HENNY PENNY

CFE 415/427 Technical Manual

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Safety

The instructions in this manual have been prepared to aid you in learning the proper procedures for your equipment. Where information is of particular importance or is safety related, the words NOTICE, CAUTION, or WARNING are used. The definitions of safety related words are described in the following table:.

	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.

Chapter 1

System Overview

1.1 Controls and Indicators

The controls and indicators for the CFE 415.427 fryer are described in this section. The controls and indicators

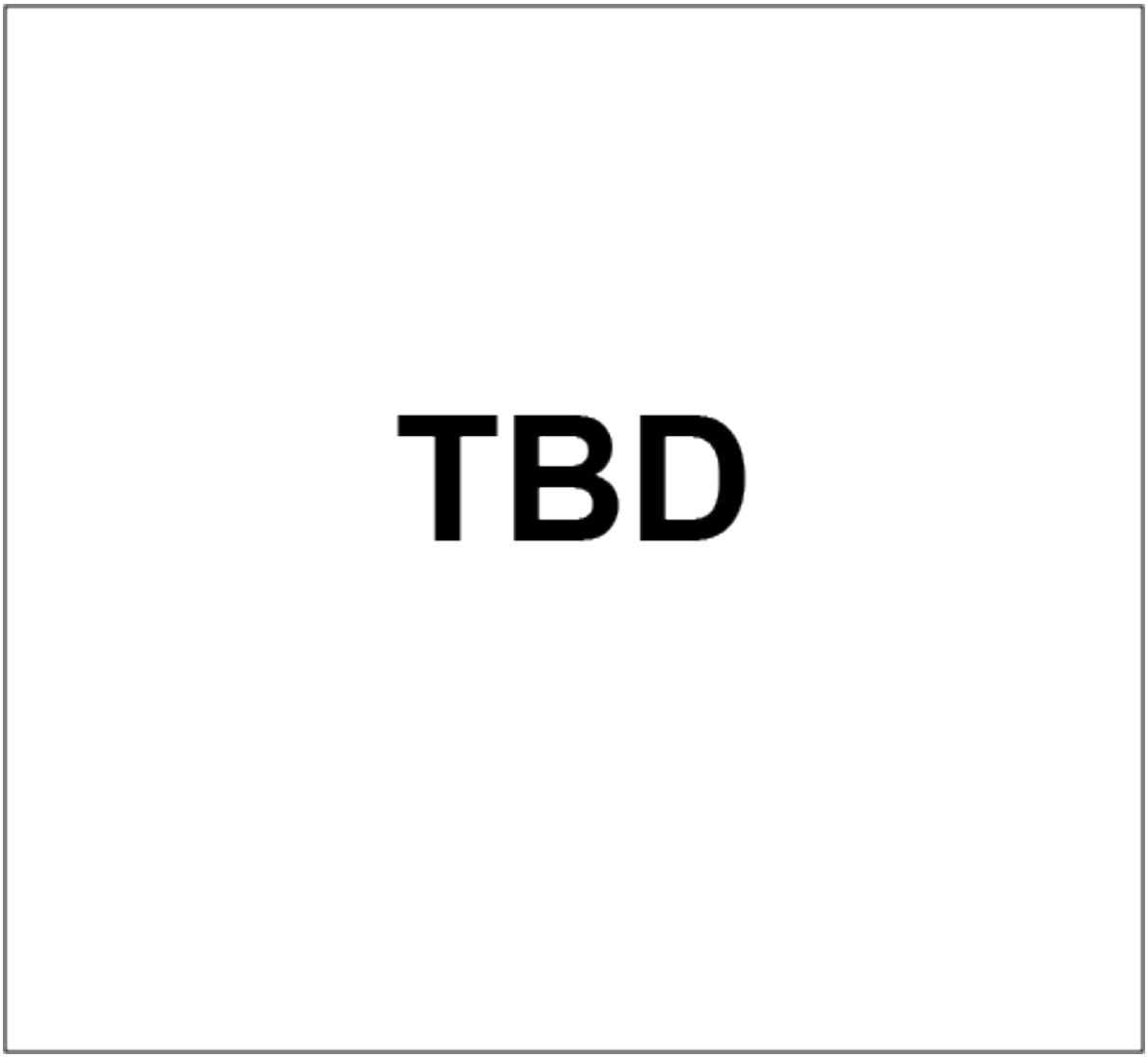


Figure 1-0 CFE 415/427 Controls and Indicators

Table 1-0 Controls and Indicators

Item	Name	Function
1	Heat On LED	Lights when the control calls for heat, the oil should start heating when this LED is lit.
2	Wait LED	Flashes when the oil temperature is not at the proper temperature for dropping product into the vat.
3	Ready LED	Lights when the oil temperature is 5°F below setpoint to 15°F above setpoint, signaling product can now be cooked.
4	Info button	- Press to display current fryer information and status. - When pressed in the program mode it shows previous settings. - When pressed along with the program button accesses the information mode which has historic operator and fryer performance information.

Item	Name	Function
5	Filter/Up and Down buttons	Used to access the Filter Menu; also used for ▲ or ▼ buttons.
6	Program button	- Press to access program mode. - When pressed in program mode it is used to advance to the next setting. - When pressed along with the info button it will access the information mode which has historic operator and fryer performance information.
7		This button
8	Menu Card	Shows the name of the food product selected.
9	Product Select button	-Press to select food products to be cooked -Answers display prompts -Button 4 accesses diagnostics -Button 5 activates the clean-out mode -Button 6 toggles between English and Spanish
10	Digital Display	Shows all the functions of the cook cycle, program mode, diagnostic mode and alarms.

Chapter 2

Software

Chapter 3

Maintenance

Chapter 4

Removal/Installation Procedures

This section contains removal/installation procedures for the CFE 415/427 fryer.

4.1 Removal Procedures

Removal procedure goes here XXX

4.1.1 Removal of the AIF Board

Removal procedure goes here XXX

4.1.2 Removal of the Control Board

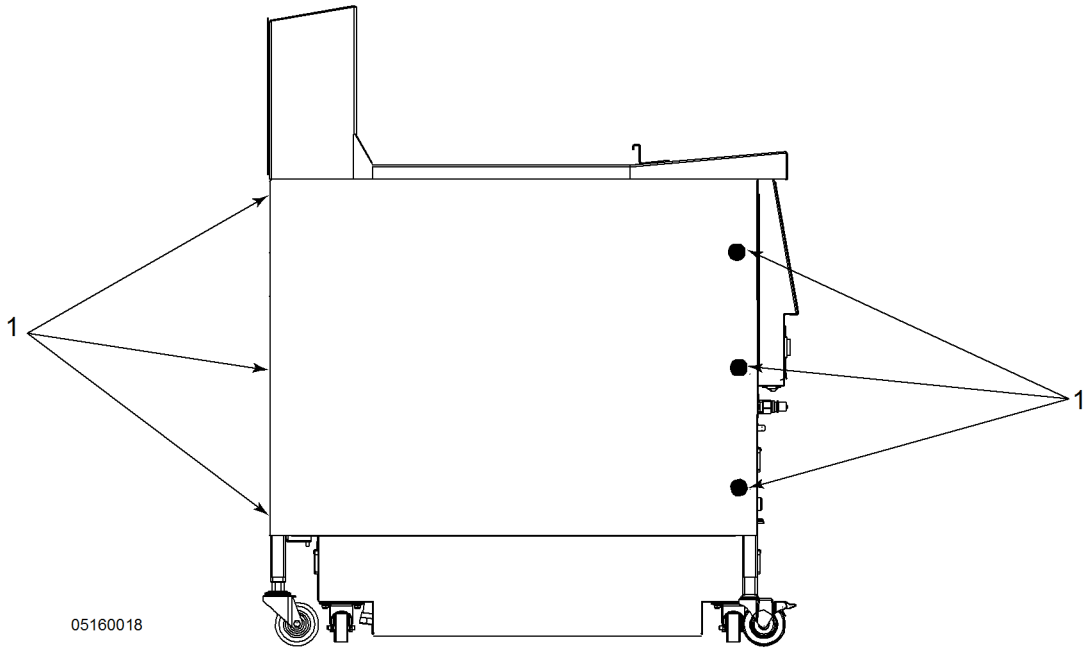
Removal procedure goes here XXX

4.1.3 Removal of the Front Panels

This section contains the procedures to remove the front panels.

4.1.4 Removal of the Side Panels

This section contains the procedures to remove the side panels.



NOTE: Left side panel shown. Right side panel is identical.

1	Screws (6 total)

Figure 4-1 Side Panel Removal

4.2 Installation Procedures

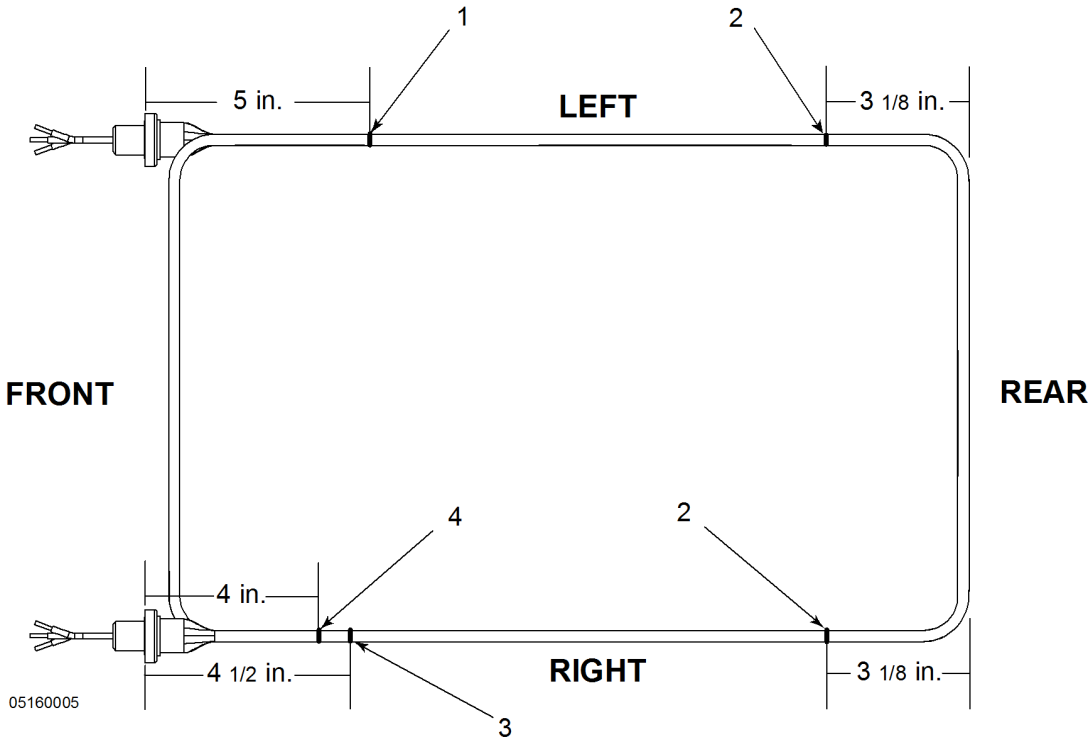
4.2.1 Installation of the Heating Element Assembly

This section contains the removal procedure for the Burner Assembly. The burner assembly contains two burners which are joined together by hardware. There is an upper burner and lower burner. The heating elements are identical and can be used interchangeably. Both heating elements must be removed in order to access the defective burner.

1) Place both heating elements on the work area.

2) Draw the following marks on the upper heating element (see Figure 4-2 *Marking the Upper heating Element*).

- Draw mark (1) on the left front side of the upper heating element five inches rear of the connector flange.
- Draw a mark (2) on the left and right side of the upper heating element 3 1/8 inches forward of the rear of the heating element.
- Draw a mark (3) on the right front side of the upper heating element 4 1/2 inches rear of the connector flange.
- Draw a mark (4) on the right front side of the upper heating element 4 inches rear of the connector flange.

