



TECHNICAL M A N U A L

OPEN FRYER[™] (Electric)

MODEL

CFE-410

CFE-420



HENNY PENNY[®]

Engineered to Last

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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 Section of the Operator's Manual.

Before troubleshooting, always recheck the Operation Section of the Operator's Manual.

1-2. SAFETY

Where information is of particular importance or is safety related, the words DANGER, WARNING, CAUTION, or NOTE are used. Their usage is described on the next page:



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 used with the safety alert symbol indicates a potentially hazardous situation which, if not avoided, could 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.



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

| Problem | Cause | Correction |
|--|--|---|
| With the switch in the POWER position, Fryer is completely inoperative | <ul style="list-style-type: none"> • Open circuit | <ul style="list-style-type: none"> • Check to see if unit is plugged in • Check breaker or fuse at supply box • Check POWER switch per Power Switch Section; replace if defective • Check voltage at wall receptacle • Check cord and plug |
| Shortening will not heat but lights are on | <ul style="list-style-type: none"> • Faulty contactor (elec. model) • Faulty temperature probe • Faulty high limit • Faulty drain switch | <ul style="list-style-type: none"> • Check contactor per Heating Contactors Section • Check temperature probe per Temperature Probe Replacement Section; “E-6” • Check high limit per the appropriate High Temperature Limit Control Section; “E-10” • Check drain switch per Drain Microswitch Section; “E-15” |

1-3. TROUBLESHOOTING
(CONTINUED)

| Problem | Cause | Correction |
|---------------------------------------|---|---|
| Heating of shortening too slow | <ul style="list-style-type: none"> • Low or improper voltage (elec. unit) • Weak or Burnt out elements (elect. unit) • Wire(s) loose • Burnt or charred wire connection • Faulty contactor | <ul style="list-style-type: none"> • Use a meter and check the receptacle voltage against the data plate • Check heating elements per Heating Element Section • Tighten • Replace wire and clean Connectors • Check contactor per Heating Contactors Section |
| Shortening overheating | <ul style="list-style-type: none"> • Temperature probe needs calibration • Bad control board | <ul style="list-style-type: none"> • Calibrate temperature probe if $\pm 10^\circ$ off, replace temperature probe • Replace control board if heat indicator stays on past ready temperature |
| Foaming or boiling over of shortening | <ul style="list-style-type: none"> • Watch in shortening • Improper or bad shortening • Improper filtering • Improper rinsing after cleaning fryer | <ul style="list-style-type: none"> • At end of cook cycle, drain shortening and clean • Use recommended shortening • Refer to the Filtering the Shortening Section in Operator's Manual • Clean and rinse the frypot; then dry thoroughly |


1-3. TROUBLESHOOTING
(CONTINUED)

| Problem | Cause | Correction |
|---|--|---|
| Shortening will not drain from frypot | <ul style="list-style-type: none"> • Drain valve clogged with crumbs • Drain valve will not open by pulling handle | <ul style="list-style-type: none"> • Open valve, force cleaning brush through drain • Replace Drain valve |
| Filter motor runs but pumps shortening slowly | <ul style="list-style-type: none"> • Pump clogged • Filter line connection loose • Solidified shortening in lines | <ul style="list-style-type: none"> • Remove pump cover and clean • Tighten all filter line connections • Clear all filter lines of solidified shortening |
| Filter switch on but motor does not run | <ul style="list-style-type: none"> • Defective switch • Defective motor • Motor thermal protector tripped | <ul style="list-style-type: none"> • Check/replace switch per Filter Switch Section • Check/replace motor • Reset thermal switch on filter motor |
| Motor hums but will not pump | <ul style="list-style-type: none"> • Clogged lines or pump | <ul style="list-style-type: none"> • Remove and clean pump and lines • Replace pump seals, rotor and rollers |

1-4. WARNINGS AND ERROR MESSAGES

The controls monitor procedure problems and system failures with warnings and error codes. The display shows the warning or error code, and an alarm sounds.




Pressing  cancels most warnings and pressing any control button stops most error code alarms. But there are some exceptions (see below). The display shows the error until the situation is corrected.

WARNINGS

| Display | Cause | Correction |
|----------------------------|---|---|
| “W-1” “LOW VOLTAGE” | In coming supply voltage too low | Having voltage at plug and receptacle checked |
| “W-2” “SLOW HEAT-UP” | Faulty components or connections | Have elements, connections, and contactors checked |
| “W-3” “WAS NOT READY” | Product loaded into frypot before READY light | Wait unit shortening is at proper temperature before loading product |
| “W-4” “SLOW COOKING” | Too much product in frypot | Do not overfill frypot |
| “W-5” “SLOW COOKING” | Product loaded into frypot before READY lights | Wait unit shortening is at proper temperature before loading product |
| “W-6” “SLOW COOKING” | Faulty components or connections | Have elements, connections, and contactors checked |
| “W-7” “LOW AMPS” | Faulty components or connections | Have elements, connections, and contactors checked |
| “W-9” “DISCARD PRODUCT” | Product overcooked. (may appear after a “SLOW COOKING” warning) | Discard product immediately |
| “OIL TOO HOT” | Didn’t allow shortening to drop to current product’s setpoint temperature | Cancel button stops this warning; once the shortening drops to setpoint temperature, the alarm automatically stops. |

**1-4. WARNINGS AND
ERROR MESSAGES
(CONTINUED)**

| DISPLAY | CAUSE | CORRECTION |
|--------------------------------------|-------------------------------|---|
| “E-1” | Low oil in frypot | Check oil level in JIB (oil reservoir) |
| “E-4” “CPU TOO HOT” | 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” “FRYER TOO HOT” | 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” “FRYER TEMP SENSOR” | 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” “FRYER TEMP SENSOR” | Temperature probe shorted | Turn switch to OFF position, then turn switch back to ON; if display shows “E-6B”, the temperature checked |
| “E-10” “HIGH LIMIT TRIPPED” | High limit | Allow heating elements to cool (15-20 minutes) and reset high limit by pressing down and releasing raised side of the switch for the vat that is not operating; switches are located just to the right of the drain knob; if high limit does not reset, high limit must be replaced  |
| “E-15” “DRAIN IS OPEN” | Drain switch | Make sure drain knob is completely pushed-in; if E-15 persists, have drain switch checked |
| “E-18” “LEVEL SENSOR FAILED” | Level sensor open | Turn switch to OFF position and then back to ON; if display still indicates a failed sensor, have the connections checked on the control board; have sensor checked & replaced if necessary |
| “E-19” “PROTECTION SENSOR FAILED” | Frypot protection sensor open | Turn switch to OFF position and then back to ON; if display still indicates a failed sensor, have the connections checked on the control board; have sensor checked & replaced if necessary |

**1-4. WARNINGS AND
ERROR MESSAGES**
(CONTINUED)

| DISPLAY | CAUSE | CORRECTION |
|--|---|--|
| <p>“E-25” “HEAT AMPS TOO HIGH”</p> | <p>Wrong or faulty elements or wiring problem</p> | <p>Have electrical supply, wiring, and elements checked</p> <p style="text-align: center;">NOTICE</p> <p>Because of the seriousness of this error code, turn the POWER switch off and back on to cancel</p> |
| <p>“E-26” “HEAT AMPS ARE LOCKED ON”</p> | <p>Faulty contactors or PCB</p> | <p>Have the contactors and PC board checked</p> <p style="text-align: center;">NOTICE</p> <p>This error code could be displayed even with the POWER switch turned off. Unplug fryer or shut-off the wall circuit breaker to disconnect electrical power to fryer.</p> |
| <p>“E-27” “AMPS TOO LOW”</p> | <ul style="list-style-type: none"> • Wrong SP-12 “Nominal Amps Rdg” setting • Defective contactor • Wrong wattage or wrong voltage heating element(s) installed • Fryer voltage excessively low | <ul style="list-style-type: none"> • The Min and Max amps limits are set as percentages below and above the programmed “Nominal Amps Reading” (Special Program parameter SP-12). The Nominal, Min, and Max amps limits can be viewed in Info Mode. (See the E-25 error above for details.) • Replace contactor • Replace heating element • Call electrician |
| <p>“E-28” “AMP SENSORS NOT DETECTED”</p> | <p>The AMP sensors are not detected by the control.</p> | <ol style="list-style-type: none"> 1. Check that amp sensors are securely plugged into the rear of the control board. If error still occurs, proceed to step 2. 2. Check to see if the ohm value of each sensor is within +/- 10% of 34 Ohms. If ohm value is not within this range, proceed to step 3. If ohm value is within range, proceed to step 4. 3. Replace amp sensors 4. Replace control board |

**1-4. WARNINGS AND
ERROR MESSAGES
(CONTINUED)**

| DISPLAY | CAUSE | CORRECTION |
|---|--|--|
| <p>“E-29” “SHUNT BREAKER HAS TRIPPED”</p> | <ul style="list-style-type: none"> • Amp draw detected on the amp sensor input when there is no call for heat (heat light off). • Control activates the shunt trip circuit with 24V AC on wires SH1 and SH2 • Breaker trips and will require a manual reset. (disconnect power – Drop control – reset breaker) • E-29 Error on Display | <ul style="list-style-type: none"> • Check the heat contactor for sticking and replace if defective • See instructions for resetting the breaker • If an E-29 occurs, check amp sensors and replace if out of range • If still E-29, replace control |
| <p>“E-41” “PROGRAMMED SETTINGS LOST”</p> | <ul style="list-style-type: none"> • Voltage spikes or dropouts • Failure of backup capacitor on CPU board | <ol style="list-style-type: none"> 1. Turn off fryer, wait 15 seconds, turn on fryer. If error still occurs, proceed to step 2. 2. Replace control |
| <p>“E-46” “EPROM MEMORY WRITE ERROR”</p> | <ul style="list-style-type: none"> • Faulty EPROM on CPU board • Other faults or contamination on CPU board | <p>Replace the control board.</p> |
| <p>“E-47” “A-to-D FAILURE”</p> | <ul style="list-style-type: none"> • 12-volt supply failed on I/O board • Analog 5v supply bad • A-to-D chip bad | <p>Replace the control board.</p> |
| <p>“E-48” “INPUT SYSTEM ERROR”</p> | <ul style="list-style-type: none"> • Defective component on the control board | <p>Replace the control board</p> |
| <p>“E-60” “AIF COMM FAILED”</p> | <ul style="list-style-type: none"> • AIF board has failed • The wiring from the control to the AIF board has become disconnected • In a two well unit the left vat power is off | <p>Press power button to turn vat off, wait 15 seconds, and turn back on again. If “E-60” persists:</p> <ul style="list-style-type: none"> • Have connector between the PCB’s checked • Replace AIF PCB or control PCB board if necessary |
| <p>“E-75” “HEAT RELAY NEAR END OF LIFE”</p> | <p>The secondary contactor has reached the 90% of life mark.</p> | <p>Replace the contactor and reset the counter in Tech Mode step T-23.</p> |

SECTION 2. INFORMATION MODE

This historic information can be recorded and used for operational and technical help and allows you to view the following:



- 1. E-LOG
- 2. P-LOG
- 3. HEAT UPS
- 4. LEFT COOK DATA
- 5. RIGHT COOK DATA
- 6. TODAY'S DATA
- 7. PREV DAY - SUN
- 8. 7-DAY TOTALS
- 9. OIL DATA
- 10. PREV OIL DATA
- 11. INPUT INFO
- 12. OUTPUT INFO
- 13. POT TMP
- 14. LVL TMP
- 15. PRO TMP
- 16. SSR TMP
- 17. CPU TMP
- 18. ANALOG INFO
- 19. AC VOLTS
- 20. AMPS INFO

NOTICE

Not all Information 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 Technical Support at 1-800-417- 8405, or 1-937-456-8405.

2-1. INFORMATION MODE DETAILS


1. E-LOG (error code log)


Press  and  buttons at the same time and “*INFO MODE*” shows in th

NOTICE

by “1. E-LOG”.

Press  and  to exit Information Mode at any time.

Press  and “A. (date & time) *NOW* show in displays. This is the present date and time.

Press  and if an error was recorded, “B. (date, time, and error code information)” shows in display. This is the latest error code that the controls recorded. Sometimes the characters “L:” and “R:” appear in front of the error code on the display which refers to the left or right vat of a split vat.

Press  and the next latest error code information is seen.

Up to 10 error codes (B to K) can be stored in the E-LOG section.

Press  to continue to P-Log.

**2-1. INFORMATION MODE
DETAILS (Continued)**

2. P-LOG (power-up log)

Press **▽** and “2A. (date & time) *NOW* shows in display. This is the present date and time.

Press **▽** and the latest power-up is shown, “2B. (date, time,) PWR-UP”.

Press **▽** and the next latest power-up date is shown. Up to 10 power-ups (2B to 2K) can be stored in P-LOG section.

Press **Ⓟ** to continue onto the heat-up log.

3. HEAT-UP’S

Press **▽** and “3A. (date & time) *NOW* shows in display. This is the present date and time.

Press **▽** and the latest heat-up is shown, along with the heat-up rate, ex: “3B. MAY-22, 8:37A 1.25”. The heat rate is the maximum rate (degrees/second) the controller recorded during the shown time frame.

