVEL SENSOR - PROBES - 2.5 in	2/vat

Recommend Parts: A=Truck Stock/B=Dist. Stock

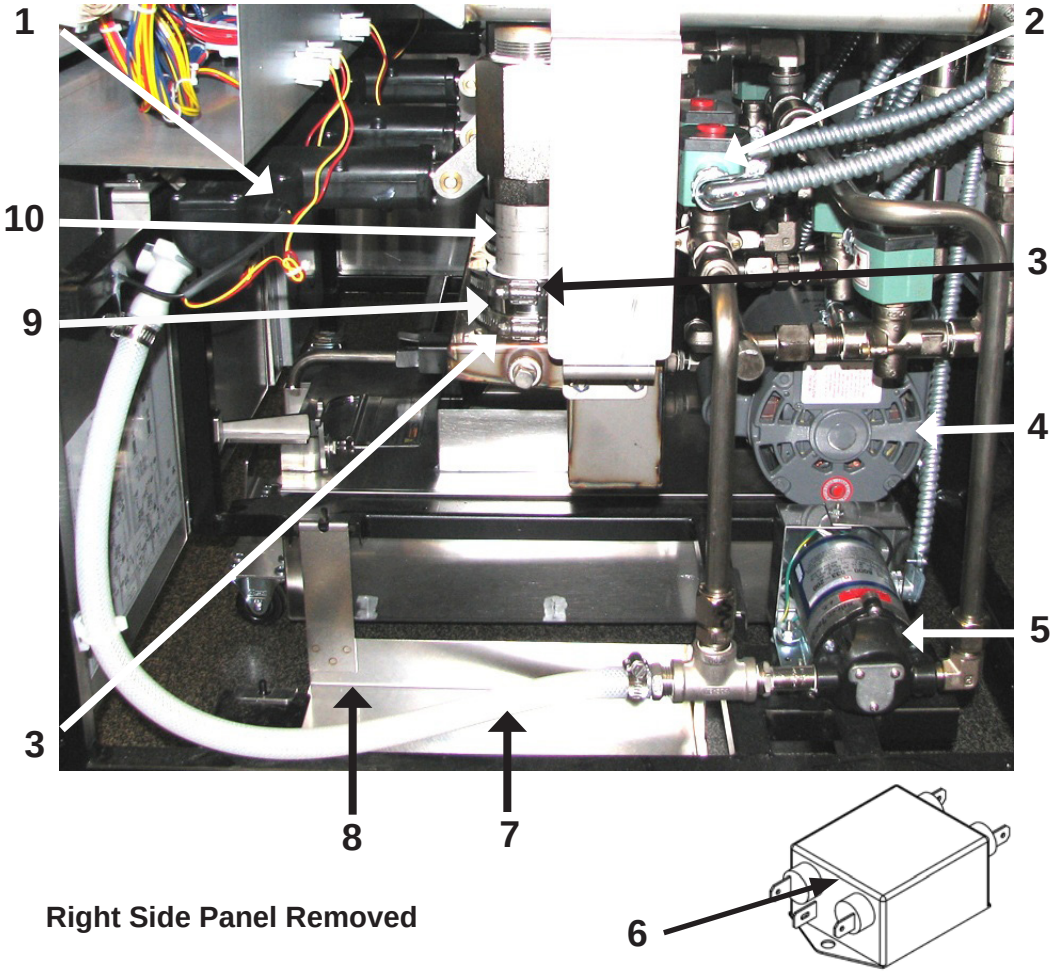
(Left Side Panel Removed)



Item No.	Part No.	Description	Quantity
B 1	51065	EMC FILTER PCB - CE	1
A 2	EF02-125	BREAKER-PUSH BUTTON RESET - 15 AMP	2
3	79596-XXXX	GATEWAY - PCB (not shown - see chart below).....	1

Part No.	Voltage	Coupling	Transceiver Type	Model
79596-1102	115	LE	NON-CENELEC	LVE-102
79596-1103	115	LE	NON-CENELEC	LVE-103
79596-1104	115	LE	NON-CENELEC	LVE-104
79596-1202	115	LN	NON-CENELEC	LVE-102
79596-1203	115	LN	NON-CENELEC	LVE-103
79596-1204	115	LN	NON-CENELEC	LVE-104
79596-2202	230	LN	NON-CENELEC	LVE-102
79596-2203	230	LN	NON-CENELEC	LVE-103
79596-2204	230	LN	NON-CENELEC	LVE-104
79596-2212	230	LN	CENELEC	LVE-102
79596-2213	230	LN	CENELEC	LVE-103
79596-2214	230	LN	CENELEC	LVE-104

Recommend Parts: A=Truck Stock/B=Dist. Stock



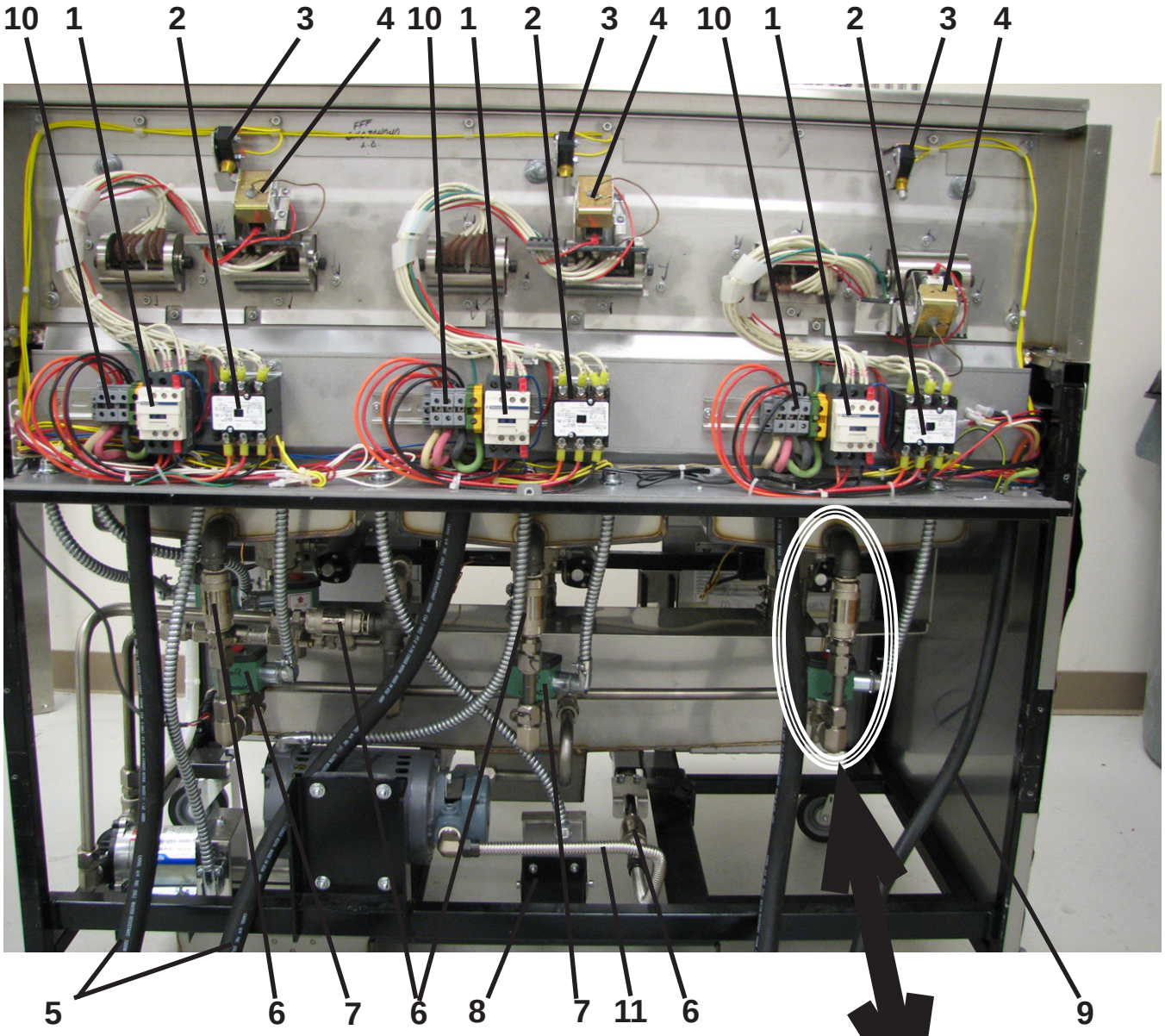
Right Side Panel Removed

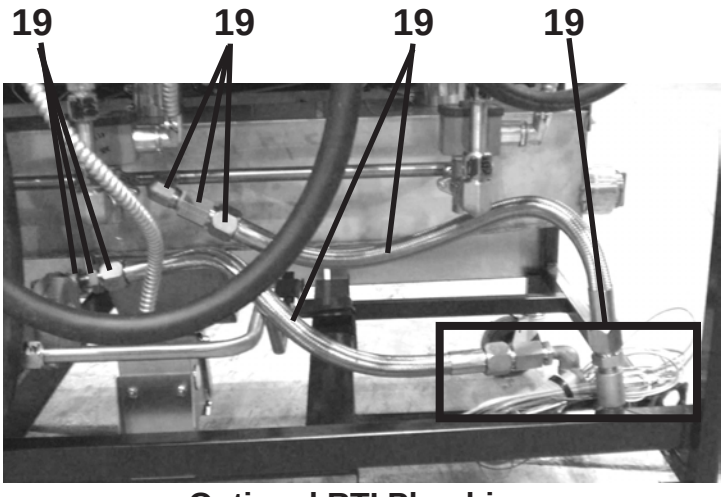
Item No.	Part No.	Description	Quantity
B 1	76783	ASSY - DRAIN VALVE ACTUATOR	1/vat
A 2	73647	SOLENOID - ASCO - 120V (JIB Solenoids)	2
A 2	74582	SOLENOID - ASCO - 230V (JIB Solenoids)	2
3	MS01-307	CLAMP - HOSE	2
4	67589	PUMP & MOTOR ASSY. (See page 8-22 for details)	1
A	67583	MOTOR - 1/2 HORSE	1
B	17437	PUMP - FILTER	1
A	17476	SEAL KIT	1
B 5	73473	PUMP - OIL TOP OFF - 120V	1
B 5	14969	KIT-PUMP-TOP OFF-230V-CE (Units built 7/24/08 and before)	1
B 5	74583	PUMP - OIL TOP OFF - 230V (Units built 7/25/08 and later)	1
B 6	80728	EMI FILTER - CE (Units built 7/25/08 and later)	1
B 7	77288	ASSY - HOSE	1
8	85966	WELD ASSY - JIB SHELF	1
9	76598	GUARD-SILICONE HOSE	1/vat
10	74553	EXTENSION-DRAIN (See chart on next page)	AR†
10	77305	EXTENSION-DRAIN (See chart on next page)	AR†
10	80191	EXTENSION-DRAIN-LVE-104 ONLY (See chart on next page)	AR†
11*	72554	HOSE-MANDREL WRAPPED SILICONE (Under Guard, item 9)	1/vat

Recommend Parts: A=Truck Stock/B=Dist. Stock
* not shown † as required

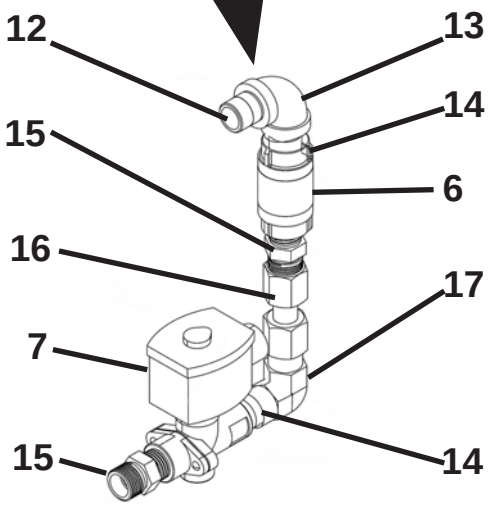
DRAIN EXTENSION QUANTITY SELECTION CHART

MODEL	P/N 74553 QUANTITY	P/N 77305 QUANTITY	P/N 80191 QUANTITY
LVE-102 DS	2	2	--
LVE-102 FF	2	--	--
LVE-102 FR	1	2	--
LVE-102 FS	--	3	--
LVE-102 LS	1	3	--
LVE-102 SD	2	2	--
LVE-102 SF	--	3	--
LVE-102 SR	1	3	--
LVE-102 SS	--	4	--
LVE-103 DSF	2	3	--
LVE-103 DSS	2	4	--
LVE-103 FFF	3	--	--
LVE-103 FFS	--	4	--
LVE-103 FSD	2	3	--
LVE-103 FSS	--	5	--
LVE-103 LSS	1	5	--
LVE-103 SFF	--	4	--
LVE-103 SSD	2	4	--
LVE-103 SSF	--	5	--
LVE-103 SSR	1	5	--
LVE-103 SSS	--	6	--
LVE-104 DSSF	2	1	4
LVE-104 DSSS	2	1	5
LVE-104 FFFF	4	--	--
LVE-104 FFFS	--	4	1
LVE-104 FFSS	--	3	3
LVE-104 FSSD	2	1	4
LVE-104 FSSS	--	2	5
LVE-104 LSSS	1	1	6
LVE-104 SFFF	--	4	1
LVE-104 SSFF	--	3	3
LVE-104 SSSD	2	1	5
LVE-104 SSSF	--	2	5
LVE-104 SSSR	1	1	6
LVE-104 SSSS	--	2	6



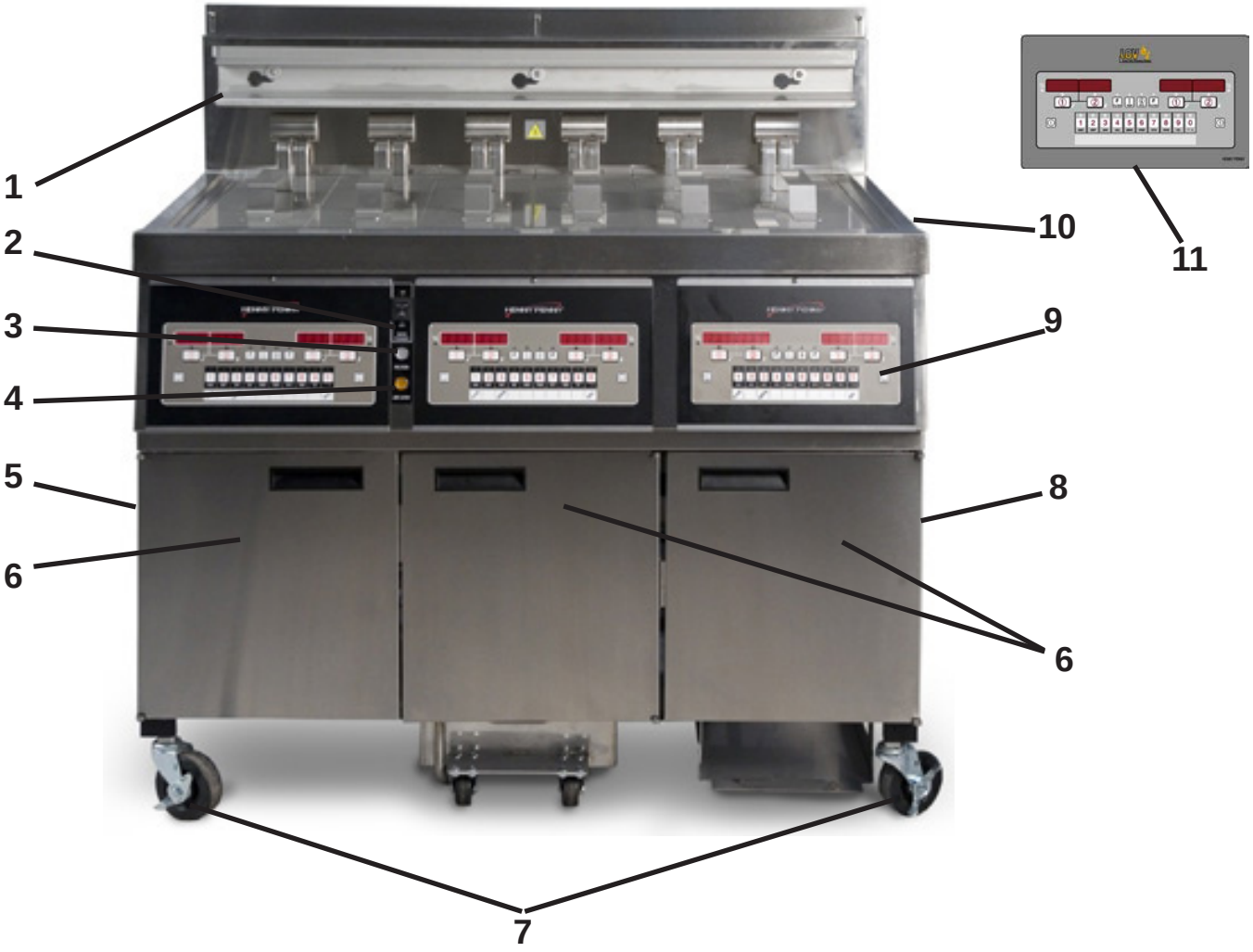


Optional RTI Plumbing



Item No.	Part No.	Description	Quantity
A 1	78753	CONTACTOR - 24V COIL (Heat Contactor)	1/vat
A 2	29509	CONTACTOR - 24V COIL (Primary Contactor)	1/vat
A 3	18227	SWITCH - ELEMENT LIFT	1/vat
A 4	140253	KIT - HIGH LIMIT - 425 F	1/vat
5	75381	ASSY - POWER CORD - 208-240V	**
5	79364	ASSY - CE POWER CORD	**
5	84906	ASSY - CE POWER CORD (8 FT) - ITALY	**
5	81064	ASSY - CORD & PLUG - LVE10X - AUSTRALIA	**
A 6	74469	VALVE-CHECK-1/2" (Vat Fill) (Apply item 18 to threads)	1/vat
A 7	73647	SOLENOID - ASCO - 120V (Vat Fill Solenoids)	1/vat
A 7	74582	SOLENOID - ASCO - 230V (Vat Fill Solenoids)	1/vat
	140229	---KIT-SOLENOID REPAIR	A/R
A 8	18227	SWITCH - DRAIN PAN - SN: BH0807094 & below	1
A 8	80148	ASSY-DRAIN SWITCH W/BOOT SN: BH0807095 & above	1
8	80153	ASSY-BOX-DRAIN SWITCH W/BOOT SN: BH0807094 & below (converts to switch w/boot)	1
9	73517	ASSY - POWER CORD 120V - CONTROL	1
9	79363	ASSY - CE CONTROL POWER CORD	1
9	80637	ASSY - FRANCE CONTROL POWER CORD	1
9	79363	ASSY - CE CONTROL POWER CORD (8 FT) - ITALY	1
B 10	78702	ASSY - TERMINAL BLOCK - DOM	1/vat
B 10	78705	ASSY-TERMINAL BLOCK-INT'L (LEFT VAT ONLY)	1
B 10	78706	ASSY-TERMINAL BLOCK-INT'L (ALL BUT LEFT VAT)	1/vat
11	77523-002	TUBE-SUCTION-18"	1
12	35856	NIPPLE - 1-1/8" - SHORT - HOSPITAL	1/vat
13	FP01-090	ELBOW - 1/2" NPT X 90°	1/vat
14	FP01-023	NIPPLE - 1/2" NPT CLOSE	2/vat
15	16807	FITTING - CONNECTOR - MALE	2/vat
16	75426	ASSY - TEE TO JIB PUMP INLET	1/vat
17	FP01-118	ELBOW - 5/8" TUBE - 1/2" NPT	1/vat
A 18*	MS01-572	PRIMER-LOCTITE-.8 OZ. CAN (for check valve threads)	As Required
19	--------	BRAIDED LINES, FITTINGS, & VALVE-OPTIONAL RTI SYSTEM--CONTACT RTI FOR PARTS OR SERVICE	--

Recommend Parts: A=Truck Stock/B=Dist. Stock
*not shown
**1/Full Vat or 1 per 2 Split Vats



Item No.	Part No.	Description	Quantity
1	77842	HANGER-BASKET - LVE-102	1
1	77709	HANGER-BASKET - LVE-103	1
1	77934	HANGER-BASKET - LVE-104	1
A 2	52224	SWITCH - POWER	1
B 3	75860	LIGHT - INDICATOR - BLUE	1
B 4	75859	LIGHT - INDICATOR - YELLOW	1
5	74460	PANEL - LH SIDE	1
6	-------	DOOR	See Chart on Next Page
7	77575	CASTER - 4” - W/BRAKE	2
8	74461	PANEL - RH SIDE	1
B 9	SEE 8-13	ASSY - CONTROL - LOV	†
10	03623	WELD ASSY - COVER - SPLIT VAT	1/vat
10	03624	WELD ASSY - COVER - FULL VAT	1/vat
11	14985	KIT - LVE CONTROL DECAL RETROFIT (Black to Gray)	
12*	77679	CASTER - 4”	2

Recommend Parts: A=Truck Stock/B=Dist. Stock
† **LVE102=2; LVE103=3; LVE104=4**
√ recommended parts / * not shown