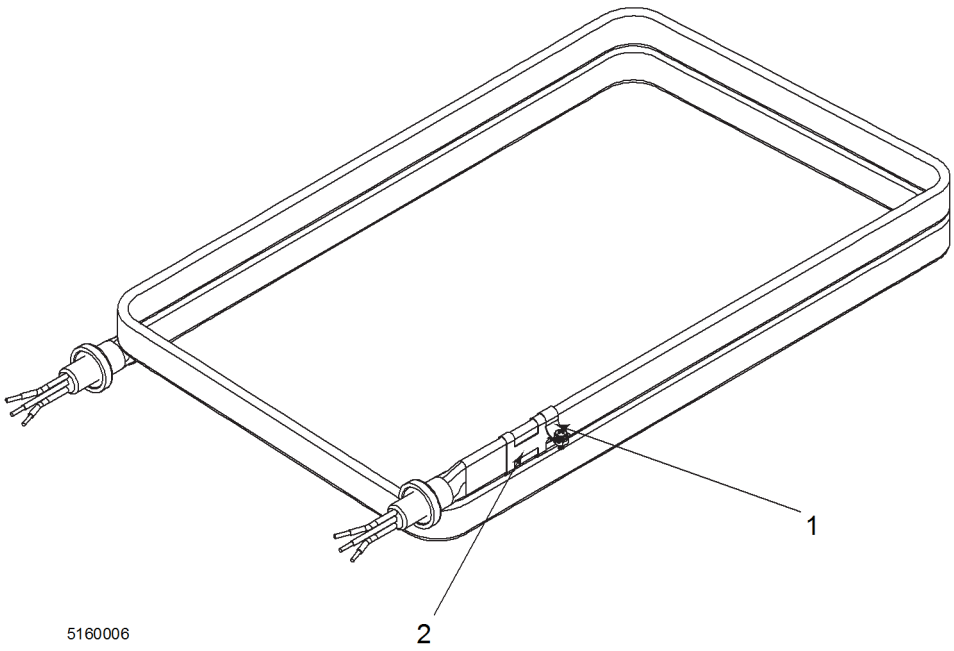


1	5 inches from connector flange	3	4.5 inches from connector flange
2	3.125 inches from rear of heating element	4	4 inches from connector flange

Figure 4-2 Marking the Upper heating Element

3) Position one high limit clip (2) on the top front right side of both heating elements (see Figure 4-3 *High Limit Clip and Clamp Install*).

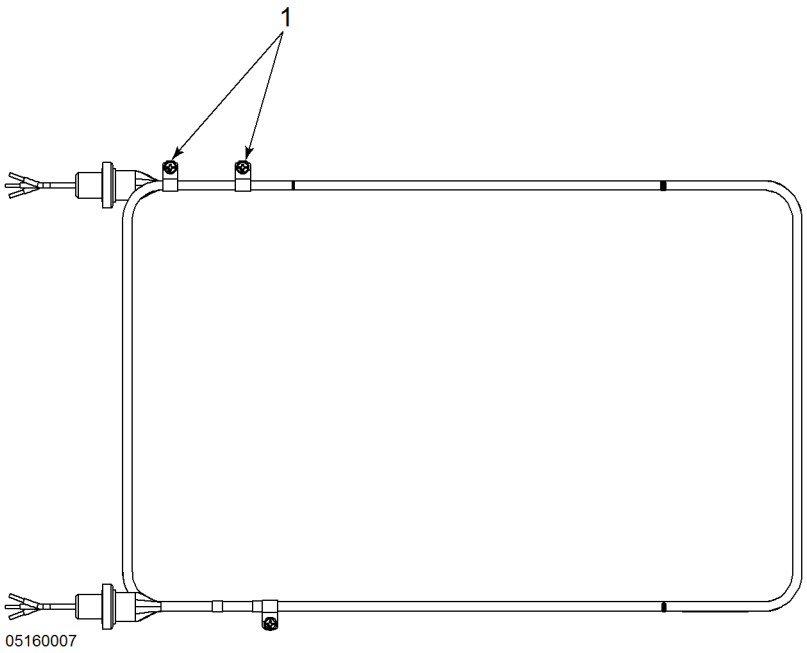
4) Position one high limit clamp (1) rear of the high limit clip (2) on the top front right side of both heating elements.



1	High Limit Clamp with 6-32 screw
2	High Limit Clip

Figure 4-3 High Limit Clip and Clamp Install

5) Position two high limit clamps (1) on the top front left of the upper heating (see Figure 4-4 *Upper Heating Element Clamp Install*).



1	High Limit Clamp with 6-32 screw

Figure 4-4 Upper Heating Element Clamp Install

6) Place upper heating element (4) on top of the lower heating element (5) (see Figure 4-5 *Spreader Bar Installation, Right Side*).

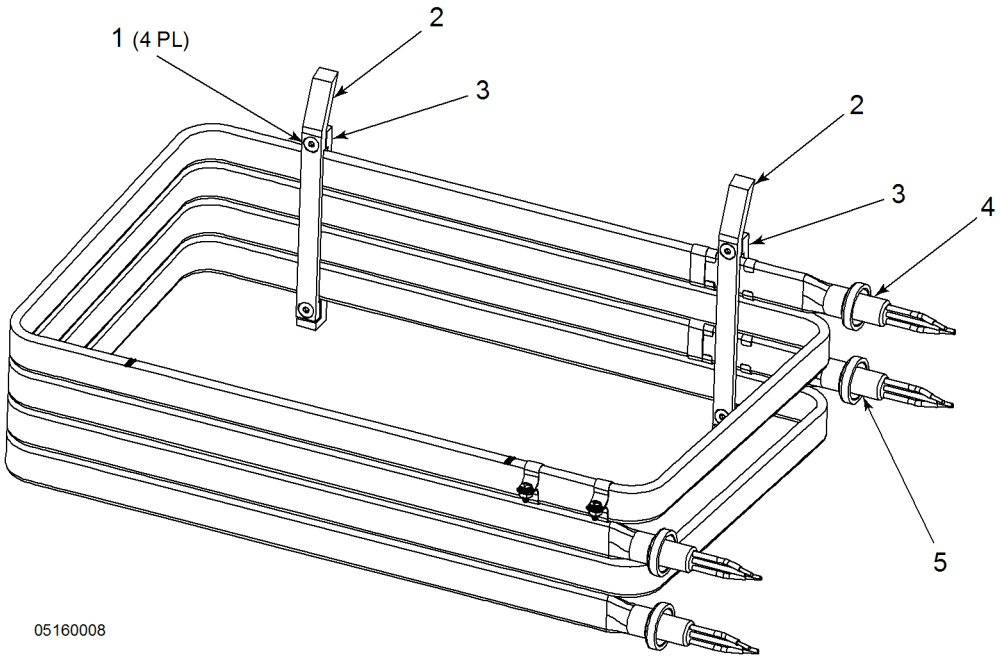
7) Position angled spreader (2) and straight spreader (3) over the high limit clips on the front right side of the heating elements.

8) Position angled spreader (2) and straight spreader (3) on the rear right side mark on the heating element.

Note

Do not tighten the allen screws all the way. The screws will be permanently tightened when the heating element assembly is placed in the vat.

9) Insert four allen screws (1) into the right side spreader bars (2) and (3) to keep them together.



1	Allen Screw, 10-32	4	Upper Heating Element
2	Angled Spreader	5	Lower Heating Element
3	Straight Spreader		

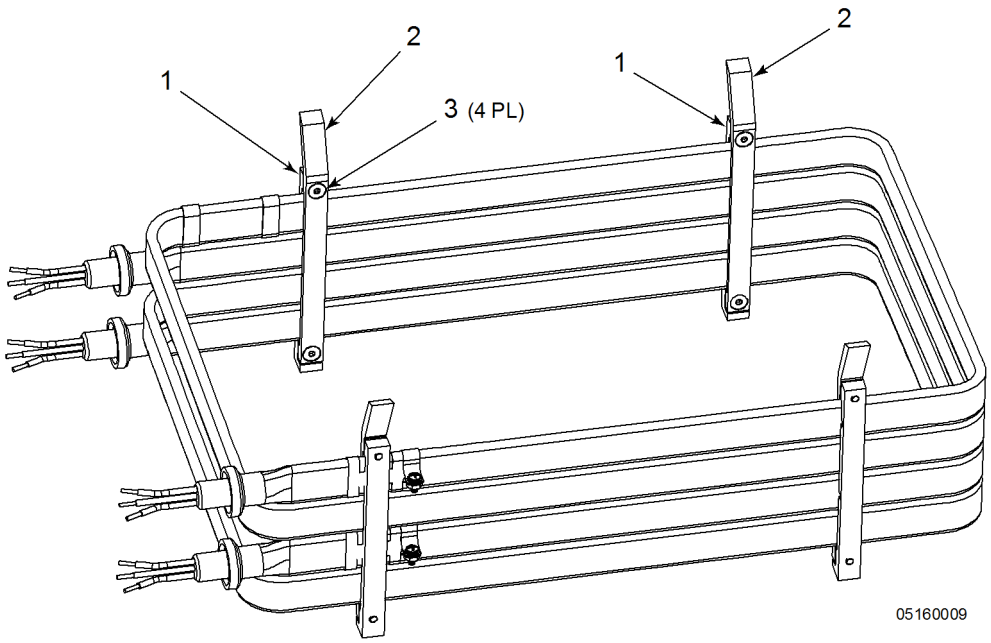
Figure 4-5 Spreader Bar Installation, Right Side

10) Position one angled spreader (2) and one straight spreader (1) on each mark on the left side of the heating element assembly (see Figure 4-6 *Spreader Bar Installation, Left Side*).

Note

Do not tighten the allen screws all the way. The screws will be permanently tightened when the heating element assembly is placed in the vat.

11) Insert four allen screws (3) into the left side spreader bars (1) and (2) to keep them together.

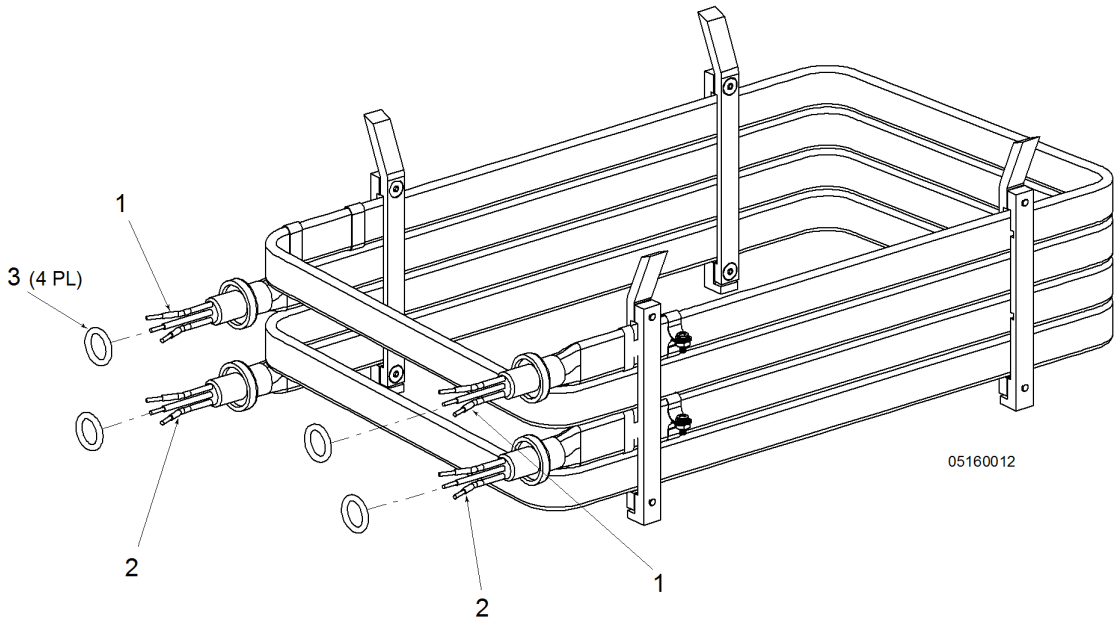


1	Allen Screw, 10-32
2	Angled Spreader
3	Straight Spreader

Figure 4-6 Spreader Bar Installation, Left Side

12) Place four o-rings (3) over the wires onto the four connectors (see Figure 4-7 *Heating Element Assembly O-Ring Installation*).