Press **▽** and the next latest heat-up is shown. Up to 10 heat-ups (3B to 3K) can be stored in the Heat-Up Log.

Press **Ⓟ** to continue onto the COOK DATA.

4. LEFT COOK DATA

Press **▽** to step through the following data:

| FUNCTION | DISPLAY EXAMPLE |
|--|------------------------|
| Time of last Cook Cycle started | 4A. STARTED 10.25A |
| Product (last product cooked) | 4B. PRODUCT -1- |
| Ready? (fryer ready before start?) | 4C. READY? YES |
| Drop detect status | 4D. DETECT X NO |
| Drop adjust (real time seconds) | 4E. DROP ADJ T-14 |
| Cook time adj (clock adjust) | 4F. CK TM ADJ -13 |
| Actual elapsed cook time (seconds) | 4G. ACT TIME 2:23 |
| Stopped: Time remaining, or secs past done | 4H. STOP DONE+1 |
| “Slow cook” for this cycle? | 4I. SLOW? NO |
| Overloaded? (Bad batch) | 4J. OVRLD? NO |
| Avg Temp during Cook Cycle | 4K. AVG TMP 343°F |
| Max voltage during Cook Cycle | 4L. MAX VOLT 99% |
| Min voltage during Cook Cycle | 4M. MIN VOLT 97% |
| Max amps during Cook Cycle | 4N. MAX AMPS 33 |
| Min amps during Cook Cycle | 4O. MIN AMPS 33 |

Press **Ⓟ** to continue onto the RIGHT COOK DATA.

**2-1. INFORMATION MODE
DETAILS (Continued)**

5. RIGHT COOK DATA

Press  button to start viewing the cook data.

| FUNCTION | DISPLAY EXAMPLE |
|--|------------------------|
| Time of last Cook Cycle started | 5A. STARTED 10.25A |
| Product (last product cooked) | 5B. PRODUCT -1- |
| Ready? (fryer ready before start?) | 5C. READY? YES |
| Drop detect status | 5D. DETECT X NO |
| Drop adjust (real time seconds) | 5E. DROP ADJ T-10 |
| Cook time adj (clock adjust) | 5F. CK TM ADJ -13 |
| Actual elapsed cook time (seconds) | 5G. ACT TIME 2:23 |
| Stopped: Time remaining, or secs past done | 5H. STOP DONE+1 |
| “Slow cook” for this cycle? | 5I. SLOW? NO |
| Overloaded? (Bad batch) | 5J. OVRLD? NO |
| Avg Temp during Cook Cycle | 5K. AVG TMP 343°F |
| Max voltage during Cook Cycle | 5L. MAX VOLT 99% |
| Min voltage during Cook Cycle | 5M. MIN VOLT 97% |
| Max amps during Cook Cycle | 5N. MAX AMPS 33 |
| Min amps during Cook Cycle | 5O. MIN AMPS 33 |

Press  to continue onto the TODAY'S DATA.

6. TODAY'S DATA (automatically resets each day)

Press  to step through the following data:



| FUNCTION | DISPLAY EXAMPLE |
|---|------------------------|
| Today's Date | 6A. DATE APR-12 |
| Time of day last heat-up was completed | 6B. LAST HEAT 9:45A |
| Peak heat-up rate (°F/Sec) for last heat-up | 6C. LAST RATE 0.82 |
| Was last heat-up acceptable? | 6D. LAST OK? YES |
| Heat Cap. status (based on last 4 ht-ups) | 6E. HEAT CAP GOOD |
| Number of monitored heat-ups today | 6F. HEAT-UPS 2 |
| Number of slow heat-ups | 6G. SLOW HT'S 0 |
| Max time to heat 270°F to 310°F today | 6H. MAX HT TM 1:17 |
| Lowest “peak rate” for today's heat-ups | 6I. MIN RATE 0.82 |
| Maximum voltage today (when fryer on) | 6J. MAX VOLT 99% |
| Minimum voltage today (when fryer on) | 6K. MIN VOLT 95% |
| No. of “low voltage” warnings generated | 6L. LO VOLT'S 0 |
| Maximum amp draw today | 6M. MAX AMPS 35 |
| Minimum amp draw today | 6N. MIN AMPS 33 |
| Number of “low amps” warnings today | 6O. LO AMP'S 0 |
| Non-cooking time (hh:mm) fryer was on | 6P. IDLE HRS 1:23 |
| Oil Wear accumulated so far today | 6Q. OIL WEAR 3 |
| Total number of Cook Cycles today | 6R. TOT CK'S 11 |
| Number of cycles started before Ready | 6S. NOT RDY'S 2 |
| No. cycles quit early, 0:11 or more rem. | 6T. QUIT 11+ 0 |
| No. cycles beeped *DONE *21 sec or more | 6U. DONE 21+ 1 |
| Individual product cook counts | 6V. Px CK CT 2 |
| Individual product “not detected” counts | 6W. Px NO DET 0 |
| Individual product “slow cook” counts | 6X. Px SLO CT 0 |
| Ind. product “frozen or overloaded” | 6Y. Px FRZ/OV 0 |

(During steps 6V through 6Y, press the product buttons (or Manual Prog) to see data on individual product items)

**2-1. INFORMATION MODE
DETAILS (Continued)**


Press  to continue onto PREV-DAY-SUN log.

7. PREV DAY - SUN

Press  to step through the following data. During each step, press  to choose the day of the week, of the past 7 days.

| FUNCTION | DISPLAY EXAMPLE |
|---|---------------------|
| Day this data was recorded for | 7A. DATE APR-8 |
| Time of day last heat-up was completed | 7B. LAST HEAT 8:15P |
| Peak heat-up rate (°F/Sec) - last heat-up | 7C. LAST RATE 0.88 |
| Was that day's last heat-up acceptable? | 7D. LAST OK? YES |
| Heat cap. status (based on last 4 ht-ups) | 7E. HEAT CAP GOOD |
| Number of monitored heat-ups that day | 7F. HEAT-UPS 7 |
| Number of slow heat-ups | 7G. SLOW HT'S 0 |
| Max heat time 270°F to 310°F that day | 7H. MAX HT TM 1:11 |
| Lowest "peak rate" - that day's heat-ups | 7I. MIN RATE 0.67 |
| Max voltage that day (when fryer on) | 7J. MAX VOLT 102% |
| Min voltage that day (when fryer on) | 7K. MIN VOLT 98% |
| No. of "low voltage" warnings generated | 7L. LO VOLT'S 0 |
| Maximum amp draw that day | 7M. MAX AMPS 35 |
| Minimum amp draw that day | 7N. MIN AMPS 34 |
| No. of "low amps" warnings that day | 7O. LO AMP'S 0 |
| Non-cooking time (hh:mm) fryer was on | 7P. IDLE HRS 7:09 |
| Oil wear accumulated that day | 7Q. OIL WEAR 39 |
| Total number of Cook Cycles that day | 7R. TOT CK'S 18 |
| Number of cycles started before ready | 7S. NOT RDY'S 2 |
| No. cycles quit early, (0:11 or more remaining) | 7T. QUIT 11+ 1 |
| No. cycles beeped *DONE* 21 sec or more | 7U. DONE 21+ 3 |
| Individual product cook counts | 7V. Px CK CT 12 |
| Individual product "not detected" counts | 7W. Px NO DET 1 |
| Individual product "slow cook" counts | 7X. Px SLO CT 0 |
| Individual product "frozen or overloaded" | 7Y. Px FRZ/OV 1 |
| | |

(During steps 7V through 7Y, press the product buttons (or Manual Prog) to see data on individual product items.)

Press  to continue onto 7-DAY TOTALS log.


**2-1. INFORMATION MODE
DETAILS (Continued)**

8. 7-DAY TOTALS


Press ▼ to step through the following data:

| FUNCTION | DISPLAY EXAMPLE |
|---|--------------------|
| Oldest day in the “previous days” history | 8A. SINCE APR-5 |
| Number of days with data included in totals | 8B. DAYS CNT 6 |
| Number of monitored heat-ups | 8C. HEAT-UPS 30 |
| Number of slow heat-ups | 8D. SLOW HT’S 1 |
| Max time to heat 270°F to 310°F | 8E. MAX HT TM 3:25 |
| Lowest “peak rate” of all heat-ups | 8F. MIN RATE 0.47 |
| Maximum voltage | 8G. MAX VOLT 102% |
| Minimum voltage | 8H. MIN VOLT 91% |
| No. of “low voltage” warnings generated | 8I. LO VOLT’S 0 |
| Maximum amp draw | 8J. MAX AMPS 35 |
| Minimum amp draw | 8K. MIN AMPS 32 |
| Number of “low amps” warnings | 8L. LO AMP’S 0 |
| Non-cooking time (hrs) while fryer was on | 8M. IDLE HRS 43 |
| Total oil wear accumulated | 8N. TOT WEAR 278 |
| Total number of Cook Cycles | 8O. TOT CK’S 125 |
| Number of cycles started before ready | 8P. NOT RDY’S 7 |
| No. cycles quit early, (0:11 or more remaining) | 8Q. QUIT 11+ 1 |
| No. cycles beeped *DONE* 21 sec or more | 8R. DONE 21+ 3 |
| Individual product cook counts | 8S. Px CK CT 77 |
| Individual product “not detected” counts | 8T. Px NO DET 3 |
| Individual product “slow cook” counts | 8U. Px SLO CT 0 |
| Individual product “frozen or overloaded” | 8V. Px FRZ/OV 1 |

(During steps 8S through 8V, press the product buttons (or Manual Prog) to see data on individual product items.)


Press  **PROG** to continue onto OIL DATA log.

**2-1. INFORMATION MODE
DETAILS (Continued)**

9. OIL DATA (current batch; resets by Clean-Out Mode)
Press  to step through the following data:

| FUNCTION | DISPLAY EXAMPLE |
|---|--------------------|
| The day current batch of oil was started | 9A. SINCE APR-1 |
| No. of days with data included in totals | 9B. DAYS CNT 10 |
| Number of monitored heat-ups | 9C. HEAT-UPS 75 |
| Number of slow heat-ups | 9D. SLOW HT'S 2 |
| Max time to heat 270°F to 310°F | 9E. MAX HT TM 3:25 |
| Lowest "peak rate" of all heat-ups | 9F. MIN RATE 0.43 |
| Maximum voltage | 9G. MAX VOLT 102% |
| Minimum voltage | 9H. MIN VOLT 91% |
| No. of "low voltage" warnings generated | 9I. LO VOLT'S 0 |
| Maximum amp draw | 9J. MAX AMPS 35 |
| Minimum amp draw | 9K. MIN AMPS 32 |
| No. of "low amps" warnings | 9L. LO AMP'S 0 |
| Non-cooking time (hrs) while fryer was on | 9M. IDLE HRS 43 |
| Total oil wear accumulated | 9N. TOT WEAR 278 |
| Total number of Cook Cycles | 9O. TOT CK'S 125 |
| Number of cycles started before ready | 9P. NOT RDY'S 7 |
| No. cycles quit early, (0:11 or more remaining) | 9Q. QUIT 11+ 1 |
| No. cycles beeped *DONE* 21 sec or more | 9R. DONE 21+ 3 |
| Individual product cook counts | 9S. Px CK CT 77 |
| Individual product "not detected" counts | 9T. Px NO DET 3 |
| Individual product "slow cook" counts | 9U. Px SLO CT 0 |
| Individual product "frozen or overloaded" | 9V. Px FRZ/OV 1 |

(During steps 9S through 9V, press the product buttons (or Manual Prog) to see data on individual product items.)

Press  to continue onto PREV OIL DATA log.
PROG

**2-1. INFORMATION MODE
DETAILS (Continued)**

10. PREV OIL DATA (moved here from Oil Data log;
assumes new shortening)

Press **▽** to step through the following data:

| FUNCTION | DISPLAY EXAMPLE |
|---|------------------------|
| The day previous batch of oil was started | 10A. BEGAN MAR-9 |
| No. of days with data included in totals | 10B. DAYS CNT 18 |
| Number of monitored heat-ups | 10C. HEAT-UPS 98 |
| Number of slow heat-ups | 10D. SLOW HT'S 0 |
| Max time to heat 270°F to 310°F | 10E. MAX HT TM 1:31 |
| Lowest "peak rate" of all heat-ups | 10F. MIN RATE 0.57 |
| Maximum voltage | 10G. MAX VOLT 101% |
| Minimum voltage | 10H. MIN VOLT 96% |
| Number of "low voltage" warnings generated | 10I. LO VOLT'S 0 |
| Maximum amp draw | 10J. MAX AMPS 35 |
| Minimum amp draw | 10K. MIN AMPS 33 |
| Number of "low amps" warnings | 10L. LO AMP'S 0 |
| Non-cooking time (hours) while fryer was on | 10M. IDLE HRS 62 |
| Total oil wear accumulated | 10N. TOT WEAR 1523 |
| Total number of Cook Cycles | 10O. TOT CK'S 653 |
| Number of cycles started before Ready | 10P. NOT RDY'S 25 |
| Num. cycles quit early, with 0:11 or more rem | 10Q. QUIT 11+ 3 |
| Num. cycles beeped *DONE* 21 sec or more | 10R. DONE 21+ 13 |
| Individual product cook counts | 10S. Px CK CT 466 |
| Individual product "not detected" counts | 10T. Px NO DET 31 |
| Individual product "slow cook" counts | 10U. Px SLO CT 0 |
| Individual product "frozen or overloaded" | 10V. Px FRZ/OV 5 |

(During steps 10S through 10V, press the product buttons (or Manual Prog) to see data on individual product items.)