DOOR PART NUMBERS FOR UNITS BUILT BEFORE MAY 3, 2010

89895 LH Door Assy with Holder	89898 RH Door Assy with Label

Model LVE-102

89895 LH Door Assy with Holder	87041 RH Door Assy	89898 RH Door Assy with Label

Model LVE-103

89896 LH Door Assy with Holder	74301 LH Door Assy	87041 RH Door Assy	89898 RH Door Assy with Label

Model LVE-104

DOOR PART NUMBERS FOR UNITS BUILT ON MAY 3, 2010 AND AFTER

79314 LH Door Assy with Label	74302 RH Door Assy with Holder

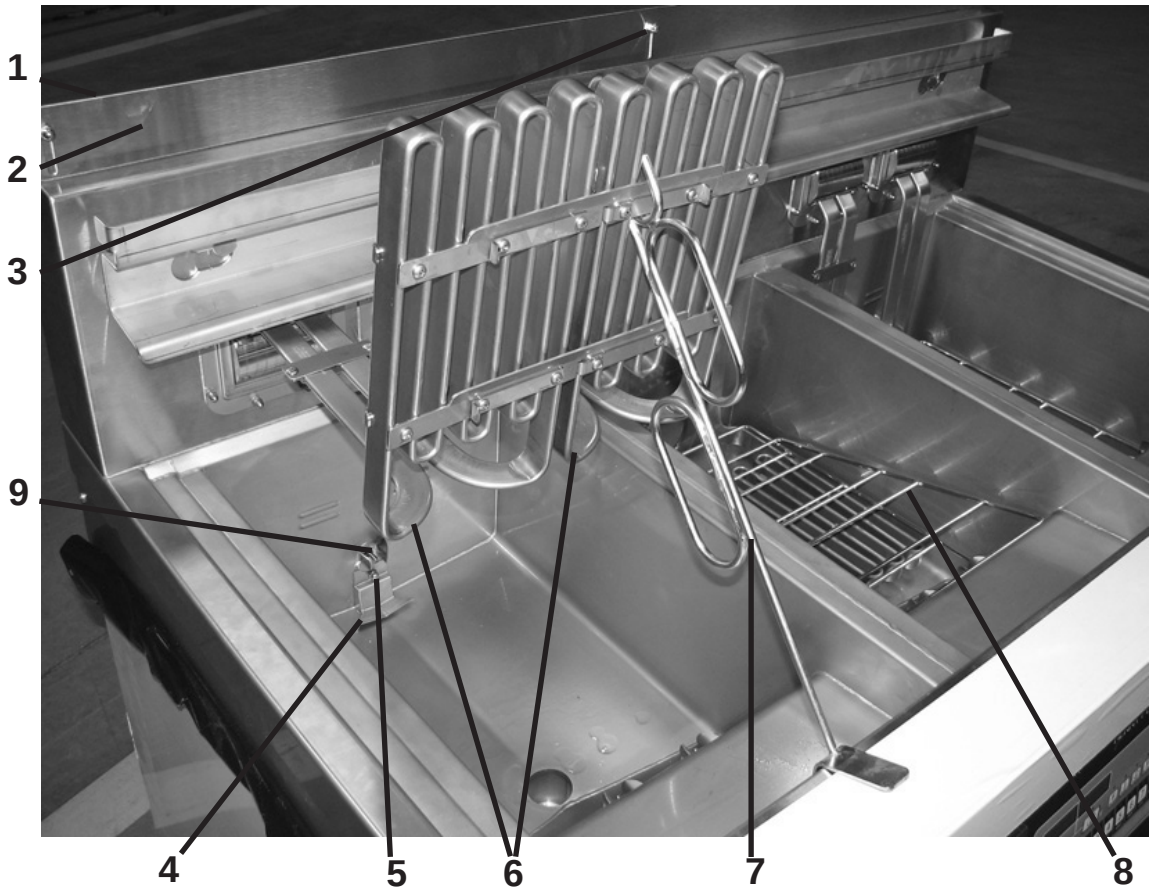
Model LVE-102

79314 LH Door Assy with Label	87041 RH Door Assy	74302 RH Door Assy with Holder

Model LVE-103

89897 RH Door Assy with Label	74301 LH Door Assy	87041 RH Door Assy	74302 RH Door Assy with Holder

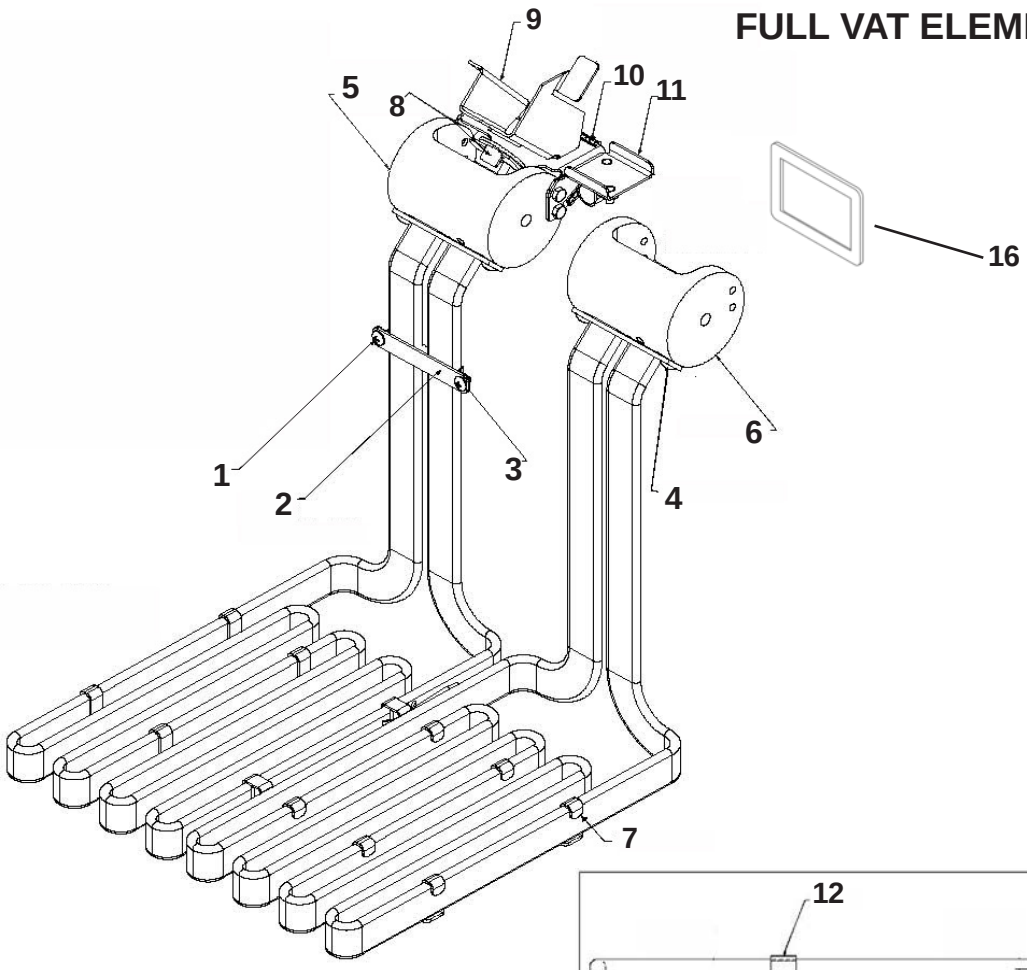
Model LVE-104

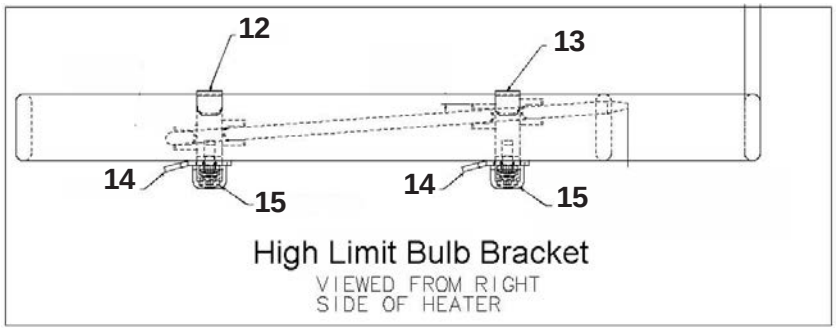


Item No.	Part No.	Description	Quantity
1	83728	ASSY - SEAM COVER - LVE-102	1
1	83729	ASSY - SEAM COVER - LVE-103	1
1	83730	ASSY - SEAM COVER - LVE-104	1
1	76563	WELD ASSY - SEAM COVER - LVE-102	1
1	76500	WELD ASSY - SEAM COVER - LVE-103	1
1	77613	WELD ASSY - SEAM COVER - LVE-104	1
2	76564	EXTENSION-SHROUD - LVE-102	1
2	76501	EXTENSION-SHROUD - LVE-103	1
2	77614	EXTENSION-SHROUD - LVE-104	1
3	NS03-044	NUT - ACORN - #10-24 - SS	3
4	77838	WELD ASSY- LOV OIL DIVERTER	1/vat
4	77443	WELD ASSY- FISH OIL DIVERTER	1/vat
5	NS03-044	NUT - ACORN - #10-24 - SS	1/vat
B 6	78484-001	ELEMENT-HEATING - 7 KW-208V	2/full; 1/split
B 6	78484-002	ELEMENT-HEATING - 7 KW-230V	2/full; 1/split
B 6	78484-003	ELEMENT-HEATING - 7 KW-480V	2/full; 1/split
B 6	78484-004	ELEMENT-HEATING - 7 KW-200V	2/full; 1/split
B 6	78484-005	ELEMENT-HEATING - 7 KW-220V	2/full; 1/split
B 6	78484-006	ELEMENT-HEATING - 7 KW-240V	2/full; 1/split
B 7	74725	HANDLE - ELEMENT LIFT	1
B 8	74263	RACK - SPLIT VAT	1/vat
B 8	74916	RACK - FULL VAT	1/vat
A 9	14984	PROBE - TEMPERATURE	1/vat

Recommend Parts: A=Truck Stock/B=Dist. Stock

FULL VAT ELEMENT ASSEMBLY

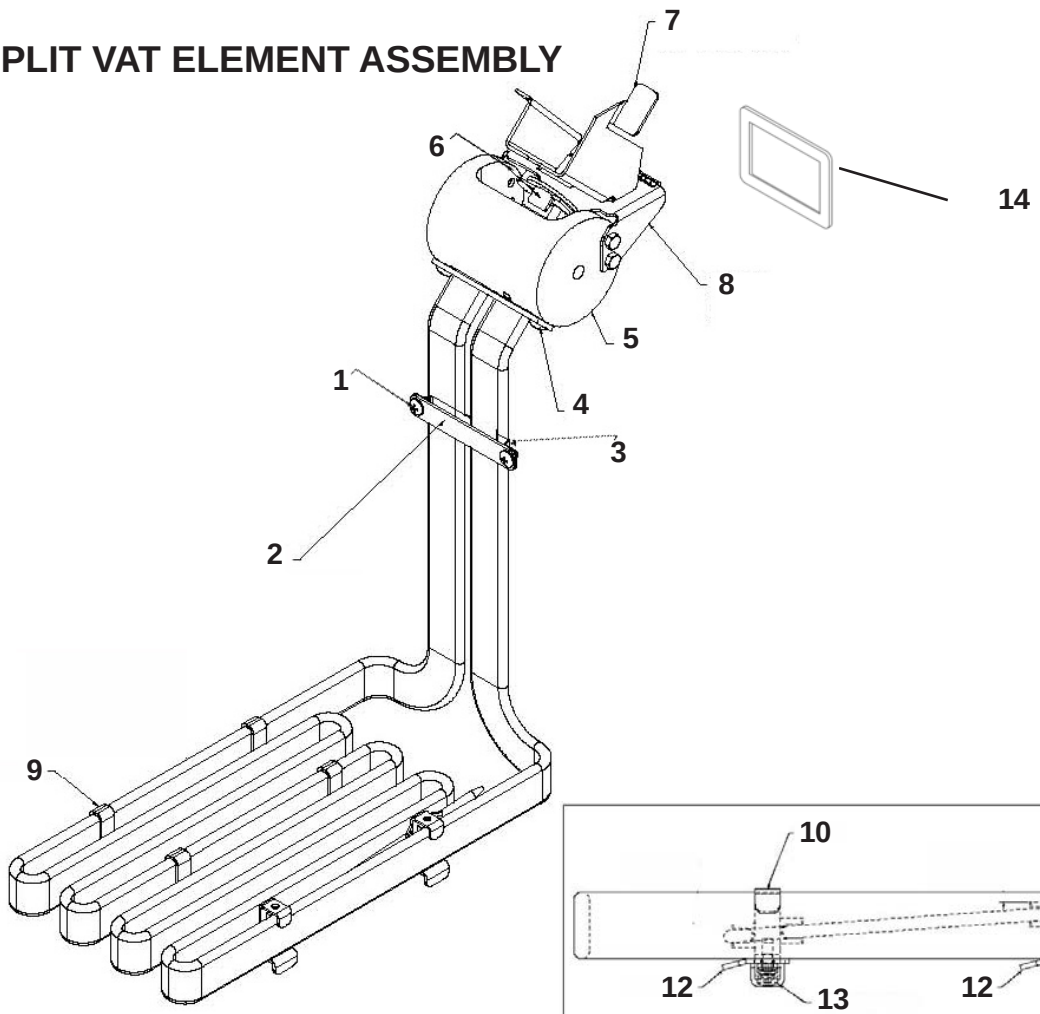


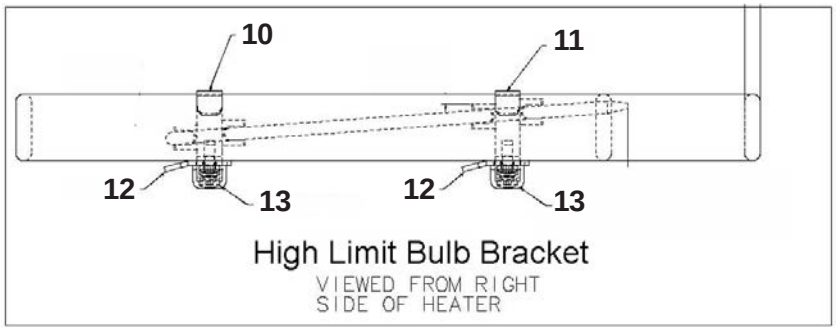


Item No.	Part No.	Description	Quantity
1	SC01-076	SCREW #8-32 X 1/4 PH THD S	2/vat
2	75819	PLATE - FRONT CAPILLARY	1/vat
3	75818	PLATE - REAR CAPILLARY	1/vat
4	SC01-074	SCREW #10-32 X 1/2 PH THD S	4/vat
5	74209	HOUSING - ELEMENT PIVOT	1/vat
6	82459	HOUSING - ELEMENT PIVOT - RH FULL	1/vat
7	78499	STRAP - SPREADER	10/vat
8	73713	WELD ASSY - HI LIMIT RESET PIN	1/vat
9	77147	WELD ASSY - PIVOT HI LIMIT BRACKET	1/vat
10	78780	BRACKET - HI LIMIT MOUNTING	1/vat
11	78896	STUD ASSY - GRND & WIRE MOUNTING	1/vat
12	78614	GUARD - FULL FRONT HI LIMIT	1/vat
13	78615	GUARD - FULL REAR HI LIMIT	1/vat
14	78494	WELD ASSY - SPREADER - FULL	2/vat
15	SC04-003	SCREW #8-32 X 3/8 PH PHD S	12/vat
B 16	82261	GASKET - HUB	2/vat
A 17*	OR01-004	O-RING (Fits on element against items #5 & 6)	2/element

Recommend Parts: A=Truck Stock/B=Dist. Stock * not shown

SPLIT VAT ELEMENT ASSEMBLY

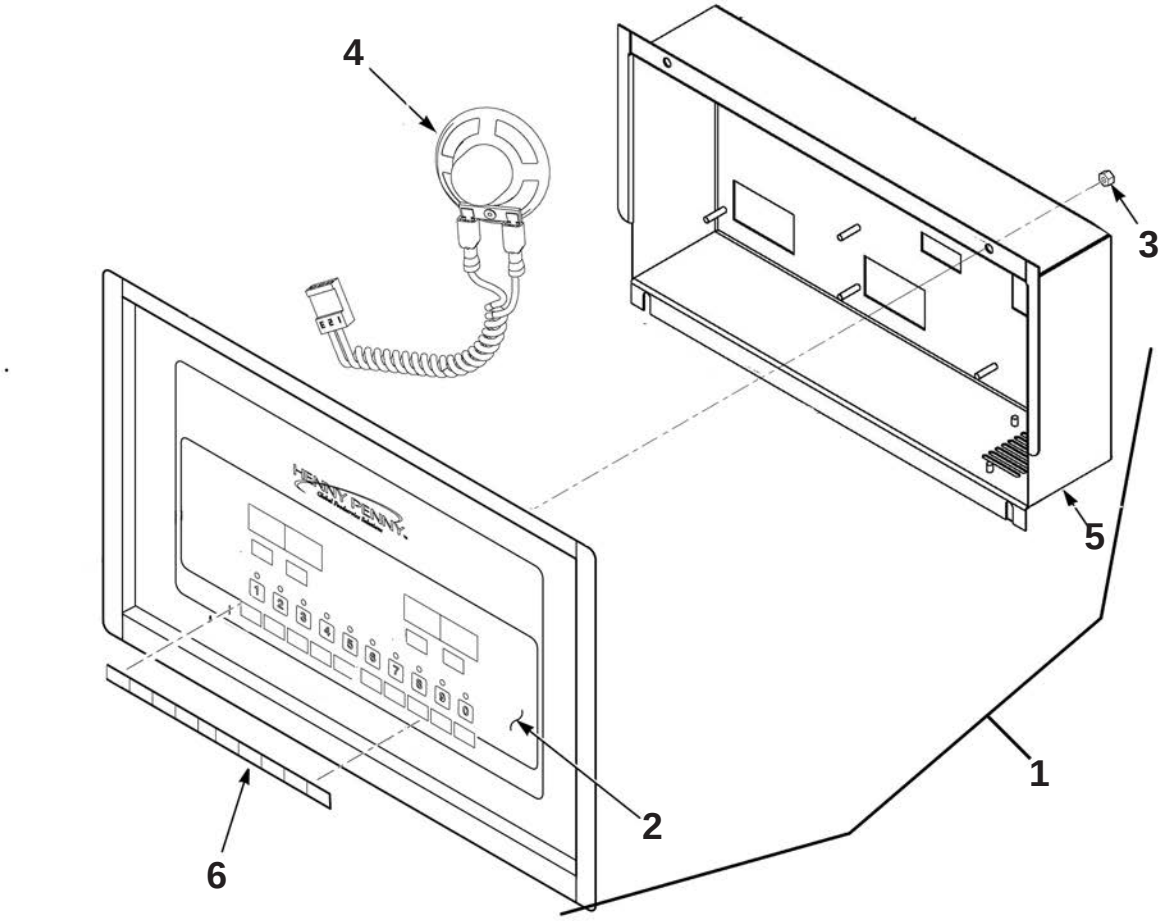




Item No.	Part No.	Description	Quantity
1	SC01-076	SCREW #8-32 X 1/4 PH THD S	2/vat
2	75819	PLATE - FRONT CAPILLARY	1/vat
3	75818	PLATE - REAR CAPILLARY	1/vat
4	SC01-074	SCREW #10-32 X 1/2 PH THD S	2/vat
5	74209	HOUSING - ELEMENT PIVOT	1/vat
6	73713	WELD ASSY - HI LIMIT RESET PIN	1/vat
7	77147	WELD ASSY - PIVOT HI LIMIT BRACKET	1/vat
8	78780	BRACKET - HI LIMIT MOUNTING	1/vat
9	78499	STRAP - SPREADER	4/vat
10	78601	GUARD - SPLIT FRONT HI LIMIT	1/vat
11	78602	GUARD - SPLIT REAR HI LIMIT	1/vat
12	78617	WELD ASSY - SPREADER - SPLIT	2/vat
12	79324	WELD ASSY - SPREADER - SPLIT - FISH VAT	2/vat
13	SC04-003	SCREW #8-32 X 3/8 PH PHD S	6/vat
B 14	82261	GASKET - HUB	1/vat
A 15*	OR01-004	O-RING (Fits on element against item #5)	2/element

Recommend Parts: A=Truck Stock/B=Dist. Stock
*not shown

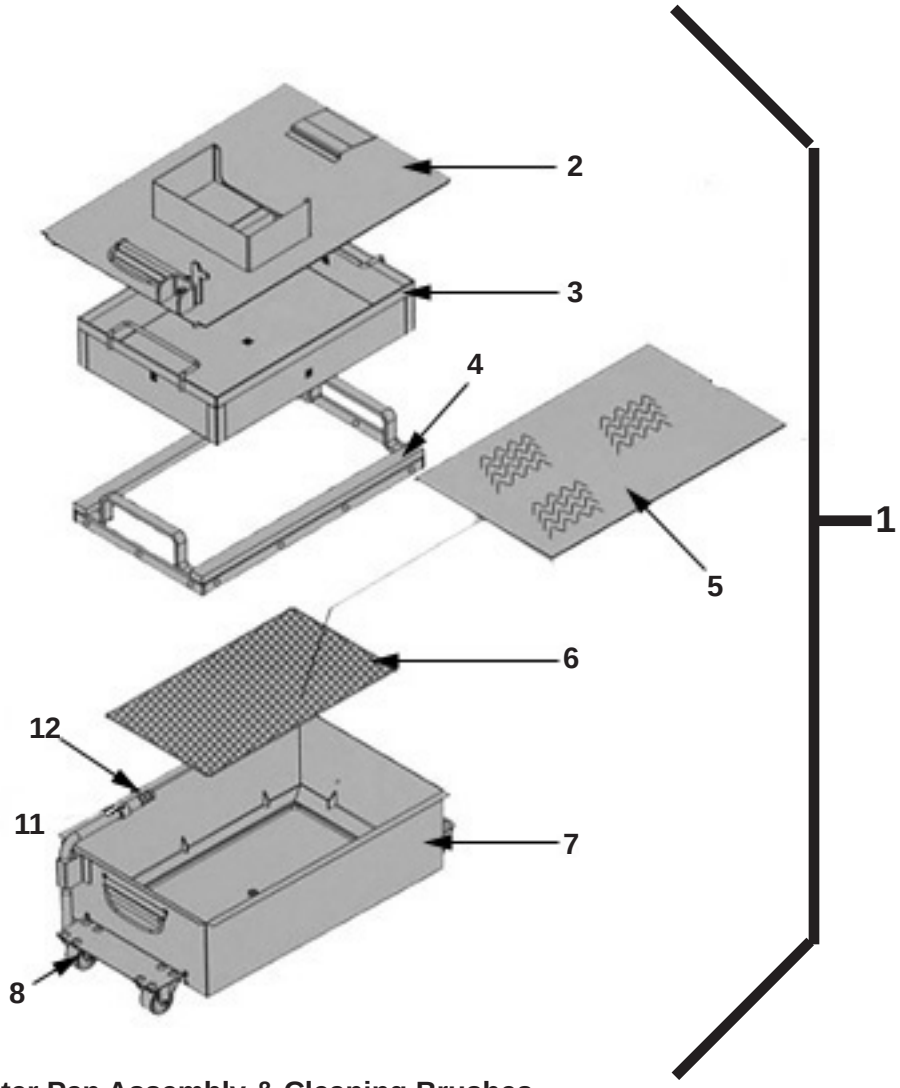
Control Panel Assembly



Item No.	Part No.	Description	Quantity
B 1	96972	ASSY - CONTROL - LOV	*
2	75660	DECAL - LOV MCD	1/control
3	NS02-005	NUT - HEX KEPS #6-32 C	23/control
B 4	26974	ASSY - SPEAKER	1/control
5	76115	STUD ASSY - CONTROL PANEL COVER	1/control
6	77249	MENU CARD - BLANK - LOV	1/control
6	77250	MENU CARD - FVA - LOV	1/control
6	77251	MENU CARD - SPA - LOV	1/control
6	81555	MENU CARD - PROTEIN - LOV - CANADA	1/control
A 7*	MS01-571	TOOL - TERMINAL EXTRACTOR (not shown)	1

