SERVICE MANUAL

MODEL ERD40 Shown

FLOOR MODEL ELECTRIC FRYERS

MODEL	ML	DESCRIPTION
ERD40	114614	15 ½" WIDE
ERD50	114615	15 ½" WIDE
ERD225	114616	15 ½" WIDE
ERD85	114617	21" WIDE
ERC40	114618	15 ½" WIDE
ERC50	114619	15 ½" WIDE
ERC225	114620	15 ½" WIDE
ERC85	114621	15 ½" WIDE
ERO15	114622	15 ½" WIDE FLOOR SERVE STATION
ERO21	114623	21" WIDE FLOOR SERVE STATION

- NOTICE -

This Manual is prepared for the use of trained Vulcan Service Technicians and should not be used by those not properly qualified. If you have attended a Vulcan Service School for this product, you may be qualified to perform all the procedures described in this manual.

This manual is not intended to be all encompassing. If you have not attended a Vulcan Service School for this product, you should read, in its entirety, the repair procedure you wish to perform to determine if you have the necessary tools, instruments and skills required to perform the procedure. Procedures for which you do not have the necessary tools, instruments and skills should be performed by a trained Vulcan Service Technician.

A Product of VULCAN-HART LOUISVILLE, KY 40201-0696

Form 24577 (12-96)

TABLE OF CONTENTS

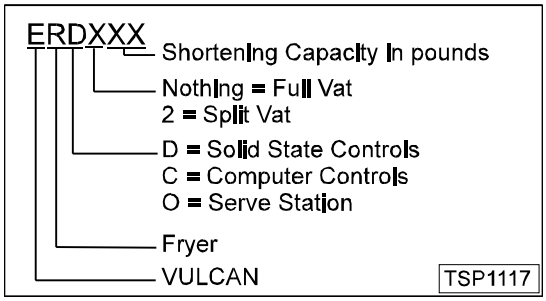
GENERAL

INTRODUCTION

This manual covers the following floor model fryers.

All fryer models are available with the following electrical specifications:
208/60/3, 240/60/3, 480/60/3, 220/380/60/3 4 wire, 240/415/60/3 4 wire

Serve station models are available in 120/60/1 if equipped with heat lamp.



MODEL	DESCRIPTION	CONTROLS	KW	SHORTENING CAPACITY IN POUNDS
ERD40	15 ½" wide	Solid State	14 & 17	40
ERD50	15 ½" wide	Solid State	14, 17 & 21	50
ERD225	15 ½" wide	Solid State	14, 17 & 21	25 for each vat
ERD85	21" wide	Solid State	24	85
ERC40	15 ½" wide	Computer	14 & 17	40
ERC50	15 ½" wide	Computer	14, 17 & 21	50
ERC225	15 ½" wide	Computer	14, 17 & 21	25 for each vat
ERC85	21" wide	Computer	24	85
ER015	15 ½" wide Serve Station			
ER021	21" wide Serve Station			

ERD225

ERC50
STATION

ERD85

ERO15 SERVE

BATTERY CONFIGURATION

Batteries of up to five fryers can be configured.

NOTE:

1. A filter dump station can be located under any position in a battery if it has been built without a serve station.
2. A filter dump station can be located under any position in a battery if the line-up has been built with a serve station located at either end of the battery.
3. When a serve station is built between two fryers within a battery, the filter dump station is located under the serve station.
4. In two-unit batteries utilizing a serve station, the filter dump station will always be located under the fryer.

543-1160

Three unit battery shown

TOOLS

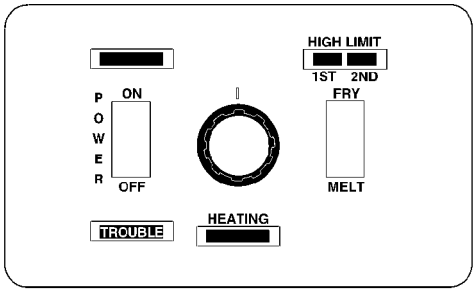
- Standard set of hand tools.
- VOM with AC current tester.

NOTE: Any quality VOM with a sensitivity of 20,000 ohms per volt can be used.

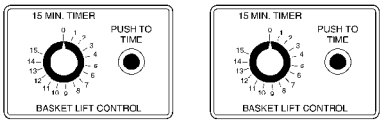
- Thermometer.
- Field service grounding kit Part #TL-84919.
- Loctite #242 Part #520228.

OPERATOR CONTROL LOCATION

Solid State Controls



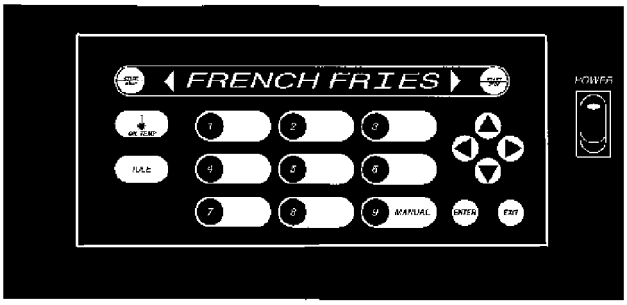
SOLID STATE CONTROL



SOLID STATE CONTROL
TIMED BASKETLIFT
OPTION

545-1162

Computer Controls



PL-52208

REMOVAL AND REPLACEMENT OF PARTS

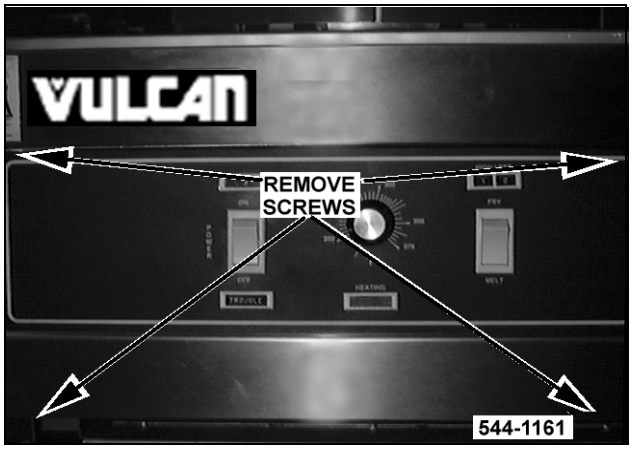
CONTROL PANELS

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. THERE MAY BE TWO SEPARATE CIRCUITS. BE SURE BOTH ARE DISCONNECTED. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

WARNING: HOT OIL AND PARTS CAN CAUSE BURNS. USE CARE WHEN SERVICING THE FRYER.

1. Remove the two screws from the upper corners of the control panel and two screws in bottom lip.

Solid State Controls shown



2. Lift out to access the back of the control panel.
3. Disconnect the lead wires to the control panel components to remove it from the fryer.
4. Reverse procedure to install.

POTENTIOMETER (SOLID STATE MODELS)

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. THERE MAY BE TWO SEPARATE CIRCUITS. BE SURE BOTH ARE DISCONNECTED. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Remove the control panel as outlined under "CONTROL PANELS".
2. Unplug the lead wire connection.
4. Loosen the set screw and remove the knob.
5. Remove the nut from the shaft and remove the potentiometer.
6. Reverse procedure to install.

COMPUTER CONTROL

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. THERE MAY BE TWO SEPARATE CIRCUITS. BE SURE BOTH ARE DISCONNECTED. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

CAUTION: CERTAIN COMPONENTS IN THIS SYSTEM ARE SUBJECT TO DAMAGE BY ELECTROSTATIC DISCHARGE DURING FIELD REPAIRS. A FIELD SERVICE GROUND KIT IS AVAILABLE TO PREVENT DAMAGE. THE FIELD SERVICE GROUNDING KIT MUST BE USED ANYTIME THE CONTROL BOARD IS HANDLED.

1. Remove the control panel as outlined under "CONTROL PANELS".
2. Unplug the lead wire connections.
3. Remove computer control.
4. Reverse procedure to install.

NOTE: There are no setup procedures for installing new computer control board because wiring harness tells board what kind of fryer it is installed in.

5. Using the “INSTRUCTIONS” manual, program the controller with the customer’s settings and products.

HEATING ELEMENTS

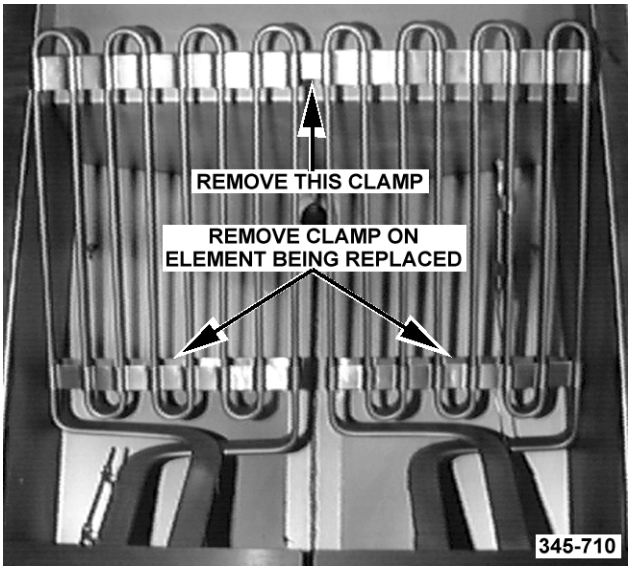
WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. THERE MAY BE TWO SEPARATE CIRCUITS. BE SURE BOTH ARE DISCONNECTED. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

NOTE: Don't bend or kink high limit capillary tube.