13) Label the wires (1) on the upper heating element B and label the wires (2) on the lower heating element A.

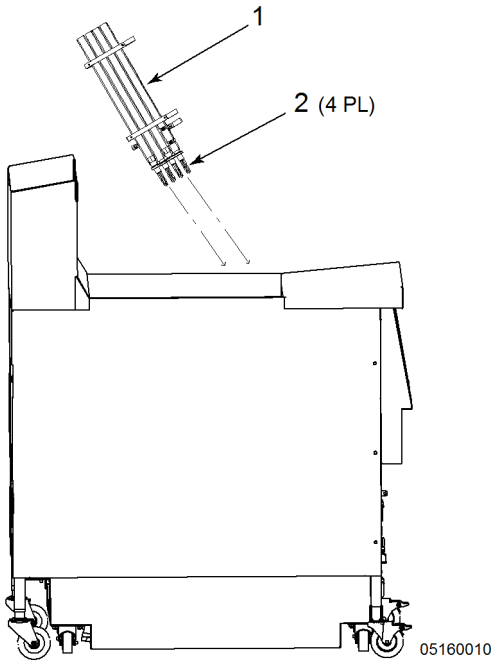


1	Upper Element Wires, Label B
2	Lower Element Wires, Label B
3	O-Ring

Figure 4-7 Heating Element Assembly O-Ring Installation

14) Position heating element assembly (1) in the vat at an angle (front end first) (see Figure 4-8 *Positioning Heating Element Assembly Into Fryer*).

15) Route wiring (2) thru holes in the front of the vat.



1	Heating Element Assembly
2	Heating Element Wiring

Figure 4-8 Positioning Heating Element Assembly Into Fryer

16) Remove front panel to gain access to the hardware mounting area (refer to 4.1.3 *Removal of the Front Panels*).

17) Remove left or right side panel as necessary to gain access to the hardware mounting area (refer to 4.1.4 *Removal of the Side Panels*).

18) Remove AIF board (refer to 4.1.1 *Removal of the AIF Board*).

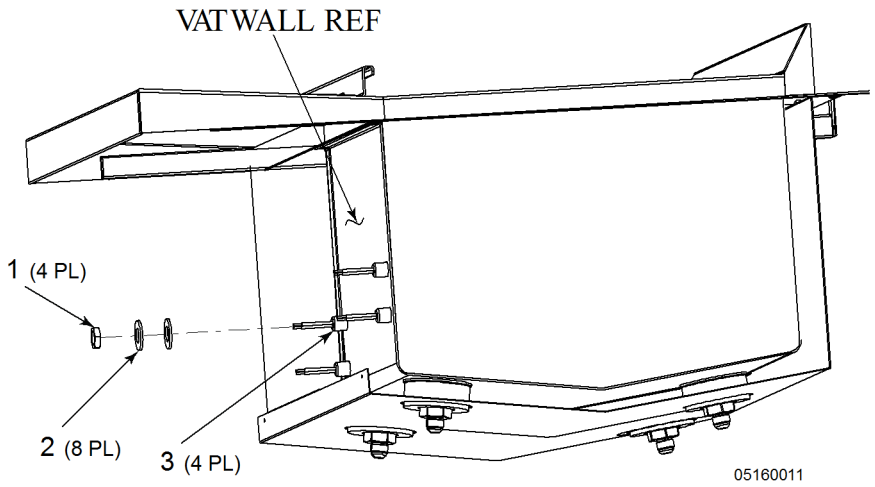
19) Remove all power from the fryer.

20) Lock out and tag the equipment in accordance with company practices.

21) Place two washers (2) on the threaded end of each heating element connector (3) (see Figure 4-9 *Heating Element Assembly Hardware Install*).

22) Place a nut (1) on the threaded end of each heating element connector securing the heating element assembly to the fry pot.

23) Tighten all four nuts, Apply 32 ft/lbs of torque.



NOTE: Wires, components, and panels removed for clarity.

1	Nut
2	Washer
3	Connector

Figure 4-9 Heating Element Assembly Hardware Install

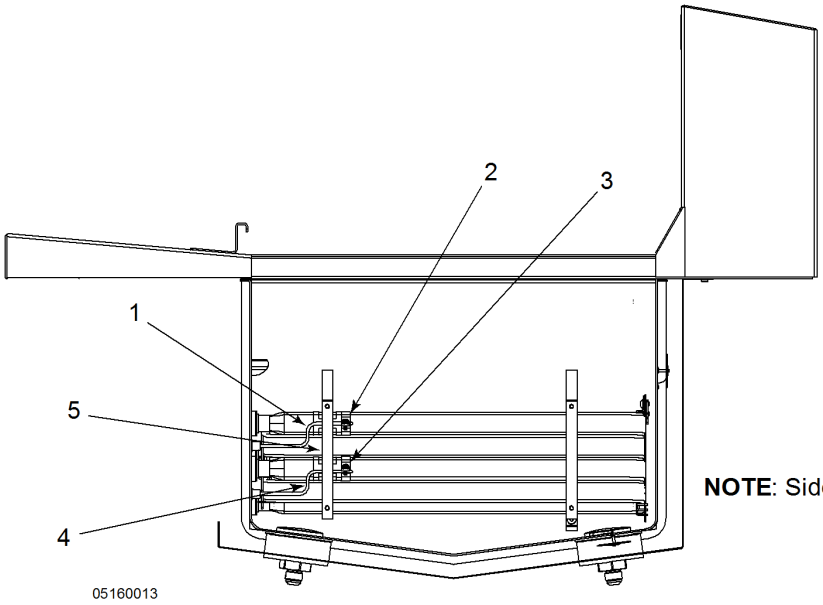
24) Insert thermocouple probe (4) thru spreader (5) opening and into the lower element front right high limit clamp (3) (see Figure 4-10 *Thermocouple Installation, Right Side*).

25) Adjust thermocouple probe (4) as necessary.

26) Insert thermocouple probe (1) thru spreader (5) opening and into the upper element front right high limit clamp (2).

27) Adjust thermocouple probe (1) as necessary.

28) Tighten both high limit clamps (2) and (3) on the front right side of the heating element assembly securing the thermocouple probes (1) and (4) to the heating element assembly, Apply 10 in/lbs of torque.



NOTE: Side panel removed for clarity.

1	Thermocouple Probe, Upper	4	Thermocouple Probe, Lower
2	High Limit Clamp, Upper	5	Spreader, Front Right
3	High Limit Clamp, Lower		

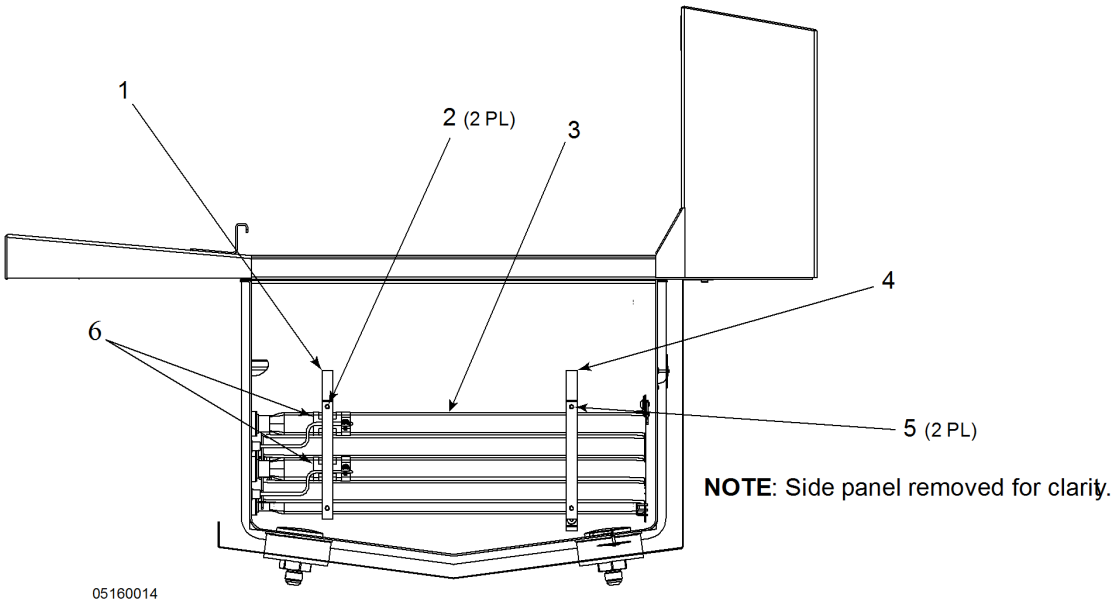
Figure 4-10 Thermocouple Installation, Right Side

29) Position front right spreader assembly (1) directly in the center of the upper and lower high limit clips (6) (see Figure 4-11 *Spreader Bars Installation, Right Side*).

30) Tighten both allen screws (2) on the front right spreader assembly (1) securing the spreader to the heating element assembly (3), Apply 32 in/lbs of torque.

31) Position rear right spreader bar assembly (4) 3.5 inches from rear vat wall.

32) Tighten allen screws (5) securing rear right spreader bar assembly (4) to the heating element assembly (3), Apply 32 in/lbs of torque.



1	Spreader Assembly, Front Right	4	Spreader Assembly, Rear Right
2	Allen Screw, Front Right Spreader	5	Allen Screw, Rear Right Spreader
3	Heating Element Assembly	6	Upper and Lower High Limit Clips

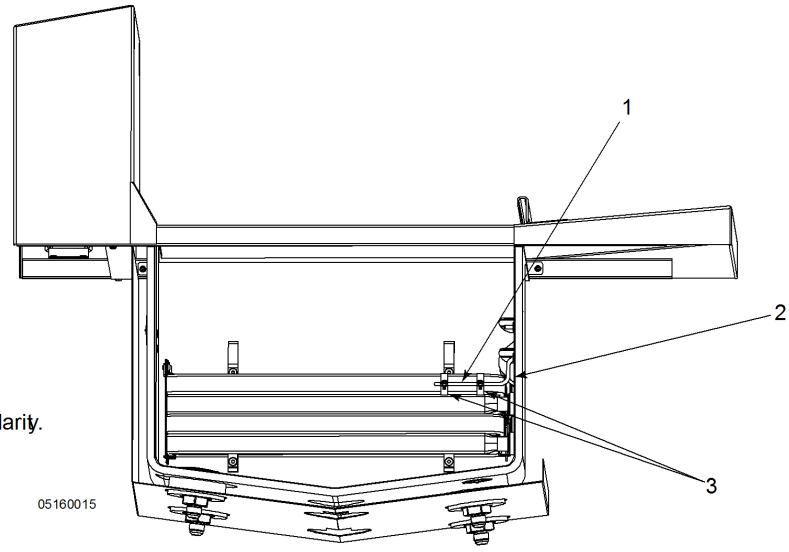
Figure 4-11 Spreader Bars Installation, Right Side

33) Route heat probe (1) thru both front left high limit clamps (3).

34) Position the tip of the heat probe (1) 4 inches form the vat wall (2).

35) Tighten both front left high limit clamps (3), Apply 10 in/lbs of torque.

NOTE: Side panel removed for clarity.