Press **PROG** to continue onto INP A_VHDSF_M check.


2-1. INFORMATION MODE DETAILS (Continued)

11. INP A_VHDSF_M

This mode displays the status of components and inputs. If the input signal is detected, an identifying letter is displayed (see below). If the signal is not detected, “_” is displayed.


With the POWER switch turned to ON, and all inputs detected, “H_P_A_VHDSF_M” shows in the display. See below for “definition” of codes.

- A = POWER Switch turned to ON
- V = Volts - 24 VAC detected
- H = High Limit - If “H” is present, the high limit is good; if “H” is missing, the high limit is tripped (overheated) or faulty
- D = DRAIN SWITCH - If “D” is present, the drain handle is closed; if “D” is missing, the drain is open or faulty
- S = POWER switch “on” interlock circuit: if “S” is present, the POWER switch is in the ON position; if the “S” is missing, the POWER switch is either off, failed, or wired incorrectly
- F = FAN
- M = MV - Detects 24 V jumper to MV terminal

Press  to view the specific status of each input. 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 V, H, D, S, F, and M signals below are wired in series. The first signal missing out of this sequence will generally cause all signals to the right of it to be missing as well.

Press  to continue onto OUTP H* check.4
PROG


2-1. INFORMATION MODE DETAILS (Continued)

12. OUTPUT*

This mode displays the status of components and outputs. If the output signal is detected, an identifying letter is displayed (see below), followed by an “*”. If the output is off, “_” is displayed.

H = Heat output

If heat is on, “H*” shows in display. If heat is off, “H_” shows in display. If controls senses a problem with the heat output, “H*” shows in display, with the “*” flashing.


Press  to view the “amps” status of output.

“H√” in the display means the amps are good. A flashing “X” behind the H means a problem exists.

Press  to view the No Connect/Ground (“NC/GD”) status of the output. This monitors a possible problem with the relays on the output PC board.

“H√” in the display means everything on the output PC board is good. A flashing “X” behind the H means a problem exists.

Press  to view the outputs and inputs (see step 10) together.

Press  to continue onto the POT TMP reading.

PROG

13. POT TMP

This step shows the present shortening temperature. The display shows “13. POT TMP (temp.)”.

Press  to continue onto the CPU TMP reading.

PROG

14. CPU TMP

This step shows the present PC board temperature.


Press  to continue onto the ANALOG reading.

PROG


2-1. INFORMATION MODE DETAILS (Continued)

15. ANALOG <1> 2344

This step displays the present status of any channel of the controller's a to d converter. This feature may be useful to a technician troubleshooting the fryer or controller.


The displayed value can be toggled between volts and bits by pressing  . If the displayed value has a decimal point,

it is voltage (0 to 5 VDC). If no decimal point is shown, the value is a-to-d bits (0 - 4095).

Press  to continue onto AC VOLTS reading.

16. AC VOLTS 98%

This item displays the present status of the line voltage supply to the fryer. The displayed value is averaged over a 10-second period, so brief dips or fluctuations in the voltage might not show up in this display.

The voltage is normally displayed as a “percent of nominal” value, where 100% would indicate that voltage is right on the nominal value (i.e. 208 volts for a 208v fryer). The display can be toggled to an actual voltage value by pressing  .

Press  to continue onto AMPS reading.


17. AMPS 33 33 33

For electric fryers, this display shows the present readings from the fryer's amps sensors, which monitor the electrical current supplied to the heaters.

On open fryers, these values indicate the current through each individual heater coil. On 208 or 240 volt units, this value should be close to the value on the data plate. On 480 volt fryers, this value should be the value on the data plate multiplied by 1.76.

The “amps” values should normally cycle on and off with the HEAT ON light, and all three values should be about the same.

NOTICE

Press and hold  to exit Information Mode at any time, or after 2 minutes, controls automatically exit back to normal operation.

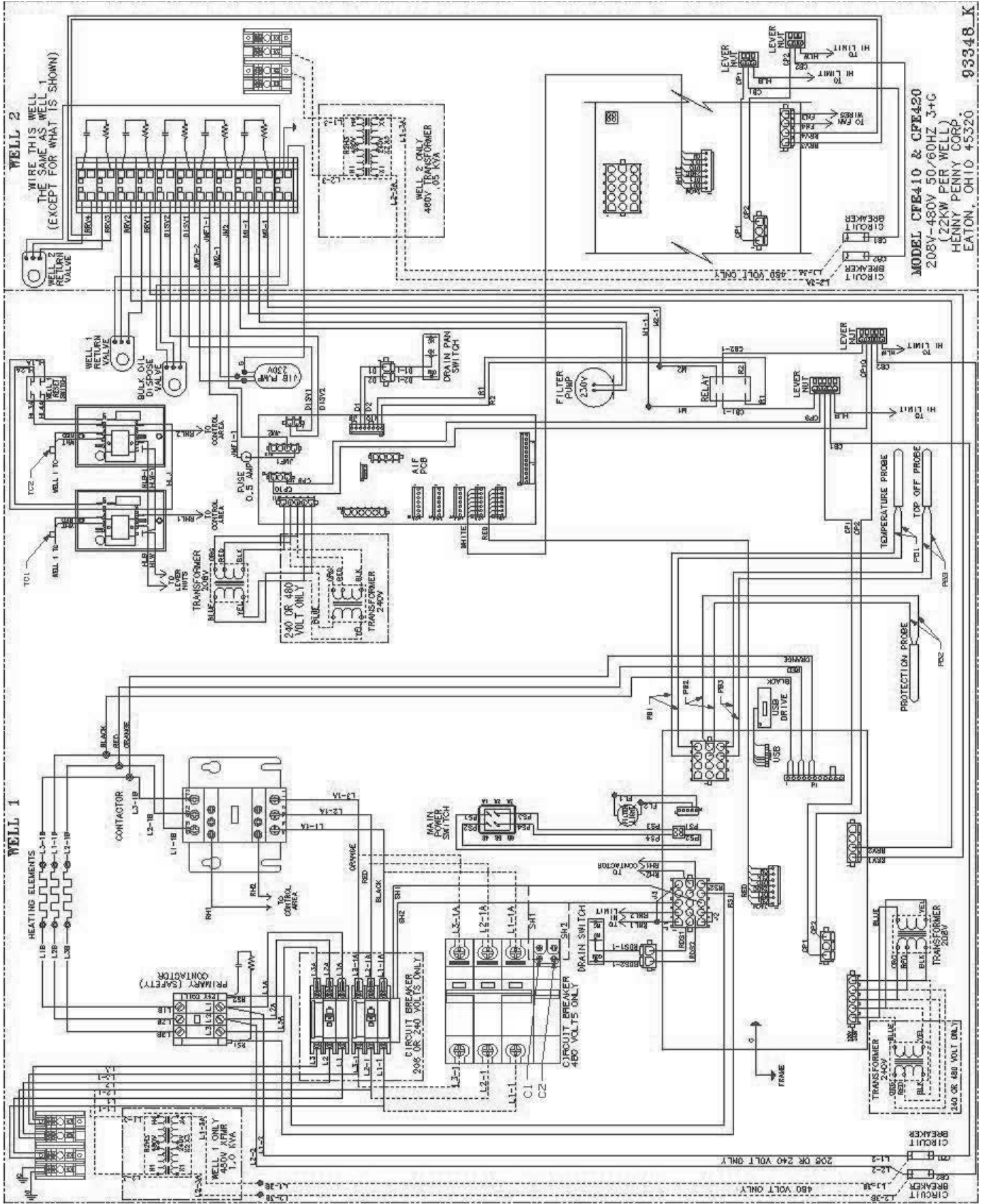
WIRING LEGEND

The legend below helps in identifying the components of the wiring diagrams on the following wiring diagrams.

| LEGEND | |
|--------|---------------|
| ABBREV | DEFINITION |
| CM | COMMON |
| CP | CONTROL POWER |
| D | DRAIN PAN |
| FB | FILTER BOARD |
| FL | FILTER LIGHT |
| FN | FAN |
| GND | GROUND |
| GV | GAS VALVE |
| HL | HIGH LIMIT |
| J | JUMPER |
| JL | JIB LOW LIGHT |
| JM | JIB MOTOR |
| JV | JIB VALVE |

| LEGEND | |
|--------|---------------------|
| ABBREV | DEFINITION |
| L1 | LINE VOLTAGE |
| LDV | LEFT DRAIN VALVE |
| LDS | LEFT DRAIN SWITCH |
| LRV | LEFT RETURN VALVE |
| LW | LONWORKS |
| M | MOTOR |
| MLT1 | MELTER LINE VOLTAGE |
| MLTN | MELTER NEUTRAL |
| MV | MAIN VALVE |
| N | NEUTRAL |
| PB | PROBE |
| PJ | POWER JUMPER |
| PS | POWER SWITCH |

| LEGEND | |
|--------|---------------------|
| ABBREV | DEFINITION |
| PV | PILOT VALVE |
| R | RELAY |
| RDV | RIGHT DRAIN VALVE |
| RDS | RIGHT DRAIN SWITCH |
| RRV | RIGHT RETURN VALVE |
| RTIC | RTI CABLE |
| RTIK | RTI KEY |
| SEN | SENSOR, FLAME |
| SFTY | SAFETY VALVE |
| TH | IGNITION MODULE TH |
| TR | TRANSFORMER |
| VS | VACUUM SWITCH |
| - | EXT. OF SAME SIGNAL |



SECTION 3. MAINTENANCE

3-1. INTRODUCTION

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

3-2. MAINTENANCE HINTS

1. You may need to use a multimeter to check the 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 the circuit being open, the multimeter will read infinity.

3-3. COMPLETE CONTROL PANEL REPLACEMENT

Should the control board become inoperative, follow these instructions for replacing the board.



Figure 1

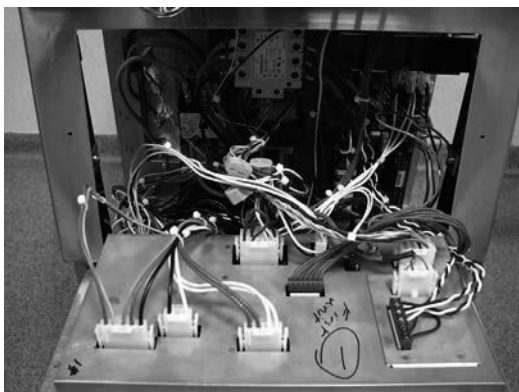


Figure 2

1. Remove electrical power supplied to the unit.



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 two screws (circled in Figure 1) securing the control panel and lift out.
3. Unplug the wire connectors going to the control board.
4. Install new control panel in reverse order.

CAUTION

When plugging connectors onto new control panel, be sure the connectors are inserted onto all of the pins, and that the connectors are not forced onto the pins backwards. If not connected properly, damage to the board could result.

3-4. QUICK FILTER





Figure 1



Figure 2




Figure 3


1. During normal operation and after 36 cook cycles, the Filter Light illuminates on the front of the fryer (Figure 1), and “FILTER LOCKOUT”/”YOU *MUST* FILTER NOW”, shows in the display. The control refuses further cook cycles until the vat is filtered.
2. **Check Filter Pan:** If the filter drain pan or cover is not in place, the display shows “CHK PAN”. Make sure that the filter pipe is tightly connected, and that the filter drain pan is as far back under fryer as it will go and the filter pan cover is in place.
3. Press  button and display shows *SKIM VAT* followed by “CONFIRM” “YES NO”. Skim vat, press  and display shows “OPEN DRAIN”. Pull drain knob (Figure 2) out, display shows “DRAINING” and oil drains from the vat.




To avoid overfilling the drain pan, drain only 1 vat at a time. The drain pan holds 1 vat of oil. Overfilling the drain pan may cause slippery floors, which may result in personal injury.


NOTICE

If filtering is NOT desired, turn off power switch and the display shows “STOPPED” followed by “CONTINUE FILTER” “YES NO”. Press  button, display shows



“QUIT FILTER” “YES NO”, press  button; SmartFilter is cancelled, the blue light goes out, and controls return to normal operation. Controls will suggest filtering after several more cook cycles.


If the drain is clogged, the display shows “VAT EMTY”, followed by “YES NO”. Use straight white brush to clear drain, press the  button, and display shows

“DRAINING”. Controls will proceed with filtering process.

4. At end of drain cycle, “VAT EMTY” followed by “YES NO” is displayed. Visually check vat is empty and press  button, “WASHING” is displayed. Once filter process is complete, display shows “CLOSE DRAIN”. Push-in on drain knob to close drain (Figure 3). Display shows “FILLING” and vat re-fills with oil.


3-4. QUICK FILTER
(CONTINUED)

5. Once vat is filled, display shows “IS POT FILLED?” “YES NO”. Make sure vat is full and then press  button and the control returns to normal operation.
6. If the oil has not pumped back to the proper level in the vat during the Quick Filter process, press  button and pump runs for another 30 seconds.