Recommend Parts: A=Truck Stock/B=Dist. Stock

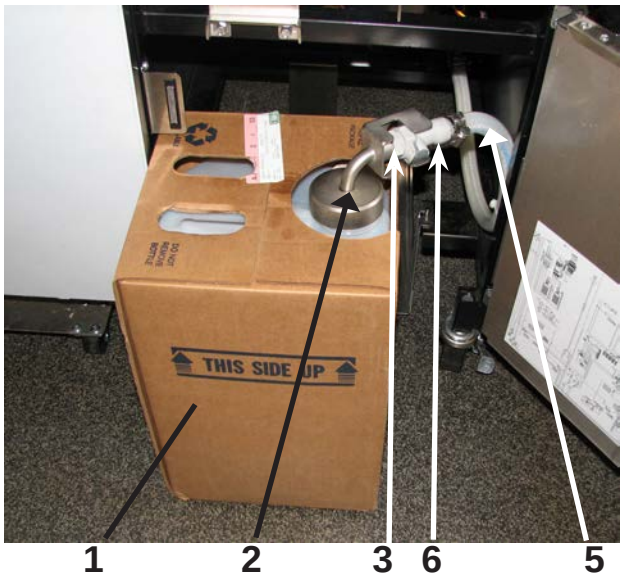
***LVG102=2; LVG103=3; LVG104=4**

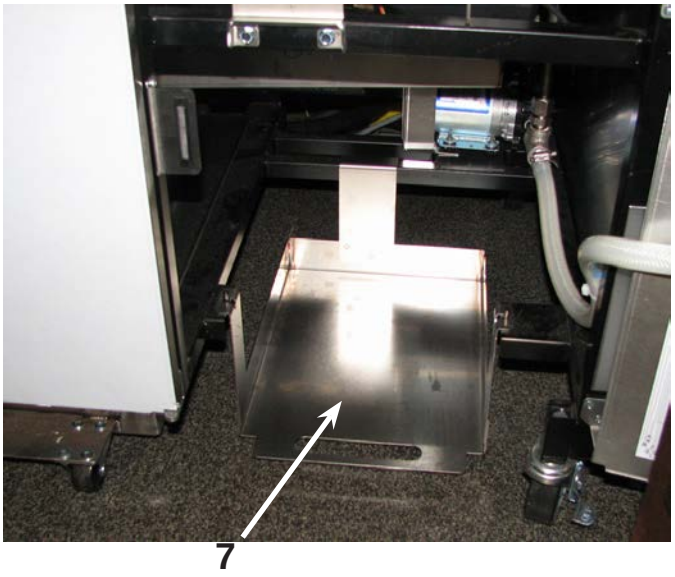


Filter Pan Assembly & Cleaning Brushes

Item No.	Part No.	Description	Quantity
1	77531	ASSY - DRAIN PAN - LVE	1
2	82673	ASSY-DRAIN PAN COVER	1
3	76259	WELD ASSY-CRUMB CATCHER	1
4	76179	WELD ASSY-FILTER WEIGHT	1
5	03190-054	McD's FILTER KIT (not supplied by Henny Penny). (includes fryer cleaner, 30 filter pads, & green cleaner pads)	1
6	76375	FILTER-SECTION	1
7	82672	WELD ASSY-DRAIN PAN	1
8	52487	CASTER - FILTER PAN	4
9*	SC01-009	SCREW (1/4-20 x 1/2)	16
10*	NS02-002	NUT, KEPS (1/4-20)	16
11	74573	ADAPTER - PUMP TO PICKUP TUBE	1
A 12	74189	O-RING-PICKUP TUBE	3
B 13	12126	BRUSH - BLACK L	1
B 14	12112	BRUSH - STRAIGHT WHITE	1
B 15	12116	BRUSH - FRYER - LONG HANDLE	1

Recommend Parts: A=Truck Stock/B=Dist. Stock
* not shown

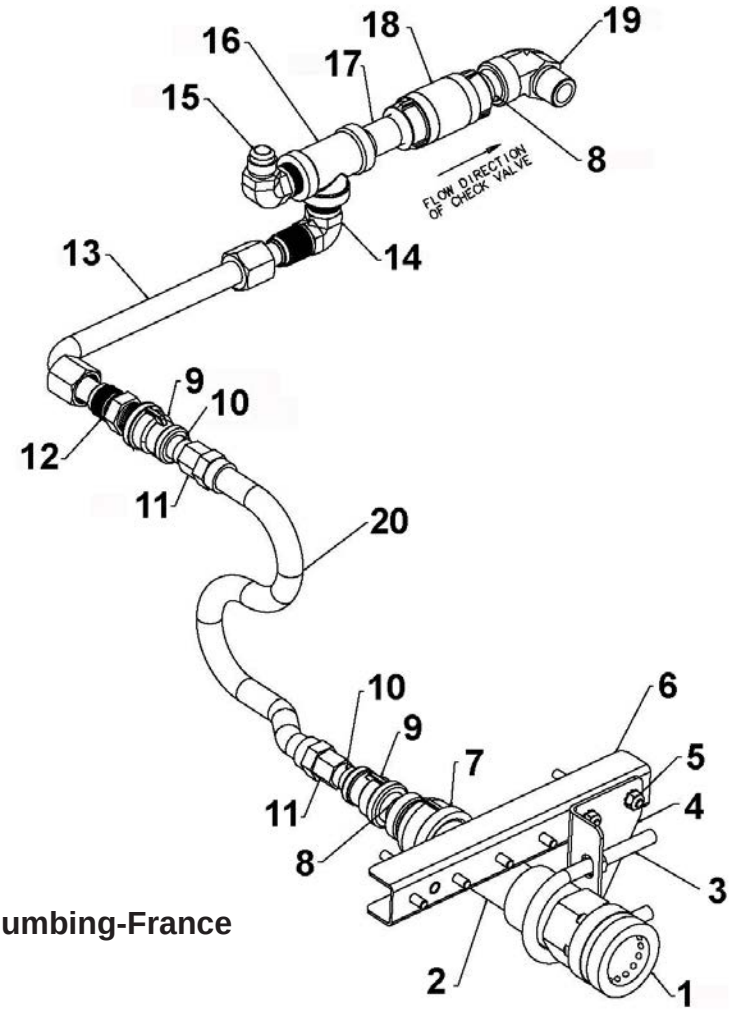




Item No.	Part No.	Description	Quantity
1	03617	ACCESSORY-JUG-AUTO TOP OFF **(EMPTY)**	1
B 2	78992	ASSY-JIB TUBE & QUICK DISC (Includes items 3 & 4)	1
B 2	80490	ASSY-INT'L. JIB TUBE & QUICK DISC (Includes items 3 & 4)	1
B 3	FP05-017	QUICK DISCONNECT-3/8" - MALE	1
A 4*	MS01-561	O-RING - JIB TUBE	1
B 5	77288	ASSY - HOSE (Includes item 6)	1
B 6	FP05-016	QUICK DISCONNECT-3/8" - FEMALE	1
7	85966	WELD ASSY - JIB SHELF	1

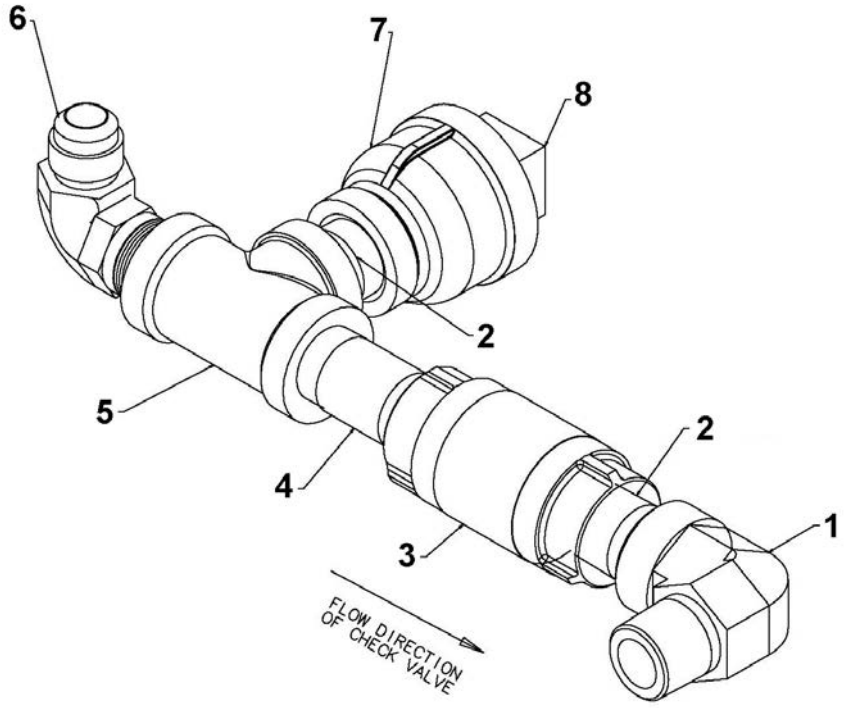
Recommend Parts: A=Truck Stock/B=Dist. Stock
* not shown

Item No.	Part No.	Description	Quantity
1	81048	COVER - REAR SHROUD - LVE-102	1
1	81049	COVER - REAR SHROUD - LVE-103	1
1	81050	COVER - REAR SHROUD - LVE-104	1
2	78316	COVER - SUPPORT - POWER CORD - LVE-102.....	1
2	78314	COVER - SUPPORT - POWER CORD - LVE-103.....	1
2	79177	COVER - SUPPORT - POWER CORD - LVE-104.....	1
3	74799	SUPPORT - POWER CORD - LVE-102.....	1
3	74689	SUPPORT - POWER CORD - LVE-103.....	1
3	75443	SUPPORT - POWER CORD - LVE-104.....	1



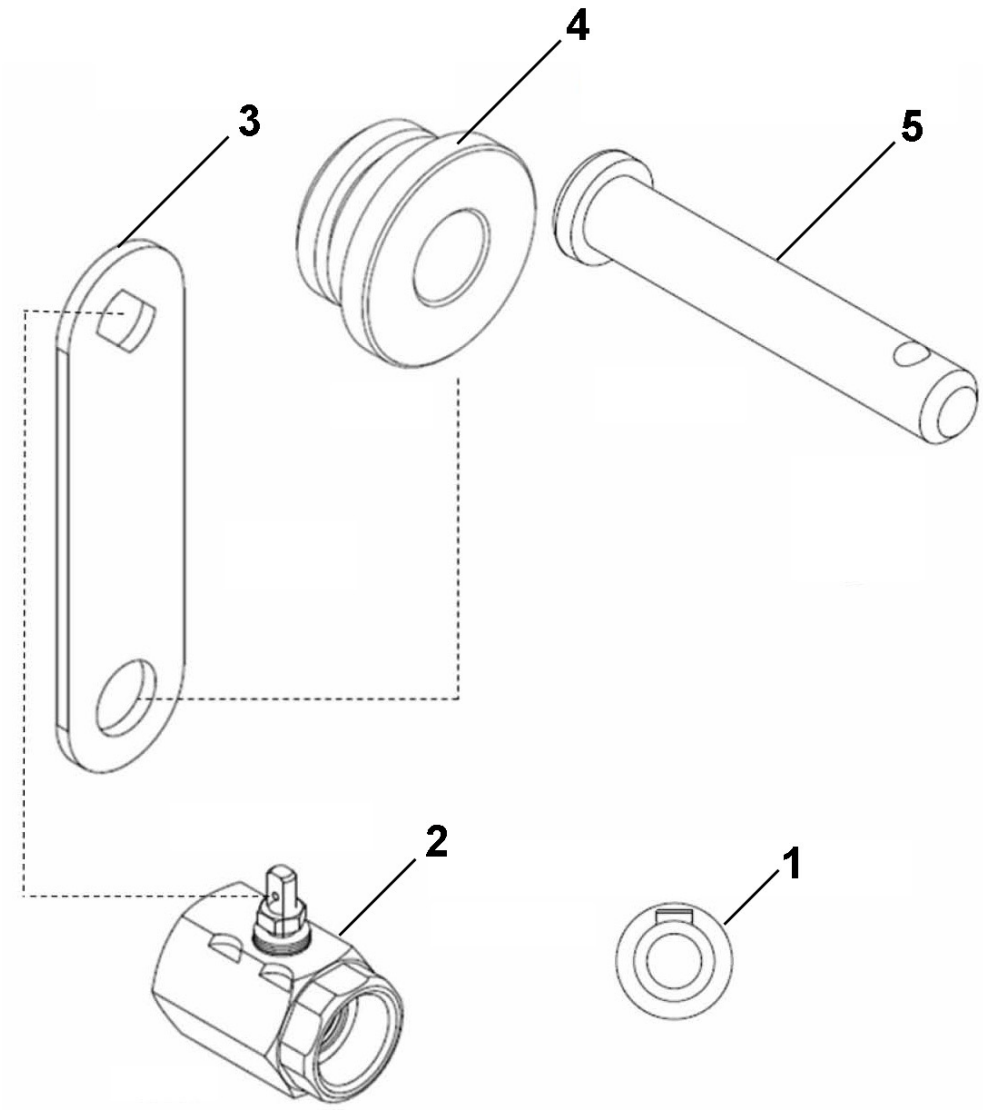
Oil Disposal Plumbing-France

Item No.	Part No.	Description	Quantity
1	80752	FITTING-QUICK COUPLE FEMALE	1
2	FP01-219	NIPPLE-1IN NPT X 4-1/2 LG BI	1
3	SC06-075	U-BOLT 3/8-16 FOR 1-1/2 DIA. (included nuts)	1
4	80745	BRKT-FRENCH DRAIN TUBE MTG	1
5	NS02-002	NUT KEPS 1/4-20 C	2
6	80808	STUD ASSY-ADJ OIL DSPL BRACKET	1
7	FP01-217	COUPLE-REDUCE 1 F X 1/2F BI	1
8	FP01-023	NIPPLE - 1/2 INCH CLOSE BLACK	2
9	FP01-122	REDUCER 3/8 TO 1/2 B.I.	2
10	FP02-024	NIPPLE-3/8 NPT CLOSE B.I.	2
11	FP01-206	CONNECTOR-3/8 NPT FEM 45 FLARE	2
12	16807	FITTING CONNECTOR MALE	1
13	76231	ASSY-SOL V TO JIB PUMP	1
14	17407	CONNECTOR 1/2 MALE ELBOW	1
15	FP01-205	ELBOW-1/2 IN NPT MALE 45 FLARE	1
16	FP01-112	1/2 NPT FEMALE PIPE TEE BI	1
17	FP02-018	NIPPLE-1/2 NPT X 2.00L BI	1
A 18	74469	VALVE-1/2 CHECK	1
19	16239	ELBOW STREET 90 DEGREE	1
20	77523	TUBE-SUCTION 18 IN L DORMONT	1



Oil Disposal Plumbing-Australia

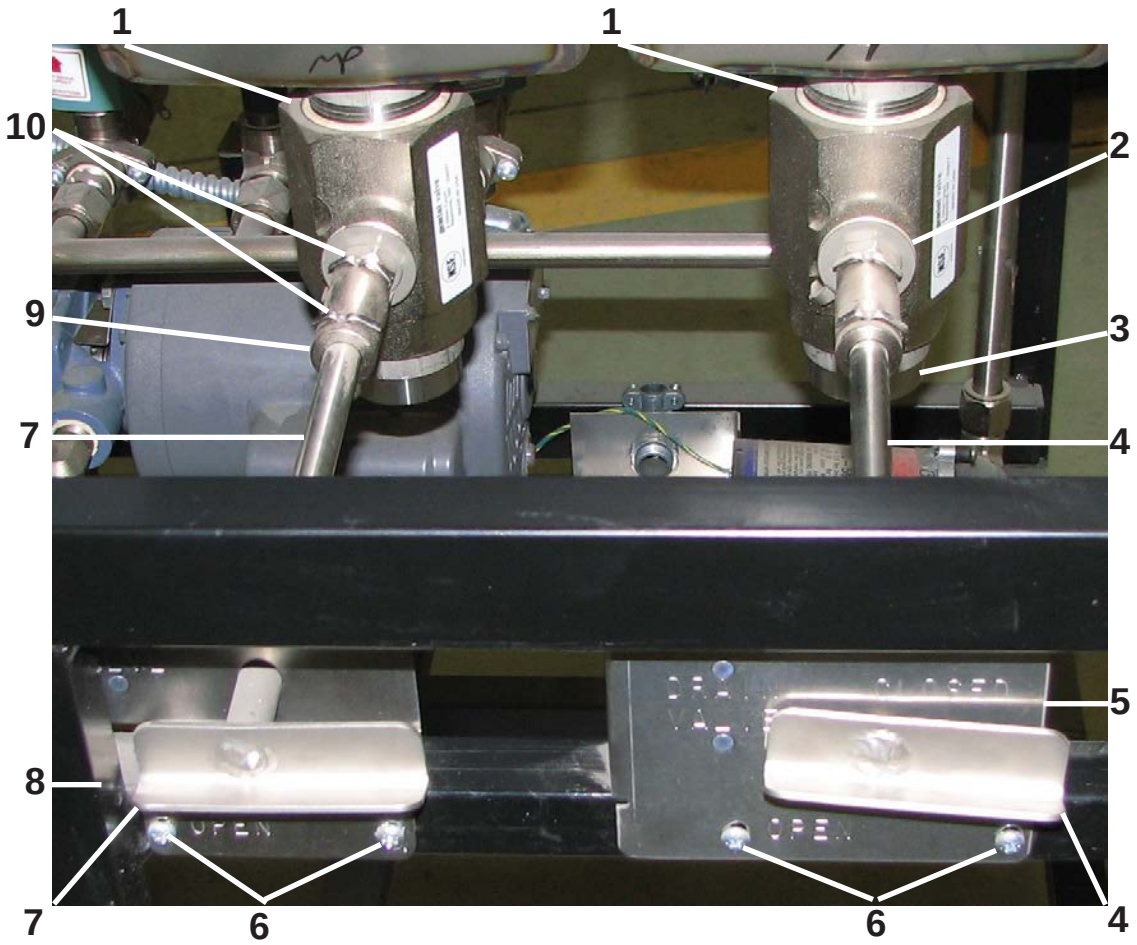
Item No.	Part No.	Description	Quantity
1	16239	ELBOW STREET 90 DEGREE	1
2	FP01-023	NIPPLE - 1/2 INCH CLOSE BLACK	2
A 3	74469	VALVE-1/2 CHECK	1
4	FP02-018	1/2 STR PIPE COUPLING CONDUIT	1
5	FP01-112	1/2 NPT FEMALE PIPE TEE BI	1
6	FP01-205	ELBOW-1/2 IN NPT MALE 45 FLARE	1
7	FP01-217	COUPLE-REDUCE 1 F X 1/2F BI	1
8	FP01-218	PLUG-1 PIPE-BI	1



Drain Valve Linkage Parts - Standard Vat

Item No.	Part No.	Description	Quantity
1	PN01-031	PIN - LOCKING WEDGE - 1/4 x 1-1/4	1/vat
B 2	79590	VALVE - DRAIN	1/vat
A 3	73994	HANDLE - PIVOT - DRAIN	1/vat
4	74568	PIVOT - BUSHING - ACTUATOR	1/vat
B 5	50776	PIN - ACTUATOR - CLEVIS	1/vat

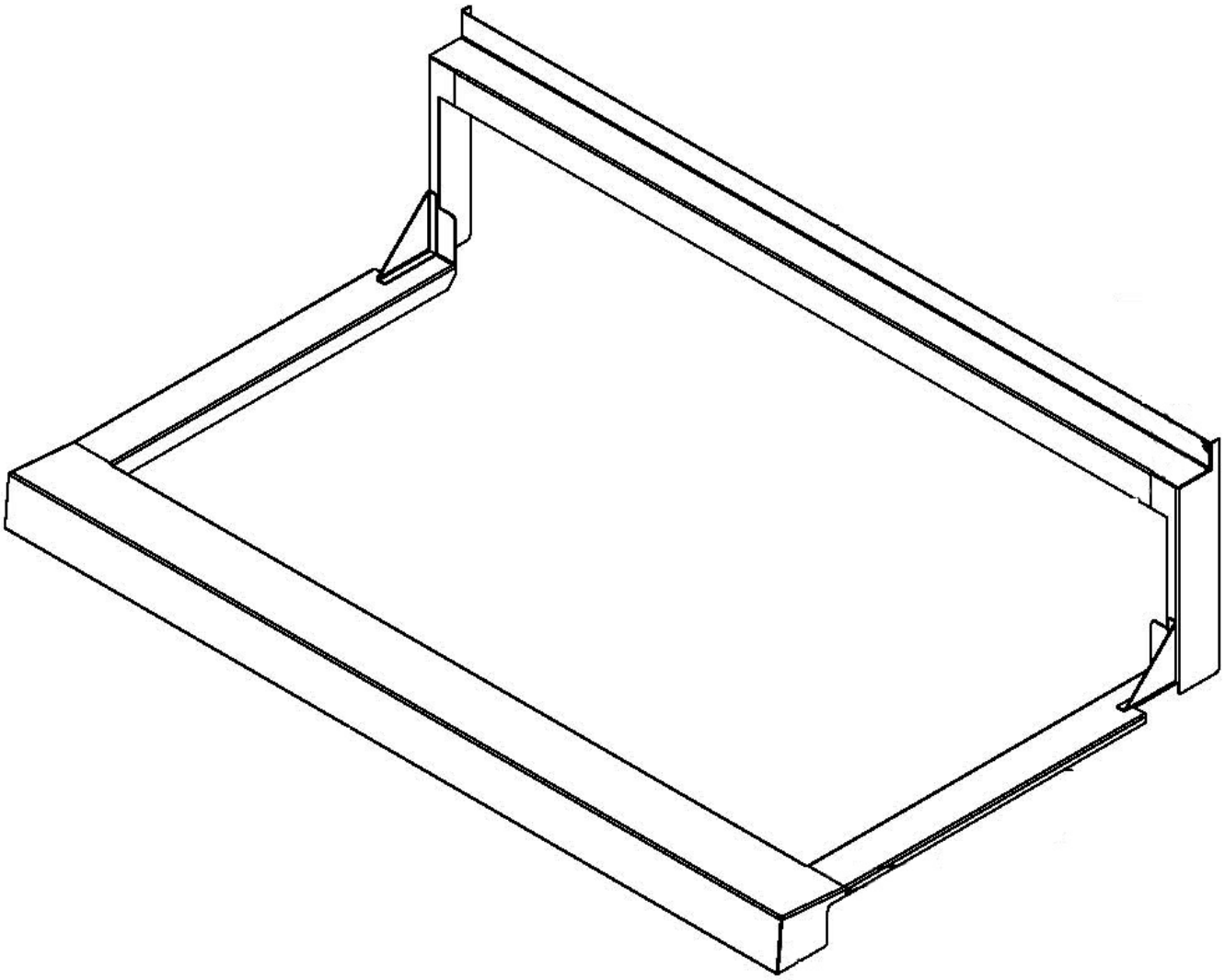
Recommend Parts: A=Truck Stock/B=Dist. Stock