1. Remove the basket hangers or guide block support (basket lift models).

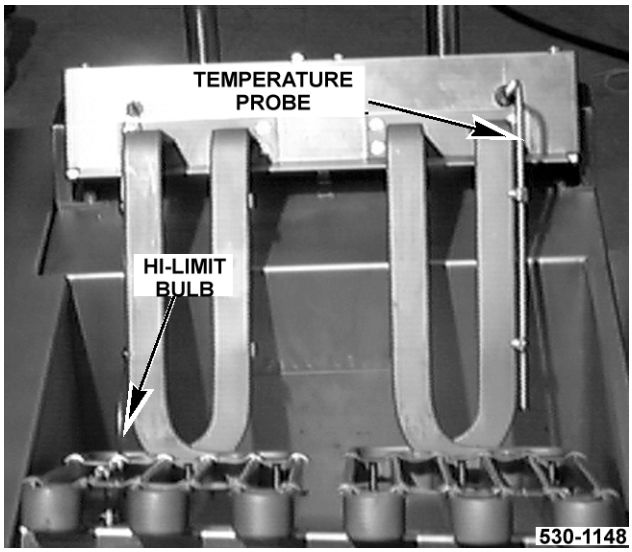
2. Lift the elements from the shortening and allow to drain.

3. Remove the element clamp from the end of the elements and the clamp at the other end of the element being replaced..

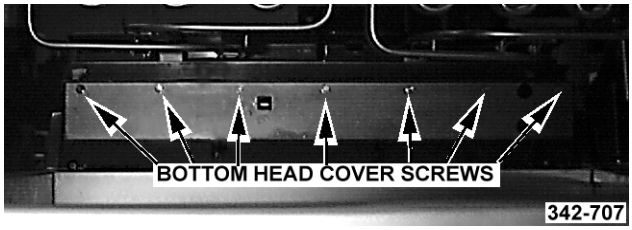


4. Remove bulb and capillary tube clamps and/or probe clamps from the element being replaced. Save for reuse if needed.

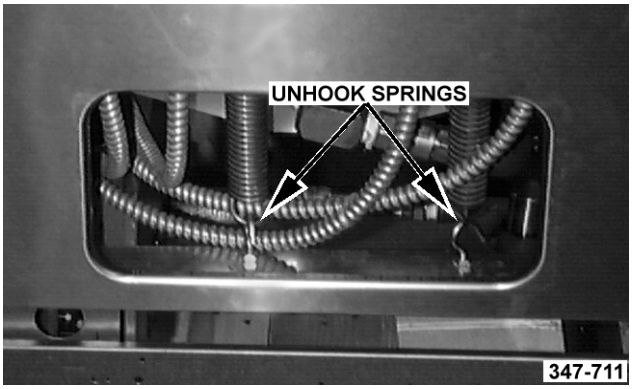
NOTE: Half of each clamp is permanently fixed in place on the element. Center the Hi-limit bulb in its clamps before tightening clamp. The Temperature Probe should be inserted in the grommet in the head then secured with the clamps.



5. Remove screws from the bottom of the element head cover.

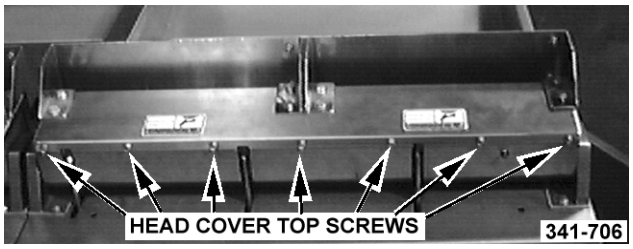


6. Lower the elements and remove the lift assist springs from the hooks at the rear of the machine.



7. Remove four screws securing element bracket.

8. Remove the screws from the rear top of the head cover.



9. Lift cover enough to access element wires. Identify the six lead wire connections for connection later. Then disconnect the six lead wires from the element being removed.

NOTE: Each heater has three elements inside and two wire connections for each element.

10. Remove the element.

11. Reverse procedure to install.

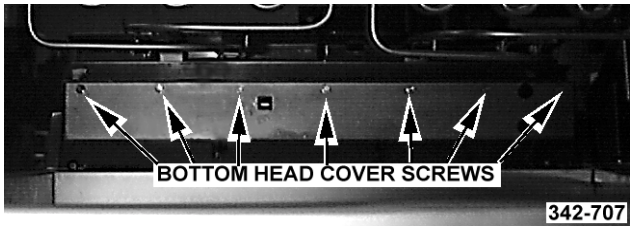
PROBE

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. THERE MAY BE TWO SEPARATE CIRCUITS. BE SURE BOTH ARE DISCONNECTED. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

NOTE: Don't bend or kink high limit capillary tube.

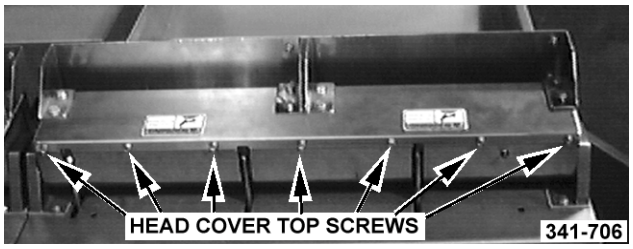
1. Raise the heating elements and allow to drain.

2. Remove screws securing the bottom of the head cover.



3. Remove the clamps from the probe.

4. Lower the element enough to remove the screws securing the top of the head cover.



5. Lift the head cover enough to access and disconnect the probe lead wires.

6. Reverse procedure to install.

7. Check temperature control for calibration as outline under "TEMPERATURE CONTROL CALIBRATION".

HIGH LIMIT THERMOSTAT

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. THERE MAY BE TWO SEPARATE CIRCUITS. BE SURE BOTH ARE DISCONNECTED. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

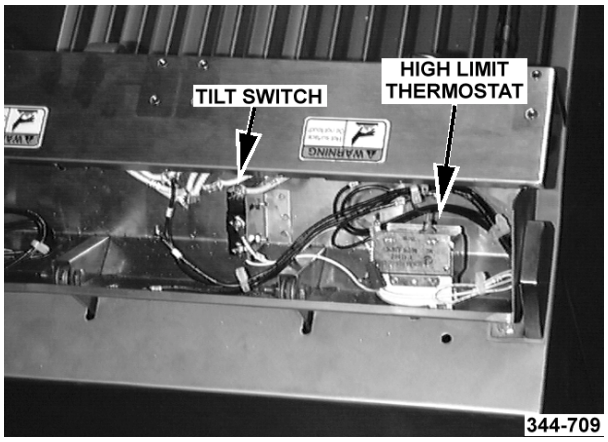
1. Raise the heating elements out of the shortening and allow to drain.

2. Loosen the clamps around the bulb and capillary tube.

3. Remove screws securing the bottom of the head cover.

4. Lower the element enough to remove the screws securing the top of the head cover.

5. Lift the head cover enough to access and disconnect the lead wires.



6. Remove the screws that secure the high limit thermostat.

7. Remove the grommet from the element head.

8. Remove the bulb, capillary tube and the high limit thermostat from the element head.

9. Reverse procedure to install.

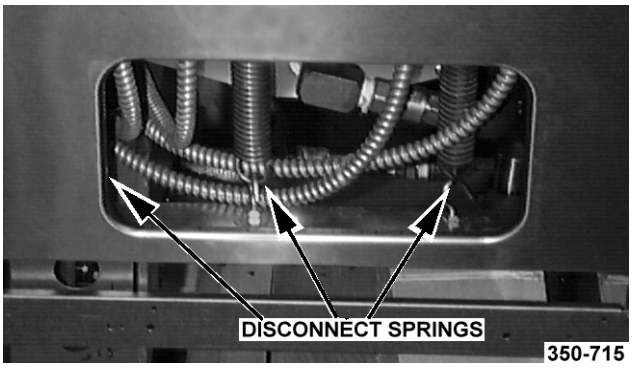
LIFT ASSIST SPRINGS

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. THERE MAY BE TWO SEPARATE CIRCUITS. BE SURE BOTH ARE DISCONNECTED. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Remove head cover screws.

2. Remove access cover by prying out on top edge with small screwdriver.

3. Disconnect spring(s) at bottom.



4. Lift head cover enough to access hanger mounting bolts.

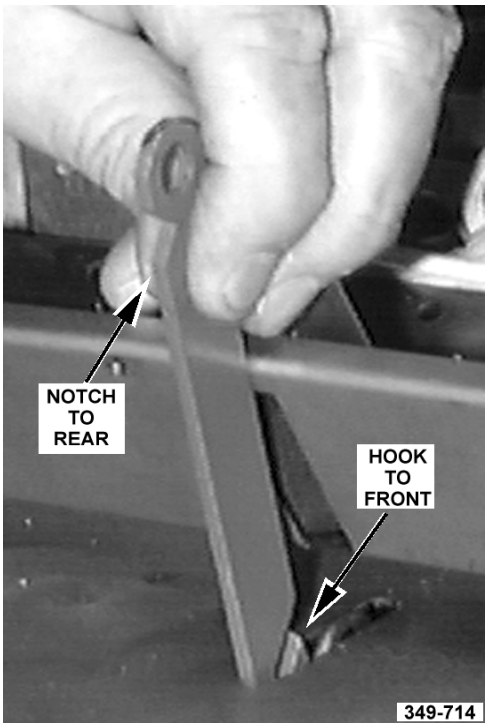
NOTE: Do not bend or kink high limit capillary tube.

5. Remove hanger mounting nut and bolt.

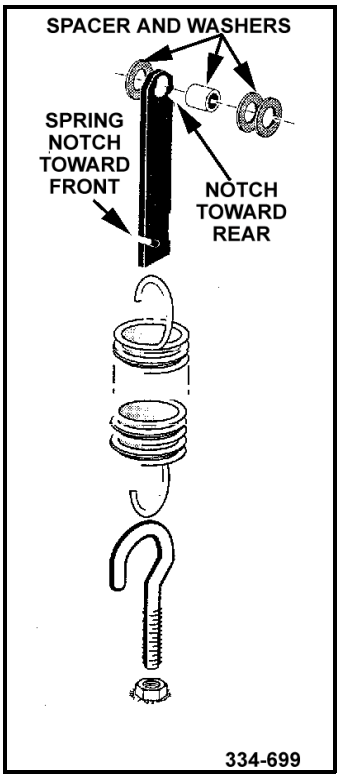
6. Remove spacer and washers.