Then the display shows “IS POT FILLED?” “YES NO”. Make sure vat is full, press  button and the control returns to normal operation.


You can try to fill the vat 3 times.

Filter Error

8. After trying to fill the vat 3 times without success, the display shows “*CHANGE* *FILTER* *PAD* CLOGGED?”. Press  button and controls turn OFF.

Change filter envelope following procedures in Changing the Filter Envelope Section.

If filter envelope is not changed, the “CHANGE FILTER PAD?” reminder will display every 4 minutes until envelope is changed.

9. During the next Quick Filter with a new filter envelope, if the vat is not filled after 3 tries, the display shows “FILTER SERVICE REQUIRED-SEE TROUBLE-SHOOTING GUIDE” followed by “YES”. Press  button and controls turn unit OFF.

NOTICE

To help ensure vat fills completely, clean the filter pan at least once a day, change the filter envelope at least once a day, and make sure oil reservoir is full and that “O” rings on the filter pan are in good condition. If your store operates 24 hours a day, clean the filter pan and change the filter envelope twice a day.

3-5. DAILY FILTERING

This filtering procedure allows for a more thorough cleaning of the vat and should be done once a day. The vat can be filtered during any non-frying times.



To avoid burns from hot oil, use approved safety equipment including, apron, face shield and gloves before starting filtering procedure.

Also, to avoid overfilling the drain pan, drain only 1 vat at a time. The drain pan holds 1 full vat of oil. Overfilling the drain pan may cause slippery floors, which may result in personal injury.



Figure 1

1. **Check Filter Pan:** A new filter envelope should be used on the first filter of each day, but the same filter envelope can be used the rest of the day.

Make sure that filter pan cover is in place, filter drain tube is secured, and filter drain pan is pushed into place. If filter drain pan and cover are not latched into place, the display shows "CHK PAN".

2. Press and hold **F** until display shows "1.EXPRESS FILTER?"
3. Press **▽** button and display shows "2.DAILY FILTER?"
4. Press **1** button and display shows "CONFIRM", followed by "YES NO".
5. Press **1** button for YES; display shows "OPEN DRAIN". Pull-out on the drain knob (Figure 1), the display shows "DRAINING" and the oil drains from the vat, **or** press **3** button and controls return to normal operation.
6. Once oil has drained from vat, remove basket support from vat. Figure 2.



Figure 2



Use protective cloth or gloves when lifting the basket support. Support may be hot and burns could result.

3-5. DAILY FILTERING
(CONTINUED)



Figure 3



Figure 4

8. Scrape or brush the sides and the bottom of the vat. Be careful not to damage the sensing probes.

CAUTION


Do not use steel wool, other abrasive cleaners or cleaners/sanitizers containing chlorine, bromine, iodine or ammonia chemicals, as these will deteriorate the stainless steel material and shorten the life of the unit.

Do not use a water jet (pressure sprayer) to clean the unit, or component damage could result.


9. Once the vat is clean and the display shows “SCRUB VAT COMPLETE?” “YES NO”. Press button and the display shows “WASH VAT” “YES NO”.
10. Press button, display shows “WASHING” and oil circulates through vat for several minutes. When wash cycle is complete, display shows “WASH AGAIN?” “YES NO”.
11. Press button if another wash is needed, otherwise press button and the display shows “CLOSE DRAIN”. Push-in on drain knob to close drain (Figure 3), the display shows “RINSING” and vat fills with oil.
12. Once the vat is filled, “OPEN DRAIN” shows in display. Pull-out on drain knob to open the drain (Figure 4) and display shows “RINSING”. When rinsing is complete, display shows “RINSE AGAIN?” “YES NO”.
13. Press button if another rinse is needed, otherwise press button. Display shows “POLISH?” “YES”.
14. Press button for YES and oil is “polished” by circulating it through the filtering system. The display shows “5:00 NO=STOP”. If desired, press button to stop the polishing, otherwise the oil is polished for 5 minutes.
15. Once the oil is polished, the display shows “FILL VAT?” “YES”. Press button and display shows “CLOSE DRAIN”. Push-in on drain knob to close drain (Figure 3), display shows “FILLING” and vat then re-fills with oil.



3-5. DAILY FILTERING
(CONTINUED)

16. Once full, display shows “IS POT FILLED?” “YES NO”.

Press  button; fryer returns to normal operation.

If  button is pressed, display shows “FILLING”. You can try to fill vat 4 times and then control shows “ADD QUIT”.

Press left  button and JIB pump runs 60 seconds, filling vat

from oil reservoir. When vat is full, press right  button and display shows “IS POT FILLED? “YES NO”. Press  button and fryer returns to normal operation.

3-6. FILTER MENU

Along with Express Filter and Daily Filter, here is a listing of all the Filter Menu items available.

Press and hold  button;

1.EXPRESS FILTER

2.DAILY FILTER

3.DISPOSE

4.DRAIN TO PAN

5.FILL FROM PAN

6.FILL FROM JIB (oil reservoir)

7.EXIT

**3-7. CHECK/REPLACE FILTER
DRAIN PAN O-RINGS**



Figure 1



Figure 2



Figure 3

To prevent oil leaking, and to keep filtering process operating properly, the filter drain pan o-rings should be inspected for nicks and tears at least every 3 months. Figure 1

1. Open the door, push down on the drain pan stop and pull out the drain pan assembly, using the handle on the drain pan. Figures 2 & 3.



This pan could be hot! Use protective cloth or glove, or severe burns could result.

2. Visually check the 3 o-rings on the tube of the filter drain pan for any cracks or breaks and replace if necessary.
3. To replace o-ring, use a small, flat-bladed screwdriver, pry up on o-ring and pull off of end of tube. Roll new o-ring into notch on tube. Lubricate o-rings on filter tube with fresh, cold oil & push filter drain pan into position. Figure 4

3-8. POWER SWITCH



1. Remove electrical power supplied to fryer.

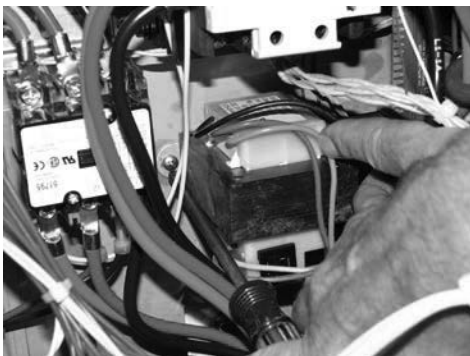


To avoid electrical shock or property damage, move the POWER switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

2. Remove control panel.
3. Label and remove the wires from the switch. With test instrument, check across the terminals of the switch with the switch in the ON position, then in the OFF position. With the switch in the ON position, the circuit should be closed. With the switch in the OFF position, the circuit should be open. If the switch checks defective, replace by continuing with this procedure.
4. With control panel removed, and the wires off the switch, push in on tabs on the switch to remove from panel.
5. Replace with new switch, and reconnect wires to switch.
6. Replace control panel

The transformer reduces voltage down to accommodate those components with low voltage.

3-9. AIF TRANSFORMER



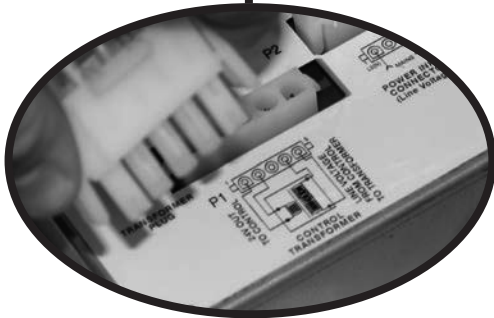
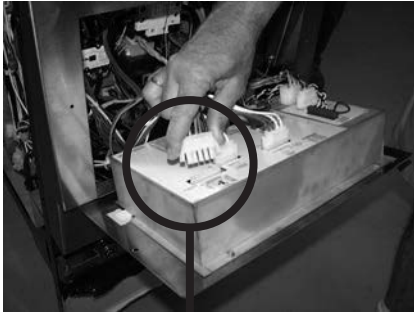
1. Remove electrical power supplied to fryer.



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 control panel as discussed in Complete Control Panel Replacement Section.
3. Squeeze on the wire connector at the AIF board assembly to disconnect the wires from the transformer.
4. Using a Phillips head screwdriver, remove the two screws securing the transformer.
5. Install the new transformer in reverse order.

3-10. CONTROL BOARD TRANSFORMER

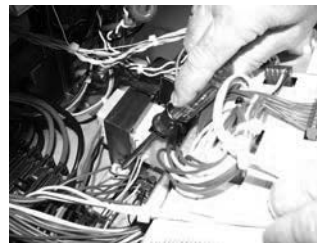


1. Remove electrical power supplied to fryer.



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. Open the control panel and locate the “CONTROL TRANSFORMER” connectors and disconnect from the control board.
3. Using a phillips head screwdriver, remove the 2 screws securing the transformer.
4. Install the new transformer in reverse order.



3-11. CIRCUIT BREAKERS



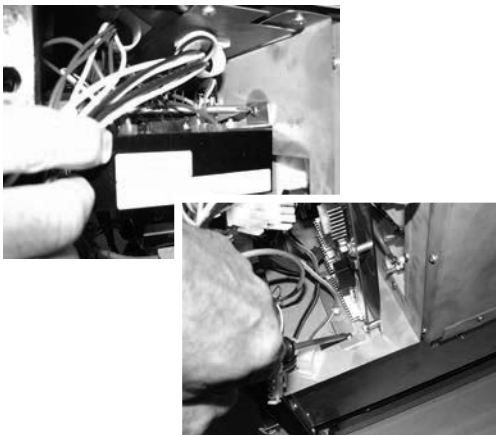
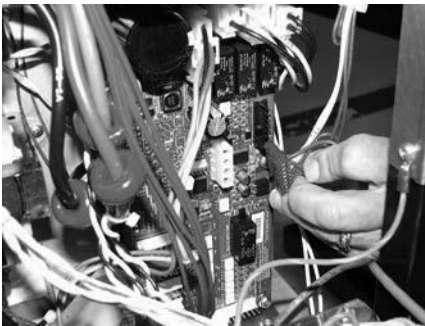
1. Remove electrical power supplied to fryer.



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 control panel as discussed in Complete Control Panel Replacement Section.
3. Label and remove wires from the old circuit breaker.
4. Loosen the nut securing the breaker from underneath with a 9/16 in. wrench and then pull the old breaker from the control panel area.
5. Install new circuit breaker in reverse order.

3-12. AIF BOARD
(SINGLE WELL)



1. Remove electrical power supplied to fryer.



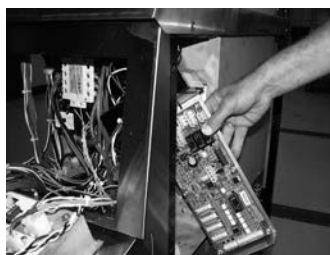
To avoid electrical shock or property damage, move the **POWER** switch to **OFF** and disconnect main circuit breaker, or unplug cord at wall receptacle.

2. Remove the control panel as discussed in Complete Control Panel Replacement Section.
3. Remove the right side panel by removing the 4 self drilling screws circled in top figure.
4. Label and disconnect the connectors leading to the AIF board.
5. Release the wires from the wire clip located on the shroud and move wires aside for clearance when removing the AIF board.
6. Using a phillips head screwdriver, remove the top screw securing the AIF bracket to the shroud.
7. Using a phillips head screwdriver, remove the bottom screw securing the AIF bracket.
8. Slid the AIF bracket with the AIF board still attached out of the side of the unit.
9. Using a nutdriver, remove all the nuts securing the AIF board to the bracket and set aside.

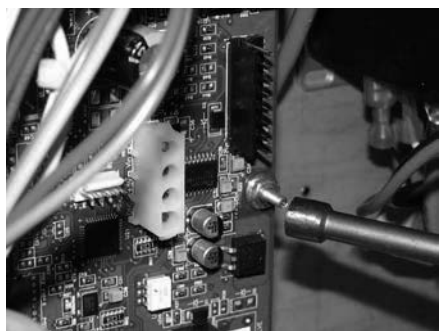
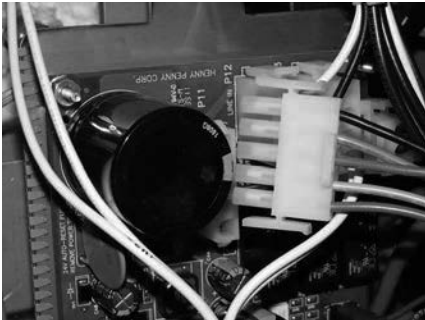
NOTICE

When removing and installing the AIF board, be sure the spacers are placed between the AIF board and bracket.

10. Install the new AIF board in reverse order.



**3-12. AIF BOARD
(DOUBLE WELL)**



1. Remove electrical power supplied to 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.

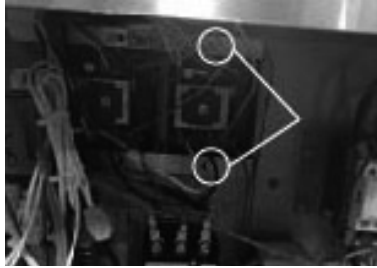
2. Remove the control panel as discussed in Complete Control Panel Replacement Section.
3. Remove the right side panel by removing the 4 self drilling screws circled in top figure.
4. Label and disconnect the connectors leading to the AIF board.
5. Release the wires from the wire clip located on the shroud and move wires aside for clearance when removing the AIF board.
6. Using a phillips head screwdriver, remove the top screw securing the AIF bracket to the shroud.
7. Using a phillips head screwdriver, remove the bottom screw securing the AIF bracket.
8. Slid the AIF bracket with the AIF board still attached out of the side of the unit.
9. Using a nutdriver, remove all the nuts securing the AIF board to the bracket and set aside.