Drain Valve Linkage Parts - Fish Vat

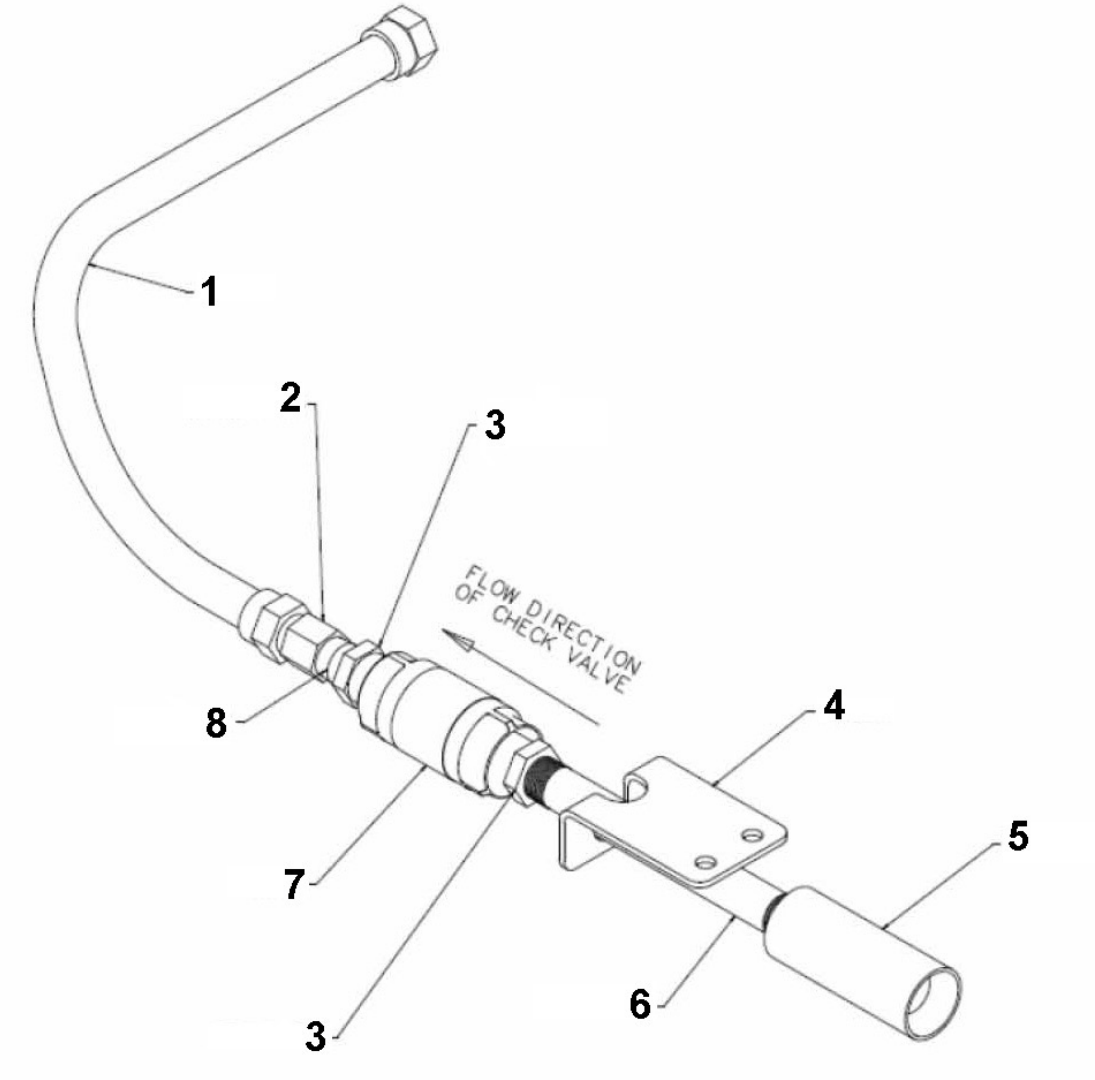
	Item No.	Part No.	Description	Quantity
B	1	79590	VALVE-DRAIN	1/vat
	2	74626	STOP-PIVOT DRAIN HANDLE	1/vat
	3	74553	EXTENSION-DRAIN	1/vat
	4	77405	WELD ASSY-FISH DRAIN ROD	1/vat
	5	80599	STUD ASSY-DR ROD BRKT-FISH VAT	1/vat
	6	SC04-003	SCREW-#8-32 X 3/8”	2/vat
	7	81891	WELD ASSY-FISH ROD-R WELL-L VAT	1/vat
	8	81812	STUD ASSY-ROD BRKT-FISH VAT-R WELL-L VAT	1/vat
	9	55142	COUPLING-DRAIN VALVE	1/vat
	10	17255	PIN -COTTER	2/vat
A	11*	18227	SWITCH-LEVER	1/vat
	12*	NS02-005	NUT-#6-32	2/vat
	13*	MS01-307	CLAMP-HOSE	2/vat
	14*	72554	HOSE-MANDREL WRAPPED SILICONE	1/vat
	15*	76598	GUARD-SILICONE HOSE	1/vat
	16*	77443	WELD ASSY-FISH OIL DIVERTER	1/VAT

Recommend Parts: A=Truck Stock/B=Dist. Stock
*not shown



Fry Cap

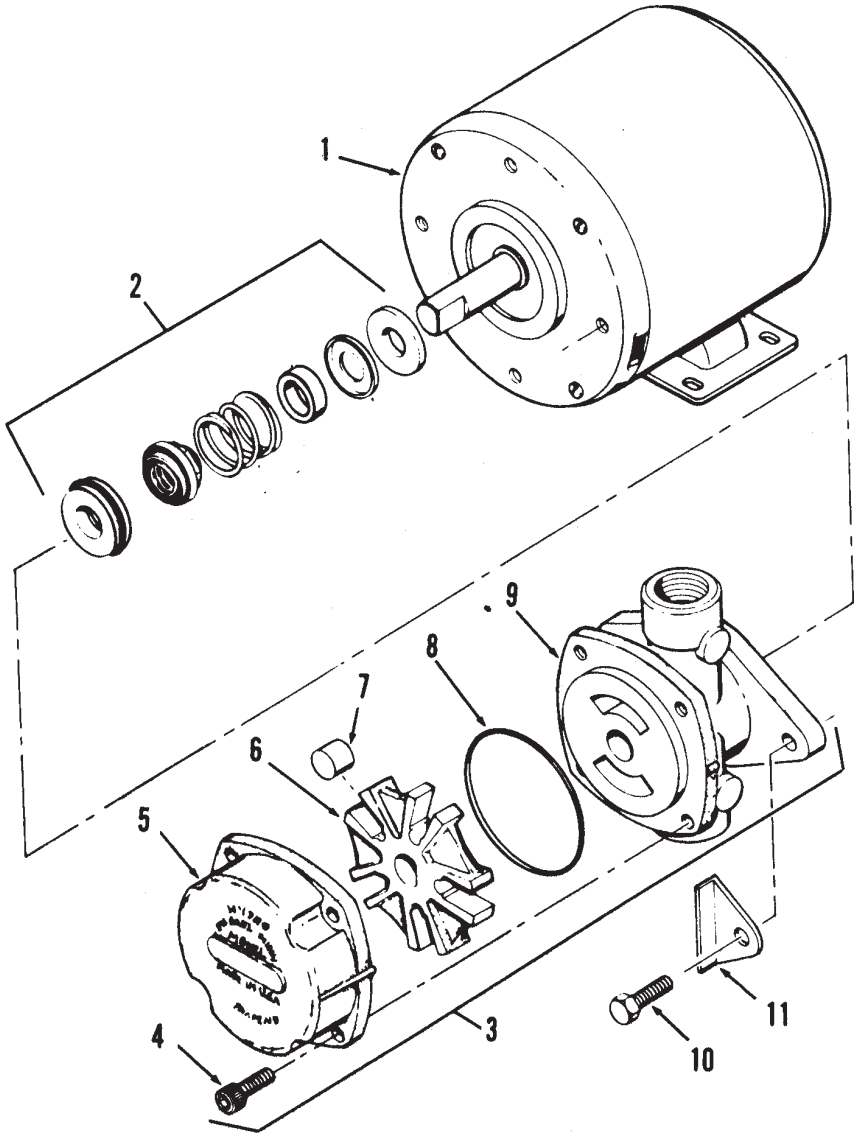
Item No.	Part No.	Description	Quantity
1	03618	ACCESSORY-FRY CAP - LVE-102	1
1	03619	ACCESSORY-FRY CAP - LVE-103	1
1	03620	ACCESSORY-FRY CAP - LVE-104	1



Filter Return Line Assembly

Item No.	Part No.	Description	Quantity
1	77523	TUBE-SUCTION 18 IN L DORMONT	1
2	FP01-206	CONNECTOR-3/8 NPT FEM 45 FLARE	1
3	FP01-029	REDUCER 1/2NPT M-3/8NPT F SS	2
4	77259	BRACKET-PLUG AND PLAY	1
5	77248	ADAPTER-TUBE END	1
6	FP01-204	NIPPLE-3/8 NPT X 6IN L BLACK	1
A 7	74469	VALVE-1/2 CHECK	1
8	FP02-024	NIPPLE-3/8 NPT CLOSE B.I.	1

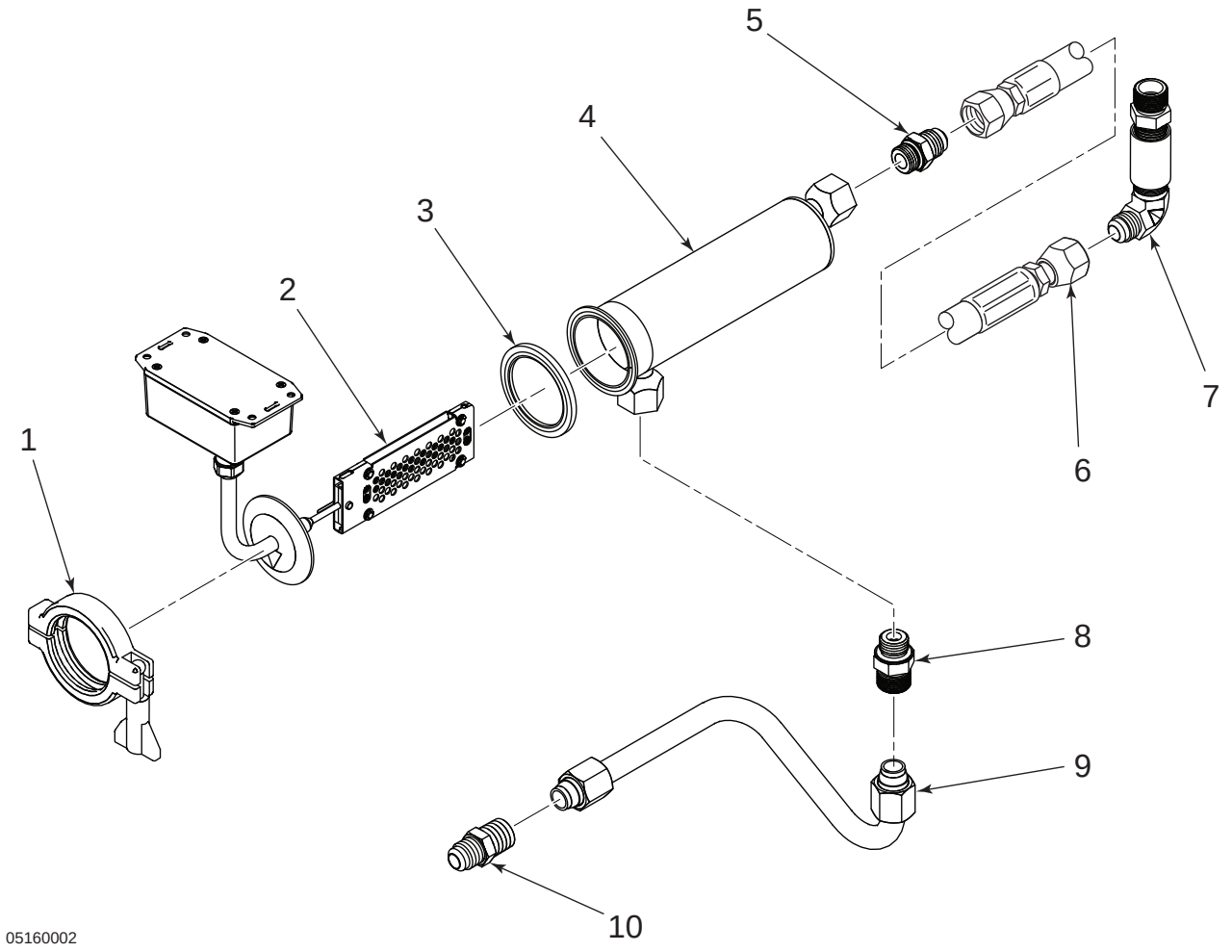
Recommend Parts: A=Truck Stock/B=Dist. Stock



Filter Motor and Pump

Item No.	Part No.	Description	Quantity
A 1	67583	MOTOR, 1/2 HP - 50/60 Hz	1
A 2	17476	SEAL KIT	1
B 3	17437	PUMP ASSEMBLY	1
4	SC01-132	SCREW, Pump Cover	1
5	17451	COVER, Pump	1
B 6	17447	ROTOR, Pump	1
A 7	17446	ROLLER, Pump	5
A 8	17453	O-RING	1
9	17454	BODY, Pump	1
10	17456	SHIELD, Pump	2
11	SC01-026	SCREW, Pump Shield	1

Recommend Parts: A=Truck Stock/B=Dist. Stock



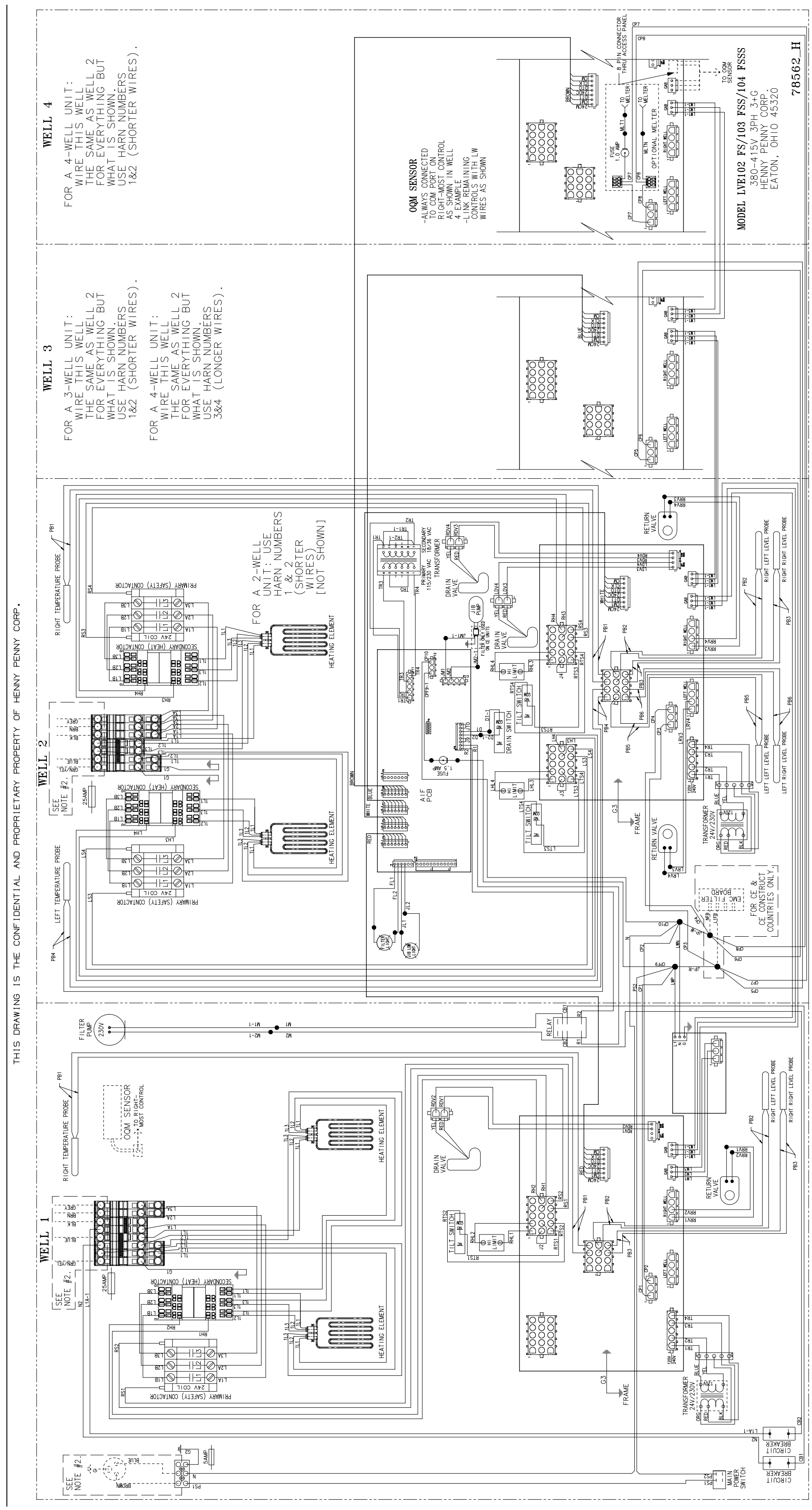
Oil Quality Monitoring (OQM) Sensor

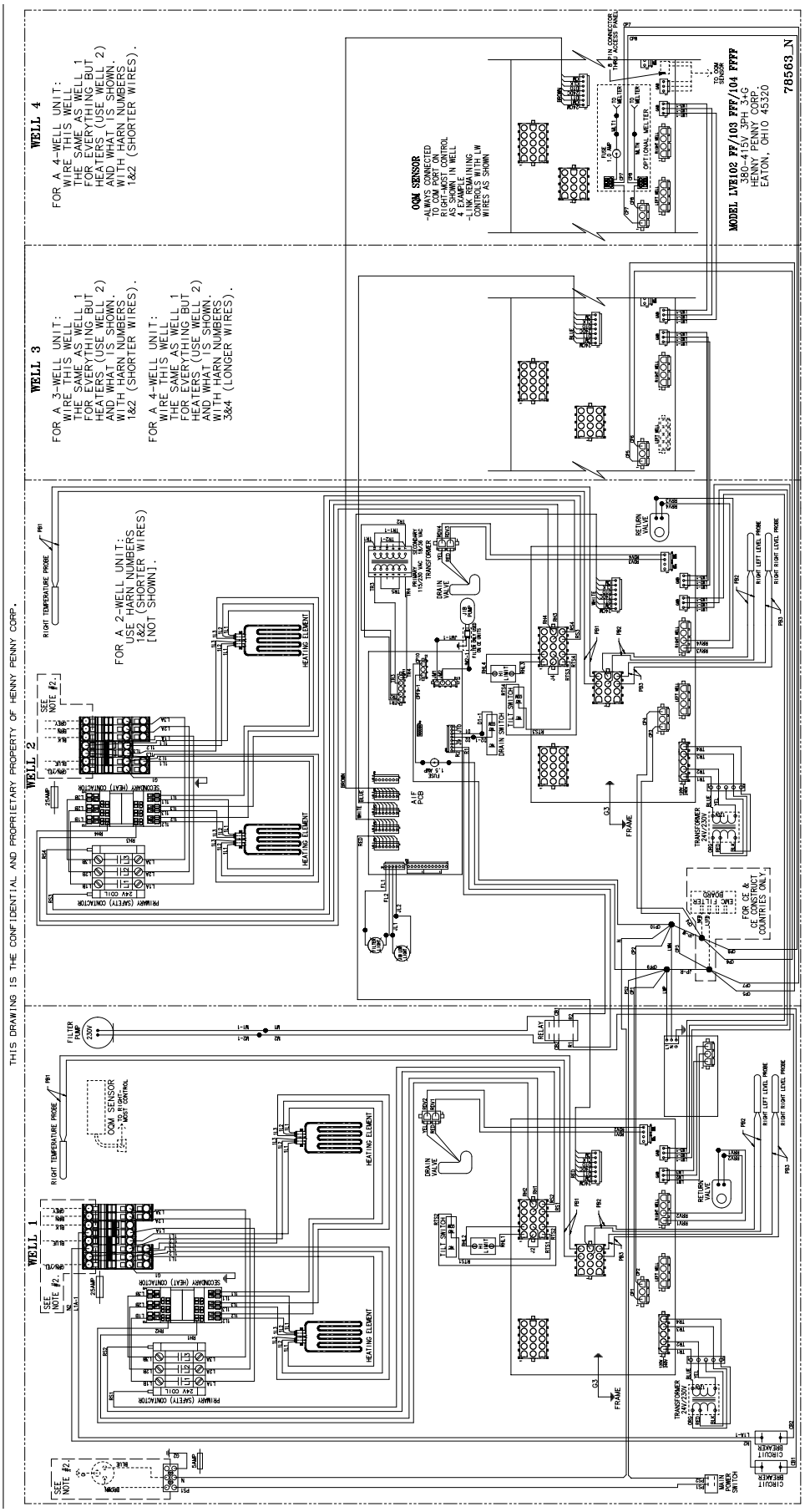
Item No.	Part No.	Description	Quantity
1	154103	CLAMP, SENSOR OQM	1
2	154101	ASSY, OQM SENSOR & TUBE	1
3	154104	SEAL, SENSOR OQM	1
4	154102	WELD ASSY, OQM SENSOR BODY	1
5	FP01-307	ADPT-SAE8 ORBM 1/2 M JIC45 FLR	1
6	151686-002	HOSE, OIL DISPOSAL 34in. (86.36cm)	1
7	163909	ASSY-OQM PLUMBING HOSE TO MANF	1
8	FP01-338	FITTING-#8 SAE ORB X 5/8 COMP	1
9	155299	TUBE, PUMP TO OQM SENSOR	1
10	16807	FITTING, CONNECTOR, MALE	1