7. Remove hanger and spring out from bottom.

8. To install spring, insert hanger from top with notch pointing to rear of unit and spring hook opening pointing to front of unit. Hold in place while inserting spring from bottom.



9. Hook spring onto hanger. Reassemble spacer and washers onto hanger and secure with bolt and nut.



10. Reconnect spring at bottom and adjust as outlined under “LIFT ASSIST SPRING ADJUSTMENT”.

11. Install covers.

TILT SWITCH

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. THERE MAY BE TWO SEPARATE CIRCUITS. BE SURE BOTH ARE DISCONNECTED. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

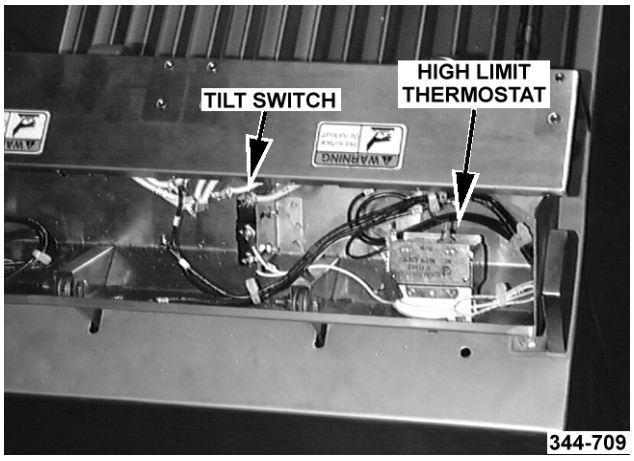
1. Remove head cover screws.

2. Lift head cover enough to access tilt switch mounting screws and remove screws.

NOTE: Do not bend or kink high limit capillary tube.

3. Disconnect tilt switch lead wires.

4. Remove tilt switch.



5. Reverse procedure to install and adjust as outlined under " TILT SWITCH ADJUSTMENT".

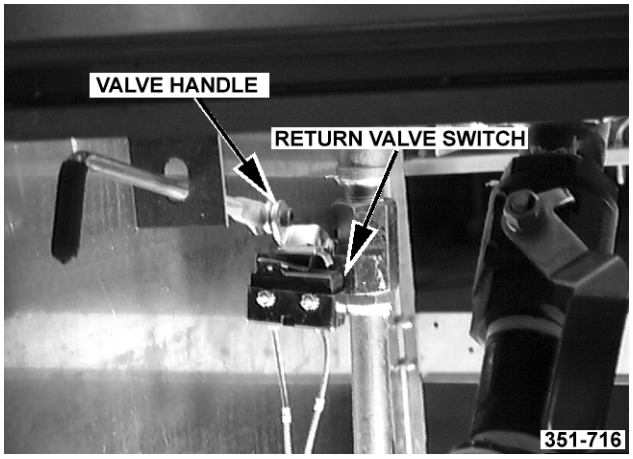
FILTER-READY RETURN VALVE SWITCH

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. THERE MAY BE TWO SEPARATE CIRCUITS. BE SURE BOTH ARE DISCONNECTED. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Open front door.

2. Disconnect lead wires to return valve switch.

3. Remove switch mounting screws.



4. Reverse procedure to install.

Note: Switch mounting is a fixed location and has no provision for adjustment. The normally open contacts close before the valve handle is in the full open position.

SERVICE PROCEDURES AND ADJUSTMENTS

WARNING: HOT OIL AND PARTS CAN CAUSE BURNS. USE CARE WHEN SERVICING THE FRYER.

WARNING: CERTAIN PROCEDURES IN THIS SECTION REQUIRE ELECTRICAL TESTS OR MEASUREMENTS WHILE POWER IS APPLIED TO THE MACHINE. EXERCISE EXTREME CAUTION AT ALL TIMES. IF TEST POINTS ARE NOT EASILY ACCESSIBLE, DISCONNECT POWER, ATTACH TEST EQUIPMENT AND REAPPLY POWER TO TEST.

THERMISTOR PROBE RESISTANCE CHART

Solid State Control

°F	Resistance ± 10%
77	30,000 ohms
311	494 ohms
340	340 ohms

NOTE: If probe is opened or disconnected, the LED near the center of the Control Board will be on. If probe is shorted, the first high limit light will be on.

Computer Control

°F	Resistance ± 10%	°F	Resistance ± 10%
77	100,000 ohms	300	1394 ohms
212	5573 ohms	350	717.7 ohms
275	2004 ohms	392	434.5 ohms

TEMPERATURE CONTROL CALIBRATION

Solid State Control

1. Shortening in tank must be to fill line.
2. Allow the oil to cool below 300°F.
3. Place a thermometer in the center of the tank one inch below the oil surface.
4. Set the temperature control to 350°F and turn the fryer on.
5. After the thermometer reads 350°F, allow the temperature control to cycle three times.
6. Agitate the shortening, to eliminate any cold zones, while you record the temperatures to calculate average temperature.
7. Calculate the average temperature. Average temperature = (Temperature at "off" + temperature at "on") / 2 . (Example: (360° + 340°) / 2 = 350°F. The average temperature should be 350°F (± 5°F). The following steps should be taken if not.
   A. Carefully loosen the set screw in the temperature control knob.
   B. Rotate the knob and set the knob at the shortening temperature.
   C. Tighten the set screw.
   D. Allow the fryer to cycle and check for agreement with the thermometer.
8. If the above adjustments can not be obtained, check the control and temperature probe as outlined under "TEMPERATURE CONTROL TEST" and "THERMISTOR PROBE RESISTANCE CHART".

TEMPERATURE CONTROL TEST

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1. Remove screws securing control panel and let panel swing down.
2. Disconnect potentiometer plug.
3. Connect ohm meter to pins 1 and 3. Meter should read 10k ohms ± 10%.
4. Connect meter to pins 1 and 2. With knob turned clockwise to the stop, the meter should read zero ohms. Slowly rotate knob counterclockwise to stop and meter should change reading from 0 up to 10k ohms. Check that there are no dead spots and that wiper tracks smoothly as you rotate knob.
5. Connect meter to pins 3 and 2. With knob turned counterclockwise to the stop, the meter should read zero ohms. Slowly rotate knob clockwise to the stop and meter should change reading from 0 up to 10k ohms. Check that there are no dead spots and that wiper tracks smoothly as you rotate knob.

HEATING ELEMENT TEST

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Perform the appropriate test to obtain the desired information.

NOTE: Values in the chart are nominal values (± 10%).

				3 Phase, 3 Wire Supply Plus Ground								
TOTAL KW	**KW / PHASE**			**AMPS PER LINE 208V**			**AMPS PER LINE 240V**			**AMPS PER LINE 480V**		
	X-Y	X-Z	Y-Z	X	Y	Z	X	Y	Z	X	Y	Z
14	4.6	4.6	4.6	39	39	39	34	34	34	17	17	17
17	5.6	5.6	5.6	47	47	47	41	41	41	20	20	20
21	7	7	7	58	58	58	51	51	51	25	25	25
24	8	8	8	67	67	67	58	58	58	29	29	29

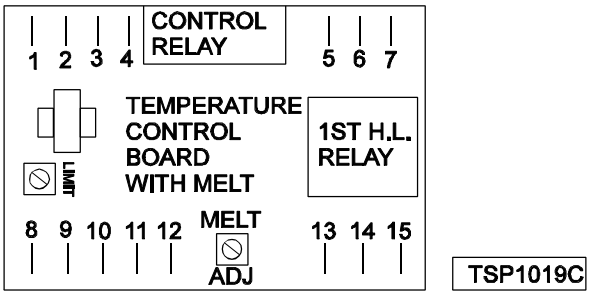
				3 Phase, 4 Wire Supply Plus Ground					
TOTAL KW	**KW / PHASE**			**AMPS PER LINE 220/380V**			**AMPS PER LINE 240/415V**		
	X-N	Y-N	Z-N	X	Y	Z	X	Y	Z
14	4.6	4.6	4.6	18	18	18	17	17	17
17	5.6	5.6	5.6	22	22	22	20	20	20
21	7	7	7	28	28	28	25	25	25
24	8	8	8	31	31	31	29	29	29

	3 Phase, 3 Wire Supply With Ground									3 Phase, 4 Wire Supply With Ground					
TOTAL KW	**RESISTANCE PER ELEMENT (OHMS) 208V**			**RESISTANCE PER ELEMENT (OHMS) 240V**			**RESISTANCE PER ELEMENT (OHMS) 480V**			**RESISTANCE PER ELEMENT (OHMS) 220/38OV**			**RESISTANCE PER ELEMENT (OHMS) 240/415V**		
	1L1 TO 1L1	1L2 TO 1L2	1L3 TO 1L3	1L1 TO 1L1	1L2 TO 1L2	1L3 TO 1L3	1L1 TO 1L1	1L2 TO 1L2	1L3 TO 1L3	1L1 TO 1L1	1L2 TO 1L2	1L3 TO 1L3	1L1 TO 1L1	1L2 TO 1L2	1L3 TO 1L3
14	18.3	18.3	18.3	24.2	24.2	24.2	97.6	97.6	97.6	42.2	42.2	42.2	48.7	48.7	48.7
17	15.2	15.2	15.2	20.4	20.4	20.4	83	83	83	34.6	34.6	34.6	41.5	41.5	41.5
21	12.4	12.4	12.4	16.3	16.3	16.3	66.4	66.4	66.4	27.3	27.3	27.3	33.2	33.2	33.2
24	10.7	10.7	10.7	14.2	14.2	14.2	57.4	57.4	57.4	24.6	24.6	24.6	28.7	28.7	28.7

MELT TEMPERATURE CALIBRATION (SOLID STATE CONTROL)

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. THERE MAY BE TWO SEPARATE CIRCUITS. BE SURE BOTH ARE DISCONNECTED. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

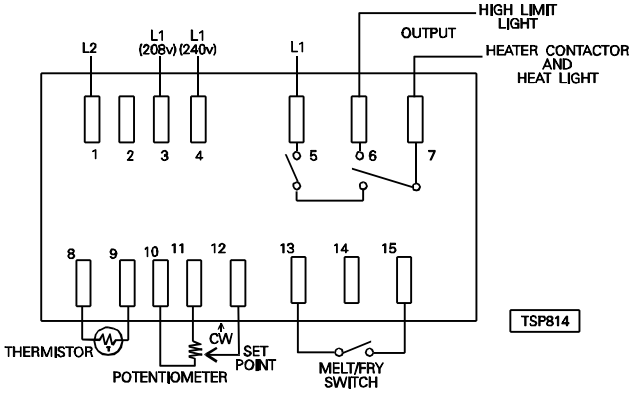
1. Place a thermometer in the center of the vat at one inch below the shortening surface.
2. Allow the shortening to cool below 135°F.
3. Remove the screws securing the control panel and allow it to swing downward.
4. Disconnect the electric harness and remove the control panel.
5. Remove the melt temperature adjustment screw sealant by gently chipping away with a screwdriver. (screw located to the right of pin #12)
6. Turn the adjustment screw clockwise to the stop position.