1	Heat Probe
2	Vat Wall
3	High Limit Clamps

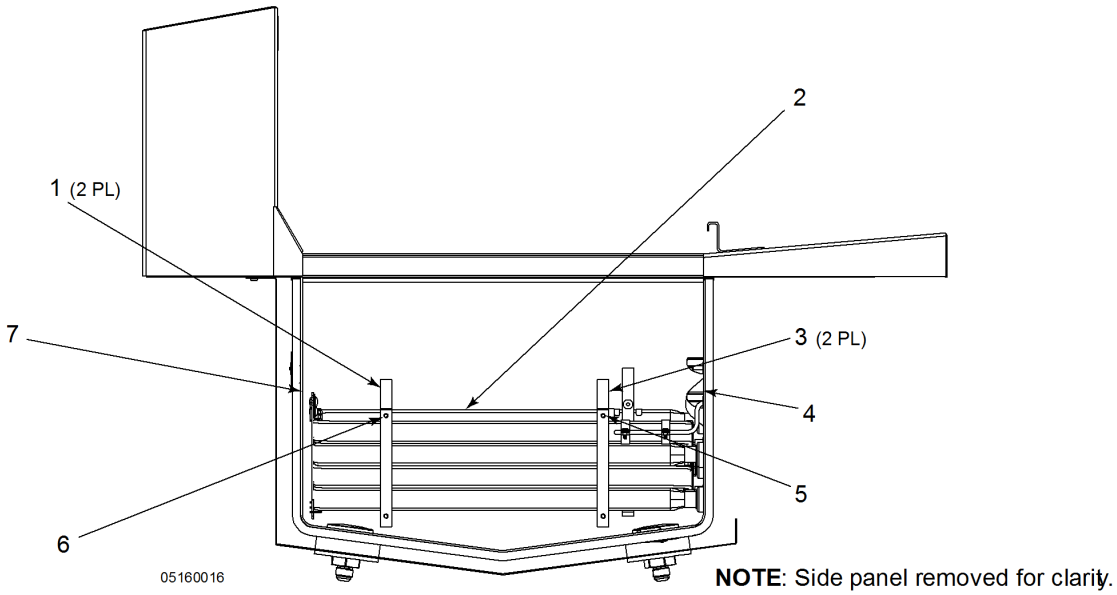
Figure 4-12 Heat Probe Installation, Left Side

36) Position front left spreader bar assembly (3) 4.250 inches from the front vat wall (4) (see Figure 4-13 *Spreader Bars Installation, Left Side*).

37) Tighten Allen screws (4) securing front left spreader bar assembly (3) to the heating element assembly (2), Apply 32 in/lbs of torque.

38) Position rear left spreader bar (1) 3.5 inches from rear vat wall (6).

39) Tighten Allen screws (5) securing rear left spreader bar assembly (1) to the heating element assembly (2), Apply 32 in/lbs of torque.



1	Spreader Assembly, Rear Left	5	Allen Screw, Front Left Spreader
2	Heating Element Assembly	6	Allen Screw, Rear Left Spreader
3	Spreader Assembly, Front Left	7	Rear Vat Wall
4	Front Vat Wall		

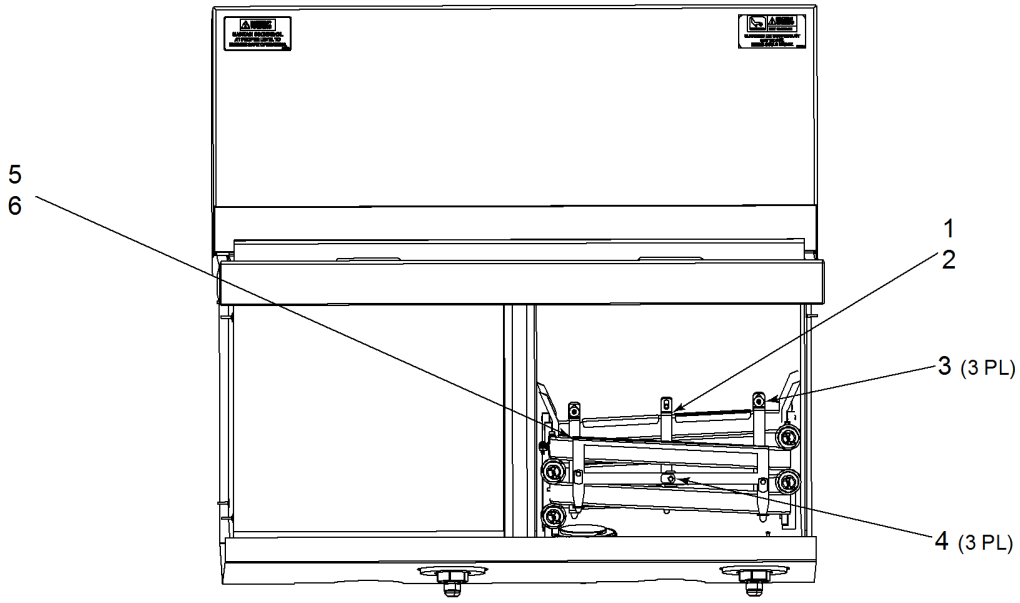
Figure 4-13 Spreader Bars Installation, Left Side

40) Place rear guard element (1) and rear element guard clamp (2) on the rear of the heating element assembly (see Figure 4-14 *Element Guard Installation*).

41) Install three screws (3) securing the rear guard element (1) and the rear element guard clamp (2) to the heating element assembly.

42) Place front guard element (5) and front element guard clamp (6) on the front of the heating element assembly.

43) Install three screws (4) securing the front guard element (5) and the rear element guard clamp (6) to the heating element assembly, Apply 32 in/lbs of torque.



NOTE: Front panel removed for clarity.

1	Rear Guard Element	4	Screw, 10-32
2	Rear Element Guard Clamp	5	Front Guard Element
3	Screw, 10-32	6	Front Element Guard Clamp

Figure 4-14 Element Guard Installation

44) Route wire RL3A from lower heating element and wire RL2B from upper heating element and install them in terminal 6T3 on contactor XXX.

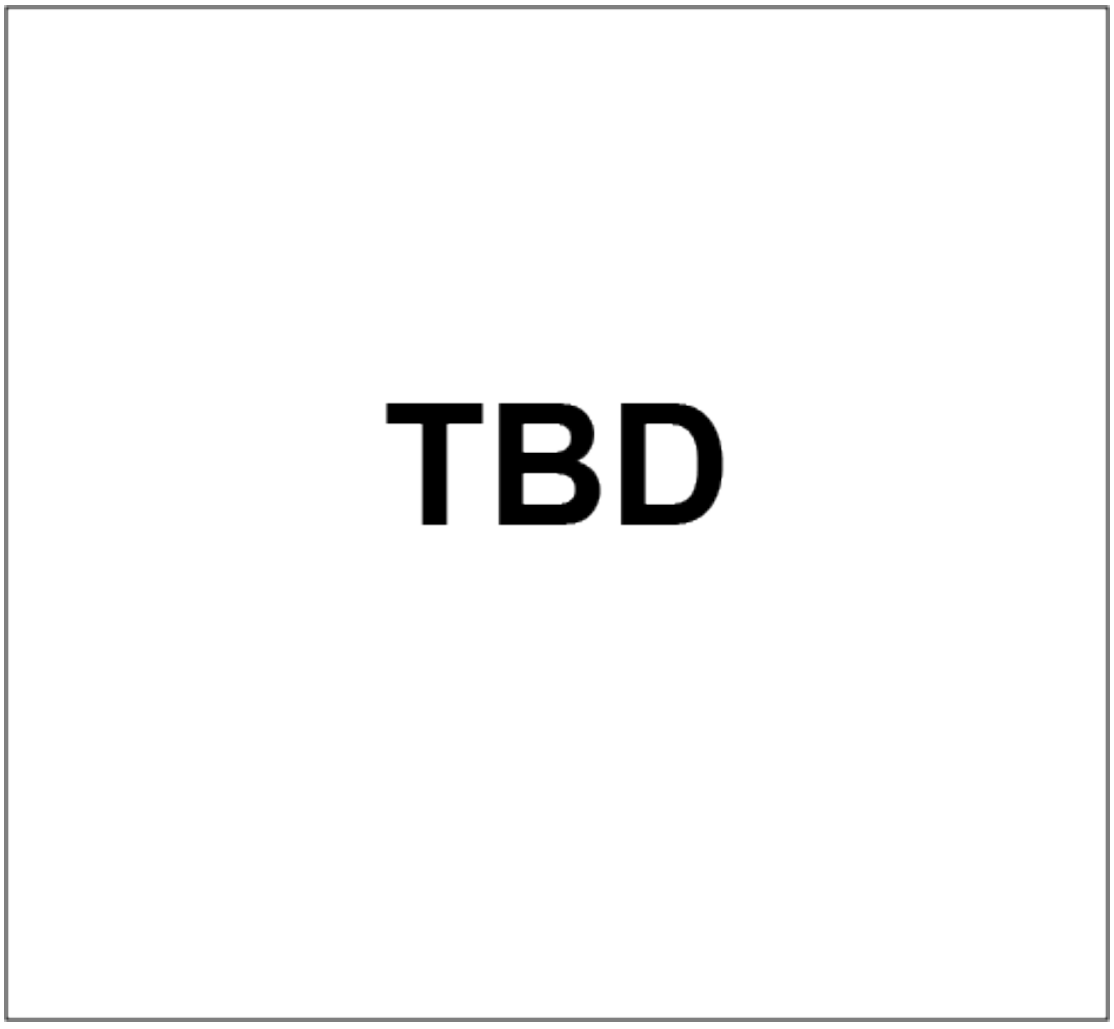
45) Route wire RL1A from lower heating element and wire RL3B from upper heating element and install them in terminal 4T2 on contactor XXX.

46) Route wire RL2A from lower heating element and wire RL1B from upper heating element and install them in terminal 2T1 on contactor XXX.

47) Route wire LL1A from lower heating element and wire LL3B from upper heating element and install them in terminal T1 on safety contactor XXX.

48) Route wire LL3A from lower heating element and wire LL2B from upper heating element and install them in terminal T2 on safety contactor XXX.

49) Route wire LL2A from lower heating element and wire LL1B from upper heating element and install them in terminal T3 on safety contactor XXX.



1	XXX
2	XXX
3	XXX

Figure 4-15 Heat Probe Installation, Left Side

Chapter 5

Troubleshooting

5.1 Warning Codes

While Error Codes generally result from some kind of hardware or equipment problem. Warning codes are frequently the result of operator error: overloading the fryer for example or starting a cook cycle before the fryer has recovered to setpoint. Warning codes may alert the user to suspected hardware problems like failed heating elements. The suspicion is based on observed temperature behavior rather than direct sensing of the heater operation. Warning Codes are activated based on user actions or based on the actual performance of the fryer. For a list of warning codes, the cause of the warning codes, and the corrective action; refer to Table 5-2 *Error Code Information*.

Table 5-1 Warning Code Information

Warning Code	Description	Correction Action
W-1	Incoming supply voltage too low	
W-2	Slow heat up	
W-3	Product loaded before ready light is on	
W-4	Too much product in vat	
W-5	Slow cooking	
W-6	Slow cooking	
W-7	Low Amps	
W-9	Discard product	
OIL TOO HOT	Oil is hotter than the set-point temperature	

5.2 Error Codes

This section of the manual describes the error codes for the CFE 415/427 fryer. Error codes are generated in the event of a control system failure. The error message are shown on the display. A constant tone is heard when an error code is displayed. The tone can be silenced by pressing any button. For a list of error codes, the cause of the error codes, and the corrective action; refer to Table 5-2 *Error Code Information*.