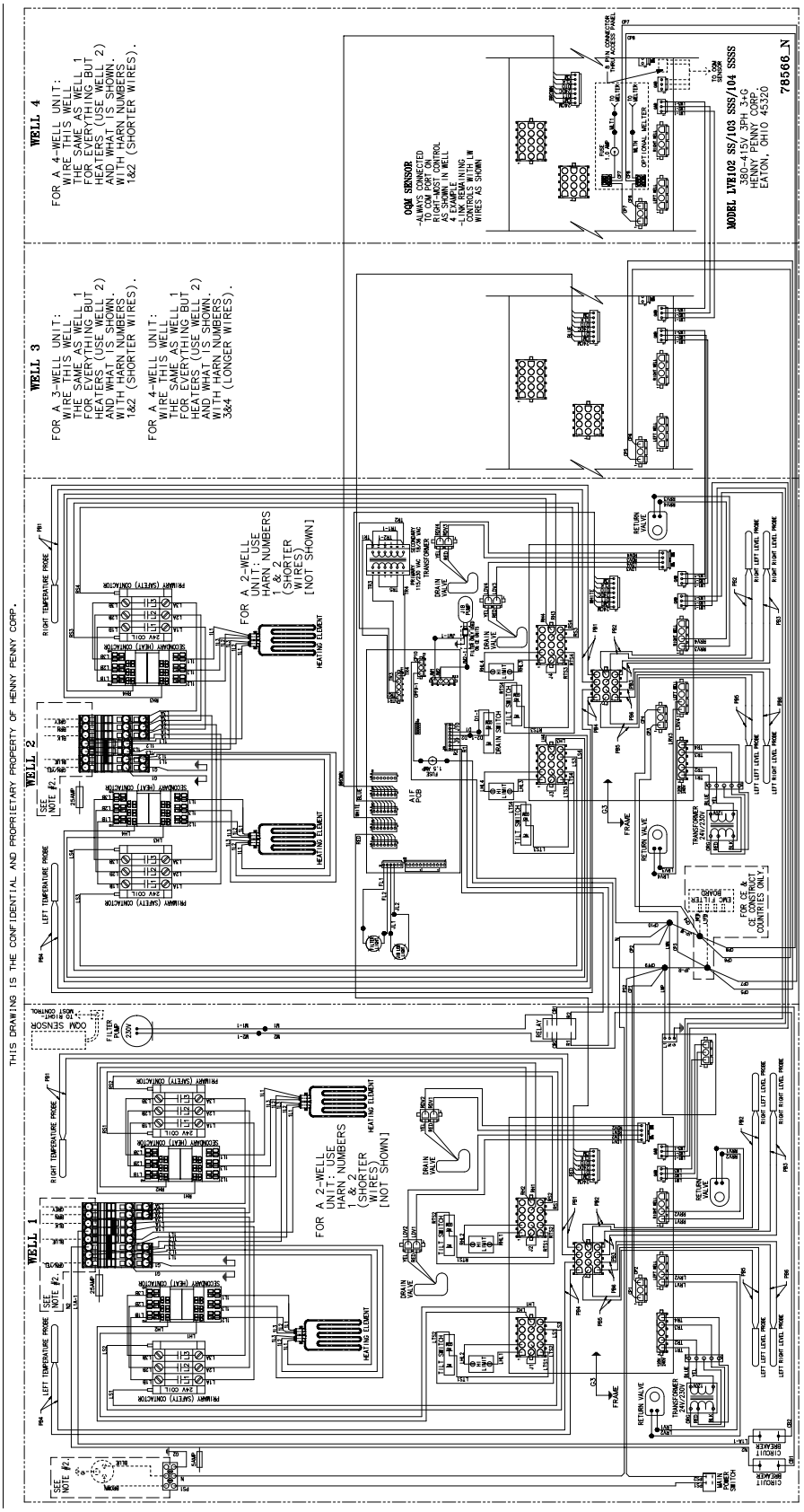
APPENDIX A. WIRING DIAGRAMS AND SCHEMATICS

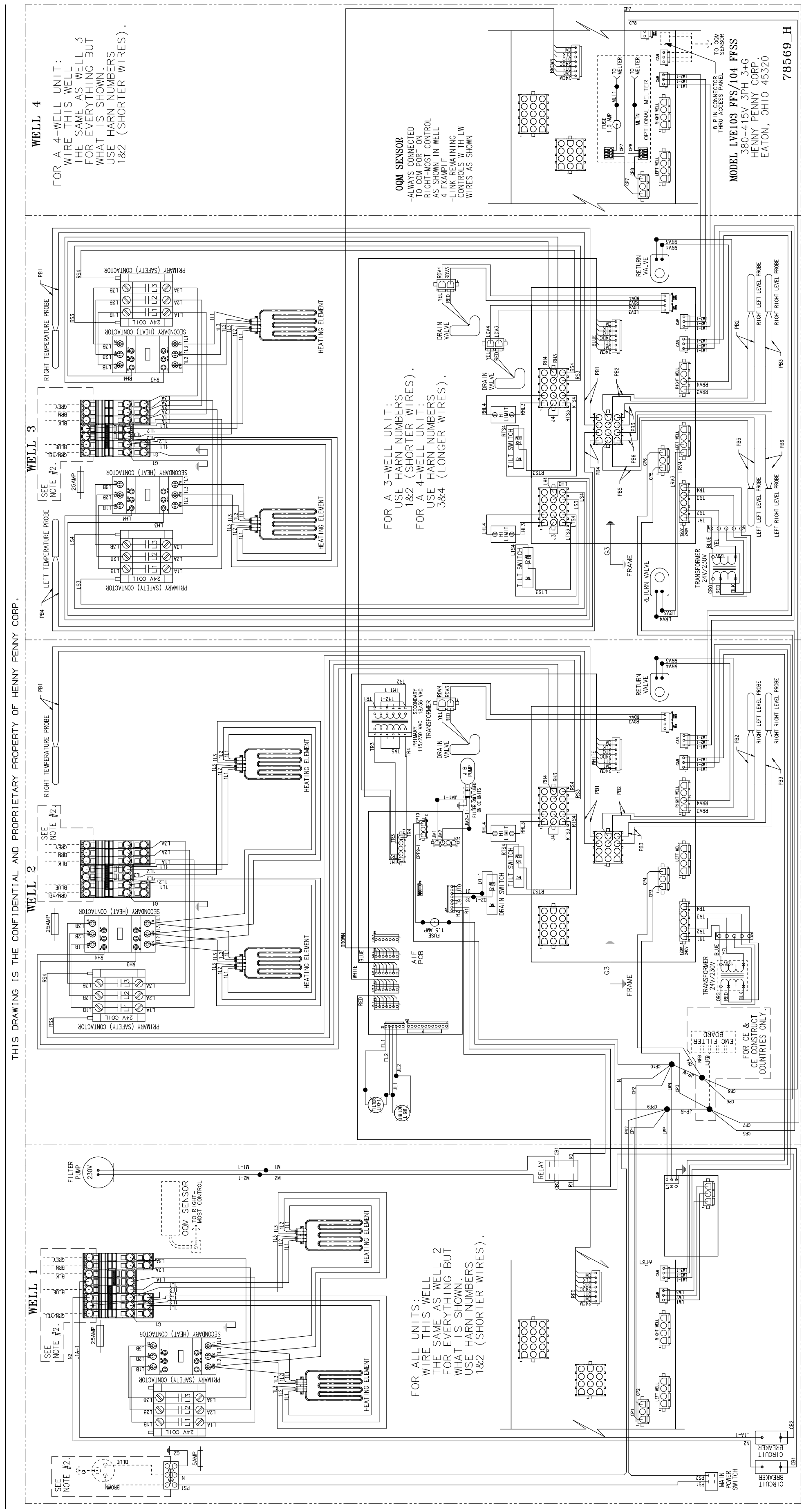
A-1. WIRING DIAGRAMS AND SCHEMATICS

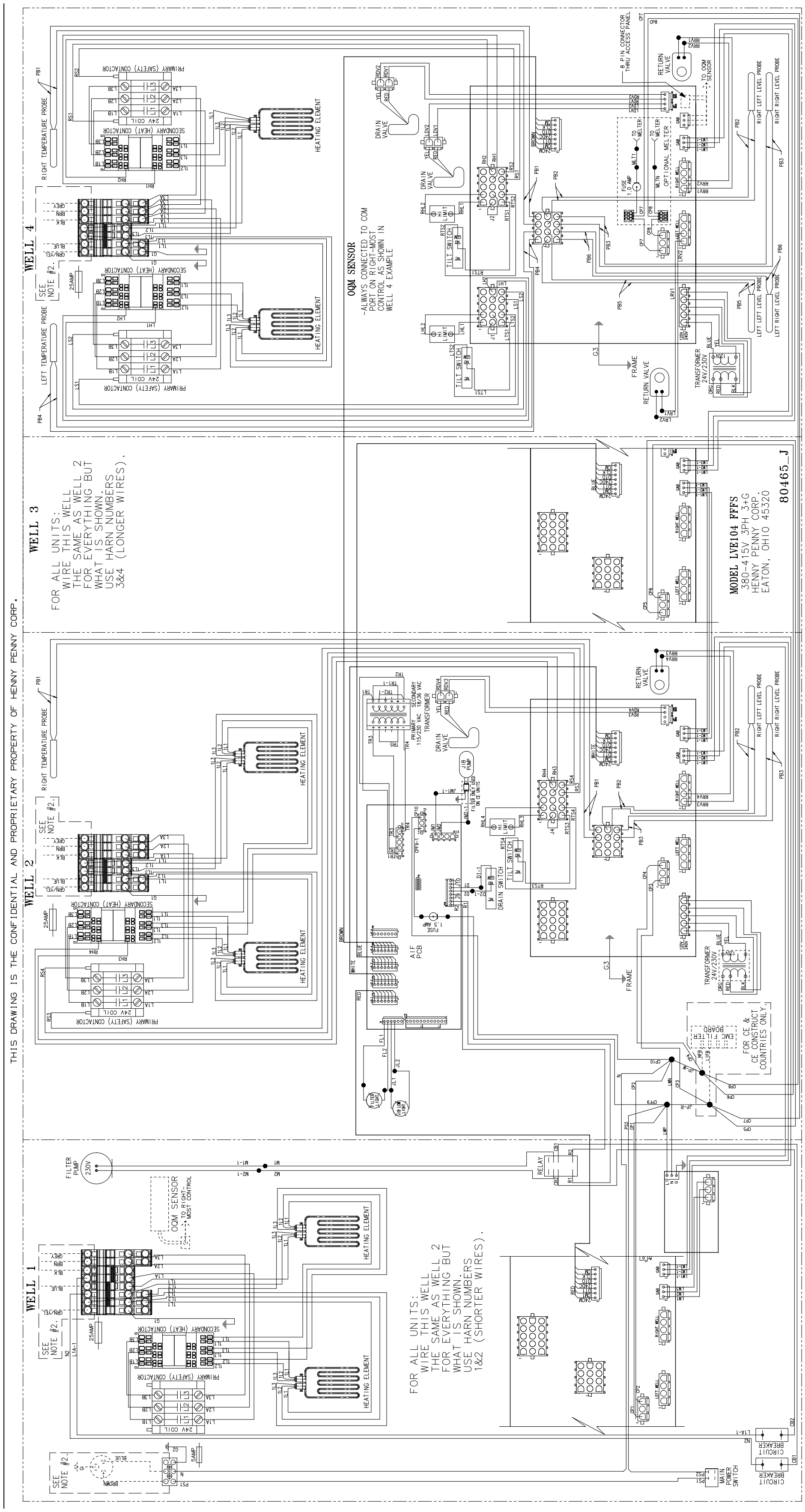
APPENDIX A contains the wiring diagrams and schematics to support the LVE-100 series fryers.

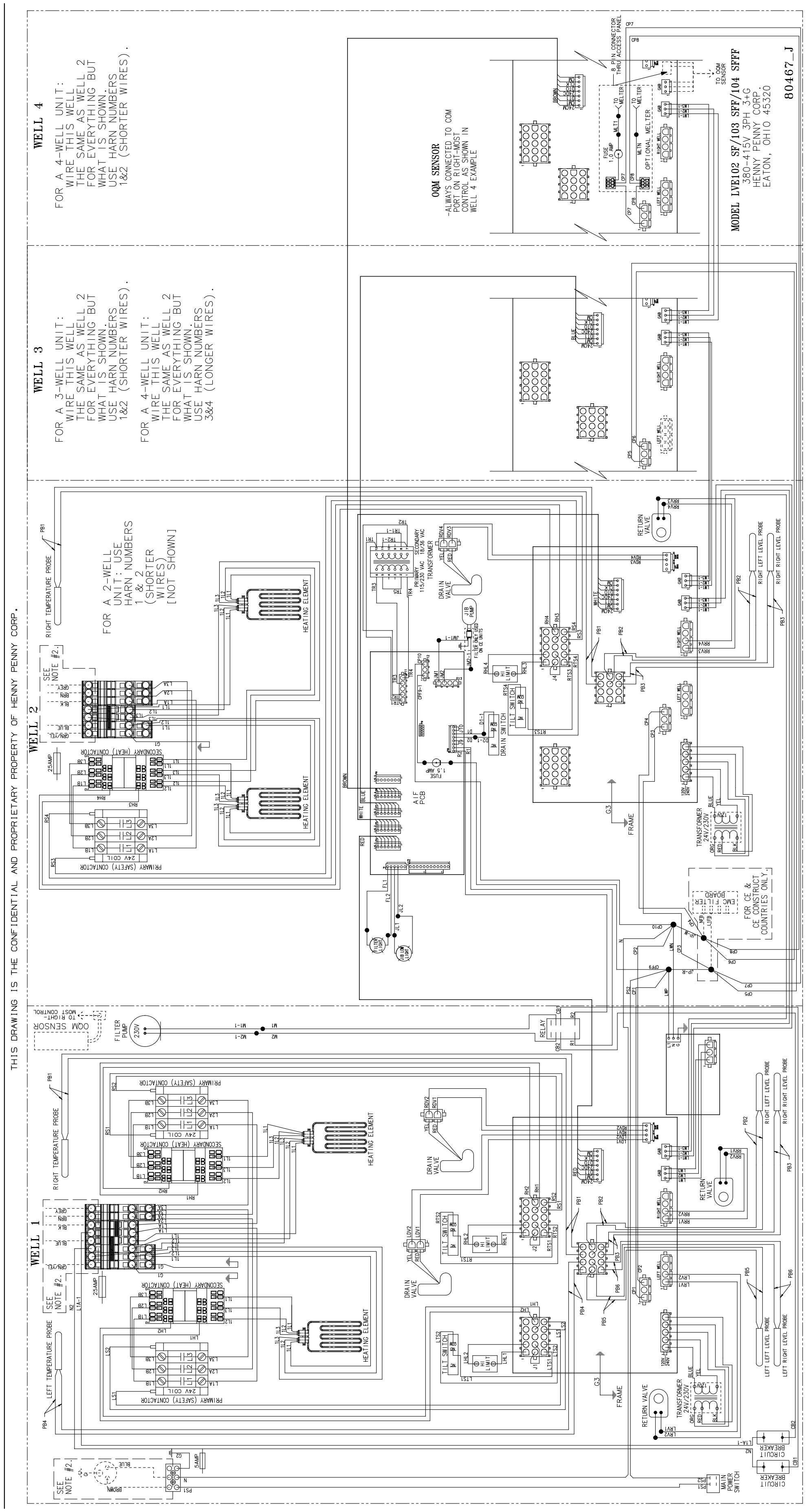

THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 1
WELL 2
WELL 3
WELL 4
FOR A 4-WELL UNIT: WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 1&2 (SHORTER WIRES).
FOR A 3-WELL UNIT: WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 1&2 (SHORTER WIRES).
FOR A 4-WELL UNIT: WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 3&4 (LONGER WIRES).
FOR A 2-WELL UNIT: USE HARN NUMBERS 1 & 2 (SHORTER WIRES) [NOT SHOWN]
OQM SENSOR
-ALWAYS CONNECTED TO OQM PORT ON RIGHT-MOST CONTROL AS SHOWN IN WELL 4 EXAMPLE
-LINK REMAINING CONTROLS WITH LW WIRES AS SHOWN
MODEL LVE102 FS/103 FSS/104 FSSS
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
78562_H
HEATING ELEMENT
PRIMARY (SAFETY) CONTACTOR
SECONDARY (HEAT) CONTACTOR
RIGHT TEMPERATURE PROBE
LEFT TEMPERATURE PROBE
FILTER PUMP
RELAY
DRAIN VALVE
RETURN VALVE
TILT SWITCH
TRANSFORMER 24V/230V
AIF PCB
FRAME
MAIN POWER SWITCH
CIRCUIT BREAKER
SEE NOTE #2.
FOR CE & CE CONSTRUCT COUNTRIES ONLY

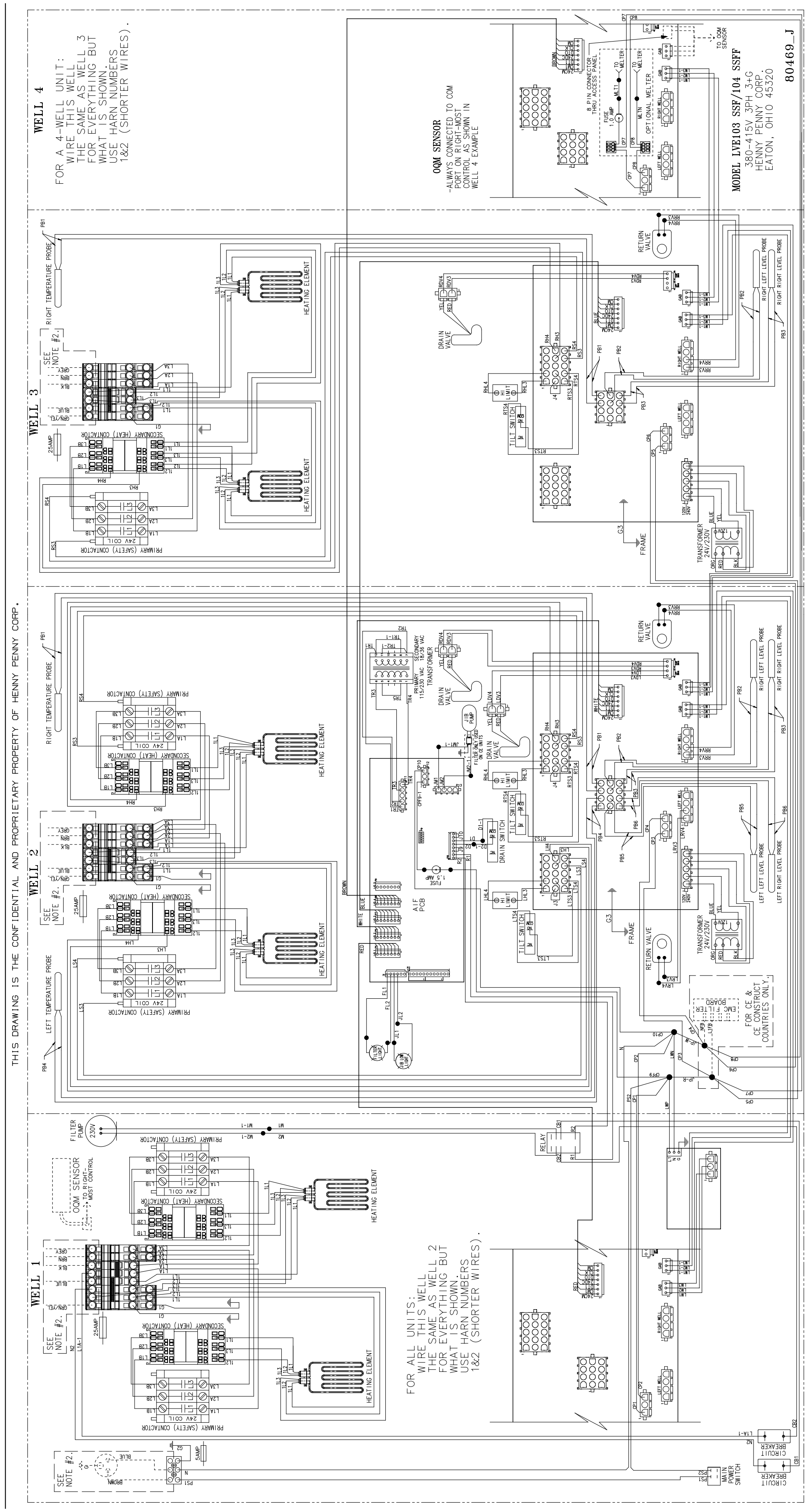

THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 4
FOR A 4-WELL UNIT:
WIRE THIS WELL
THE SAME AS WELL 1
FOR EVERYTHING BUT
HEATERS (USE WELL 2)
AND WHAT IS SHOWN.
WITH HARN NUMBERS.
1&2 (SHORTER WIRES).
WELL 3
FOR A 3-WELL UNIT:
WIRE THIS WELL
THE SAME AS WELL 1
FOR EVERYTHING BUT
HEATERS (USE WELL 2)
AND WHAT IS SHOWN.
WITH HARN NUMBERS.
1&2 (SHORTER WIRES).
FOR A 4-WELL UNIT:
WIRE THIS WELL
THE SAME AS WELL 1
FOR EVERYTHING BUT
HEATERS (USE WELL 2)
AND WHAT IS SHOWN.
WITH HARN NUMBERS.
3&4 (LONGER WIRES).
FOR A 2-WELL UNIT:
USE HARN NUMBERS
1&2 (SHORTER WIRES)
[NOT SHOWN].
OQM SENSOR
-ALWAYS CONNECTED
TO COM PORT ON
RIGHT HAND CONTROL
AS SHOWN IN WELL
4 EXAMPLE
-LINK REMAINING
CONTROLS WITH LAN
WIRES AS SHOWN
MODEL LVE102 FFF/103 FFF/104 FFFF
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
78563_N
WELL 1
WELL 2
RIGHT TEMPERATURE PROBE
HEATING ELEMENT
PRIMARY (SAFETY) CONTACTOR
SECONDARY (HEAT) CONTACTOR
24V COIL
FILTER PUMP 230V
DRAIN VALVE
RETURN VALVE
RELAY
TRANSFORMER 24V/230V
FRAME
MAIN POWER SWITCH
CIRCUIT BREAKER
RIGHT LEFT LEVEL PROBE
RIGHT RIGHT LEVEL PROBE
FOR CE & CE CONSTRUCT COUNTRIES ONLY
SEE NOTE #2.

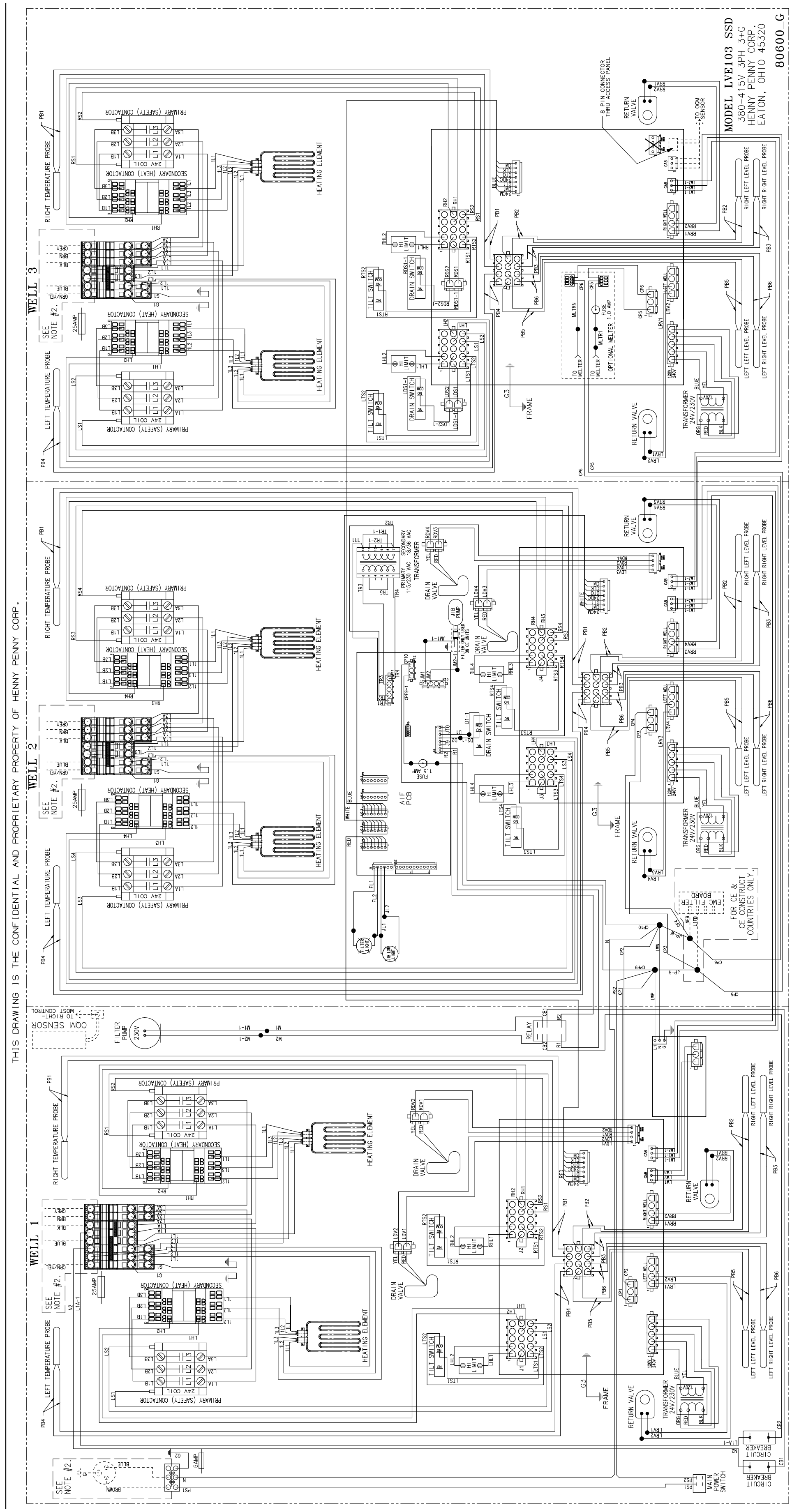

THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 1
WELL 2
WELL 3
WELL 4
FOR A 4-WELL UNIT:
WIRE THIS WELL
THE SAME AS WELL 1
FOR EVERYTHING BUT
HEATERS (USE WELL 2)
AND WHAT IS SHOWN.
WITH HARN NUMBERS
1&2 (SHORTER WIRES).
FOR A 3-WELL UNIT:
WIRE THIS WELL
THE SAME AS WELL 1
FOR EVERYTHING BUT
HEATERS (USE WELL 2)
AND WHAT IS SHOWN.
WITH HARN NUMBERS
1&2 (SHORTER WIRES).
FOR A 4-WELL UNIT:
WIRE THIS WELL
THE SAME AS WELL 1
FOR EVERYTHING BUT
HEATERS (USE WELL 2)
AND WHAT IS SHOWN.
WITH HARN NUMBERS
3&4 (LONGER WIRES).
FOR A 2-WELL UNIT: USE HARN NUMBERS 1 & 2 (SHORTER WIRES) [NOT SHOWN]
HEATING ELEMENT
RIGHT TEMPERATURE PROBE
LEFT TEMPERATURE PROBE
PRIMARY (SAFETY) CONTACTOR
SECONDARY (HEAT) CONTACTOR
SEE NOTE #2.
OCM SENSOR
-ALWAYS CONNECTED TO COM PORT ON RIGHT-MOST CONTROL AS SHOWN IN WELL 4 EXAMPLE
-LINK/TERMINATING CONTROLS WITH LM WIRES AS SHOWN
MODEL LVE102 SS/103 SSS/104 SSSS
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
78566_N
DRAIN VALVE
RETURN VALVE
TRANSFORMER 24V/230V
FILTER PUMP 230V
MAIN POWER SWITCH
CIRCUIT BREAKER
FRAME
AIF PCB
FOR CE & CE CONFORMITY COUNTRIES ONLY