7. Connect a DC voltmeter between pins 13 and 15 on the electronic control board.
8. Reconnect the control panel wiring harness.
9. Reconnect the power supply.
10. While holding the control panel in your hand, turn the power switch on.
11. Set the temperature control to the frying temperature and the melt switch to melt.
12. The voltmeter should read 5 VDC.
13. When the shortening temperature reaches 135°F, turn the adjustment screw counterclockwise until the voltmeter reads 0 VDC.
14. Place a small drop of enamel paint or fingernail polish in the center of the screw.
15. Disconnect the power and remove the voltmeter.
16. Install the control panel.

CONTROL BOARD TEST (SOLID STATE CONTROL)

1. Check the temperature of the shortening. The temperature should be below 300°F and above 135°F.
2. Access the control board.
3. With the potentiometer set at 0°, turn the power switch on and check the incoming voltage.
   A. 120 volts, between pins 1 - 2 and I - 5.
   B. 208 or 240 Volts, between pins 1 - 3 and 1 - 5
   C. 240 Volts, between pins 1 - 4 and 1 - 5 (Export only)
4. Check the potentiometer as outlined under “TEMPERATURE CONTROL TEST”.
5. Check the thermistor temperature probe as outlined under “THERMISTOR PROBE RESISTANCE CHART”.
6. Set the control to call for heat, the heat light should light.
7. Check for output voltage between pins 1 - 7.



8. Replace the control board if there isn't any output.

COMPUTER CONTROL TEST

1. Check for 24 VAC at pin 1 (and pin 2 on split vat fryer) referenced to pin 13.

2. Check for 12 to 16 VDC between pins 23 and 24.

3. Verify probe thermistor operation as outlined under “THERMISTOR PROBE RESISTANCE CHART”.

4. Check output for 24 VAC at pin 15 (and pin 16 for split vat fryer) when calling for heat. Reference to pin 13.

5. Check output for 24 VAC at pin 14 (and pin 19 on split vat fryers) when in a cook cycle. Reference to pin 13.

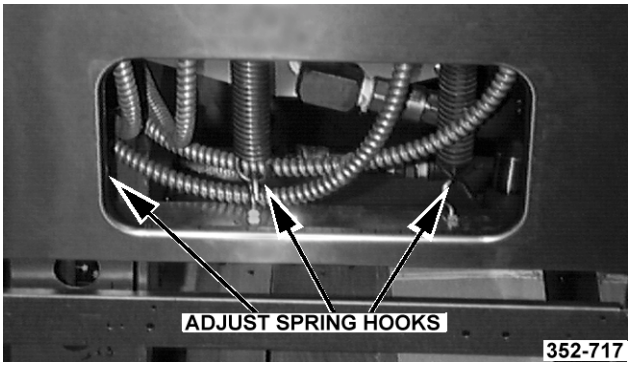
6. Replace computer control if outputs are not correct.

LIFT ASSIST SPRING ADJUSTMENT

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. THERE MAY BE TWO SEPARATE CIRCUITS. BE SURE BOTH ARE DISCONNECTED. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Remove rear access cover by prying out on top edge with small screwdriver.

2. Adjust all spring hooks evenly so that elements stay in the raised position when lifted.



3. Install rear cover.

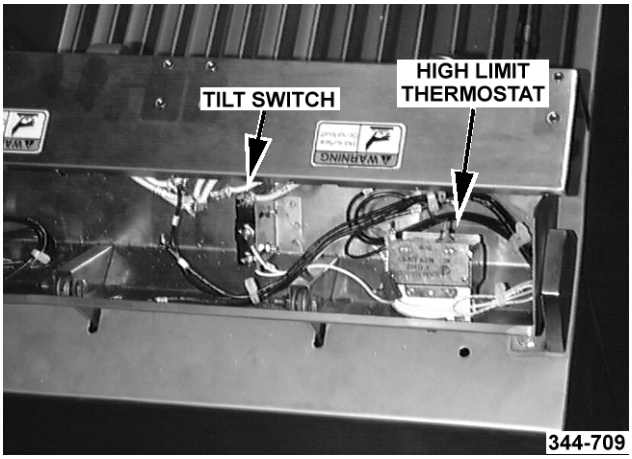
TILT SWITCH ADJUSTMENT

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. THERE MAY BE TWO SEPARATE CIRCUITS. BE SURE BOTH ARE DISCONNECTED. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Remove head cover screws.

2. Lift head cover enough to access tilt switch mounting screws.

NOTE: Do not bend or kink high limit capillary tube.



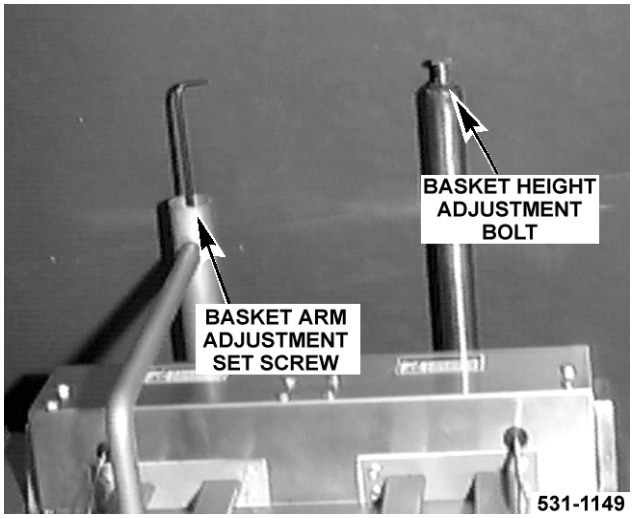
3. With oil at level mark on vat, switch should operate to shut off elements before front of elements leave oil. Loosen switch mounting screws and adjust switch as required.

4. Install head cover.

BASKET LIFT ARM ADJUSTMENT

1. When basket is in the down position, it should just clear the rack which is installed above the elements.
   A. To adjust, pull basket arm off lift shaft and adjust height adjustment bolt to raise or lower basket arm as required. Both baskets should be same height.

2. Rollers on basket arm should touch rear of tank and be square to tank.
   A. To adjust, loosen basket arm set screw and adjust arm in or out as required. Use Loctite #242 on set screw and tighten.