Table 5-2 Error Code Information

Error Code	Description	Correction Action
E-1	Low oil	Refer to 5.3.1 *E-01 Low Oil Troubleshooting*.
E-4	CPU too hot	Refer to 5.3.2 *E-04 CPU Too Hot Troubleshooting*
E-5	Fryer too hot	Refer to 5.3.3 *E-05 Fryer Too Hot Troubleshooting*.
E-6	Fryer temperature sensor failed	Refer to 5.3.4 *E-06 Fryer Temp Sensor Failed Troubleshooting*.
E-10	High Limit has tripped	Refer to 5.3.5 *E-10 High Limit Tripped Troubleshooting*.
E-15	Drain is open	Refer to 5.3.6 *E-15 Drain is Open Troubleshooting*.
E-18	Level sensor failed	Refer to 5.3.7 *E-18 Level Sensor Failed Troubleshooting*.
E-19	Protection sensor failed	Refer to 5.3.8 *E-19 Protection Sensor Failed Troubleshooting*.
E-25	Heat amps to high	Refer to 5.3.9 *E-25 Heat Amps Too High Troubleshooting*.
E-26	Heat amps are locked on	Refer to 5.3.10 *E-26 Heat Amps Locked On Troubleshooting*.
E-27	Heat amps to low	Refer to 5.3.11 *E-27 Heat Amps Too Low Troubleshooting*.
E-28	Amp sensors not detected	Refer to 5.3.12 *E-28 Amp Sensor Not Detected Troubleshooting*.
E-29	Shunt breaker tripped	Refer to 5.3.13 *E-29 Shunt Breaker Tripped Troubleshooting*.
E-41	System data lost	Refer to 5.3.14 *E-41 System Data Lost Troubleshooting*.
E-46C	Internal memory error	Refer to 5.3.15 *E-46C Internal Memory Error Troubleshooting*.
E-46W	Data saved failed	Refer to 5.3.16 *E-46W Data Saved Failed Troubleshooting*.
E-47	Analog system or 12 volt failed	Refer to 5.3.17 *E-47 Analog System or 12 Volt Failed Troubleshooting*.
E-48	Analog or digital input system error	Refer to 5.3.18 *E-48 Analog or Digital Input System Error Troubleshooting*.
E-60	AIF communication failed	Refer to 5.3.19 *E-60 AIF Communication Failed Troubleshooting*.

Error Code	Description	Correction Action
E-75	Heat relay near end of life	Refer to 5.3.20 *E-75 Heat Relay Troubleshooting*.
E-92	24 volt fuse	Refer to 5.3.21 *E-92 24 Volt Fuse Troubleshooting*.

5.3 Troubleshooting Procedures

5.3.1 E-01 Low Oil Troubleshooting

This section contains troubleshooting information for the E-01 Low Oil error code. Troubleshoot the E-01 Low Oil error in accordance with the following procedure:

5.3.2 E-04 CPU Too Hot Troubleshooting

This section contains troubleshooting information for the E-04 CPU Too Hot error code. Troubleshoot the E-04 CPU Too Hot error in accordance with the following procedure:

5.3.3 E-05 Fryer Too Hot Troubleshooting

This section contains troubleshooting information for the E-04 CPU Too Hot error code. Troubleshoot the E-04 CPU Too Hot error in accordance with the following procedure:

5.3.4 E-06 Fryer Temp Sensor Failed Troubleshooting

This section contains troubleshooting information for the E-06 Fryer Temp Sensor Failed error code. Troubleshoot the E-06 Fryer Temp Sensor Failed error in accordance with the following procedure:

5.3.5 E-10 High Limit Tripped Troubleshooting

This section contains troubleshooting information for the E-10 High Limit Tripped error code. Troubleshoot the E-10 High Limit Tripped error in accordance with the following procedure:

5.3.6 E-15 Drain is Open Troubleshooting

This section contains troubleshooting information for the E-15 Drain is Open error code. Troubleshoot the E-15 Drain is Open error in accordance with the following procedure:

5.3.7 E-18 Level Sensor Failed Troubleshooting

This section contains troubleshooting information for the E-18 Level Sensor Failed error code. Troubleshoot the E-18 Level Sensor Failed error in accordance with the following procedure:

5.3.8 E-19 Protection Sensor Failed Troubleshooting

This section contains troubleshooting information for the E-19 Protection Sensor Failed error code. Troubleshoot the E-19 Protection Sensor Failed error in accordance with the following procedure:

5.3.9 E-25 Heat Amps Too High Troubleshooting

This section contains troubleshooting information for the E-25 Heat Amps Too High error code. Troubleshoot the E-25 Heat Amps Too High error in accordance with the following procedure:

5.3.10 E-26 Heat Amps Locked On Troubleshooting

This section contains troubleshooting information for the E-26 Heat Amps Locked On error code. Troubleshoot the E-26 Heat Amps Locked On error in accordance with the following procedure:

5.3.11 E-27 Heat Amps Too Low Troubleshooting

This section contains troubleshooting information for the E-27 Heat Amps Too Low error code. Troubleshoot the E-27 Heat Amps Too Low error in accordance with the following procedure:

5.3.12 E-28 Amp Sensor Not Detected Troubleshooting

This section contains troubleshooting information for the E-28 Amp Sensor Not Detected error code. Troubleshoot the E-28 Amp Sensor Not Detected error in accordance with the following procedure:

5.3.13 E-29 Shunt Breaker Tripped Troubleshooting

This section contains troubleshooting information for the E-29 Shunt Breaker Tripped error code. Troubleshoot the E-29 Shunt Breaker Tripped error in accordance with the following procedure:

5.3.14 E-41 System Data Lost Troubleshooting

This section contains troubleshooting information for the E-41 System Data Lost error code. Troubleshoot the E-41 System Data Lost error in accordance with the following procedure:

5.3.15 E-46C Internal Memory Error Troubleshooting

This section contains troubleshooting information for the E-46C Internal Memory Error code. Troubleshoot the E-46C Internal Memory error in accordance with the following procedure:

5.3.16 E-46W Data Saved Failed Troubleshooting

This section contains troubleshooting information for the E-46W Data Saved Failed error code. Troubleshoot the E-46W Data Saved Failed error in accordance with the following procedure:

5.3.17 E-47 Analog System or 12 Volt Failed Troubleshooting

This section contains troubleshooting information for the E-47 Analog System or 12 Volt Failed error code. Troubleshoot the E-47 Analog System or 12 Volt Failed error in accordance with the following procedure:

5.3.18 E-48 Analog or Digital Input System Error Troubleshooting

This section contains troubleshooting information for the E-48 Analog or Digital Input System error code. Troubleshoot the E-48 Analog or Digital Input System error in accordance with the following procedure:

1) Replace the control board (refer to 4.1 *Removal Procedures*).
2) Verify the error code is no longer present.

5.3.19 E-60 AIF Communication Failed Troubleshooting

This section contains troubleshooting information for the E-60 AIF Communication Failed error code. Troubleshoot the E-60 AIF Communication Failed error in accordance with the following procedure:

5.3.20 E-75 Heat Relay Troubleshooting

This section contains troubleshooting information for the E-75 Heat Relay error code. Troubleshoot the E-75 Heat Relay error in accordance with the following procedure:

5.3.21 E-92 24 Volt Fuse Troubleshooting

This section contains troubleshooting information for the 24 Volt Fuse error code. Troubleshoot the 24 Volt Fuse error in accordance with the following procedure:

Chapter 6

Illustrated Parts Catalog

Parts Info goes here.

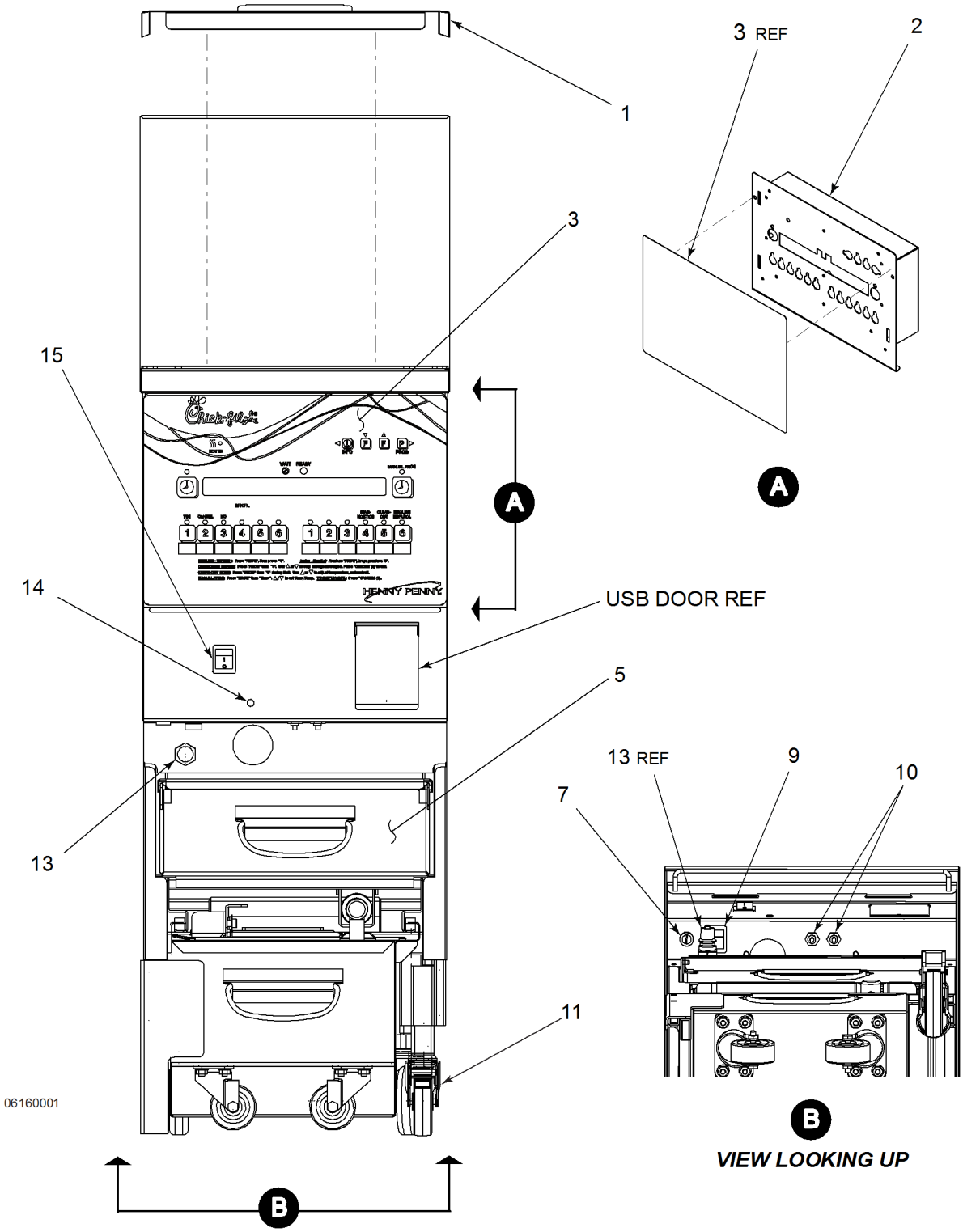


Figure 6-16 CFE 415/427 Components, Front

Table 6-3 CFE 415/427 Components, Front

Fig No.	Item No.	Part No.	Description	Qty 415	Qty 427
6-1	1	159480	COVER, WELD ASSY, CFE	1	2
	2	158536	ASSY-CFX, ARM CONTROL	1	2
	3	97552	. DECAL, CFE CONTROL, NARROW	1	2
	4*	03719	DRIVE, USB, FLASH	1	2
	5	155308	ATO BOX ASSY, OIL, CFA	1	2
	6*	86349	O-RING, -116 SUCTION LINE, LVX	3 per ATO	
	7	EF02-104	FUSE HOLDER, 20A, 250V	1	2
	8*	FA52-005	FUSE, 0.5 AMP, TIME DELAY	1	2
	9	84987	SWITCH, MOMENTARY, SPLASH PROOF	1	2
	10	EF02-125	BREAKER, PUSH-BUTTON RESET	2	4
	11	156263	CASTER, 3 INCH, TOE LOCK	1	2
	12*	17630	CASTER, 3 INCH, SWIVEL STEM	2	2
	13	17334	DISCONNECT, RINSE HOSE, MALE	1	2
	14	81980	LED, 5MM, BLUE	1	2
	15	52224	COVERED POWER SWITCH	1	2