NOTICE

When removing and installing the AIF board, be sure the spacers are placed between the AIF board and bracket.

10. Install the new AIF board in reverse order.

**3-13. HIGH LIMIT
MODULE**



1. Remove electrical power supplied to fryer.



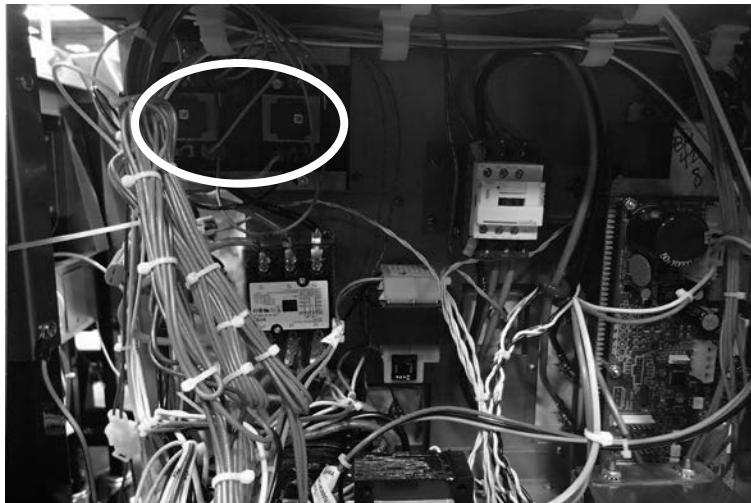
To avoid electrical shock or property damage, move the **POWER** switch to **OFF** and disconnect main circuit breaker, or unplug cord at wall receptacle.

2. Using a phillips screwdriver remove the screws from the control board and lower the the control board.
3. Using a 5/16 in. socket/ wrench, remove the nuts securing the modules to the top of the bracket. Set the nuts and the metal strips off to the side.
4. Locate the faulty module box and label the wires. Disconnect the wires.

NOTICE

Located on the side of the module box are the locations of each wire connector.

5. Slide the old module off of the studs. Install the new module in reverse order.



**3-14. HEATING ELEMENT
REPALCEMENT**

NOTICE

Heating elements are available for 208, 240, and 480 volts. Check data plate to determine correct voltage.

Checkout:

If the shortenings temperature recovery is very slow or at a slower rate than required, this may indicate defective heating element(s). An ohmmeter will quickly indicate if the elements are shorted or open.

1. Remove electrical power supplied to the frypot to be worked on.



Move the POWER switch to OFF and disconnect main circuit breaker or unplug cord at wall receptacle. Failure to do so may result in electrical shock or property damage

2. Remove control panel.
3. Disconnect the wires from the element and perform an ohms check on one element at a time. If the resistance is not within tolerance replace the element (refer to the table below).

| Voltage | Wattage | Resistance (cold) |
|----------------|----------------|--------------------------|
| 208 | 7333 | 5.6 Ohms |
| 240 | 7333 | 7.5 Ohms |
| 480 | 7333 | 31.4 Ohms |

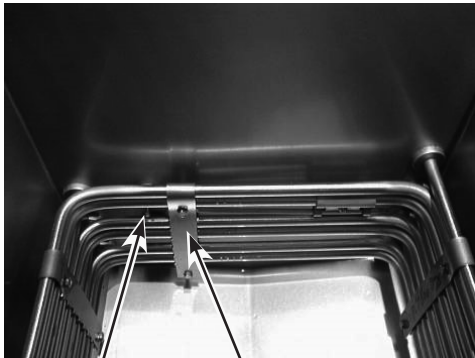
Replacement:

1. Drain the shortening from the vat.
2. Remove the high limit bulb holder from the heating element inside the frypot.
3. Remove the heating element wires from the terminals by removing the nuts and washers. Label each so it can be replaced on the new element in the same position.

4. Remove the bolts from the five element spreaders. The element spreaders will now pull off the elements.
5. Remove the brass nuts and washers which secure the ends of the elements through the frypot wall.
6. Remove the heating elements from the frypot as a group by lifting the far end and sliding them up and out toward the rear of the frypot.

NOTICE

Install new o-rings when installing new heating elements



Temperature Probe Spreader

7. Install new heating elements with the new O-rings terminal end first at approximately a 45° angle slipping the terminals through the front wall of the frypot.
8. Replace the brass nuts and washers on the element terminals, apply 30 foot lbs. of torque when tightening nuts.
9. Evenly space the element spreaders on the sides of the elements and reinstall bolts. Place the fifth spreader in the front of the elements as to protect the temperature probe.
10. Replace the high limit bulb holder on the top element.
11. Position the bulb between the top and second element midway from side to side.
12. Tighten screw that holds the bulb in place.
13. Reconnect the wires to the appropriate terminal as labeled when they were removed.
14. Replace the front control panel.
15. Connect the power cord to the wall receptacle or close wall circuit breaker.

CAUTION

Heating elements should never be energized without shortening in the vat. Failure to have shortening in the vat when energizing the heating elements may result in damage to the heating elements.

16. Replace the shortening in the frypot.

SECTION 4. PARTS INFORMATION

4-1. INTRODUCTION

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

4-2. GENUINE PARTS

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

4-3. 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 | |

4-4. PRICES

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

4-5. 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 Corp. Normally, these will be sent to your distributor within three working days.

4-6. WARRANTY

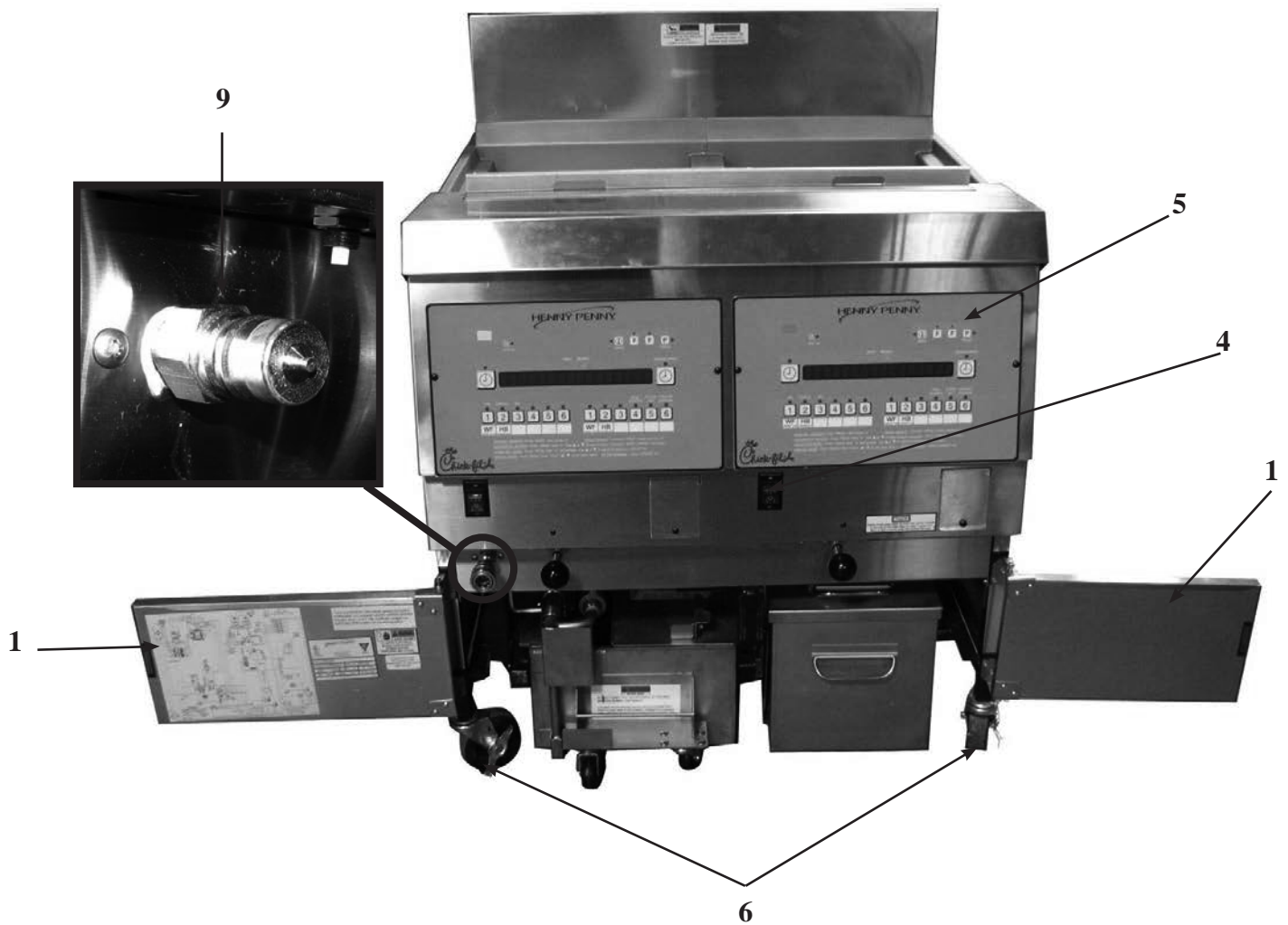
All replacement parts (except lamps and fuses) are warranted for 90 days against manufacturing defects and workmanship. If damage occurs during shipping, notify the carrier at once so that a claim may be properly filed. Refer to warranty in the front of this manual for other rights and limitations.

Recommended replacement parts are indicated with A or B in the parts lists:

A = parts to be stocked on service vans or trucks

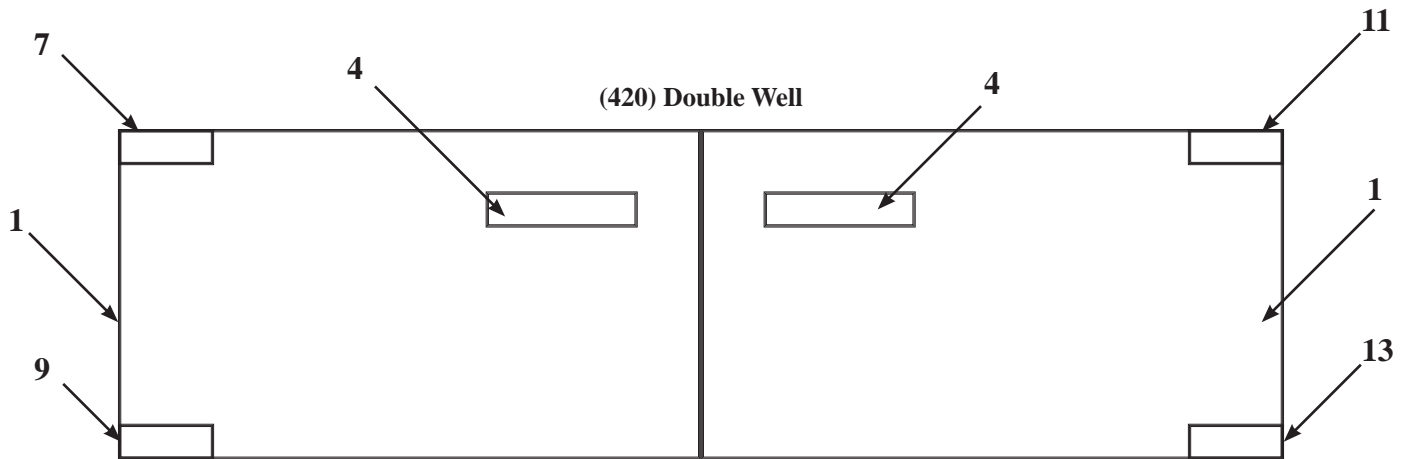
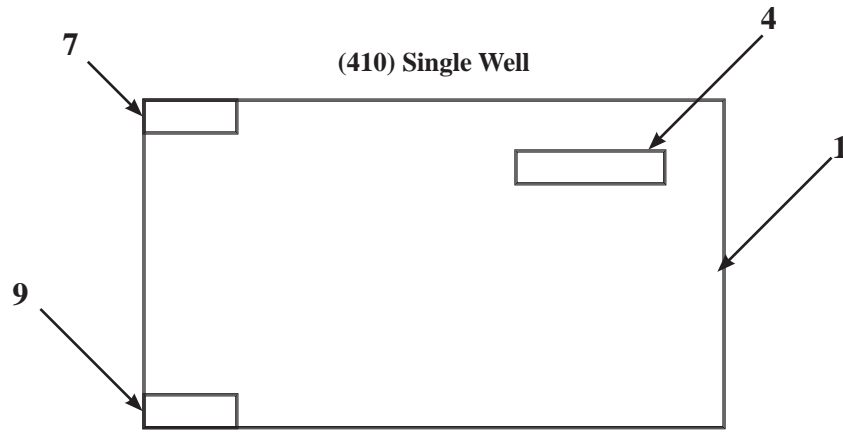
B = parts to be stocked at the distributor/KES location.