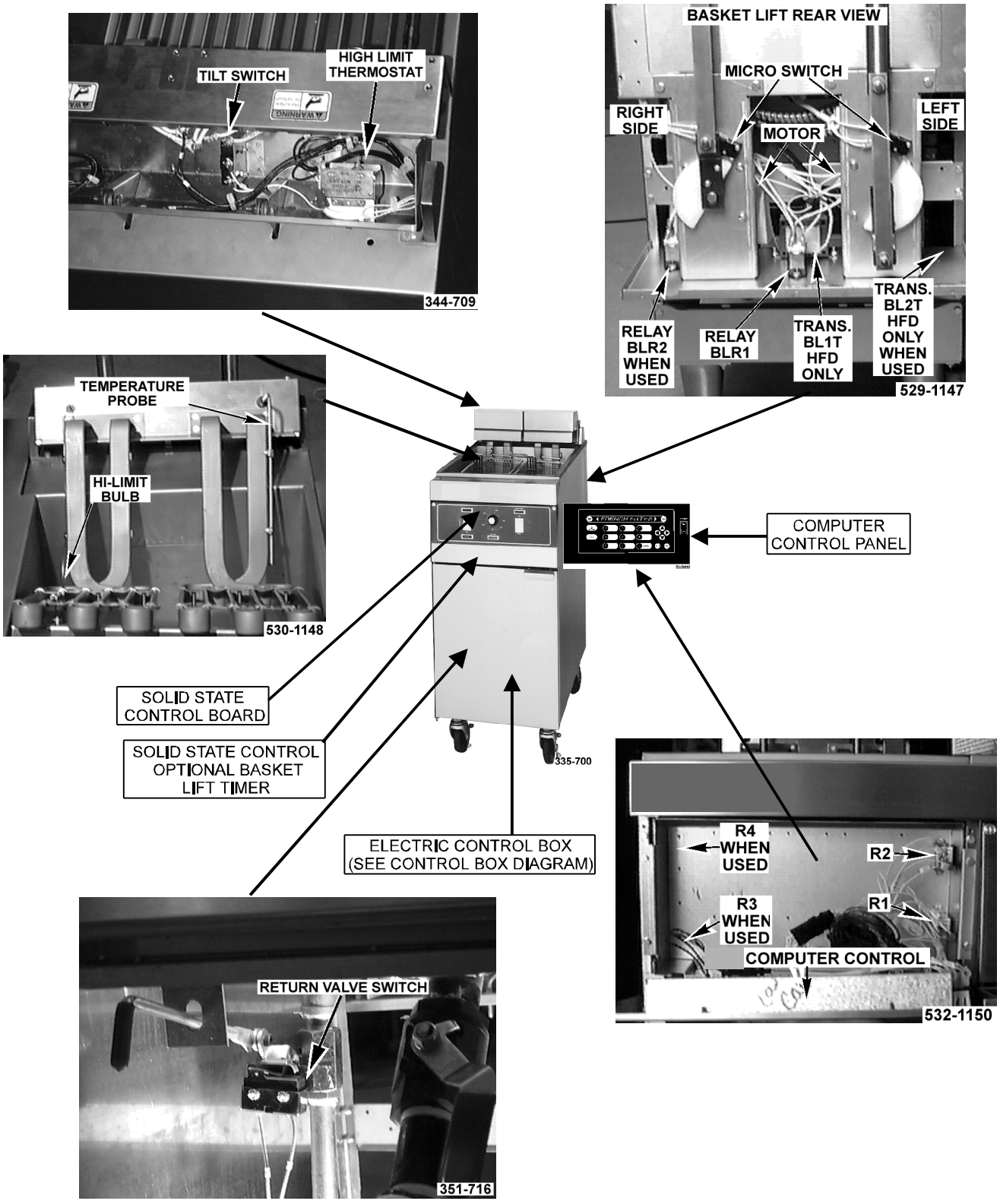


ELECTRICAL OPERATION

COMPONENT FUNCTION

1T TRANSFORMER	Supplies 12 VAC to computer power supply board.
2T TRANSFORMER	Supplies 24 VAC to computer control and/or inter-plumb system.
3T TRANSFORMER	Used in 480 VAC units.
BL1T TRANSFORMER	Supplies power to solid state model single and dual basket lifts.
BL2T TRANSFORMER	Used in addition to BL1T to supply power to solid state model split vat basket lift.
COMPUTER CONTROL	Monitors temperature probe to regulate the shorting temperature and controls cooking cycle.
CONTACTOR	Controls voltage to heating elements.
FUSES 1FU, 2FU	Protect control circuits.
IPR1 RELAY	Inter-plumb control relay which controls power to the filter motor.
HEAT LIGHT	Indicates power is being supplied to the heating elements.
HEATING ELEMENT(S)	Produces heat that is transferred to the shortening.
HIGH LIMIT THERMOSTAT	Prevents the oil from reaching temperatures over 435°F (manual reset)
HIGH TEMP LIMIT LIGHT	Signals that the high limit(s) operated.
POWER LIGHT	Indicates power switch is in the "on" position.
PS-1 COMPUTER POWER SUPPLY BOARD	Supplies 10 VDC to computer control.
POWER SWITCH	Supplies power to control circuit.
RETURN VALVE SWITCH	Controls IPR1 relay which starts filter motor when valve is opened.
RELAYS R1 thru R4	Control relays on computer control models which control power to computer and heat circuits.
TEMPERATURE CONTROL . . .	Monitors temperature probe to regulate the shortening temperature.
TEMPERATURE PROBE	Senses temperature of shortening.
TILT SWITCH	Removes power to heat circuit if elements are raised.

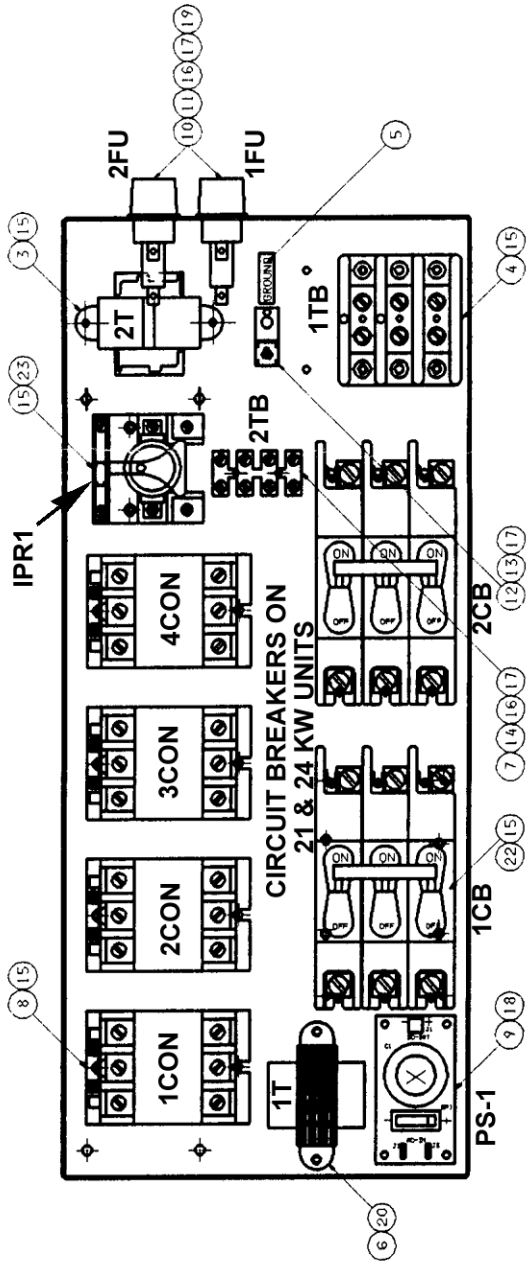
COMPONENT LOCATION



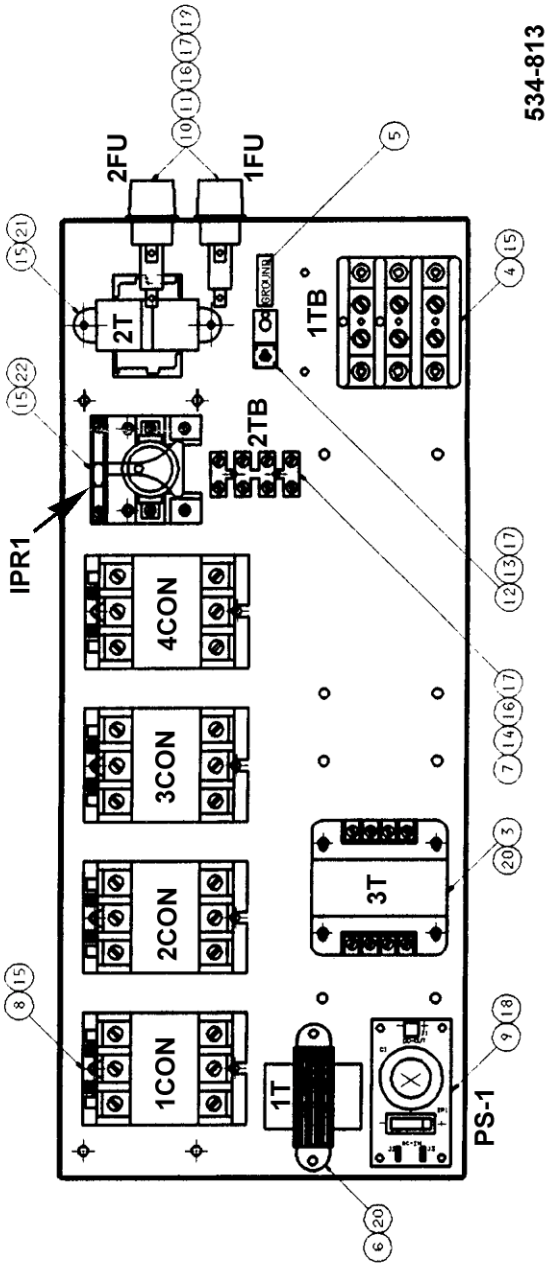
TSP 1115

CONTROL BOX

23	OPT. INTER PLUMB RELAY	IPR1
22	BREAKER ON 21 & 24 KW UNITS	
21	STAND. CONTACTOR	
20	SCREW	
19	SCREW	
18	NUT #6-32	
17	LOCKWASHER #10	
16	NUT #6	
15	SCREW. #10 X 1/2	
14	SCREW. #6 X 1/2	
13	SCREW	
12	LUG. GROUND	
11	FUSE	
10	HOLDER. FUSE	
9	BOARD. POWER	
8	CNTCTR. 3 POLE 40A 230V	
7	BLOCK. TERMINAL	
6	TRANSFORMER 12V	
5	DECAL. GROUND	
4	BLOCK. TERMINAL 3 POLE	
3	TRNSFRMR. 40VA 230/24VAC	
2	POWER SUPPLY BOX COVER	
1	POWER SUPPLY BOX	
03	PWR SUPPLY BOX ASSY T P	
QTY	DESCRIPTION	



22	OPT. INTER PLUMB RELAY	IPR1
21	TRNSFRMR. 40VA 120/24VAC	
20	SCREW	
19	SCREW	
18	NUT #6-32	
17	LOCKWASHER #10	
16	NUT #6	
15	SCREW. #10 X 1/2	
14	SCREW. #6 X 1/2	
13	SCREW	
12	LUG. GROUND	
11	FUSE	
10	HOLDER. FUSE	
9	BOARD. POWER	
8	CNTCTR. 3 POLE 40A 230V	
7	BLOCK. TERMINAL	
6	TRANSFORMER 12V	
5	DECAL. GROUND	
4	BLOCK. TERMINAL 3 POLE	
3	TRANSFORMER 480V	
2	POWER SUPPLY BOX COVER	
1	POWER SUPPLY BOX	
03	PWR SUPPLY BOX ASSY T P	
QTY	DESCRIPTION	



ELECTRONIC CONTROL (SOLID STATE) FULL VAT SEQUENCE OF OPERATION

1. Conditions
   A. Shortening at room temperature.
   B. Fryer circuit breaker "on".
   C. Melt/Fry switch in "melt".
   D. Power to pin 1 of control.
   E. Control set 350°F

2. Power switch to "on".
   A. Power to pin 2 or pin 3 or pin 4 on control depending on supply voltage.
   B. Power is jumpered to pin 5.
   C. When power switch is turned on, first high limit blinks on as control energizes relay to open path between pin 6 and pin 7. Pin 7 output is now controlled by another relay switching pin 5.
   D. Power is supplied to 1CON , 2CON, 3CON and 4CON. 1CON and 3CON will energize through the tilt switch and second high limit.