* = Not shown
A/R = As Required

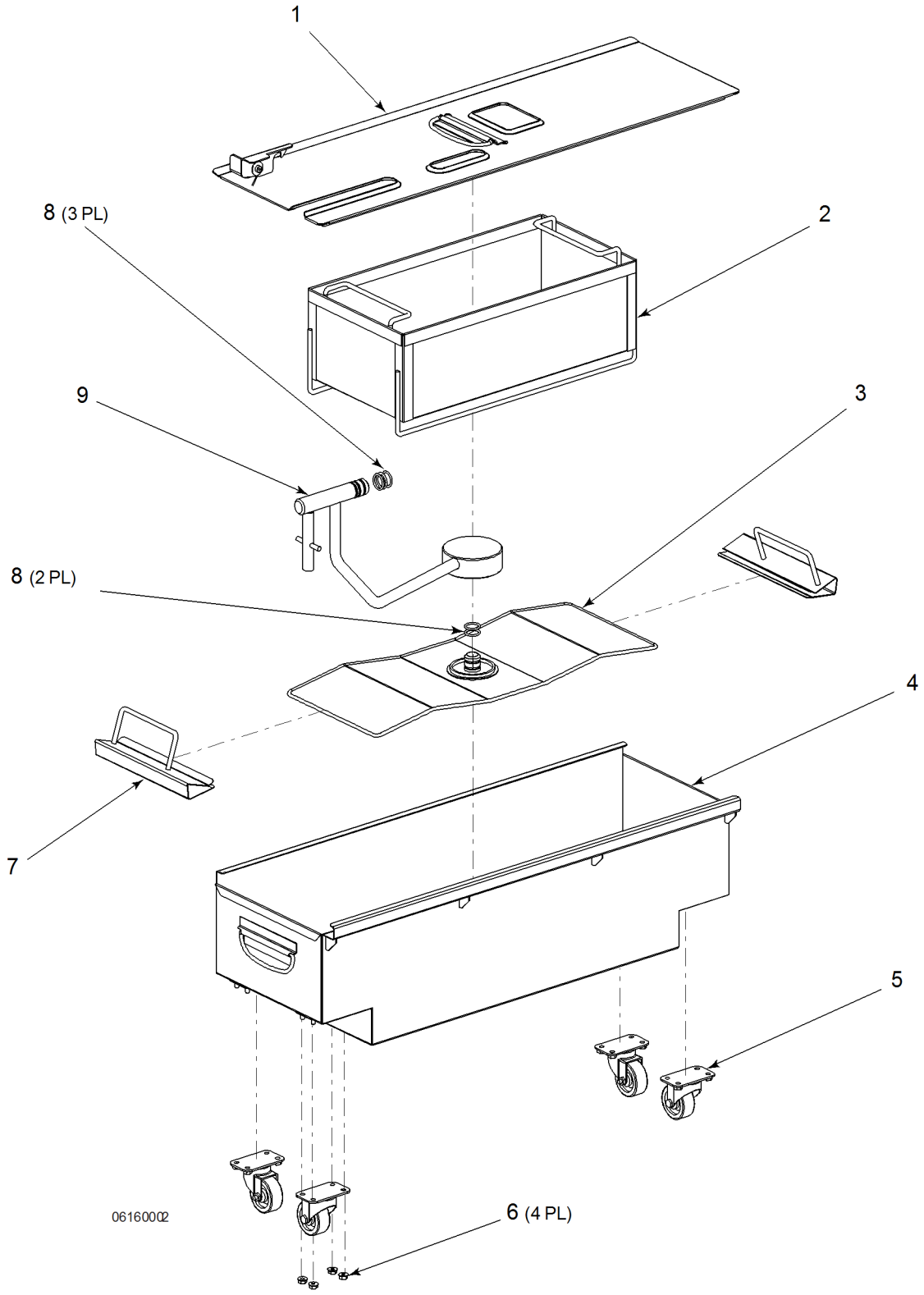


Figure 6-17 CFE 415/427 Drain Pan Assembly

Table 6-4 CFE 415/427 Drain Pan Assembly

Fig No.	Item No.	Part No.	Description	Qty 415	Qty 427
6-2		155266	ASSY, DRAIN PAN	1	2
	1	157245	. COVER, DRAIN PAN	1 per Assy	
	2	161150	. CRUMB CATCHER	1 per Assy	
	3	161054	. SCREEN, FILTER	1 per Assy	
	4	155262	. DRAIN PAN, WELD ASSY,	1 per Assy	
	5	19004	. CASTER, 2 IN SWIVEL	4 per Assy	
	6	NS04-005	. LOCKNUT, 1/4-20, SERRATED FLANGE	16 per Assy	
	7	161350	. CLIP, FILTER, WELD ASSY	2 per Assy	
	8	86349	. O-RING	5per Assy	
	9	155290	. STANDPIPE	1 per Assy	

* = Not shown
A/R = As Required

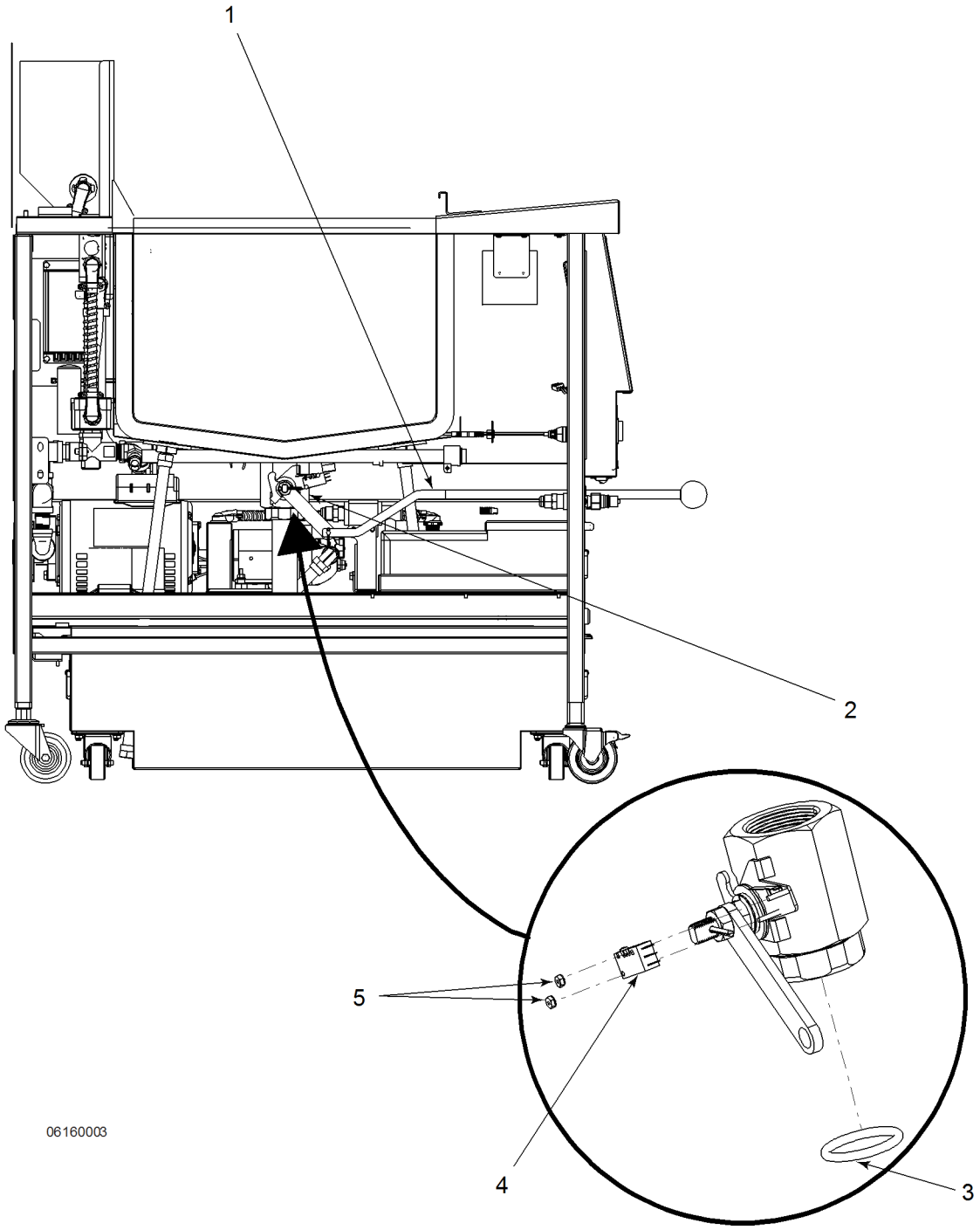


Figure 6-18 CFE 415/427 Drain Valve Assembly

Table 6-5 CFE 415/427 Drain Valve Assembly

Fig No.	Item No.	Part No.	Description	Qty 415	Qty 427
6-3	1	161685	DRAIN ROD, WELD ASSY	1	2
	2	159010	VALVE ASSY, DRAIN	1	1
	3	84415	. O-RING	1 per Assy	
	4	95489	. MICRO SWITCH, LEVER	1 per Assy	
	5	NS02-009	. NUT, HEX	2 per Assy	