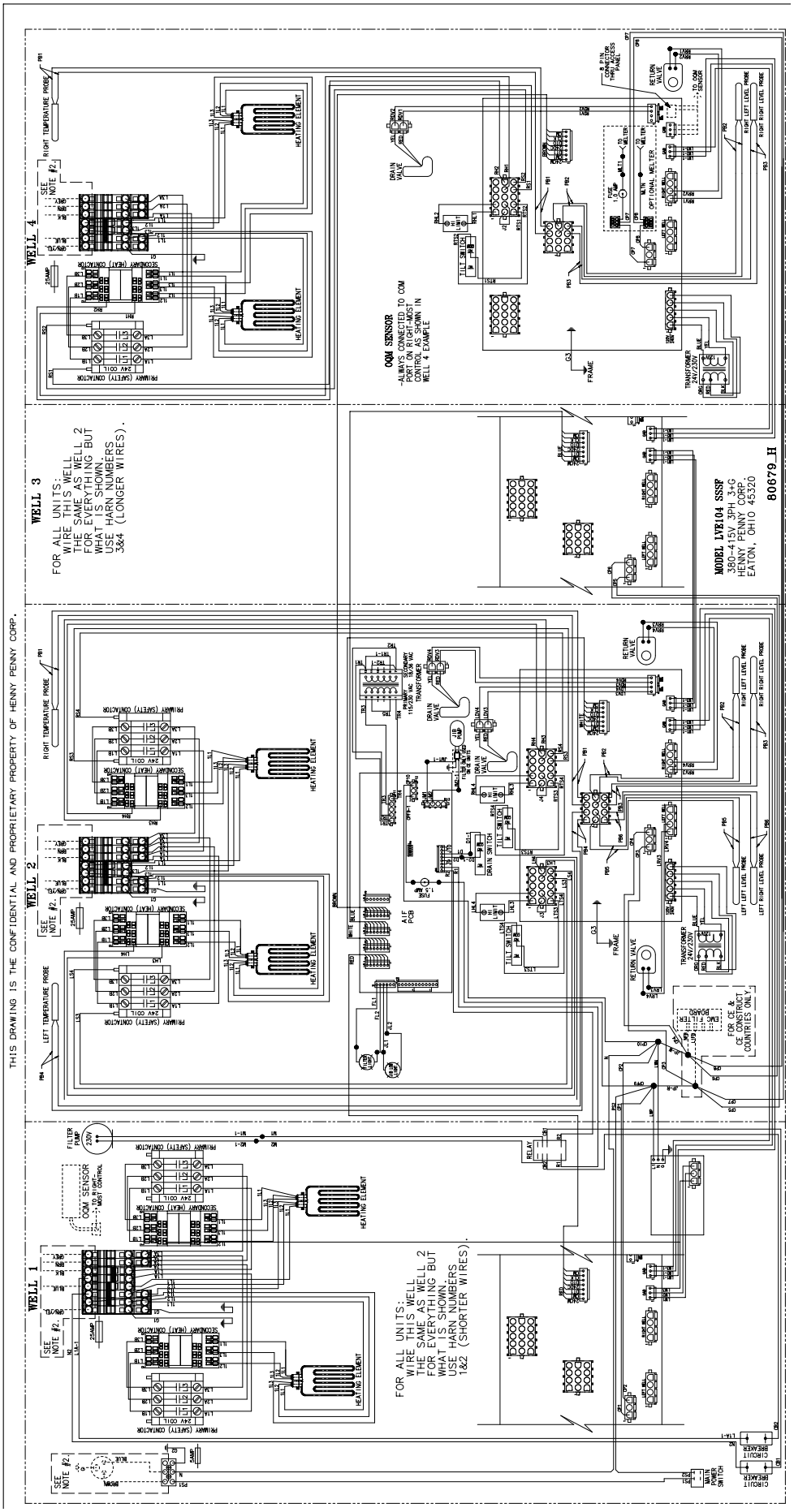

THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 1
WELL 2
WELL 3
WELL 4
FOR A 4-WELL UNIT: WIRE THIS WELL THE SAME AS WELL 3 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 1&2 (SHORTER WIRES).
FOR A 3-WELL UNIT: USE HARN NUMBERS 1&2 (SHORTER WIRES). FOR A 4-WELL UNIT: USE HARN NUMBERS 3&4 (LONGER WIRES).
FOR ALL UNITS: WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 1&2 (SHORTER WIRES).
OQM SENSOR
-ALWAYS CONNECTED TO COM PORT ON RIGHT-MOST CONTROL AS SHOWN IN WELL 4 EXAMPLE
-LINK REMAINING CONTROLS WITH LW WIRES AS SHOWN
MODEL LVE103 FFS/104 FFSS
380-415V 3PH 3-G
HENNY PENNY CORP.
EATON, OHIO 45320
78569_H
HEATING ELEMENT
PRIMARY (SAFETY) CONTACTOR
SECONDARY (HEAT) CONTACTOR
RIGHT TEMPERATURE PROBE
LEFT TEMPERATURE PROBE
RETURN VALVE
DRAIN VALVE
TRANSFORMER
FRAME
FILTER PUMP 230V
RELAY
CIRCUIT BREAKER
MAIN POWER SWITCH
SEE NOTE #2
A1F PCB

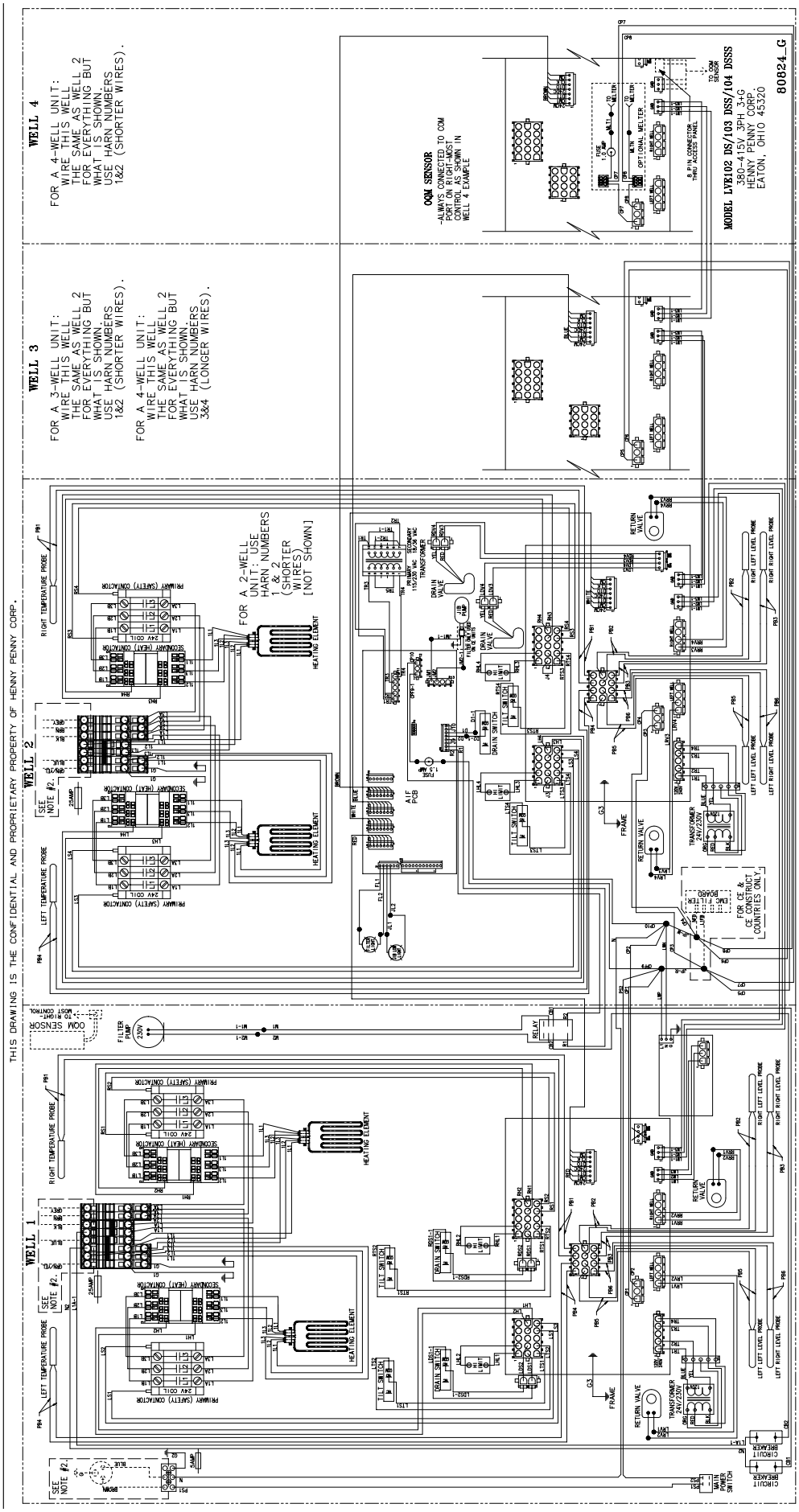

THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 1
WELL 2
WELL 3
WELL 4
FOR ALL UNITS: WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 3&4 (LONGER WIRES).
FOR ALL UNITS: WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 1&2 (SHORTER WIRES).
OQM SENSOR
-ALWAYS CONNECTED TO COM PORT ON RIGHT-MOST CONTROL AS SHOWN IN WELL 4 EXAMPLE
MODEL LVE104 FFFS
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
80465_J
HEATING ELEMENT
PRIMARY (SAFETY) CONTACTOR
SECONDARY (HEAT) CONTACTOR
RIGHT TEMPERATURE PROBE
LEFT TEMPERATURE PROBE
TRANSFORMER 24V/230V
FILTER PUMP 230V
MAIN POWER SWITCH
CIRCUIT BREAKER
FOR CE & CE CONSTRUCT COUNTRIES ONLY.
EMC FILTER BOARD

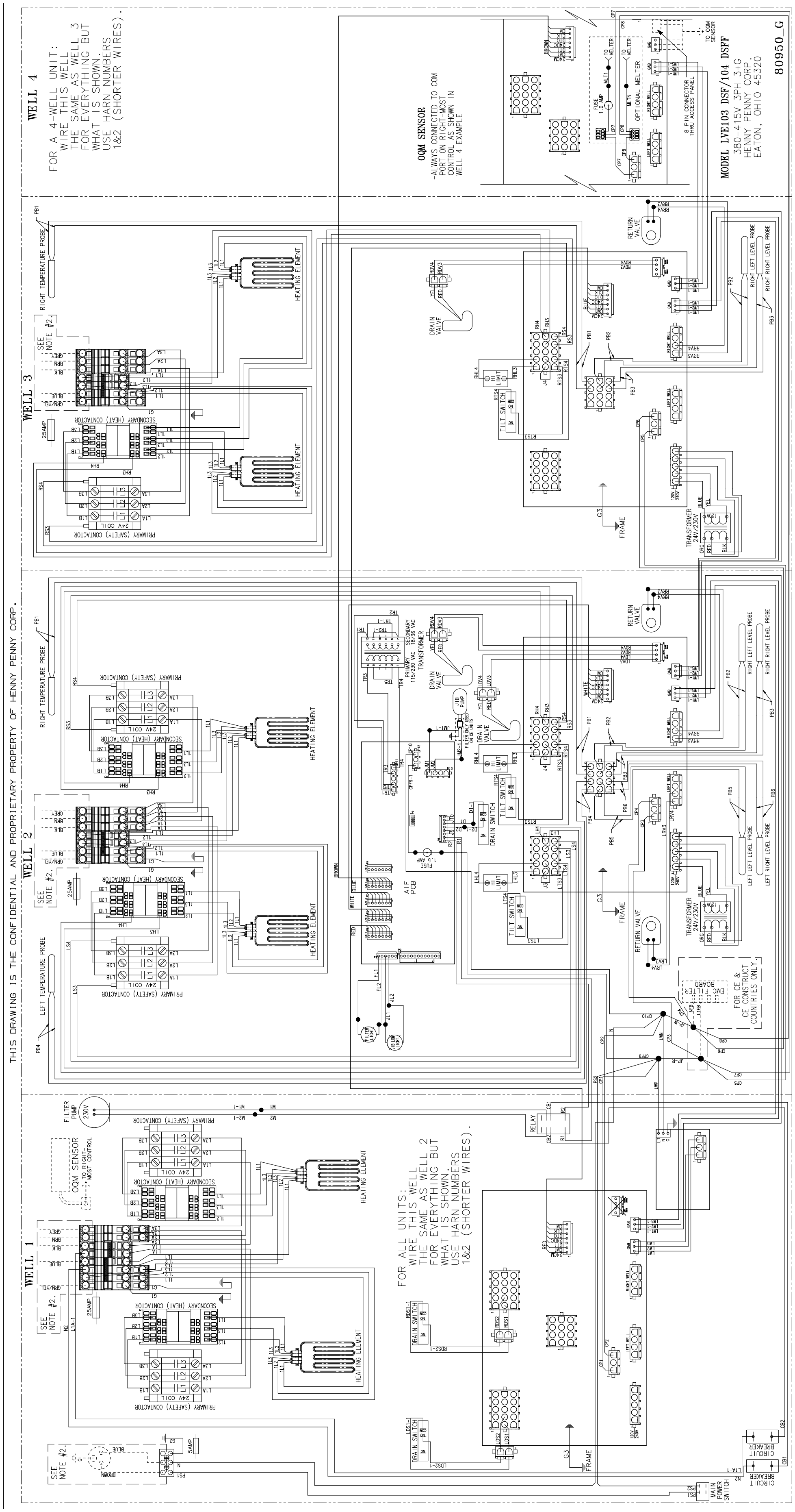

THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 4
FOR A 4-WELL UNIT: WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 1&2 (SHORTER WIRES).
WELL 3
FOR A 3-WELL UNIT: WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 1&2 (SHORTER WIRES).
FOR A 4-WELL UNIT: WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 3&4 (LONGER WIRES).
WELL 2
FOR A 2-WELL UNIT: USE HARN NUMBERS 1 & 2 (SHORTER WIRES) [NOT SHOWN]
WELL 1
OQM SENSOR
-ALWAYS CONNECTED TO COM PORT ON RIGHT-MOST CONTROL AS SHOWN IN WELL 4 EXAMPLE
HEATING ELEMENT
PRIMARY (SAFETY) CONTACTOR
SECONDARY (HEAT) CONTACTOR
RIGHT TEMPERATURE PROBE
LEFT TEMPERATURE PROBE
DRAIN VALVE
RETURN VALVE
TILT SWITCH
DRAIN SWITCH
TRANSFORMER 24V/230V
FRAME
AIF PCB
FILTER PUMP
RELAY
FOR CE & CE CONSTRUCT COUNTRIES ONLY.
EMC FILTER BOARD
MAIN POWER SWITCH
CIRCUIT BREAKER
MODEL LVE102 SF/103 SFF/104 SFF
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
80467_J

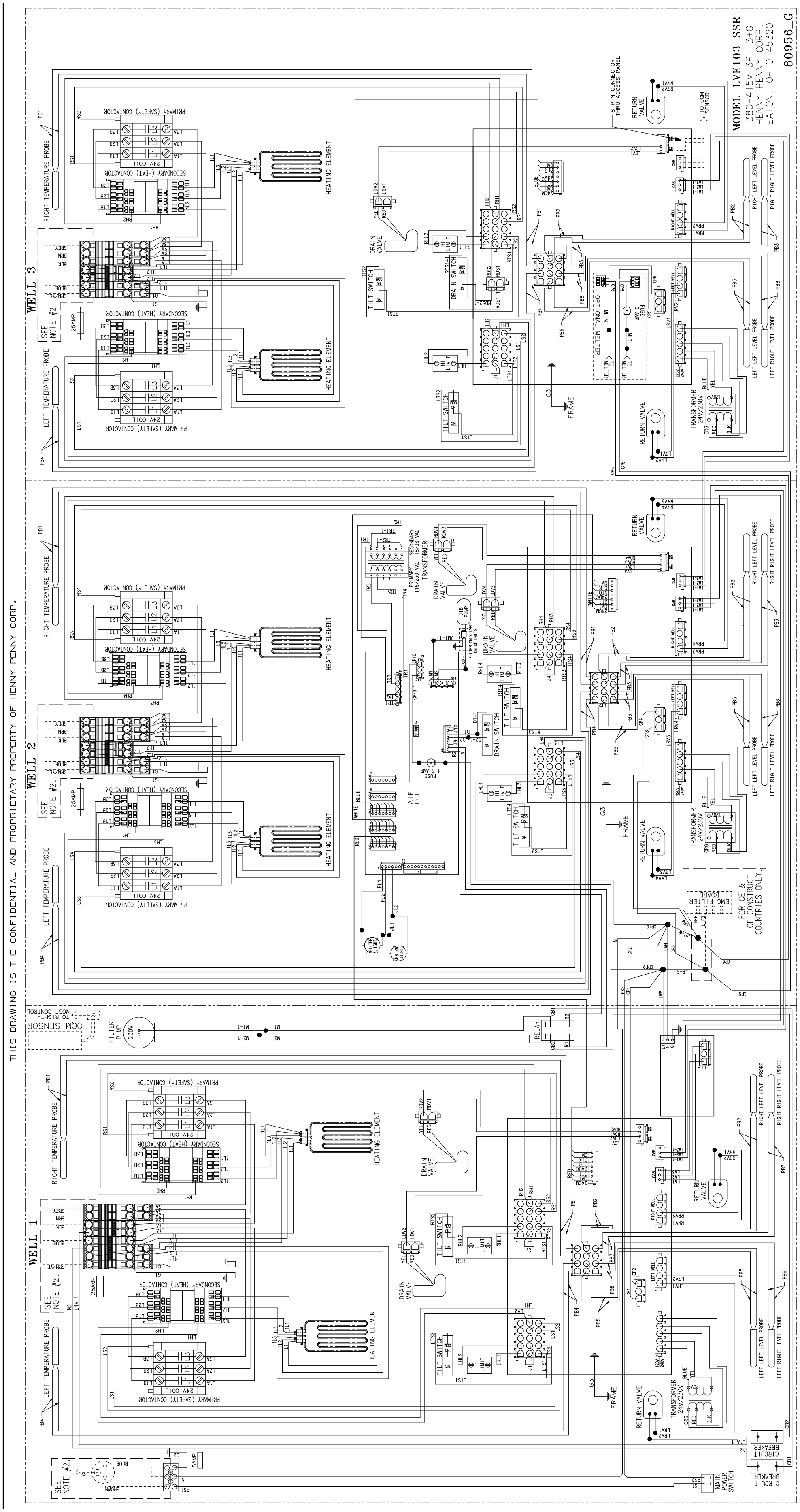

THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 1
WELL 2
WELL 3
WELL 4
FOR A 4-WELL UNIT: WIRE THIS WELL THE SAME AS WELL 3 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 1&2 (SHORTER WIRES).
FOR ALL UNITS: WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 1&2 (SHORTER WIRES).
OQM SENSOR
-ALWAYS CONNECTED TO COM PORT ON RIGHT-MOST CONTROL AS SHOWN IN WELL 4 EXAMPLE
HEATING ELEMENT
RIGHT TEMPERATURE PROBE
LEFT TEMPERATURE PROBE
PRIMARY (SAFETY) CONTACTOR
SECONDARY (HEAT) CONTACTOR
DRAIN VALVE
RETURN VALVE
TRANSFORMER 24V/230V
FRAME
FILTER PUMP
RELAY
MAIN POWER SWITCH
CIRCUIT BREAKER
MODEL LVE103 SSF/104 SSFF
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
80469_J

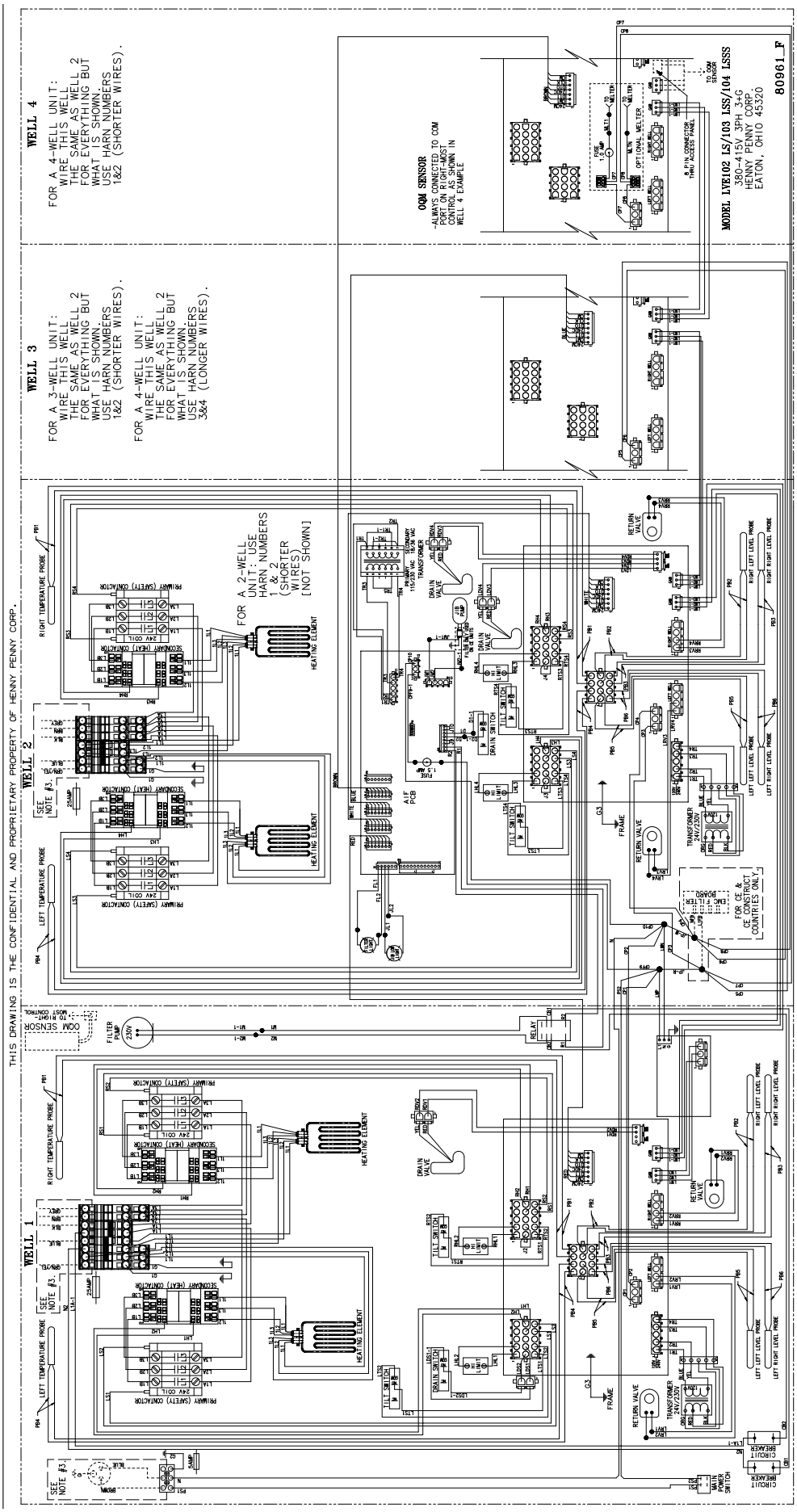

THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 3
WELL 2
WELL 1
MODEL LVE103 SSD
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
80600_G