3. Control evaluates the input from the thermistor at pins 8 and 9.
   A. The melt cycle is initiated. Percent timer controls output at pin 7 to energize 2CON and 4CON.
      1) Initial condition is off (28 sec)
      2) Heat condition (2 sec)
   B. Control cycles output on time cycle of 28 sec off, then 2 sec on.

4. Shortening temperature reaches 135°F.
   A. Melt cycle is automatically over-ridden.
   B. Control uses thermistor to cycle output at pin 7.

5. Shortening temperature reaches 350°F.
   A. Control removes output from pin 7.

6. Control cycles output at pin 7 on temperature.

7. If shortening temp reaches 410°F, the control unenergizes relay which opens path from pin 7 to pin 5 and closes path from pin 7 to pin 6.
   A. The first high limit light lights.
   B. Power is removed from 2CON and 4CON.
   C. Output is removed from pin 6 when shortening temperature drops below 350°F.

8. If either the tilt switch or the second high limit open, power is removed from 1CON and 3CON and both the trouble and the second high limit lights will come on.

COMPUTER CONTROL FULL VAT SEQUENCE OF OPERATION

1. Conditions
   A. Shortening at room temperature.
   B. Fryer circuit breaker "on".
   C. 24 VAC power from 2T to pins 3, 4, 5, 6, 11, and 17 (reference to ground at pins 9 or 10) on computer main harness.
   D. 24 VAC ground to pins 9, 10, 12, and 13 (reference to pin 17).

   NOTE: Pin 12 on the main harness is used to indicate to the computer the type of fryer (full or split vat) that it is installed in. If the fryer is a full vat, pin 12 is tied to 24 VAC ground and if the fryer is a split vat, pin 12 is tied to 24 VAC.

2. Power switch to “on”.
   A. Plus 12 VDC from computer power supply board PS-1 to pin 23 on computer main harness.
   B. R1 control relay, 1CON and 2CON will energize.
   C. R1 relay energized, NO contacts close and supply power to pin 1 on computer main harness.

   NOTE: Pins 1 and 2 on the main harness are used to monitor the power status of the vat(s). Pin 1 is the power status input for the right vat and pin 2 is the input for the left vat. These inputs tell the computer which vat(s) are being used or which vat(s) have been turned off. 24 VAC is applied when on and 0 Volt when turned off. If configured as a full vat, only pin 1 is used. Pin 2 is left open.

3. Computer evaluates input from thermistor at pins 3 and 4 on temperature probe harness.
   A. Computer controls output at pin 15 to energize R2 control relay.
   B. Control relay R2 energizes.
   C. R2 NO contacts close to supply power to 2CON and 4CON.

   NOTE: Pin 15 on the main harness is the right heat output and pin 16 is the left heat output. These outputs provide 24 VAC to control relays which control the heat circuit. If the fryer is a full vat unit, only pin 15 is used. Pin 16 is left open.

4. Shortening temperature reaches set temperature.
   A. Computer turns off heat output and control relay R2 de-energizes.
   B. Power is removed from 2CON and 4CON.

5. Computer cycles heat output on temperature.

6. If the first high limit (410°F) trips, the display will indicate “HI TEMP”.

NOTE: For a full vat, the fryer will shut down and become inoperable. For a split vat, only the vat which experienced the failure becomes inoperable.

7. If the second high limit (435°F) trips or the tilt switch operates, the control relay R1 is de-energized removing 24 VAC power from pin 1 (full vat), pin 1 or pin 2 (split vat because its control relay is de-energized). The display will indicate “OFF” for a full vat and become inoperable . If a split vat, “OFF” will be displayed for the vat which experienced the failure and become inoperable.

BATTERY AND INTER PLUMB FILTER SEQUENCE OF OPERATION

NOTE: A battery of fryers equipped with optional interplumbing connects the vats to a common drain. Each vat has an individual drain valve. These valves should only be opened one at a time.

1. Conditions
   A. Empty filter in position and connected as outlined in filter Instructions manual.
   B. All drain valves and return valves closed.

2. Open desired vat drain valve.

3. Oil drains into filter.

4. Close drain valve.

5. Open return valve for vat oil is to be returned to.
   A. Return valve switch normally open contacts close energizing 24 VAC control relay IPR1.
   B. Control relay IPR1 normally open contacts close to provide line voltage to filter motor.

6. Oil is pumped back to vat.

7. Close the return valve.
   A. Return valve switch contacts open.
   B. Control relay IPR1 unenergizes.

8. Filter motor stops.

BASKET LIFT SEQUENCE OF OPERATION

1. Conditions
   A. Fryer at operating temperature.
   B. Basket lift in raised position.
   C. Basket lift micro switch operated, normally open contacts closed.
   D. BLR1 control relay unenergized.

2. Power is present at one side of gear motor and contact 5 of BLR1 control relay.

3. When either the Push To Time button (solid state models) or the Start button (computer control models) is pressed, BLR1 relay is energized closing contacts 5 and 3.

4. Power flows through BLR1 contacts 5 and 3 and normally open contacts of micro switch.

5. Motor runs until lift is lowered and cam unoperates micro switch.

6. Micro switch normally open contacts open removing power from motor.

7. Timer (solid state control) or cook cycle (computer control) is complete and power is removed from BLR1 control relay.

8. BLR1 normally closed contacts 5 and 1 close suppling power through micro switch normally closed contacts.

9. Motor runs and lift raises until cam operates micro switch opening the normally closed contacts and stopping the motor.

10. Cycle is repeated.

COMPUTER CONTROL BOARD DIAGNOSTICS

NOTE: The computer control is also used on other equipment and is capable of displaying many different prompts. Therefore some prompts not applicable may display when a problem occurs in the wiring harness. Since the computer is looking for either 24 VAC or 24 VAC ground on particular pins, an open connection can cause a non applicable prompt to appear. Refer to "Computer Control Harness Pin-outs Chart"

For operator programming and operation refer to that section in the Instructions Manual.

Diagnostics is divided into two areas, "operation" and "service". Operation mode is the usual mode of fryer operation. Service mode is intended to give the service person more information regarding the nature of the failure. In either mode the unit operates normally until an error occurs. In that case what is displayed will be different. The chart below shows what is displayed for both "operation" and "service" modes.

Service mode is entered by pressing the product 3 and product 4 keys while turning on the power to the fryer computer. Once in service mode you can only exit it by turning off the power switch.

The following displays/system responses will be given for the noted failure conditions.

FAILURE	OPERATION MODE DIAGNOSTICS DISPLAY	SERVICE MODE DIAGNOSTICS DISPLAY	SYSTEM RESPONSE
Ignition (gas heat)	IGN FAILURE	IGN FAILURE with L or R for split vat	Heat off
Low Temperature (lack of heat)	LOW TEMP	LO TEMP XXXF	Heat off
High temperature (1st limit)	HIGH TEMP	HI TEMP XXX°F	Heat off
High Temperature (2nd limit)	OFF	OFF	Hardware limit, Vat off
Tilt Switch open	OFF	OFF	Vat off
Clogged Filter (gas heat)	turn on AIR indicator	turn on AIR indicator	none
Probe	CALL SERVICE	PROBE OPEN R or L for split vat PROBE SH R or L for split vat	Heat off
Door Open	CLOSE DOOR	CLOSE DOOR	Heat off
Self check	CALL SERVICE	MICRO FAIL	System to backup mode

POWER UP DIAGNOSTICS

On power up, the control will execute a self check. The failure of any of these tests will result in the message “CALL SERVICE” or “MICRO FAIL” being displayed.

This prompt will flash at approximately a 1 hertz rate. While the prompt is displayed, the computer will not function. If the failure is in the computer, the fryer will operate in backup mode.

When the fryer computer comes out of initialization and self check routines, it will either enter the heating mode or the melt mode (if programmed) of operation.

For a split vat fryer, one vat can be off while the other is in operation. If this occurs, the side that is off will be indicated by displaying the “OFF” prompt to the user. The message will be on the side of the display which corresponds to the vat which is off.

SYSTEM TESTS

The system diagnostics menu is intended to give you the ability to test the basic parts of the computer. It can be entered by pressing the 8 and 9 product keys simultaneously while turning on power to the fryer computer. The message “SYSTEM TESTS” is displayed. In this mode you can select one of three tests.