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.



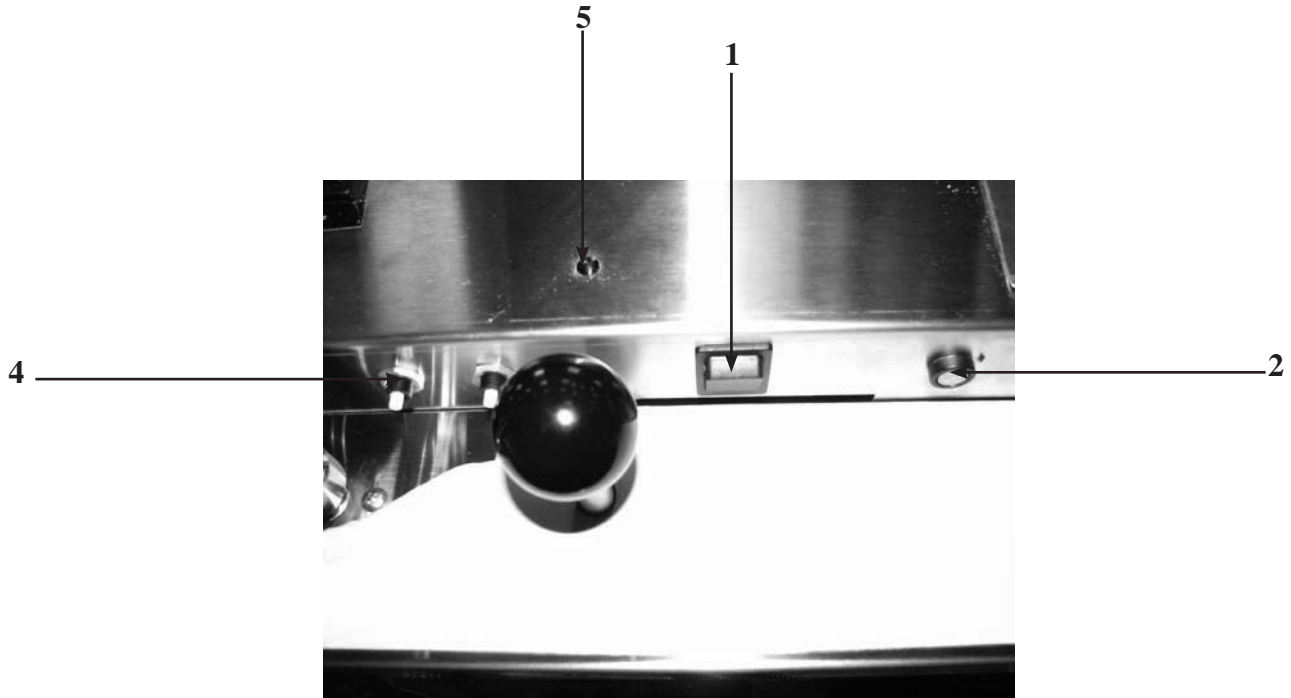
| Item No. | Part No. | Description | 410 | 420 |
|----------------------------|----------|-------------------------------------|-----|-----|
| 1 | 93097 | ASSY-DOOR..... | 1 | - |
| 2 | 94403 | ASSY-LH DOOR..... | - | 1 |
| 3 | 94420 | ASSY-RH DOOR..... | - | 1 |
| (Door breakdown next page) | | | | |
| A 4 | 52224 | COVERED POWER SWITCH..... | 1 | 2 |
| 5 | 140592 | ASSY-PANEL 410/420 EMCON/SHUNT..... | 1 | 2 |
| | 92414 | --DECAL-CFE4XX CONTROL..... | 1 | 2 |
| 6 | 52064 | CASTER 4" SWIVEL W/BRAKE..... | 2 | 2 |
| 7 | 60312 | CASTER 4" SWIVEL W/O BRAKE..... | 2 | 2 |
| --(back of fryer) | | | | |
| 8* | 91924 | WELD ASSY-ONBOARD OIL SHELF..... | - | 1 |
| 9 | 17334 | RINSE HOSE DISCONNECT MALE..... | 1 | 1 |
| 10* | 26873 | ASSY-COVER-FRYPOT-CFA..... | 1 | 2 |
| A 11* | 03719 | USB DRIVE..... | 1 | 1 |

*- Item Not Shown



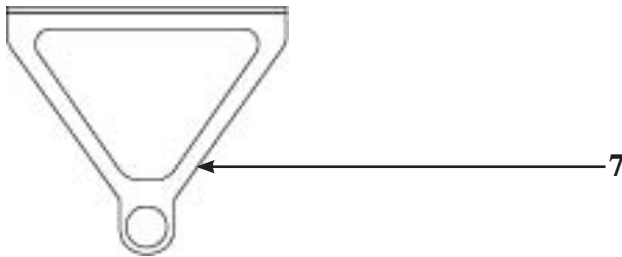
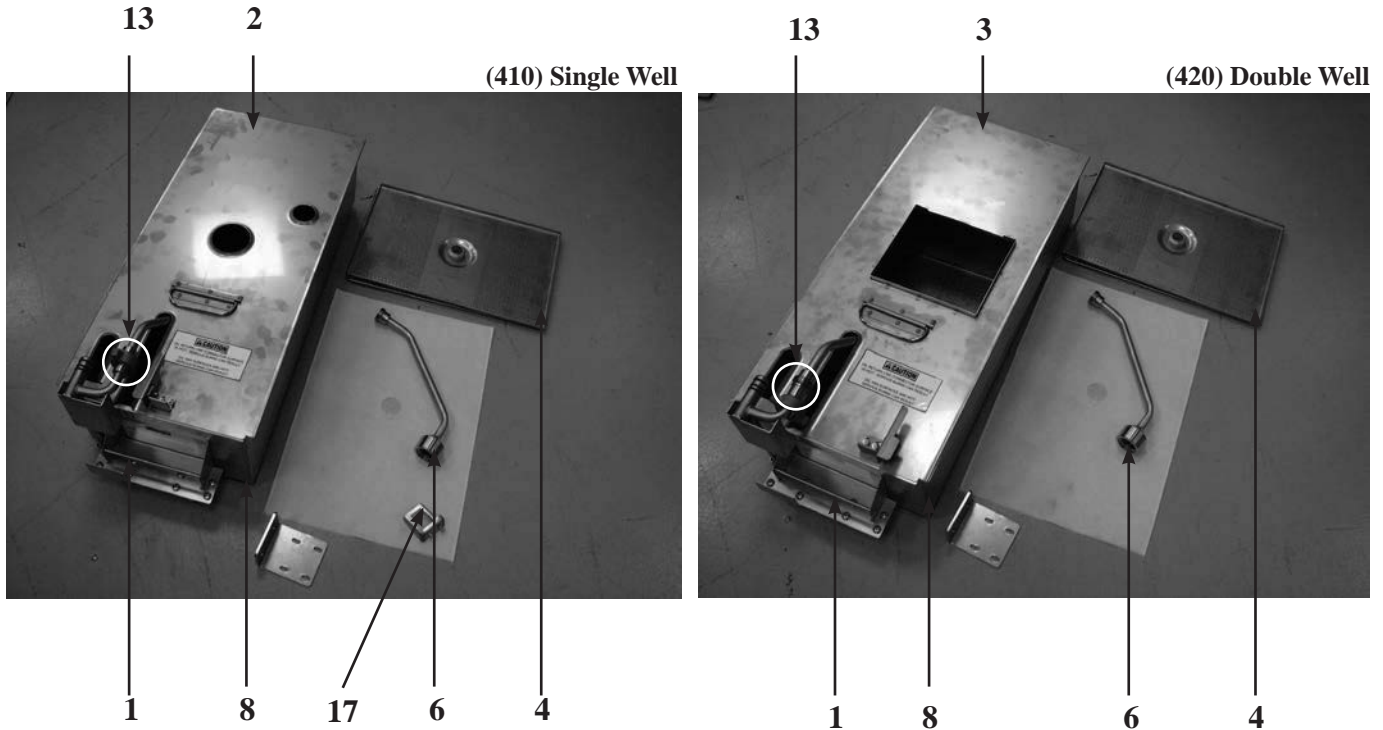
| Item No. | Part No. | Description | 410 | 420 |
|----------|----------|-----------------------------------|-----|-----|
| 1 | 93097 | ASSY-DOOR | 1 | - |
| 2 | 94403 | ASSY-LH DOOR..... | - | 1 |
| 3 | 94420 | ASSY-RH DOOR..... | - | 1 |
| 4 | 41836 | --POCKET PULL..... | 1 | 2 |
| 5 | 17002 | --MAGNET..... | 1 | 2 |
| 6** | 92080 | --HINGE-TOP-LEFT | 1 | 1 |
| 7 | 92342 | --STUD ASSY-TOP HINGE-L.H. | 1 | 1 |
| 8** | 92079 | --HINGE-BOTTOM-LEFT | 1 | 1 |
| 9 | 92340 | --STUD ASSY-BOTTOM HINGE-L.H..... | 1 | 1 |
| 10** | 92620 | --HINGE-TOP-RIGHT | - | 1 |
| 11 | 92618 | --STUD ASSY-TOP HINGE-RH..... | - | 1 |
| 12** | 92621 | --HINGE-BOTTOM-RIGHT | - | 1 |
| 13 | 92619 | --STUD ASSY-BOTTOM HINGE-RH | - | 1 |
| 14* | 39752 | ---DOOR BUSHING | 1 | 2 |
| 15* | SC04-003 | ---SCREW #8-32 X 3/8 PH PHD | 4 | 8 |

*- Item Not Shown/ **-Hinges are attached to Fryer Frame



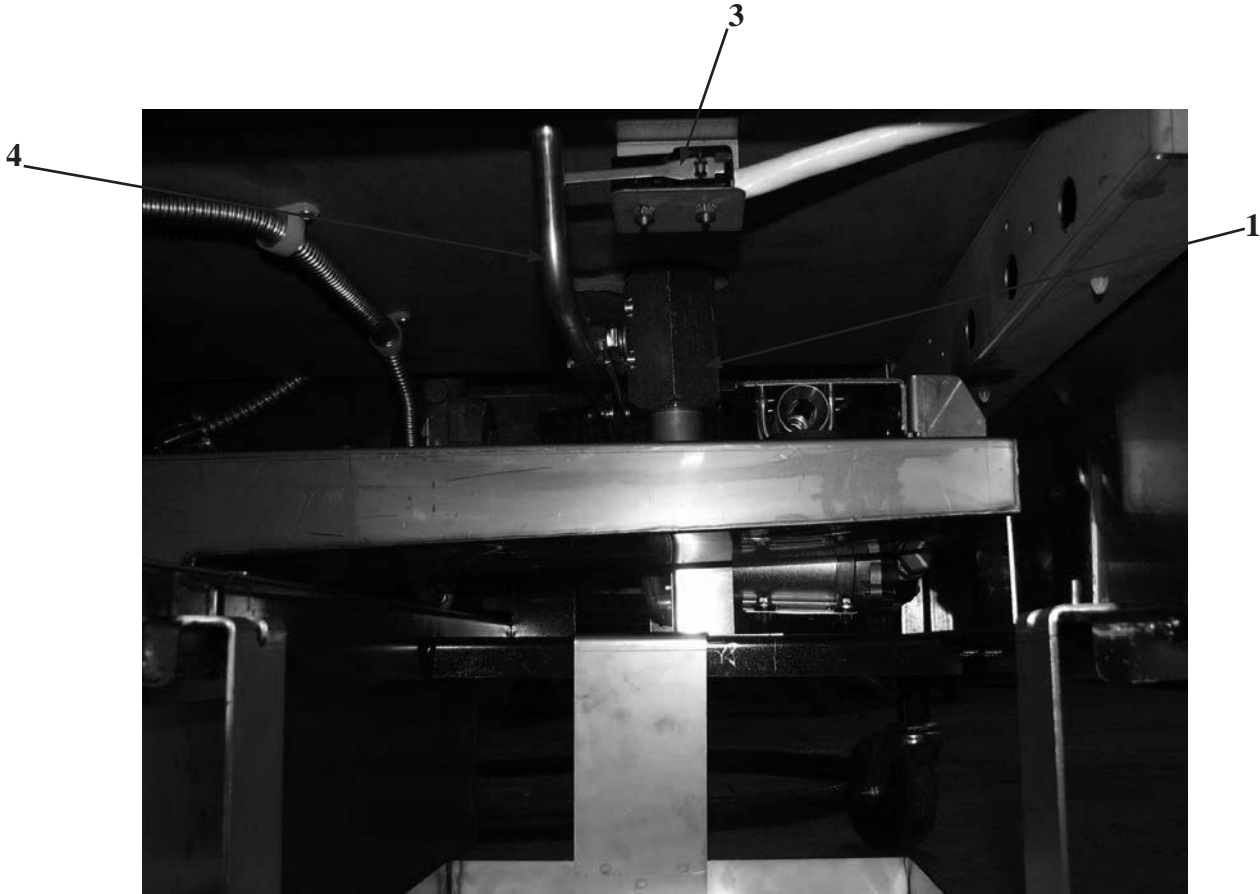
| Item No. | Part No. | Description | 410 | 420 |
|----------|----------|------------------------------------|-----|-----|
| A 1 | 84987 | SWITCH-MOMENTARY SPLASH PROOF..... | 1 | 2 |
| 2 | EF02-104 | FUSE HOLDER - 20A 250V..... | 1 | 2 |
| 3* | FA52-005 | FUSE - 0.5 AMP TIME DELAY | 1 | 2 |
| 4 | EF02-125 | BREAKER-PUSH BUTTON RESET | 2 | 4 |
| 5 | 81980 | LED - 5 mm BLUE..... | 1 | 2 |