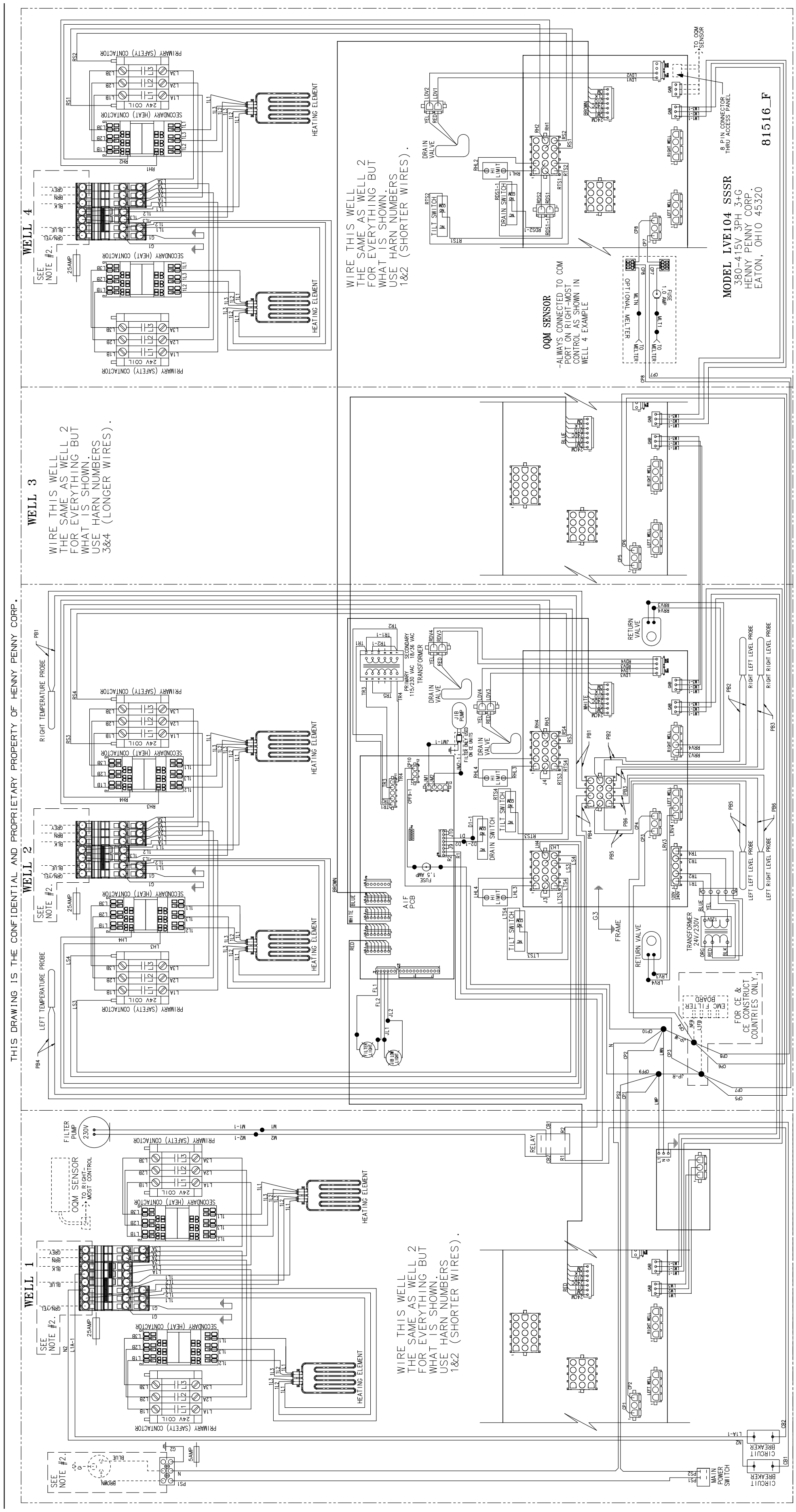

THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 4
WELL 3
WELL 2
WELL 1
FOR ALL UNITS:
WIRE THIS WELL
THE SAME AS WELL 2
FOR EVERYTHING BUT
WHAT IS SHOWN.
USE HARN NUMBERS
3&4 (LONGER WIRES).
FOR ALL UNITS:
WIRE THIS WELL
THE SAME AS WELL 2
FOR EVERYTHING BUT
WHAT IS SHOWN.
USE HARN NUMBERS
1&2 (SHORTER WIRES).
OQM SENSOR
-ALWAYS CONNECTED TO COM PORT ON RIGHT-MOST CONTROL AS SHOWN IN WELL 4 EXAMPLE
MODEL LVE104 SSSF
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
80679_H
RIGHT TEMPERATURE PROBE
LEFT TEMPERATURE PROBE
HEATING ELEMENT
PRIMARY (SAFETY) CONTACTOR
SECONDARY (HEAT) CONTACTOR
24V COIL
25AMP
SEE NOTE #2.
DRAIN VALVE
RETURN VALVE
TRANSFORMER 24V/230V
FRAME
AUF PCB
DRAIN SWITCH
FILTER PUMP 230V
OQM SENSOR - TO RIGHT-MOST CONTROL
RELAY
MAIN POWER SWITCH
CIRCUIT BREAKER
FOR CE & CE CONSTRUCT COUNTRIES ONLY

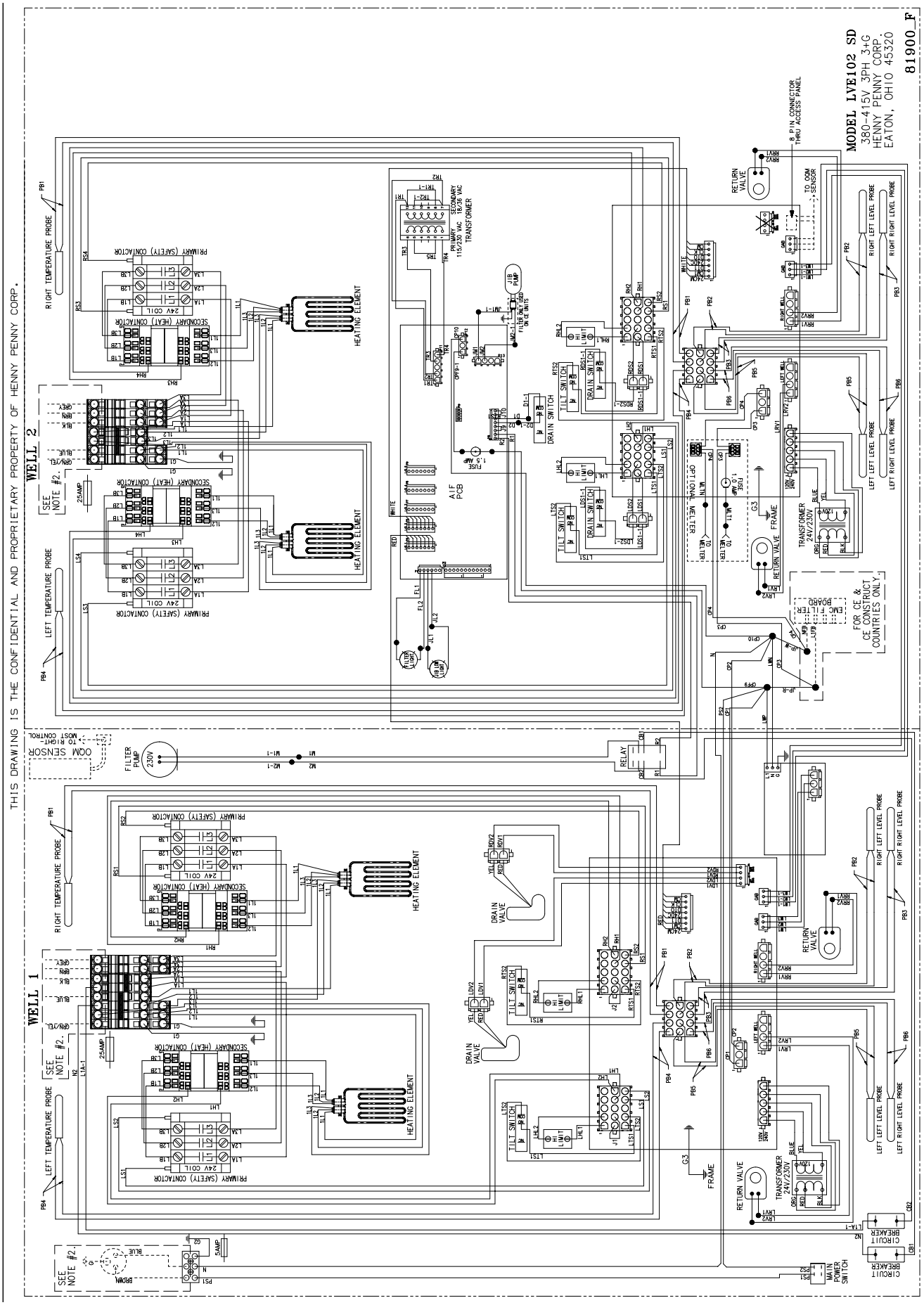

THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 4
FOR A 4-WELL UNIT:
WIRE THIS WELL
THE SAME AS WELL 2
FOR EVERYTHING BUT
WHAT IS SHOWN.
USE HARN NUMBERS
1&2 (SHORTER WIRES).
WELL 3
FOR A 3-WELL UNIT:
WIRE THIS WELL
THE SAME AS WELL 2
FOR EVERYTHING BUT
WHAT IS SHOWN.
USE HARN NUMBERS
1&2 (SHORTER WIRES).
FOR A 4-WELL UNIT:
WIRE THIS WELL
THE SAME AS WELL 2
FOR EVERYTHING BUT
WHAT IS SHOWN.
USE HARN NUMBERS
3&4 (LONGER WIRES).
OQM SENSOR
-ALWAYS CONNECTED TO COM PORT ON RIGHT-MOST CONTROL AS SHOWN IN WELL 4 EXAMPLE
MODEL LVE102 DS/103 DSS/104 DSSS
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
80824_G
FOR A 2-WELL UNIT: USE HARN NUMBERS 1 & 2 (SHORTER WIRES) [NOT SHOWN]
WELL 1
WELL 2
WELL #2.
SEE NOTE #2.
RIGHT TEMPERATURE PROBE
LEFT TEMPERATURE PROBE
HEATING ELEMENT
PRIMARY (SAFETY) CONTACTOR
SECONDARY (HEAT) CONTACTOR
24V COIL
DRAIN SWITCH
DRAIN VALVE
RETURN VALVE
TILT SWITCH
AIF PCB
TRANSFORMER 24V/230V
FRAME
RELAY
FILTER 230V
COM SENSOR
TO RIGHT-MOST CONTROL
MAIN POWER SWITCH
CIRCUIT BREAKER
FOR CE & CE CONSTRUCT COUNTRIES ONLY
OPTIONAL MELTER
TO MELTER
8 PIN CONNECTOR THRU ACCESS PANEL
TO COM SENSOR

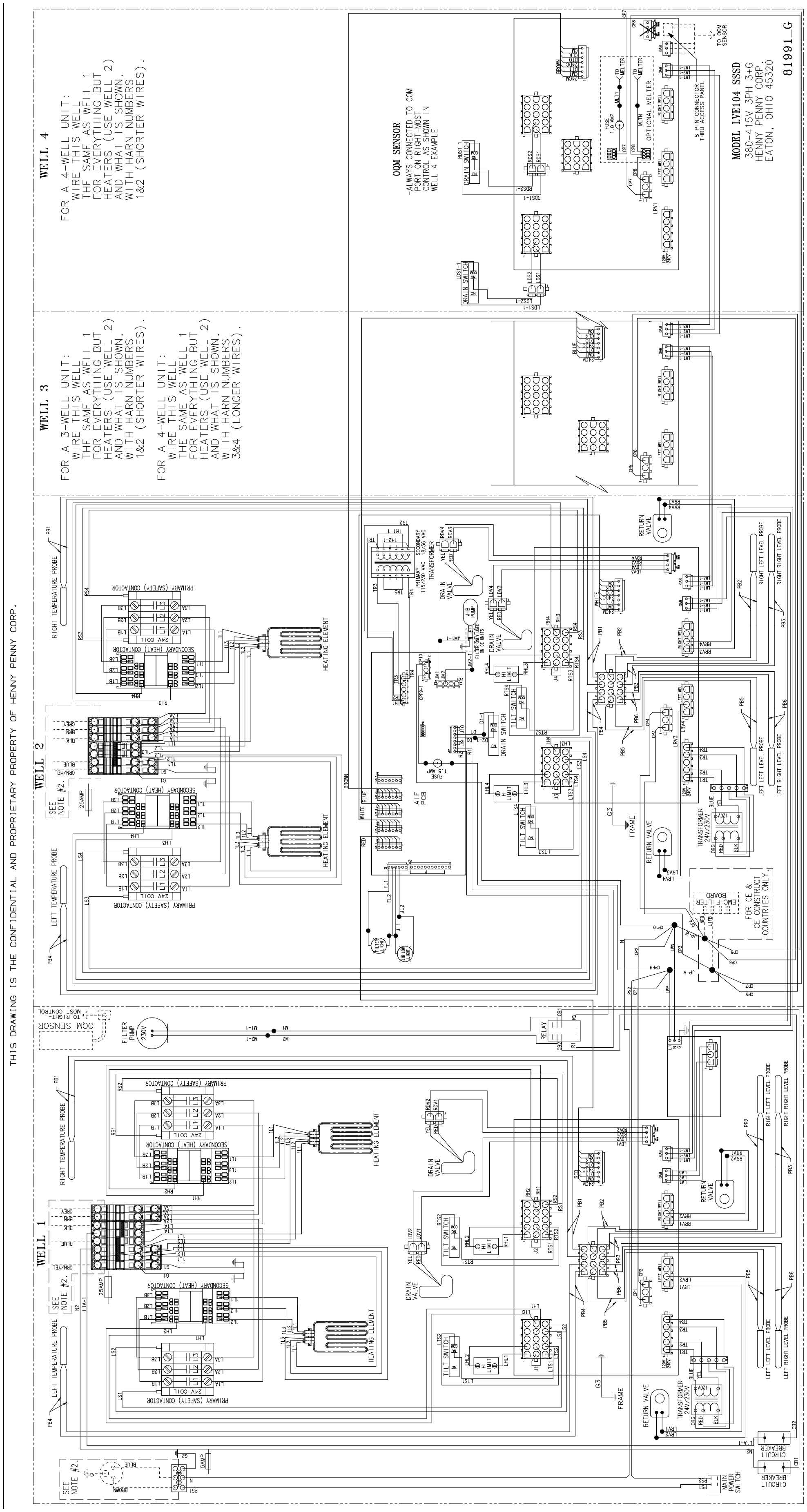

THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 4
FOR A 4-WELL UNIT: WIRE THIS WELL THE SAME AS WELL 3 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 1&2 (SHORTER WIRES).
OQM SENSOR
-ALWAYS CONNECTED TO COM PORT ON RIGHT-MOST CONTROL AS SHOWN IN WELL 4 EXAMPLE
WELL 3
WELL 2
WELL 1
FOR ALL UNITS: WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 1&2 (SHORTER WIRES).
HEATING ELEMENT
RIGHT TEMPERATURE PROBE
LEFT TEMPERATURE PROBE
PRIMARY (SAFETY) CONTACTOR
SECONDARY (HEAT) CONTACTOR
DRAIN VALVE
RETURN VALVE
TILT SWITCH
DRAIN SWITCH
TRANSFORMER 24V/230V
FRAME
FILTER PUMP 230V
RELAY
MAIN POWER SWITCH
CIRCUIT BREAKER
FOR CE & CE CONSTRUCT COUNTRIES ONLY
MODEL LVE103 DSF/104 DSFF
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
80950_G

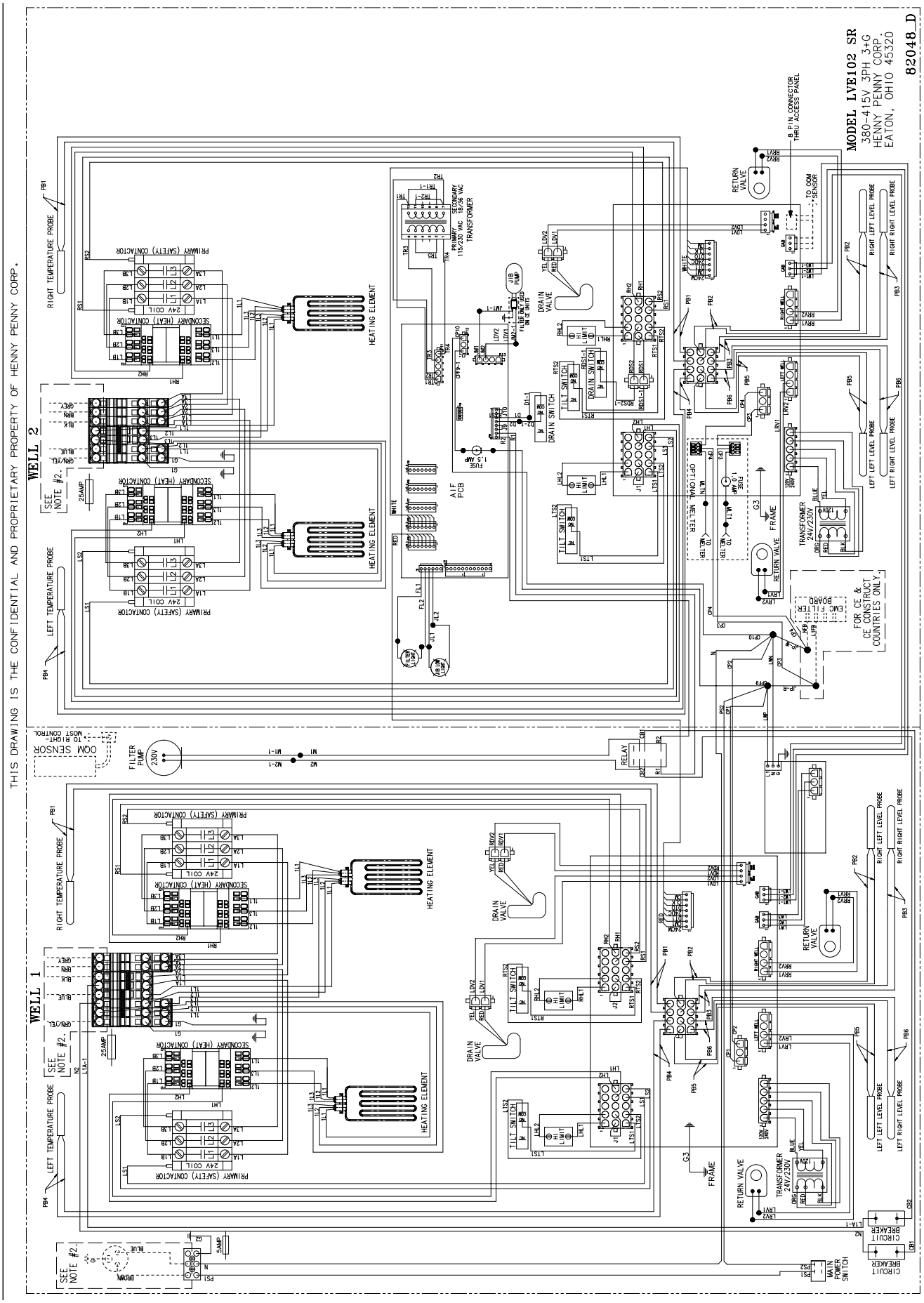

THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
MODEL LVE103 SSR
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
80956_G
WELL 3
WELL 2
WELL 1