* = Not shown
A/R = As Required

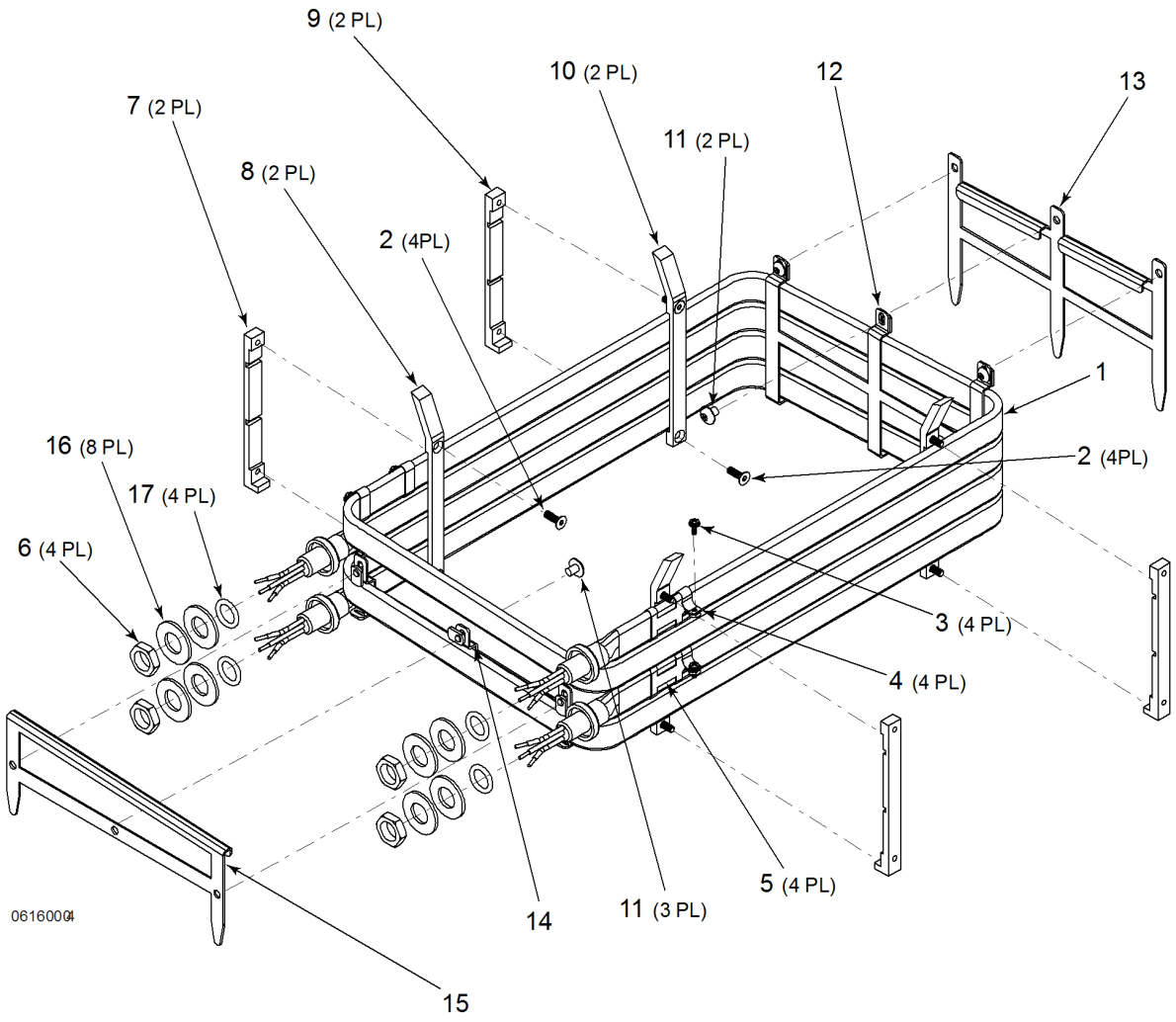
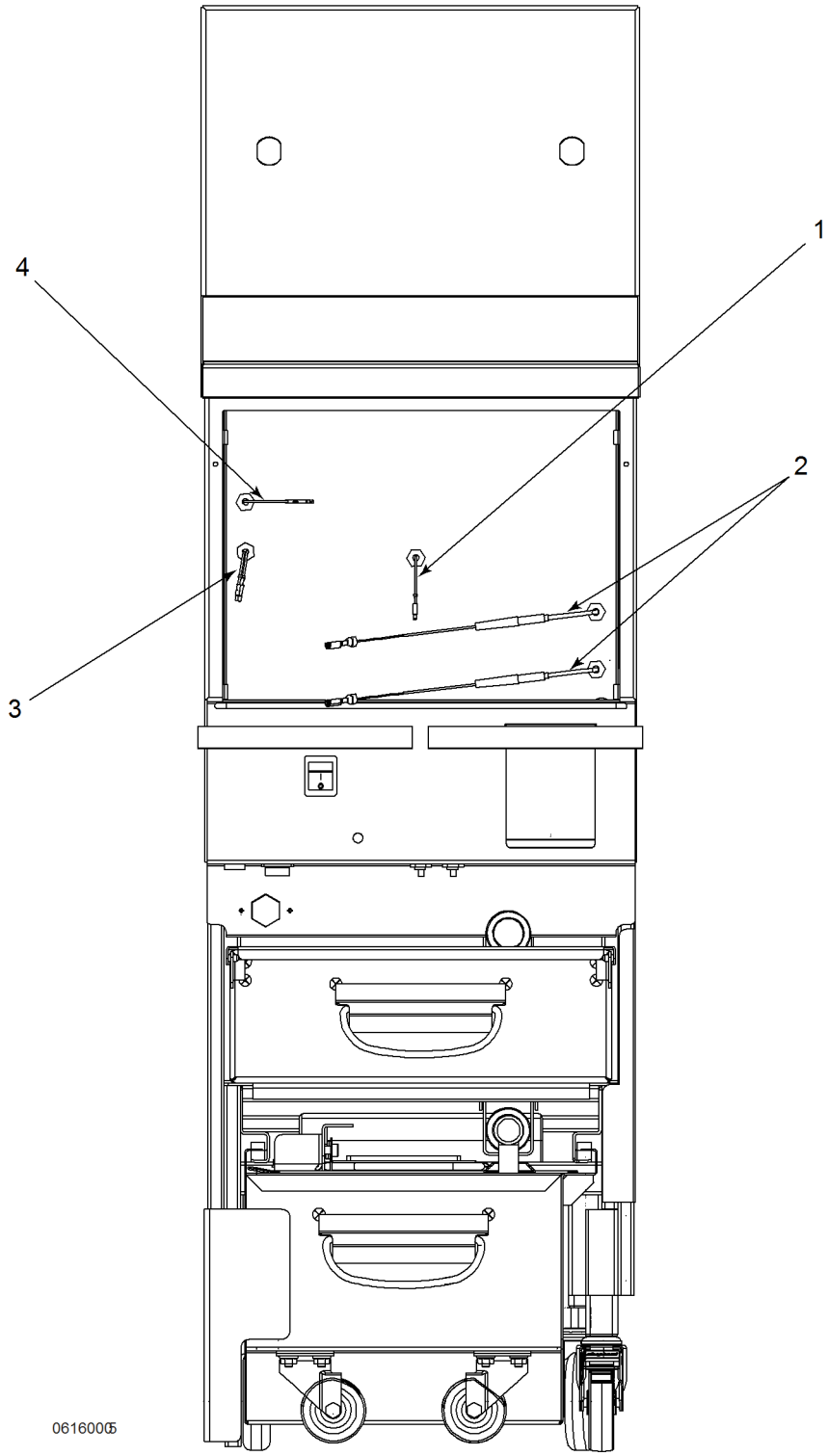


Figure 6-19 Heating Element Assy

Table 6-6 Heating Element Assy

Fig No.	Item No.	Part No.	Description	Qty 415	Qty 427
6-4		97527	HEATING ELEMENT ASSY	1	2
	1	155207	. HEATING ELEMENT	2 per Assy	
	2	SC01-313	. SCREW, 10-32 X 5/8	8 per Assy	
	3	SC01-310	. SCREW, #6-32 X 3 PH	4 per Assy	
	4	154866	. CLAMP, HIGH LIMIT	4 per Assy	
	5	154736	. CLIP, HIGH LIMIT	2 per Assy	
	6	16855	. O-RING	4 per Assy	
	7	154840	. SPREADER, HI LIMIT, TAP PLATE	2 per Assy	
	8	154839	. SPREADER, HI LIMIT, ANGLED	2 per Assy	
	9	87120	. SPREADER, TAP PLATE	2 per Assy	
	10	87119	. SPREADER, ANGLED	2 per Assy	
	11	SCO-178	SCREW, #10-32 X 14	6 per Assy	
	12	156579	GUARD, ELEMENT, REAR	1 per Assy	
	13	156586	GUARD CLAMP, ELEMENT, REAR	1 per Assy	
	14	156348	GUARD, ELEMENT, FRONT	1 per Assy	
	15	156512	GUARD CLAMP, ELEMENT, FRONT	1 per Assy	
	16	NS01-017	NUT, HEX, 5/8-18 B	4 per Assy	
	17	WA01-005	WASHER 5/8 TYPE A-SERIES N	8 per Assy	

* = Not shown
A/R = As Required



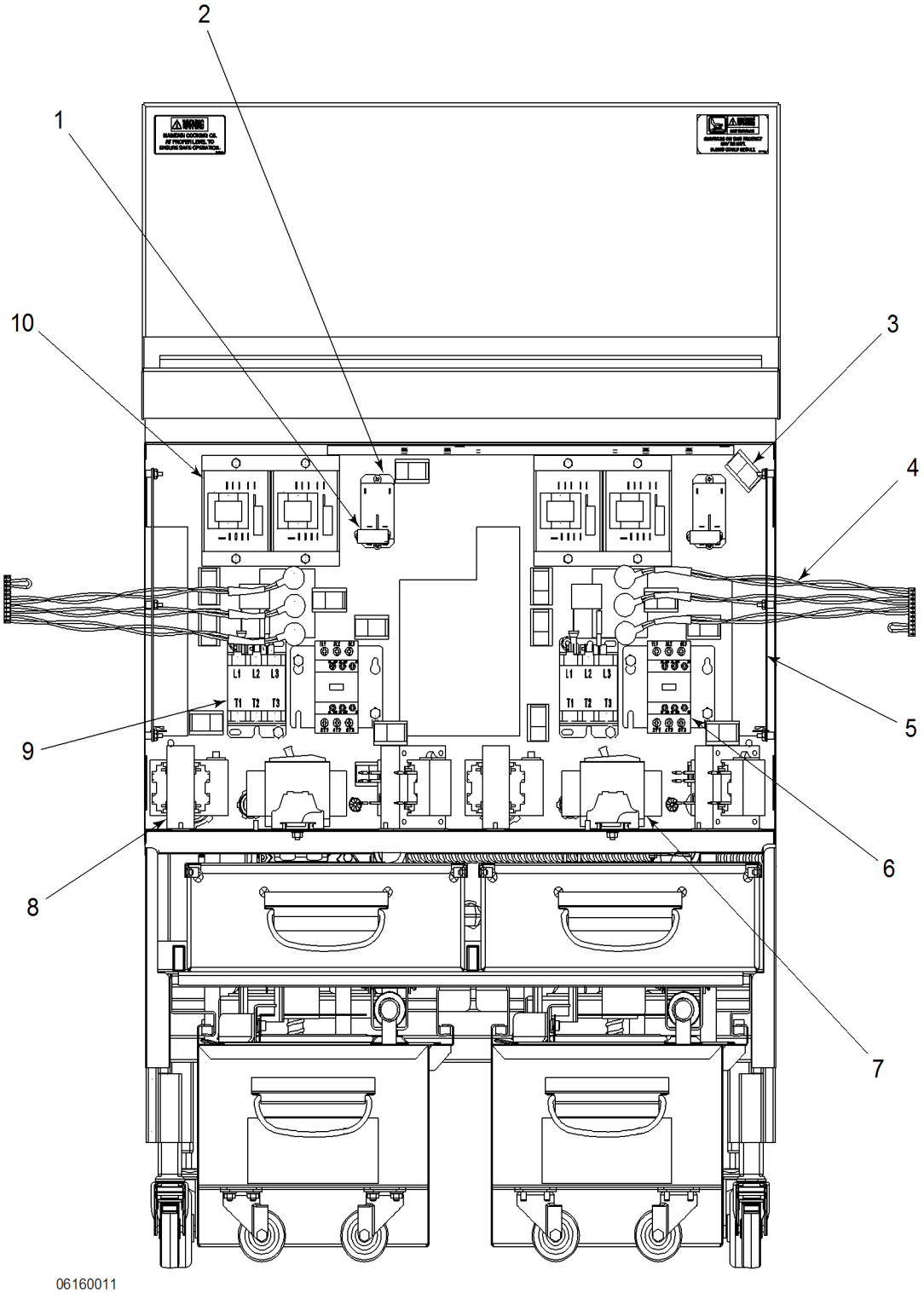
NOTE: Front panels removed for clarity.

Figure 6-20 Thermocouple and Probes

Table 6-7 Thermocouple and Probes

Fig No.	Item No.	Part No.	Description	Qty 415	Qty 427
6-5	1	140492	KIT, LEVEL PROBE	1	2
	2	93968	THERMOCOUPLE, HI LIMIT	2	4
	3	140490	KIT, PROTECTION PROBE	1	2
	4	140491	KIT, TEMPERATURE PROBE	1	2

* = Not shown
A/R = As Required



NOTE: Doors, panels, and wiring removed for clarity.