*- Item Not Shown



| Item No. | Part No. | Description | 410 | 420 |
|----------|----------|--------------------------------------|-----|-----|
| 1 | 151489 | WELD ASSY-DRAIN PAN CFE4XX..... | 1 | 1 |
| 2 | 96513 | WELD ASSY-DRAIN PAN COVER 410 | 1 | - |
| 3 | 96514 | WELD ASSY-DRAIN PAN COVER 420 | - | 1 |
| 4 | 65211 | CRUMB CATCHER..... | 1 | 1 |
| 5* | 65447 | WELD ASSY-SS WOVEN FILT SCREEN | 1 | 1 |
| 6 | 65208 | NUT-FILTER-FEMALE..... | 1 | 1 |
| 7 | 62116 | BAR- FILTER SEALER..... | 1 | 1 |
| 8 | 151489 | ASSY-DRAIN PAN | 1 | 1 |
| 9* | 19004 | --CASTER-2 IN SWIVEL MTG PLATE | 4 | 4 |
| 10* | SC01-009 | --SCREW 1/4-20 X 1/2..... | 16 | 16 |
| 11* | NS04-005 | --LOCKNUT1/4-20 | 16 | 16 |
| 12* | 69287 | --UNION- MALE FITTING..... | 1 | 1 |
| 13 | 69288 | --UNION- HANDLE FITTING..... | 1 | 1 |
| 14* | 96871 | SVC PACK - O-RINGS..... | A/R | A/R |
| 15* | 86349 | --O-RING -PICK UP TUBE | 3 | 3 |
| 16* | 74189 | --O-RING-JIB | A/R | A/R |
| 17 | 96516 | STUD ASSY-DR PAN LCH BRK 410..... | 1 | - |

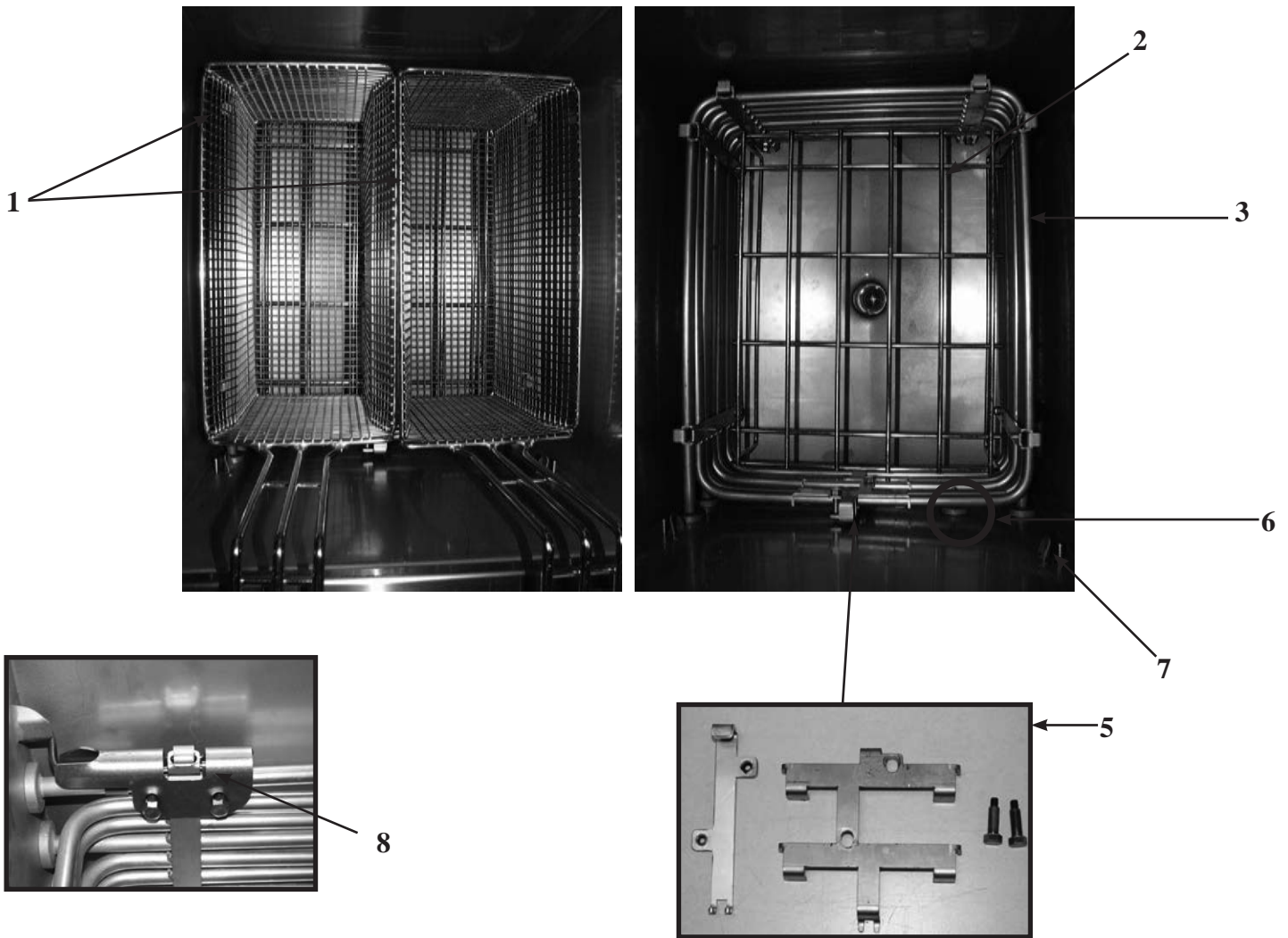
*- Item Not Shown



| Item No. | Part No. | Description | 410 | 420 |
|----------|----------|-------------------------------------|-----|-----|
| 1 | 83732 | VALVE-DRAIN 1-1/2 NPT X 1 NPT..... | 1 | 2 |
| 2* | 84415 | -- O-RING -326 DRAIN VALVE | 2 | 4 |
| 3 | 50764 | MICROSWITCH-RIGID LEVER..... | 1 | 2 |
| 4 | 90759 | WELD ASSY-DRAIN ROD CFE4XX CFA..... | 1 | 2 |

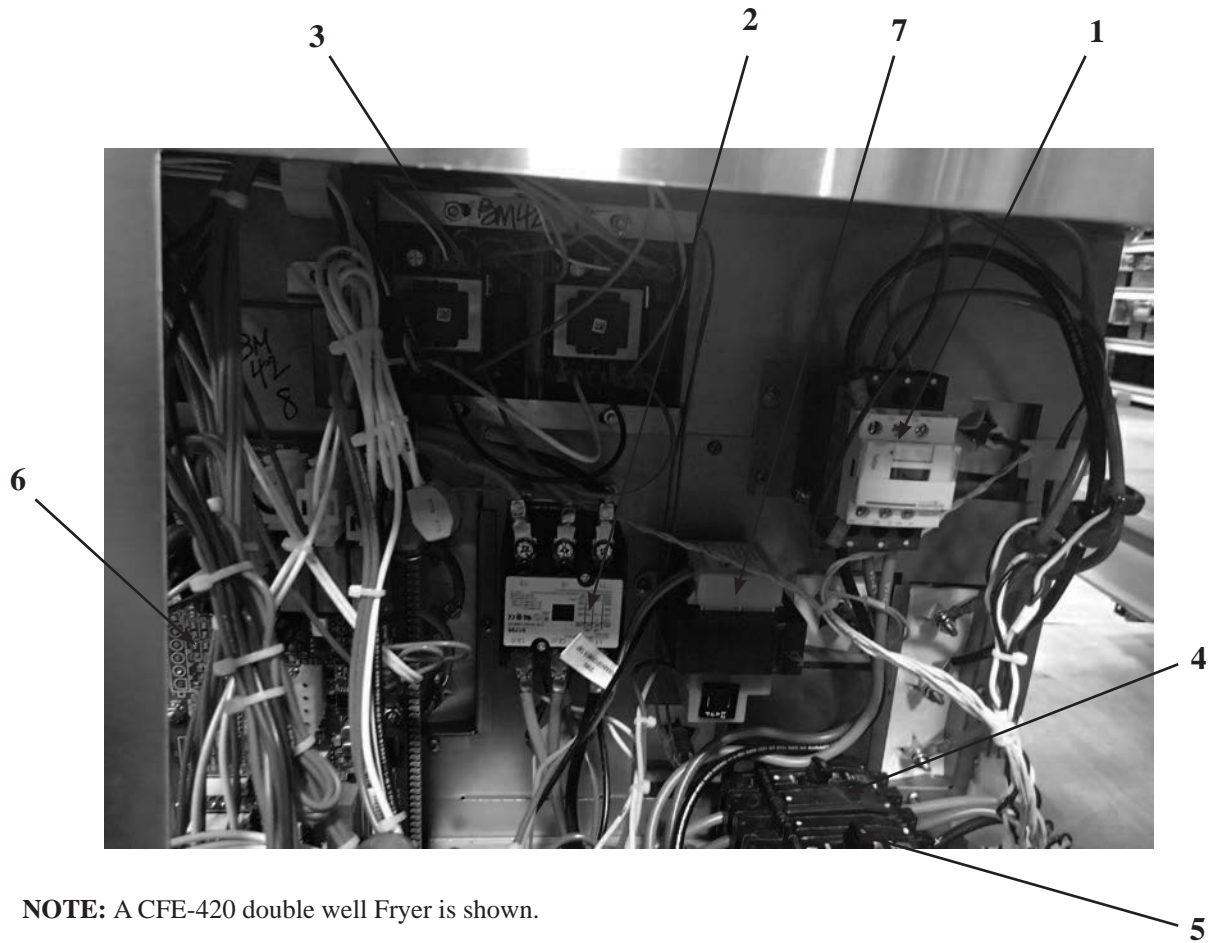
| *SUCTION TUBES | | | |
|----------------|--------|-----|-----|
| Part No. | Length | 410 | 420 |
| 77523-001 | 12 in. | - | 1 |
| 77523-003 | 24 in. | 1 | 1 |
| 77523-005 | 36 in. | 1 | 1 |
| 77523-008 | 7 in. | 1 | 1 |
| 77523-011 | 10 in. | 2 | 2 |