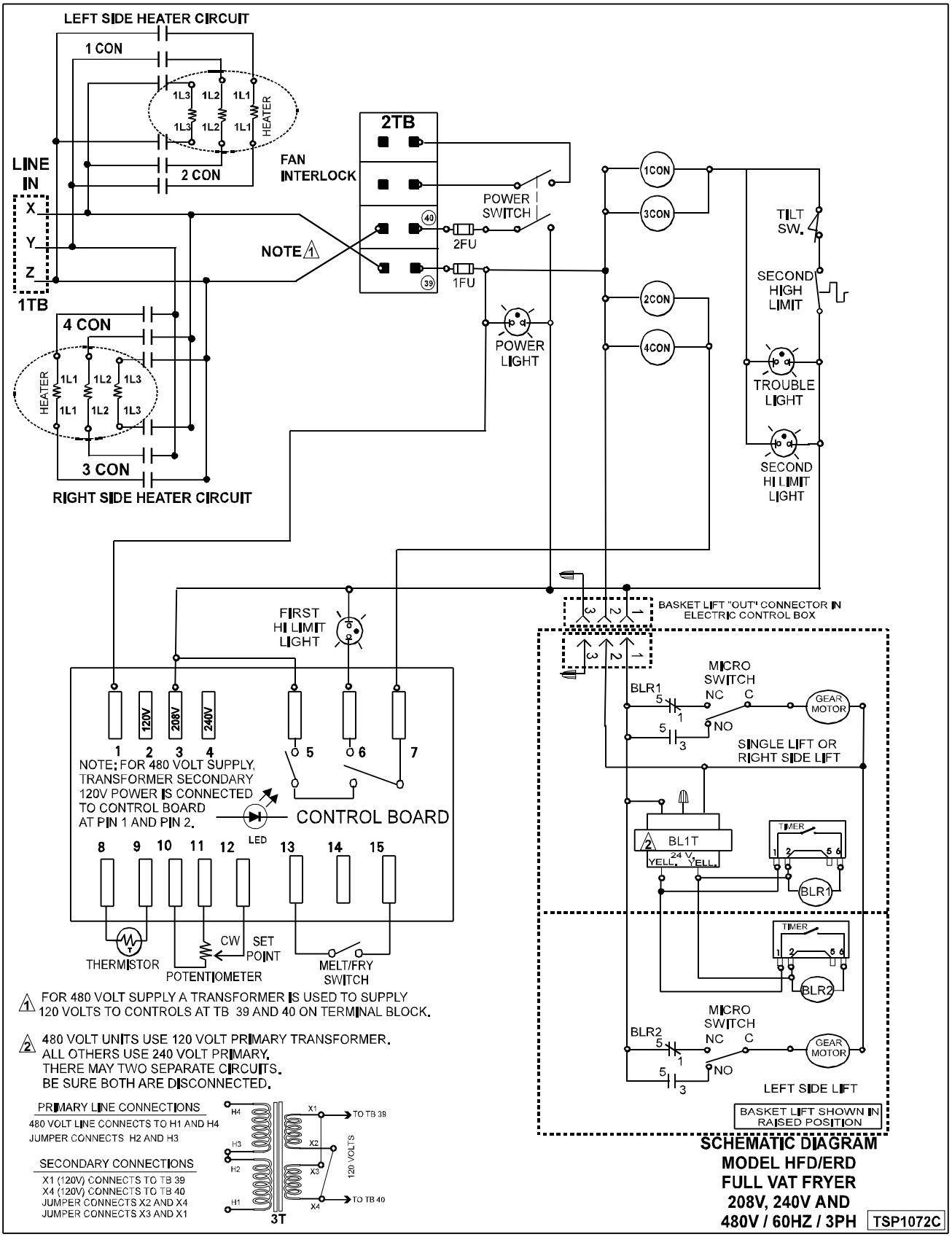
With DISPLAY TEST displayed, press enter to begin a test, use the up and down arrows to rotate through the screens. Press exit once to return to the test menu or twice to return to normal operation.

With KEYPAD TEST displayed, press enter to begin the test. The control will respond by displaying the name of the key pressed. Press exit once to return to the test menu or twice to return to normal operation.

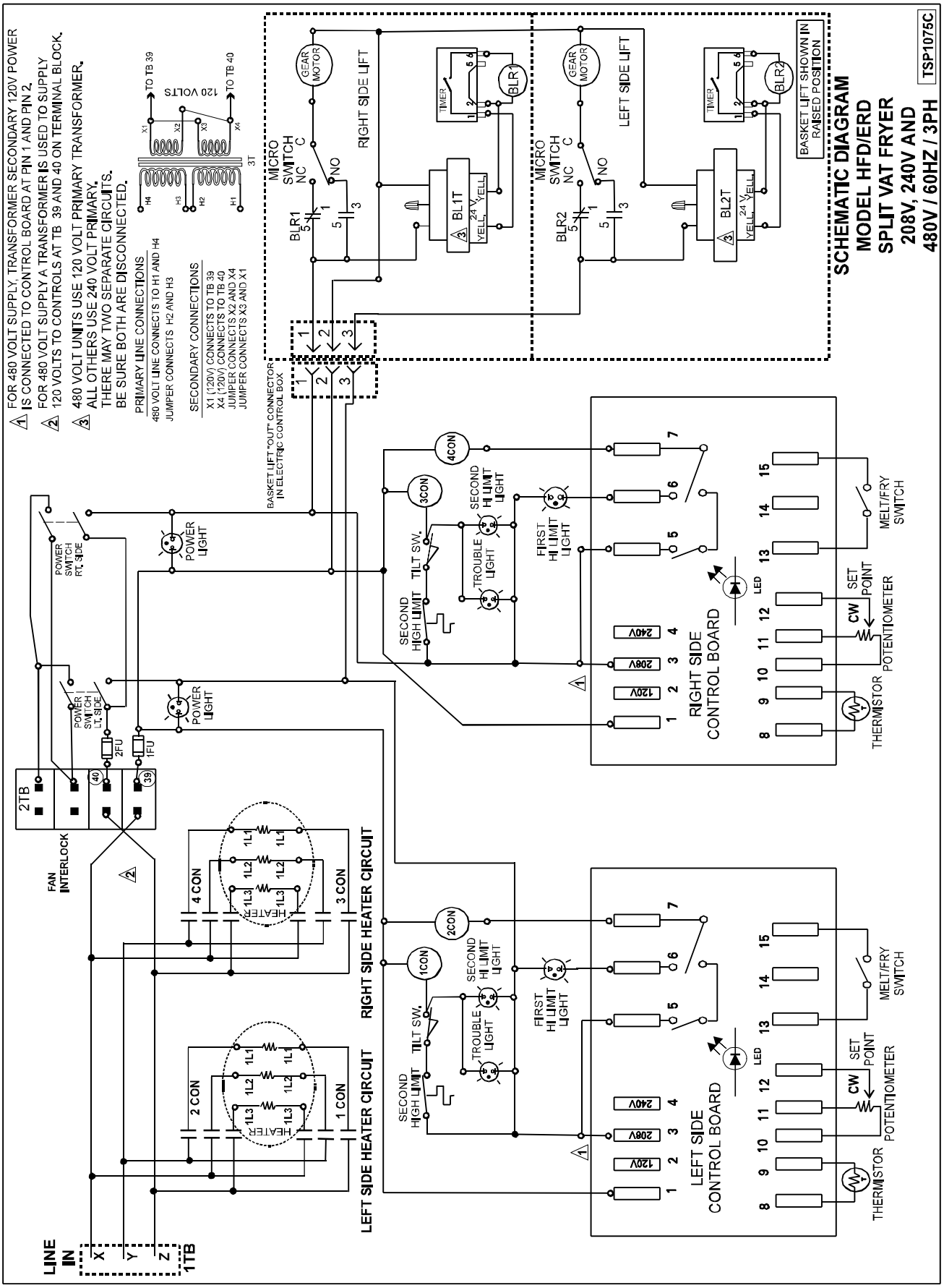
With VER xxx displayed, the release number is displayed as “VER XXX”