Figure 6-21 CFE 415/427 Control Shroud

Table 6-8 CFE 415/427 Control Shroud

Fig No.	Item No.	Part No.	Description	Qty 415	Qty 427
6-6	1	96023	R/C SNUBBER ASSY, W/ TERMINALS	1	2
	2	ME90-008	RELAY, 12 VDC COIL, 30 AMP	1	2
	3	EF02-140	CLIP-SNAP, CLOSING WIRE	8	16
	4	24347	CURRENT SENSE ASSEMBLY	1	2
	5	84454	PCB, AIF	1	2
	6	65073	CONTACTOR, SQUARE D, 24V	1	2
	7	157253	CIRCUIT BREAKER, 240V, 50A	1	2
	8	83977	TRANSFORMER, 208/240V, 50/60 HZ	2	4
	9	51795	CONTACTOR, 24V	1	2
	10	83581	CONTROL MODULE, HIGH LIMIT	2	4

* = Not shown
A/R = As Required

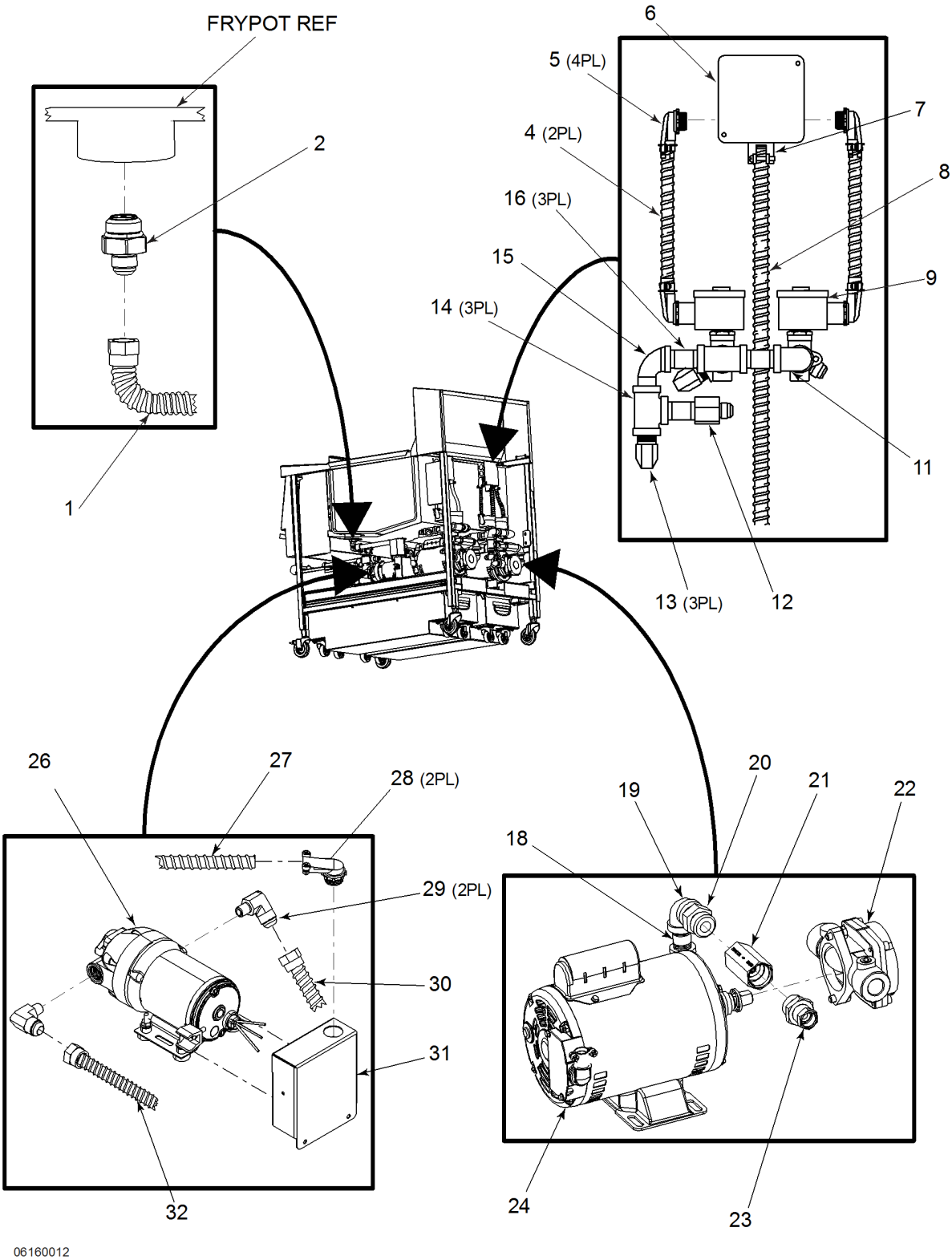


Figure 6-22 Motors and Plumbing Components

Table 6-9 Heating Element Assy

Fig No.	Item No.	Part No.	Description	Qty 415	Qty 427
6-7					
	1	77523-002	TUBE-SUCTION, 18 IN L D	2	4
	2	158282	VALVE, CHECK, 12SAE ORB TO 45FLR	2	4
	3*	97522	SOLENOID D AND F, ASSY	1	2
	4	90960-003	. CONDUIT, FLEX, 3/8 IN X 6.750 IN	2 PER ASSY	
	5	18107	. CONNECTOR. 3/8 X 90 FLEX COND	4 PER ASSY	
	6	18102	. JUNCTION BOX	1 PER ASSY	
	7	18104	. CONNECTOR, CONDUIT	1 PER ASSY	
	8	90961-006	. CONDUIT, FLEX, 1/2 IN X 32.0 IN	1 PER ASSY	
	9	154048	. VALVE, 220-240V, SOLENOID 1/2NPT	2 PER ASSY	
	10*	FP01-023	. NIPPLE, 1/2 IN CLOSE BLACK	3 PER ASSY	
	11	FP01-090	. ELBOW, 1/2 NPT X 90 FEMALE BI	1 PER ASSY	
	12	FP01-246	. CONN, 1/2 NPT F X #8 45 FLARE	1 PER ASSY	
	13	FP01-205	. ELBOW, 1/2 NPT 45 DEG FLARE	3 PER ASSY	
	14	FP01-112	. TEE, 1/2 NPT FEMALE PIPE	3 PER ASSY	
	15	FP01-088	. ELBOW, STREET 1/2 X 90 BL IRO	1 PER ASSY	
	16	FP02-018	. NIPPLE, 1/2 NPR X 2.00 L BI	3 PER ASSY	
	17*	158979	PUMP ASSY, CFE-42X	1	2
	18	FP02-062	. NIPPLE 1/2 NPT X 1.75 LONG	1 PER ASSY	
	19	FP01-090	. ELBOW, 1/2 NPT X 90 FEMALE BI	1 PER ASSY	
	20	FP01-256	. FTG, 12 SAE, NPT	1 PER ASSY	
	21	90506-001	. VALVE, CHECK, SAE 12, 3 PSI	1 PER ASSY	
	22	17437	. PUMP, SUB ASSY, 5 GPM	1 PER ASSY	
	23	FP01-283	. FTG, 12 SAE, 8 45 DEG FLARE SWVL	1 PER ASSY	
	24	67583	. MOTOR, 1/2 HP, FILTER PUMP	1 PER ASSY	
	25*	158980	PUMP ASSY, JIB	1	2
	26	153417-002	. PUMP, 230V, JIB	1 PER ASSY	
	27	90960-018	. CONDUIT, FLEXIBLE, 3/8 DIA X 16	2 PER ASSY	
	28	18107	. CONNECTOR, 3/8 X 90, FLEX COND	2 PER ASSY	

* = Not shown
A/R = As Required

Fig No.	Item No.	Part No.	Description	Qty 415	Qty 427
	29	FP01-239	. ELBOW, 90 DEG, 3/8 NPT, 45 FLARE	2 PER ASSY	
	30	77523-001	. TUBE, SUCTION, 12 IN L DORMONT	1 PER ASSY	
	31	156588	. COVER, JIB ASSY, STUD	1 PER ASSY	
	32	77523-009	. TUBE, SUCTION, 13 IN DORMONT	1 PER ASSY	

* = Not shown
A/R = As Required

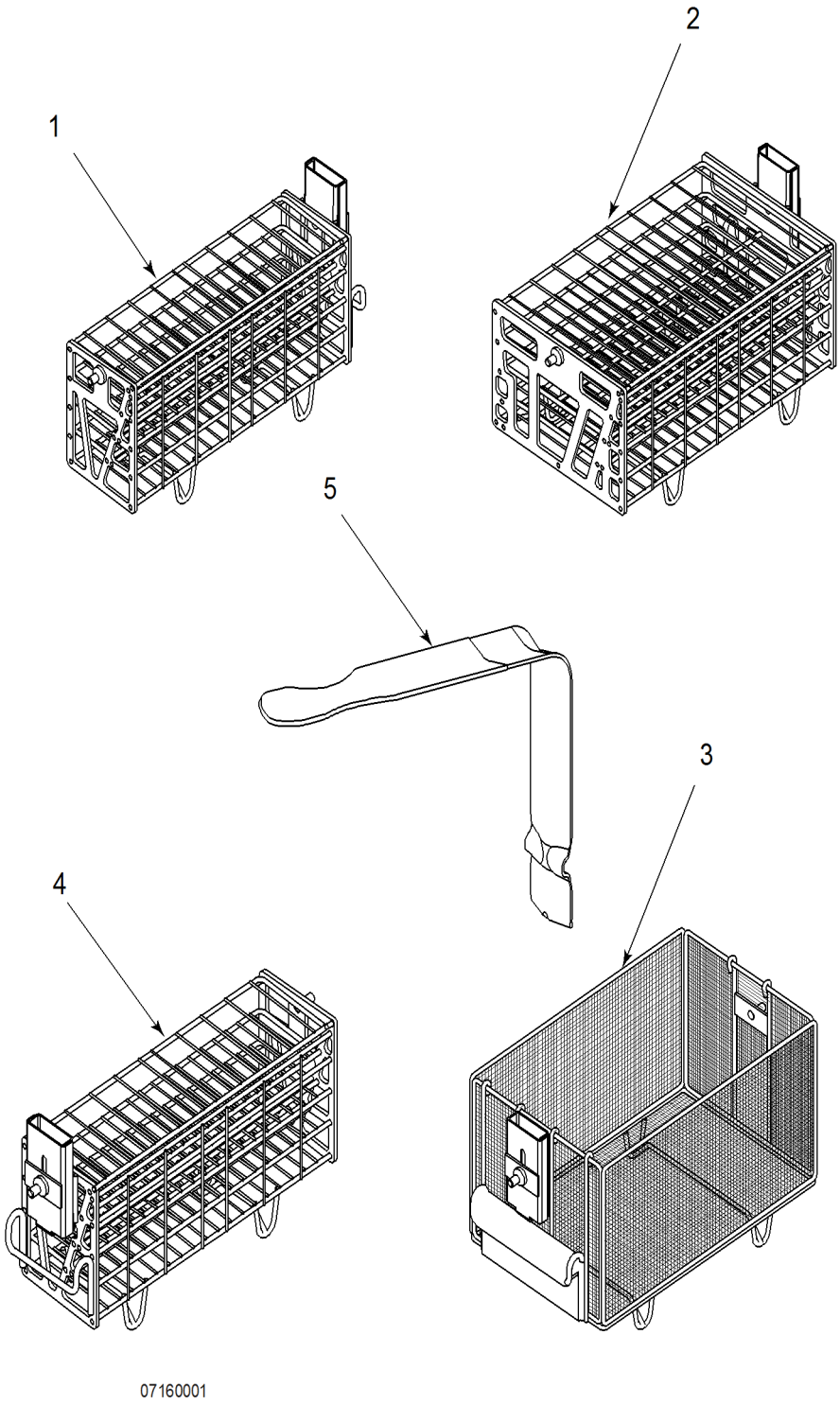


Figure 6-23 CFE 415/427 Accessories

Table 6-10 CFE 415/427 Accessories

Fig No.	Item No.	Part No.	Description	Qty 415	Qty 427
6-8	1	159332	BASKET, RH, TIERED FILLET	A/R	A/R
	2	159497	BASKET, TIERED FILLET	A/R	A/R
	3	161394	BASKET, FULL, NUGGET	A/R	A/R
	4	159545	BASKET, LH, TIERED FILLET	A/R	A/R
	5	160099	HANDLE, FRYER BASKET	A/R	A/R

* = Not shown
A/R = As Required

Appendix A

Wiring Diagrams

Wiring goes here.