*- Item Not Shown



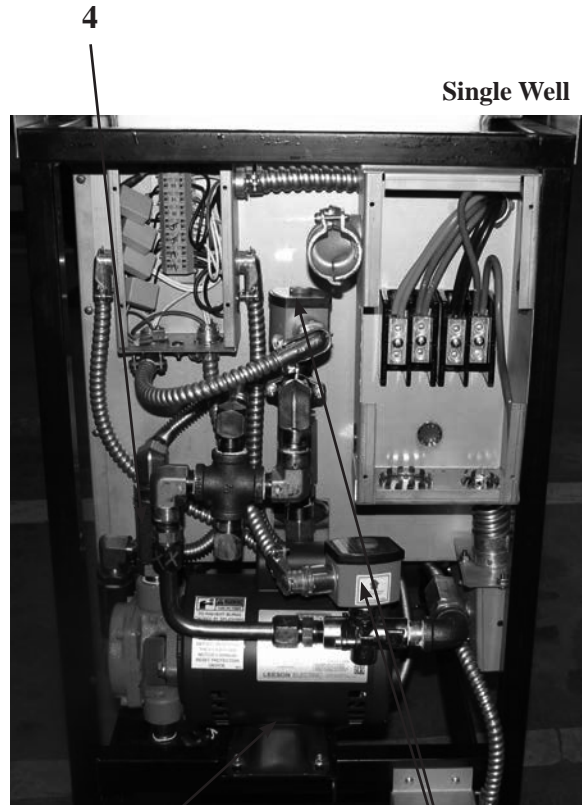
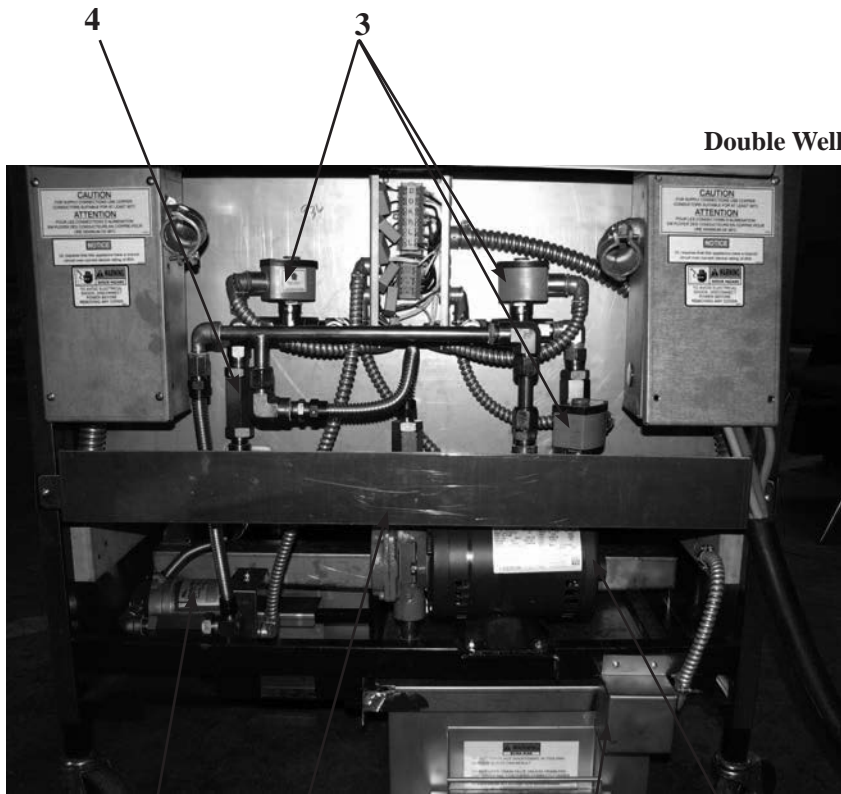
| Item No. | Part No. | Description | 410 | 420 |
|----------|----------|--------------------------------------|--------|-----|
| 1 | 21033 | 1/2 BASKET-CHIC-FIL-A TALL | 2 | 4 |
| 2 | 26917 | SUPPORT-FRY BASKET | 1 | 2 |
| A 3 | 30292-2 | HEATING ELEMENT - 208V 7333W | 3 | 6 |
| C 4* | 89909 | ASSY-HI LIMIT PROBE | 1 | 2 |
| A 5 | 96640 | ASSY-HI LIMIT BRKT/CLAMP/SCRS | 1 | 2 |
| A 6 | 140269 | KIT-CFE4XX TEMP PROBE/GAUGE | 1 | 2 |
| 7 | 140270 | KIT-CFE4XX LEVEL PROBE/GAUGE | 1 | 2 |
| 8 | 140287 | KIT-CFE PROTECTION PROBE..... | 1 | 2 |
| | 96405 | --SCREW-HEX HD 1/4 X .656 SHDR | 2 | 4 |
| | 152029 | --CLIP-ELEMENT W/PROBE..... | 2 | 4 |
| | 152035 | --CLAMP-ELEMENT W/PROBE | 1 | 2 |
| | 152293 | ----ASSY-RTD PROBE OFFSET | 1 | 2 |
| * | 30094 | FITTING - COMPRESSION..... | 3 | 6 |
| | 140635 | ELEMENT BRACKET KIT..... | 1..... | 2 |
| | 159637 | RH SPREADER..... | 1..... | 2 |
| | 152705 | LH SPREADER..... | 1..... | 2 |

*- Item Not Shown



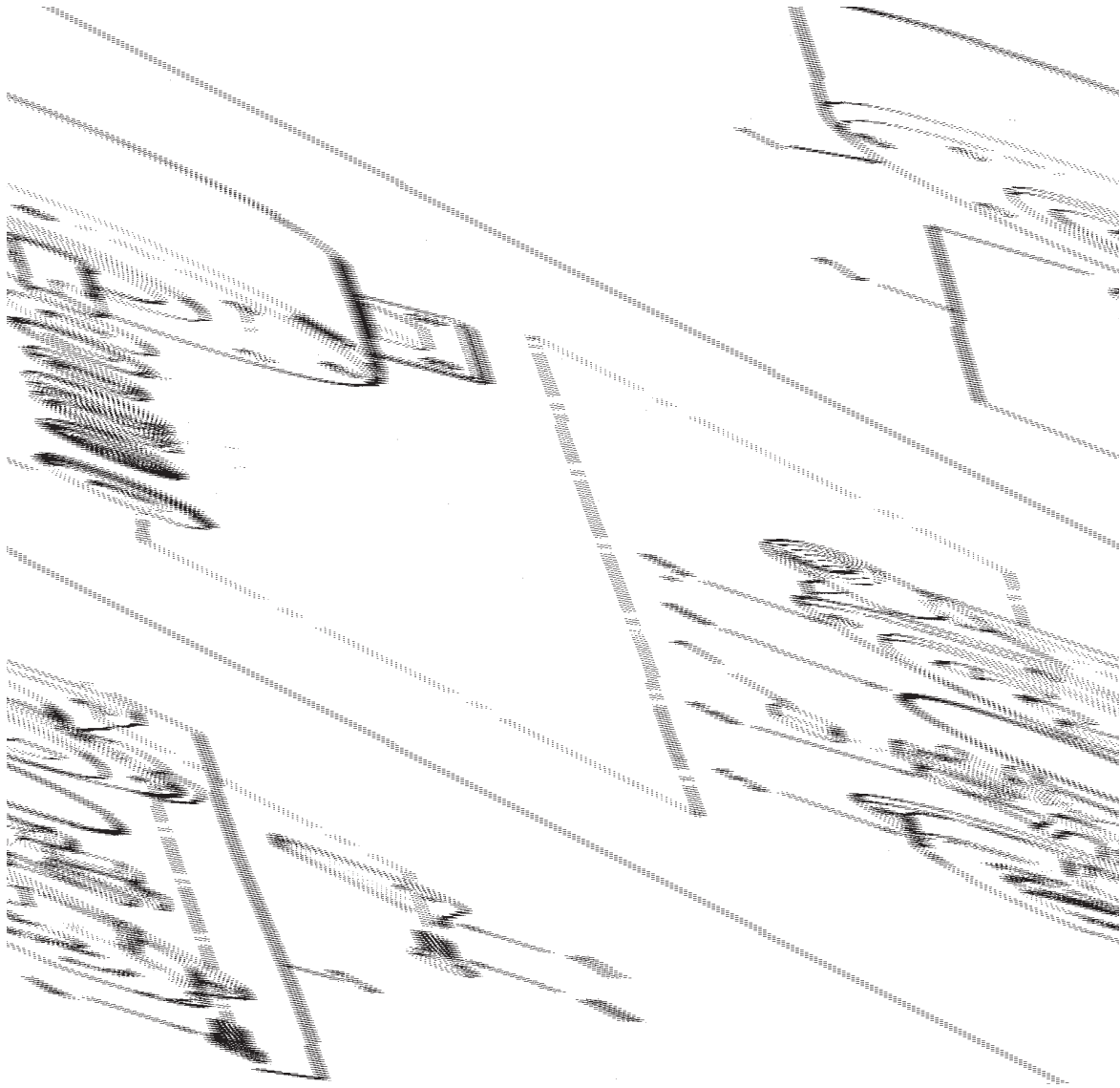
| Item No. | Part No. | Description | 410 | 420 |
|----------|-----------|--|-----|-----|
| A 1 | 65073 | SECONDARY CONTACTOR, 24V (HEAT)..... | | |
| A 2 | 29509 | PRIMARY CONTACTOR - 24VAC..... | 1 | 2 |
| A 3 | 93245-001 | CONTROL-WATLOW HIGH LIMIT | 2 | 4 |
| 4 | 91903 | BREAKER-CIRCUIT 240V 60A | 2 | 4 |
| 4 | 154772 | BREAKER-CIRCUIT 480V 30A | 2 | 4 |
| 5 | 154770 | BREAKER-CIRCUIT 240V 60A W/SHUNT | 2 | 4 |
| 5 | 154796 | BREAKER-CIRCUIT 480V 30A W/SHUNT | 2 | 4 |
| 6 | 84454 | BOARD-AIF | 1 | 1 |
| 7 | 84134 | TRANSFORMER-208V/24V 50/60 75VA..... | 2 | 3 |
| 7 | 84135 | TRANSFORMER-240V/24V 50/60 75VA..... | 2 | 3 |
| 8* | 24347 | ASSY-CURRENT SENSE XFORMERS | 1 | 2 |
| 9* | 96299 | ASSY-AMP SENSE/USB CONTROL PCB..... | 1 | 2 |
| 10* | ME90-008 | P&B T92 RELAY 12VDC COIL 30AMP0 | 1 | 1 |
| 11* | 96146-001 | ASSY-ELEM/CURRENT SENSE XFMR | 1 | 2 |

*- Item Not Shown



| Item No. | Part No. | Description | 410 | 420 |
|----------|-----------|--|-----|-----|
| 1 | 67589 | ASSY-FILTER PMP & 1/2 HP MOTOR..... (see next page for breakdown) | 1 | 1 |
| 2 | 97601 | SVC PACK-CFE410/420 JIB RETRO | 1 | 1 |
| 3 | 154048 | VALVE-220-240V SOLENOID 1/2NPT..... | 2 | 3 |
| A 4 | 90506-001 | VALVE-CHECK SAE 12 3 PSI..... | 4 | 5 |
| A 5 | 80148 | DRAINSWITCH W/BOOT..... | 1 | 1 |
| 6* | 140276 | KIT-CFE410 REAR GD | 1 | - |
| 6* | 140277 | KIT-CFE420 REAR GD | - | 1 |
| 7* | 93323 | GUARD-REAR PLUMBING CFE420..... | - | 1 |

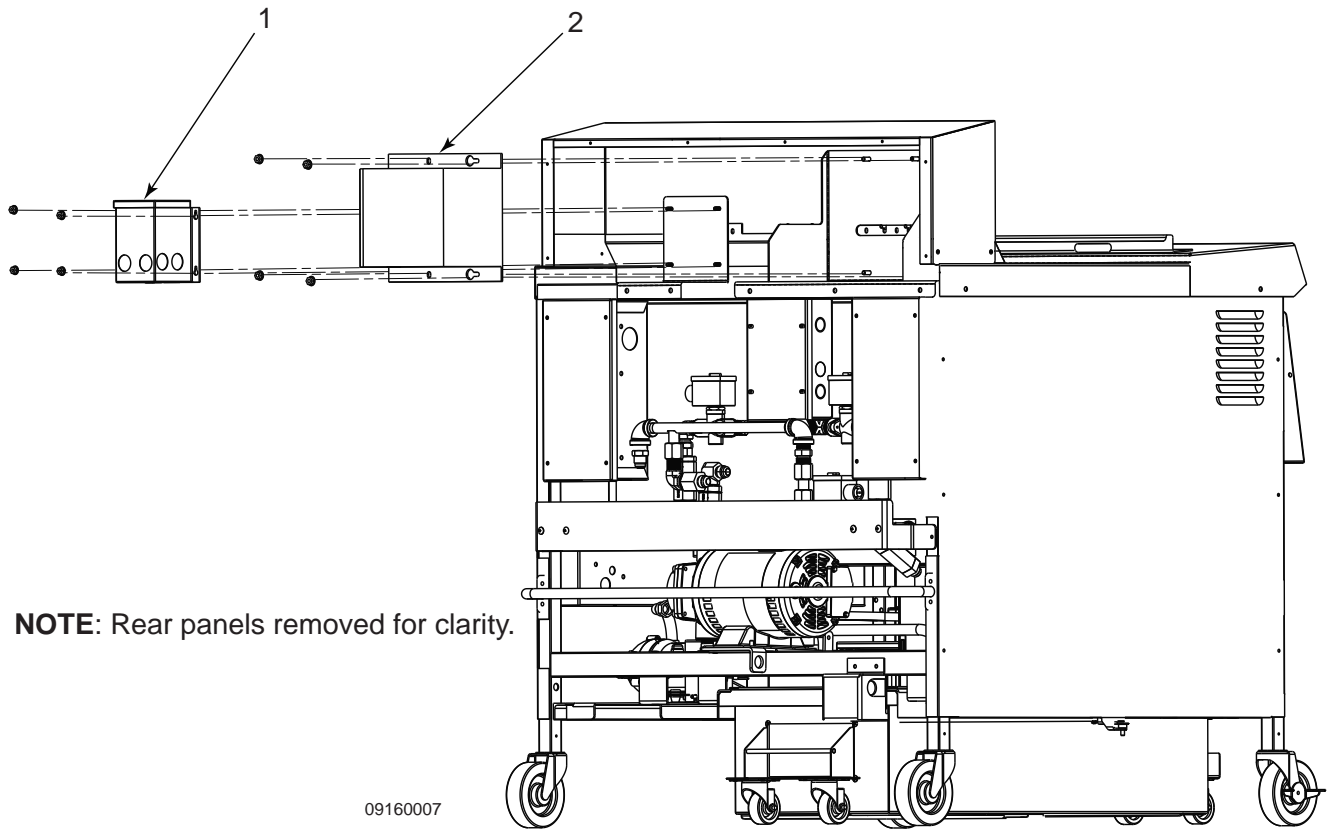
*- Item Not Shown



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 |

***- Item Not Shown**



NOTE: Rear panels removed for clarity.

09160007

| Item No. | Part No. | Description | 410 | 420 |
|----------|----------|--|-----|-----|
| 1 | 60838 | TRANSORMER, .05 KVA, 480/240 VAC | 0 | 1 |
| 2 | 19923 | TRANSORMER, 1.0 KVA, 480 VAC | 1 | 1 |

*- Item Not Shown