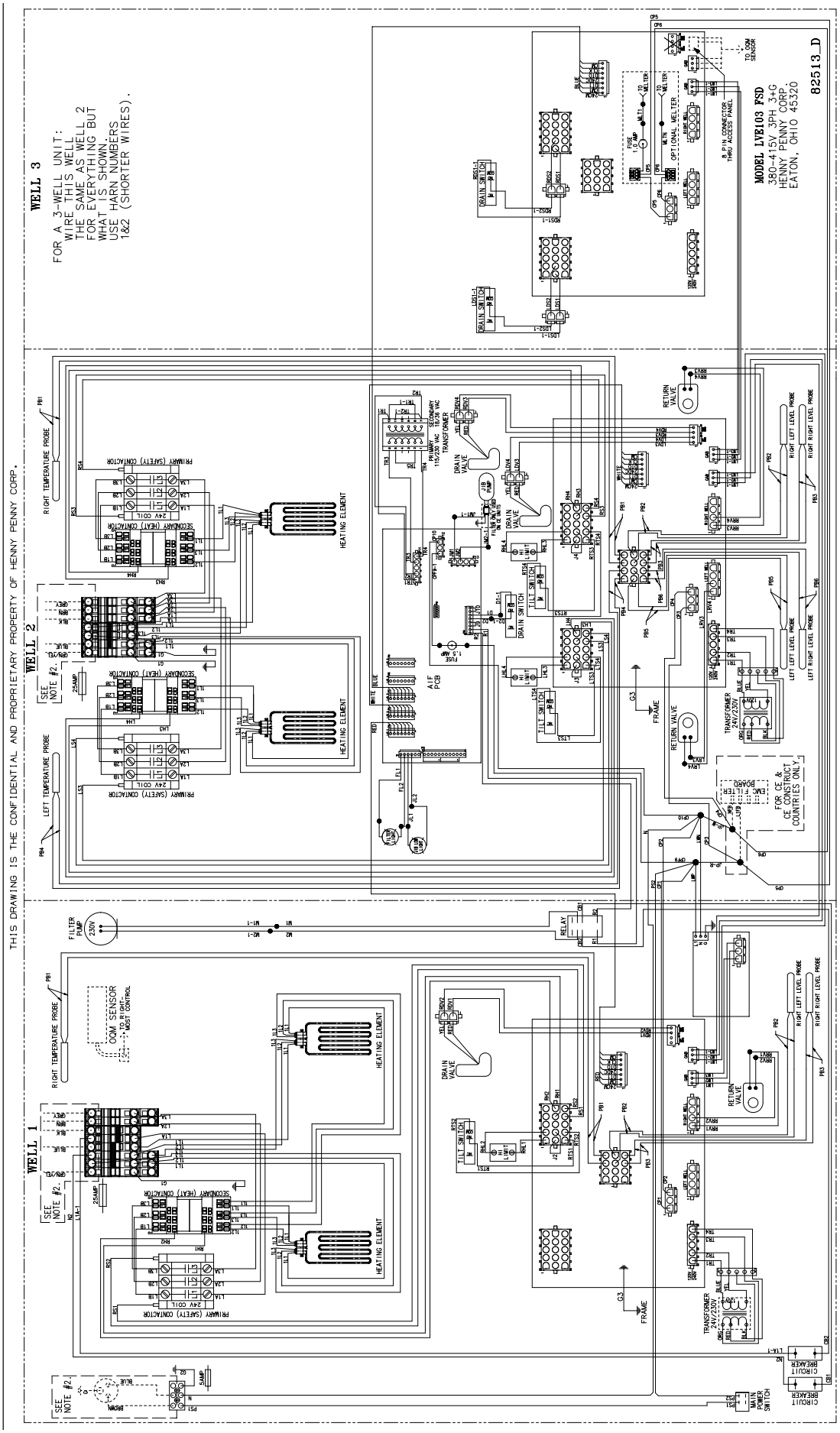

THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 4
FOR A 4-WELL UNIT:
WIRE THIS WELL
THE SAME AS WELL 2
FOR EVERYTHING BUT
WHAT IS SHOWN.
USE HARN NUMBERS
1&2 (SHORTER WIRES).
WELL 3
FOR A 3-WELL UNIT:
WIRE THIS WELL
THE SAME AS WELL 2
FOR EVERYTHING BUT
WHAT IS SHOWN.
USE HARN NUMBERS
1&2 (SHORTER WIRES).
FOR A 4-WELL UNIT:
WIRE THIS WELL
THE SAME AS WELL 2
FOR EVERYTHING BUT
WHAT IS SHOWN.
USE HARN NUMBERS
3&4 (LONGER WIRES).
OQM SENSOR
ALWAYS CONNECTED TO COM
BOARD ON MOST LAST
CONTROL AS SHOWN IN
WELL 4 EXAMPLE
MODEL LVE102 1S/103 1SS/104 1SSS
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
80961_F
FOR A 2-WELL
UNIT: USE
HARN NUMBERS
1 & 2
(SHORTER
WIRES)
[NOT SHOWN]
WELL 1
WELL 2
RIGHT TEMPERATURE PROBE
LEFT TEMPERATURE PROBE
HEATING ELEMENT
PRIMARY (SAFETY) CONTACTOR
SECONDARY (HEAT) CONTACTOR
24V COIL
SEE NOTE #3.
25AMP
5AMP
DRAIN VALVE
RETURN VALVE
TILT SW
DRAIN SWITCH
A1F PCB
FILTER PUMP 230V
TRANSFORMER 24V/230V
FRAME
RIGHT LEFT LEVEL PROBE
LEFT LEFT LEVEL PROBE
LEFT RIGHT LEVEL PROBE
OPTIONAL MELTER
FUSE
8 PIN CONNECTOR THRU ACCESS PANEL
TO COM BOARD
OQM SENSOR
RELAY
CIRCUIT BREAKER
MAIN POWER SWITCH
FOR 1ST & OTHER COUNTRIES ONLY

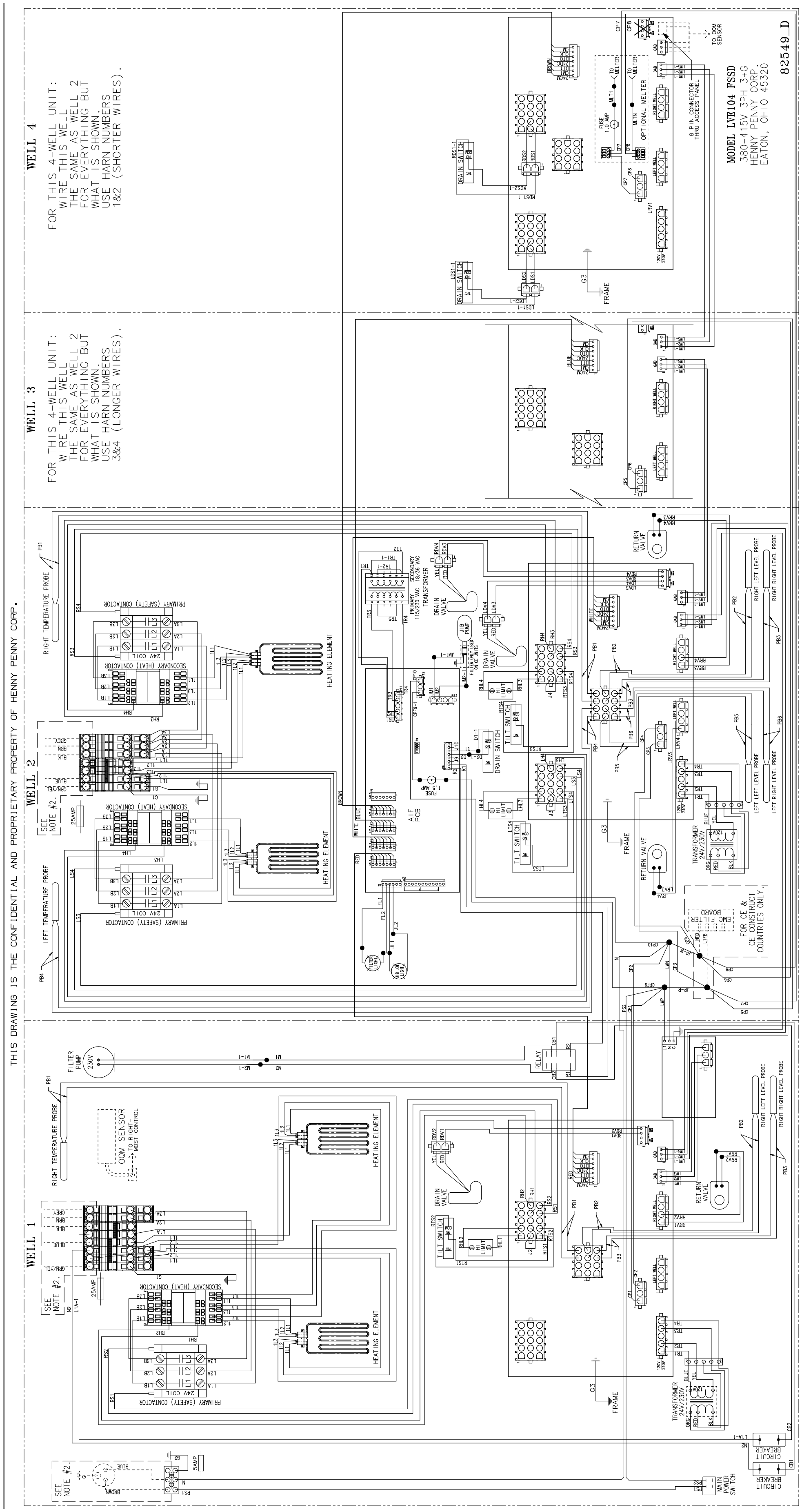

THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 1
WELL 2
WELL 3
WELL 4
WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 3&4 (LONGER WIRES).
WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 1&2 (SHORTER WIRES).
OQM SENSOR
-ALWAYS CONNECTED TO COM PORT ON RIGHT-MOST CONTROL AS SHOWN IN WELL 4 EXAMPLE
MODEL LVE104 SSSR
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
81516_F
HEATING ELEMENT
PRIMARY (SAFETY) CONTACTOR
SECONDARY (HEAT) CONTACTOR
FILTER PUMP
RELAY
MAIN POWER SWITCH
CIRCUIT BREAKER
FRAME
RETURN VALVE
DRAIN VALVE
TRANSFORMER 24V/230V

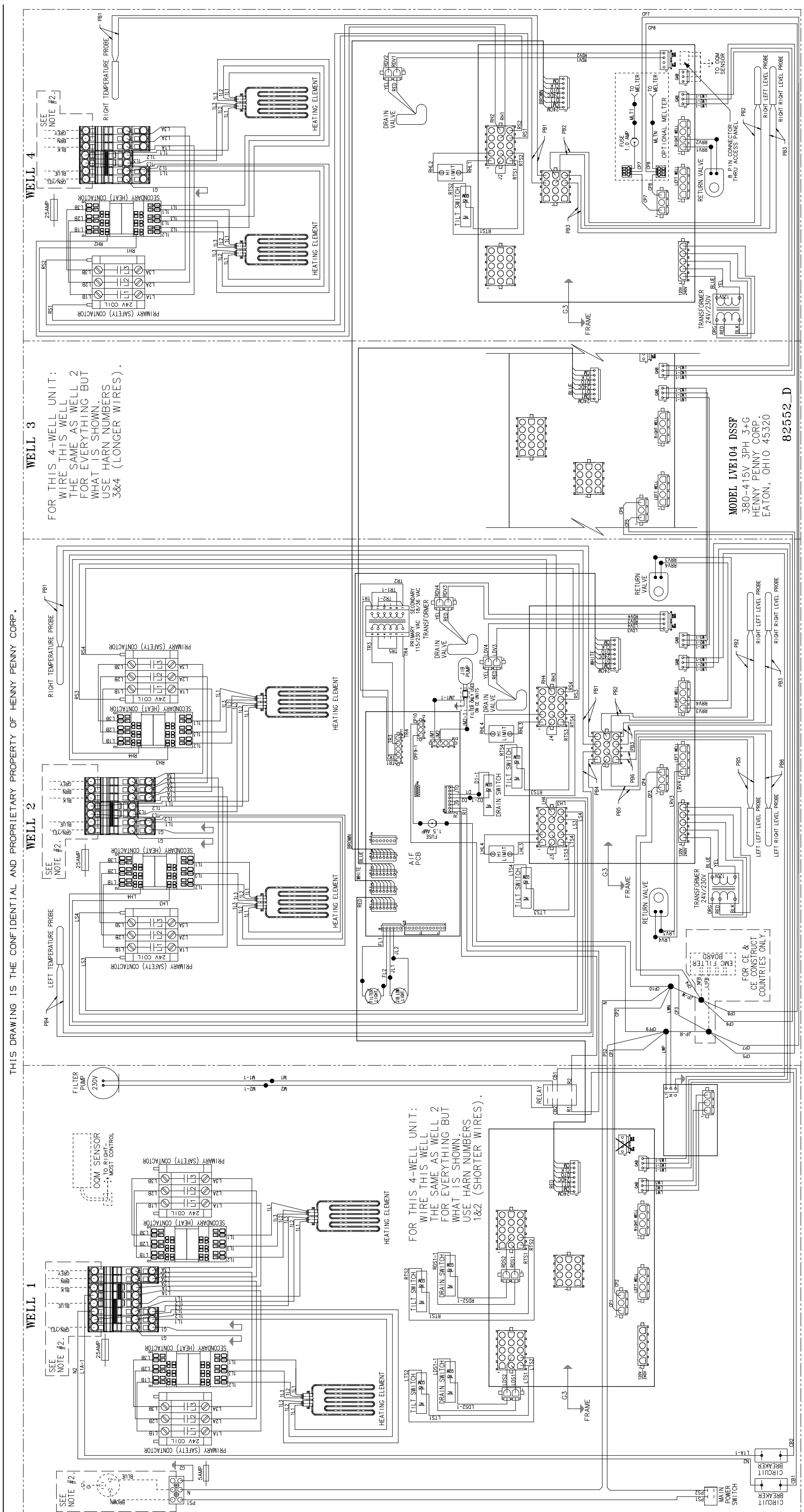

MODEL LVE102 SD
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OH10 45320
81900_F
THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 1
WELL 2
SEE NOTE #2.
RIGHT TEMPERATURE PROBE
LEFT TEMPERATURE PROBE
HEATING ELEMENT
PRIMARY (SAFETY) CONTACTOR
SECONDARY (HEAT) CONTACTOR
24V COIL
25AMP
5AMP
FILTER PUMP 230V
RELAY
DRAIN VALVE
RETURN VALVE
TILT SWITCH
DRAIN SWITCH
HI LIMIT
TRANSFORMER 24V/230V
MAIN POWER SWITCH
CIRCUIT BREAKER
FUSE
AIF PCB
8 PIN CONNECTOR THRU ACCESS PANEL
TO OOM SENSOR
OOM SENSOR
FOR CE & CE CONSTRUCT COUNTRIES ONLY.
RIGHT LEFT LEVEL PROBE
RIGHT RIGHT LEVEL PROBE
LEFT LEFT LEVEL PROBE
LEFT RIGHT LEVEL PROBE

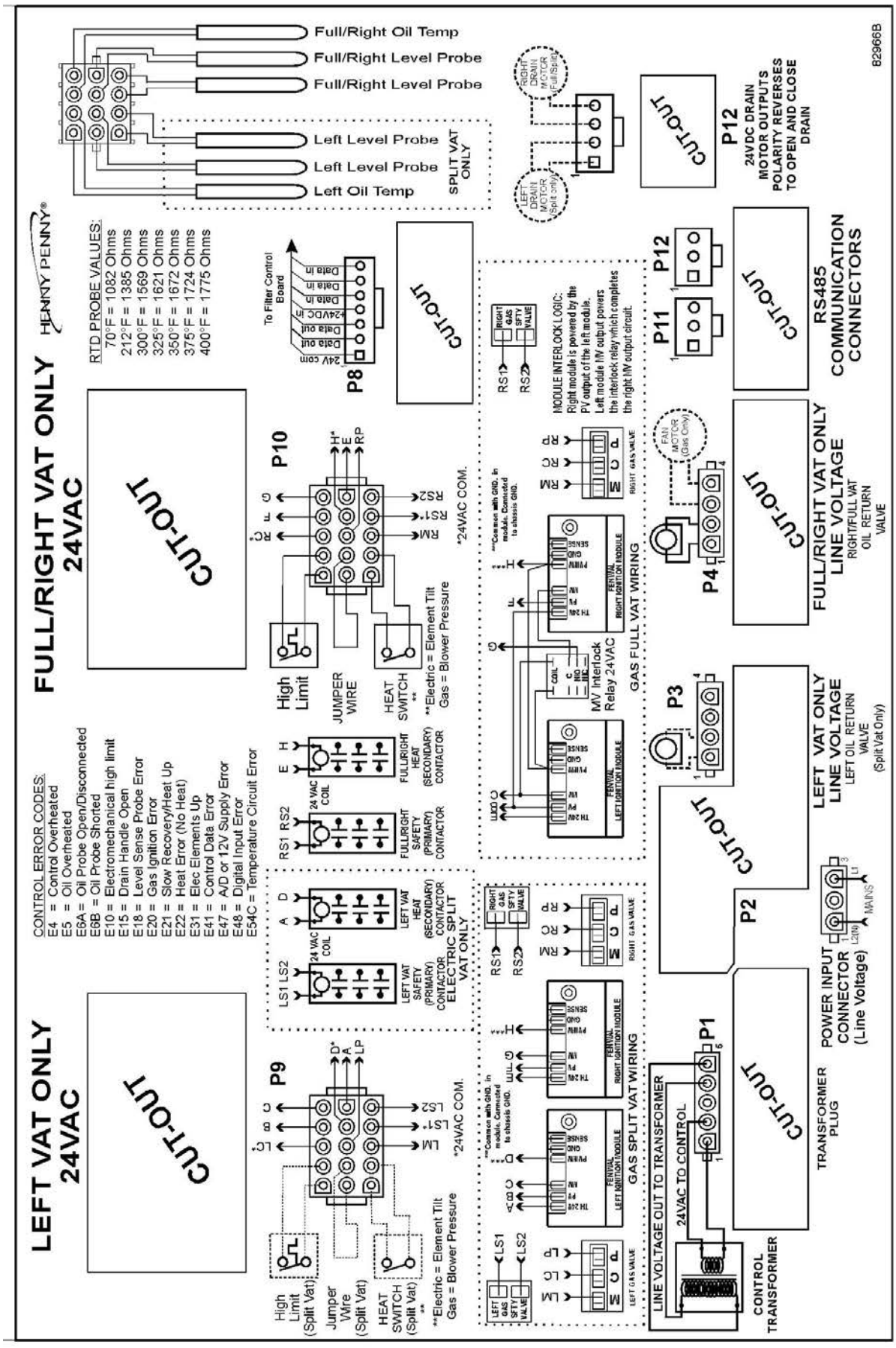

THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 4
FOR A 4-WELL UNIT: WIRE THIS WELL THE SAME AS WELL 1 FOR EVERYTHING BUT HEATERS (USE WELL 2) AND WHAT IS SHOWN. WITH HARN NUMBERS 1&2 (SHORTER WIRES).
WELL 3
FOR A 3-WELL UNIT: WIRE THIS WELL THE SAME AS WELL 1 FOR EVERYTHING BUT HEATERS (USE WELL 2) AND WHAT IS SHOWN. WITH HARN NUMBERS 1&2 (SHORTER WIRES).
FOR A 4-WELL UNIT: WIRE THIS WELL THE SAME AS WELL 1 FOR EVERYTHING BUT HEATERS (USE WELL 2) AND WHAT IS SHOWN. WITH HARN NUMBERS 3&4 (LONGER WIRES).
WELL 2
WELL 1
OQM SENSOR
-ALWAYS CONNECTED TO COM PORT ON RIGHT-MOST CONTROL AS SHOWN IN WELL 4 EXAMPLE
MODEL LVE104 SSSD
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
81991_G


THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
MODEL LVE102 SR
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
82048_D
WELL 1
WELL 2
RIGHT TEMPERATURE PROBE
LEFT TEMPERATURE PROBE
HEATING ELEMENT
PRIMARY (SAFETY) CONTACTOR
SECONDARY (HEAT) CONTACTOR
24V COIL
SEE NOTE #2.
25AMP
5AMP
FILTER PUMP
DRAIN VALVE
RETURN VALVE
DRAIN SWITCH
TILT SWITCH
HI LIMIT
AIF PCB
FUSE 1.5 AMP
FUSE 1.0 AMP
TRANSFORMER 24V/230V
FRAME
RELAY
MAIN POWER SWITCH
CIRCUIT BREAKER
8 PIN CONNECTOR THRU ACCESS PANEL
TO OOM SENSOR
OOM SENSOR
FOR CE & CE CONSTRUCT COUNTRIES ONLY
RIGHT LEFT LEVEL PROBE
RIGHT RIGHT LEVEL PROBE
LEFT LEFT LEVEL PROBE
LEFT RIGHT LEVEL PROBE


WELL 3
FOR A 3-WELL UNIT:
WIRE THIS WELL
THE SAME AS WELL 2
FOR EVERYTHING BUT
WHAT IS SHOWN.
USE HARN NUMBERS
1&2 (SHORTER WIRES).
MODEL LVE103 FSD
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
82513_D
THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 1
WELL 2
RIGHT TEMPERATURE PROBE
LEFT TEMPERATURE PROBE
HEATING ELEMENT
PRIMARY (SAFETY) CONTACTOR
SECONDARY (HEAT) CONTACTOR
24V COIL
DRAIN VALVE
DRAIN SWITCH
TILT SWITCH
RETURN VALVE
FRAME
TRANSFORMER 24V/230V
FILTER PUMP 230V
RELAY
MAIN POWER SWITCH
CIRCUIT BREAKER
OPTIONAL MELTER
8 PIN CONNECTOR THRU ACCESS PANEL
TO OOM SENSOR
OOM SENSOR
FOR CE & CE CONSTRUCT COUNTRIES ONLY
SEE NOTE #2.


THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 4
FOR THIS 4-WELL UNIT: WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 1&2 (SHORTER WIRES).
WELL 3
FOR THIS 4-WELL UNIT: WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 3&4 (LONGER WIRES).
WELL 2
WELL 1
MODEL LVE104 FSSD
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
82549_D


THIS DRAWING IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF HENNY PENNY CORP.
WELL 1
WELL 2
WELL 3
WELL 4
FOR THIS 4-WELL UNIT: WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 3&4 (LONGER WIRES).
FOR THIS 4-WELL UNIT: WIRE THIS WELL THE SAME AS WELL 2 FOR EVERYTHING BUT WHAT IS SHOWN. USE HARN NUMBERS 1&2 (SHORTER WIRES).
PRIMARY (SAFETY) CONTACTOR
SECONDARY (HEAT) CONTACTOR
HEATING ELEMENT
RIGHT TEMPERATURE PROBE
LEFT TEMPERATURE PROBE
FILTER PUMP
OQM SENSOR
AIF PCB
DRAIN VALVE
RETURN VALVE
TILT SWITCH
DRAIN SWITCH
TRANSFORMER 24V/230V
FRAME
RELAY
MAIN POWER SWITCH
CIRCUIT BREAKER
OPTIONAL MELTER
FOR CE & CE CONSTRUCT COUNTRIES ONLY
MODEL LVE104 DSSF
380-415V 3PH 3+G
HENNY PENNY CORP.
EATON, OHIO 45320
82552_D


LEFT VAT ONLY
24VAC
FULL/RIGHT VAT ONLY
24VAC
HENNY PENNY
CUT-OUT
CONTROL ERROR CODES:
E4 = Control Overheated
E5 = Oil Overheated
E6A = Oil Probe Open/Disconnected
E6B = Oil Probe Shorted
E10 = Electromechanical high limit
E15 = Drain Handle Open
E18 = Level Sense Probe Error
E20 = Gas Ignition Error
E21 = Slow Recovery/Heat Up
E22 = Heat Error (No Heat)
E31 = Elec Elements Up
E41 = Control Data Error
E47 = A/D or 12V Supply Error
E48 = Digital Input Error
E54C = Temperature Circuit Error
RTD PROBE VALUES:
70°F = 1082 Ohms
212°F = 1385 Ohms
300°F = 1569 Ohms
325°F = 1621 Ohms
350°F = 1672 Ohms
375°F = 1724 Ohms
400°F = 1775 Ohms
Full/Right Oil Temp
Full/Right Level Probe
Full/Right Level Probe
Left Level Probe
Left Level Probe
Left Oil Temp
SPLIT VAT ONLY
P8
P9
P10
P11
P12
P1
P2
P3
P4
To Filter Control Board
Data In
Data In
Data In
Data Out
Data Out
+24VDC
24V com
High Limit
JUMPER WIRE
HEAT SWITCH **
**Electric = Element Tilt
Gas = Blower Pressure
*24VAC COM.
MODULE INTERLOCK LOGIC:
Right module is powered by the PV output of the left module.
Left module MV output powers the interlock relay which completes the right MV output circuit.
MV Interlock Relay 24VAC
GAS FULL VAT WIRING
GAS SPLIT VAT WIRING
FULL/RIGHT VAT ONLY
LINE VOLTAGE
RIGHT/FULL VAT
OIL RETURN
VALVE
LEFT VAT ONLY
LINE VOLTAGE
LEFT OIL RETURN
VALVE
(Split Vat Only)
RS485
COMMUNICATION
CONNECTORS
P12
24VDC DRAIN
MOTOR OUTPUTS
POLARITY REVERSES
TO OPEN AND CLOSE
DRAIN
FAN MOTOR (Gas Only)
RIGHT DRAIN MOTOR (Full/Split)
LEFT DRAIN MOTOR (Split only)
ELECTRIC SPLIT VAT ONLY
FULL/RIGHT HEAT (SECONDARY) CONTACTOR
FULL/RIGHT SAFETY (PRIMARY) CONTACTOR
LEFT VAT HEAT (SECONDARY) CONTACTOR
LEFT VAT SAFETY (PRIMARY) CONTACTOR
24 VAC COIL
LINE VOLTAGE OUT TO TRANSFORMER
24VAC TO CONTROL
TRANSFORMER PLUG
POWER INPUT CONNECTOR (Line Voltage)
MAINS
CONTROL TRANSFORMER
82966B