SCHEMATICS

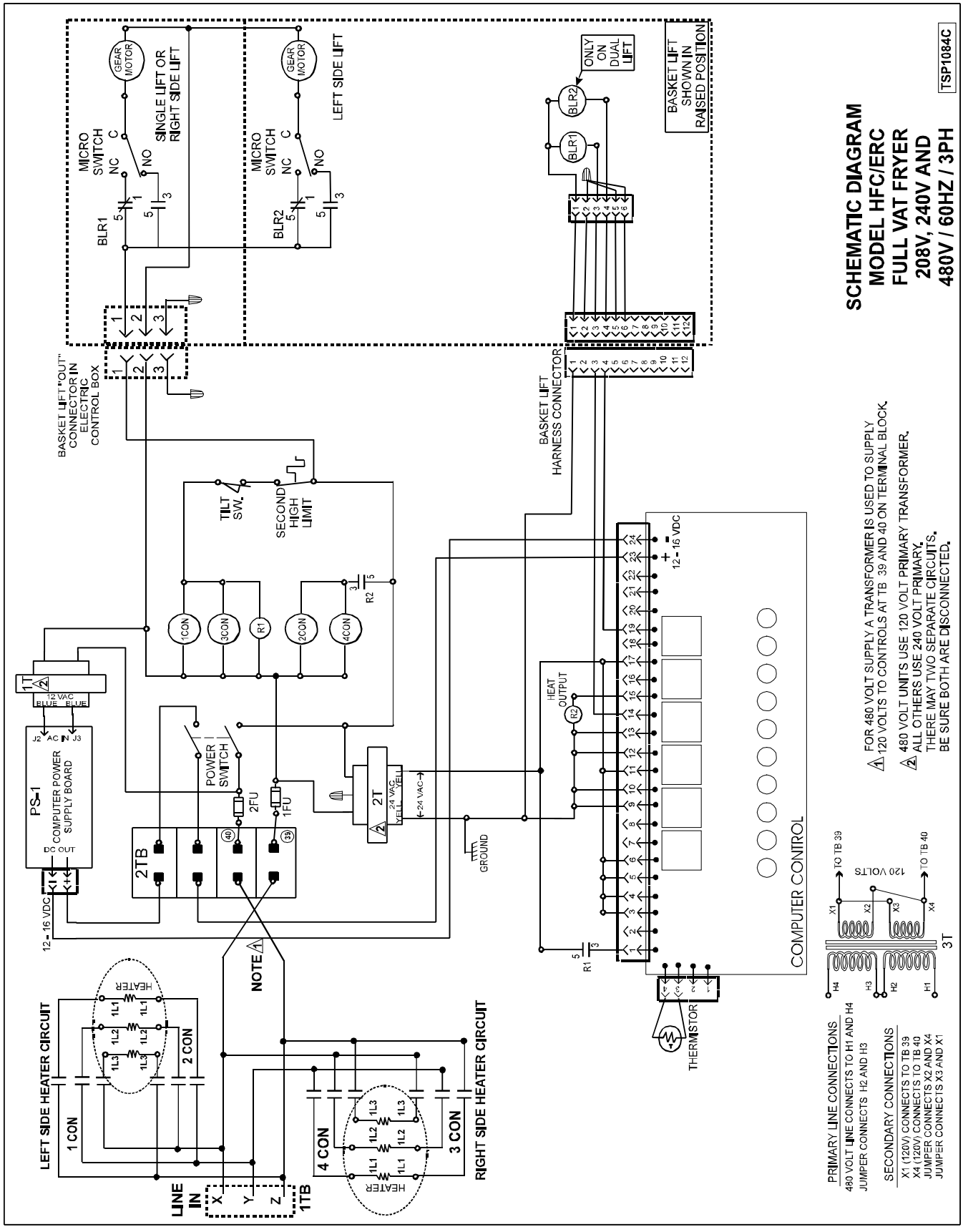
Full Vat With Solid State Control



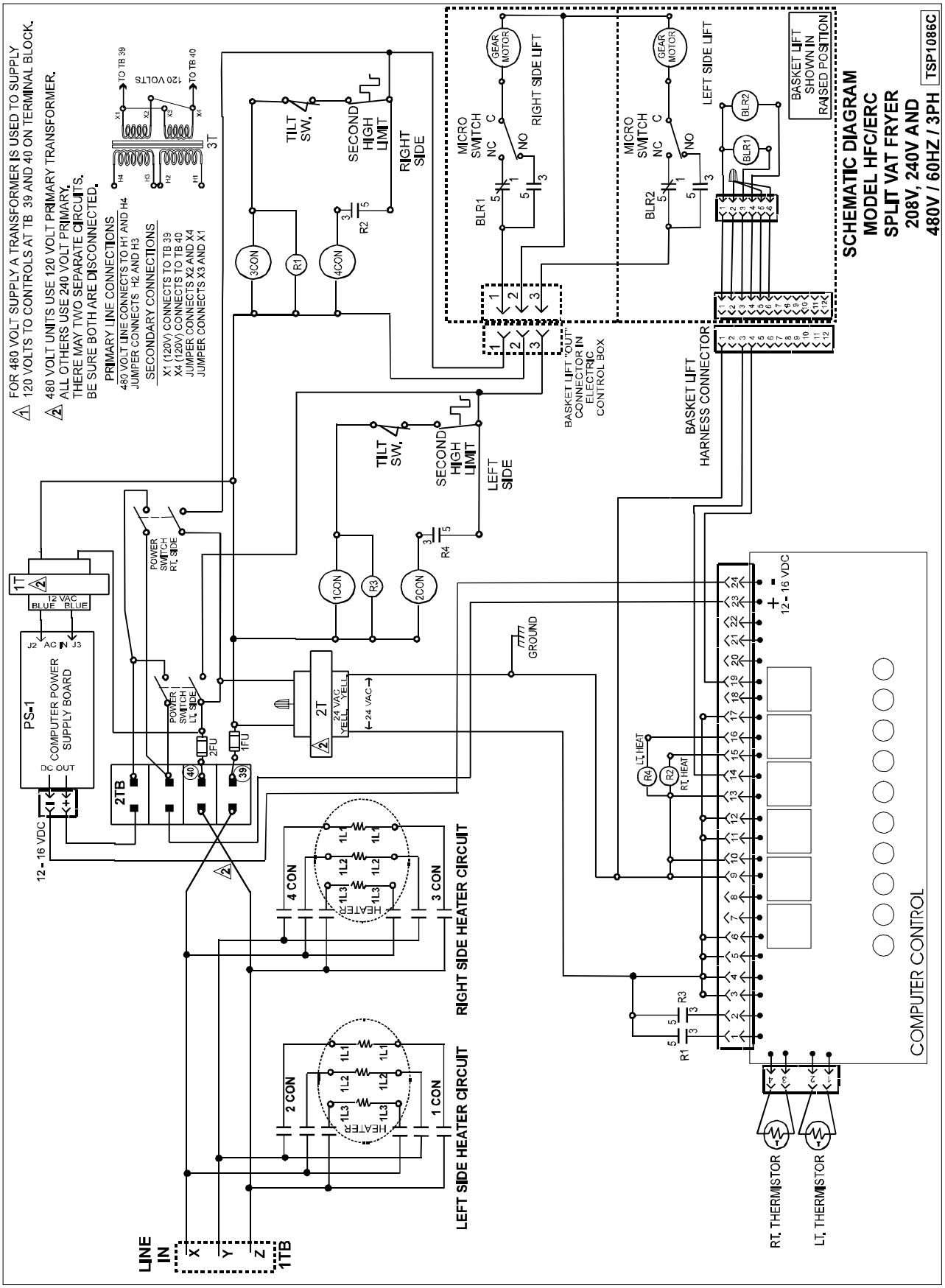
Split Vat With Solid State Control



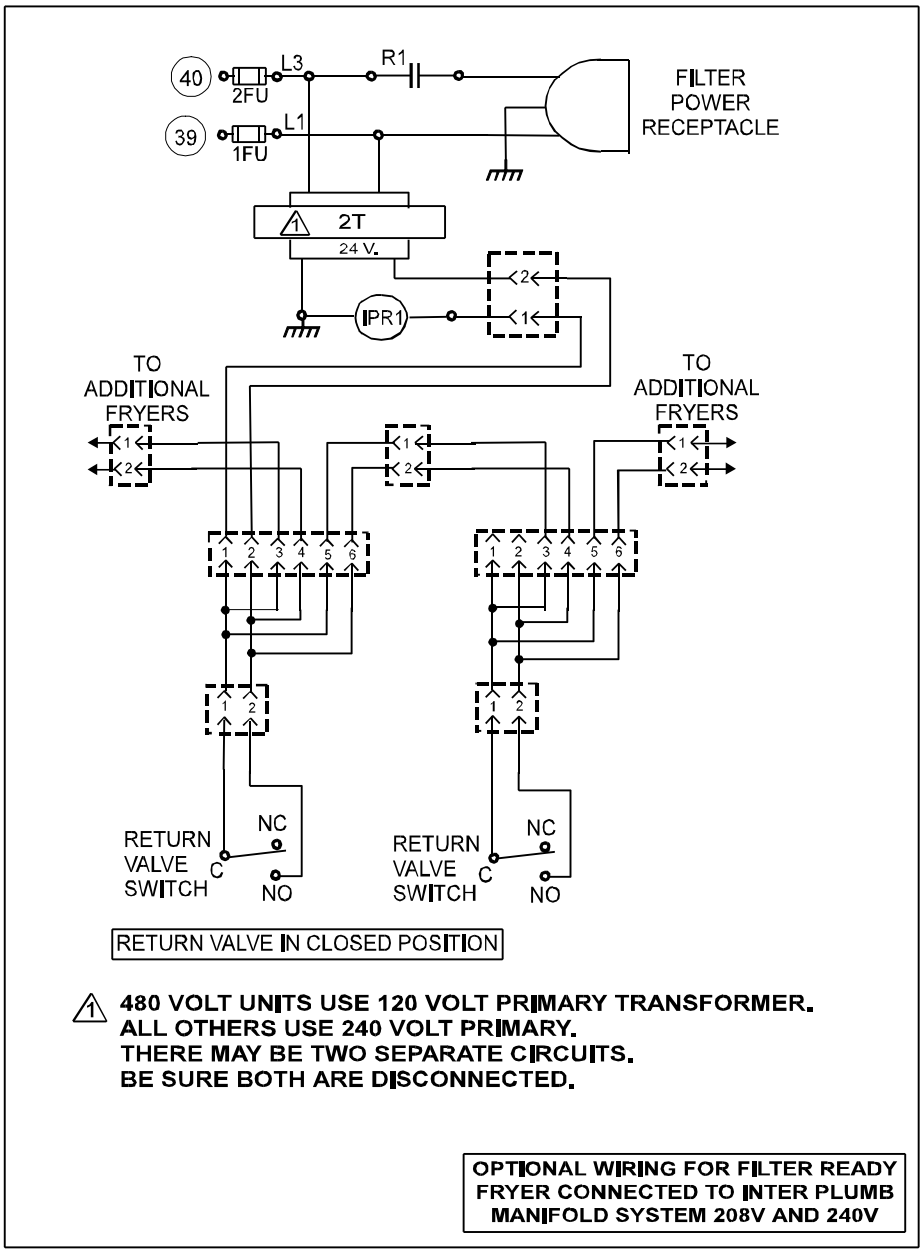
Full Vat With Computer Control

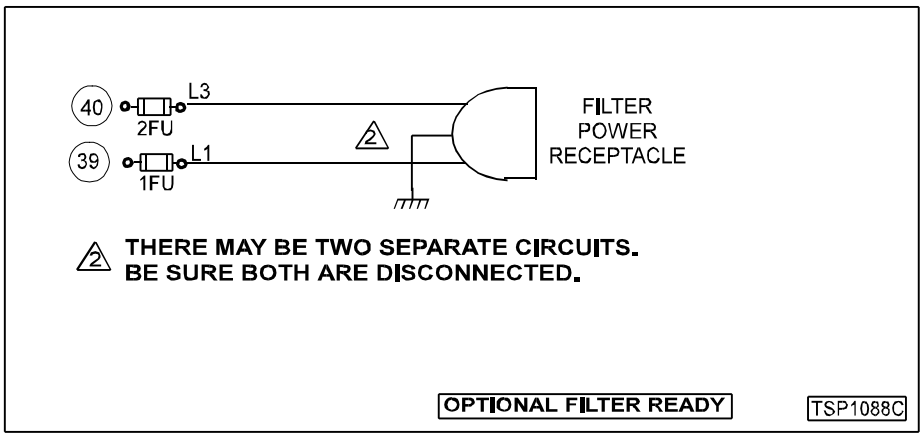


Split Vat With Computer Control



Filter Ready, Inter Plumb Options





WIRING DIAGRAM INDEX

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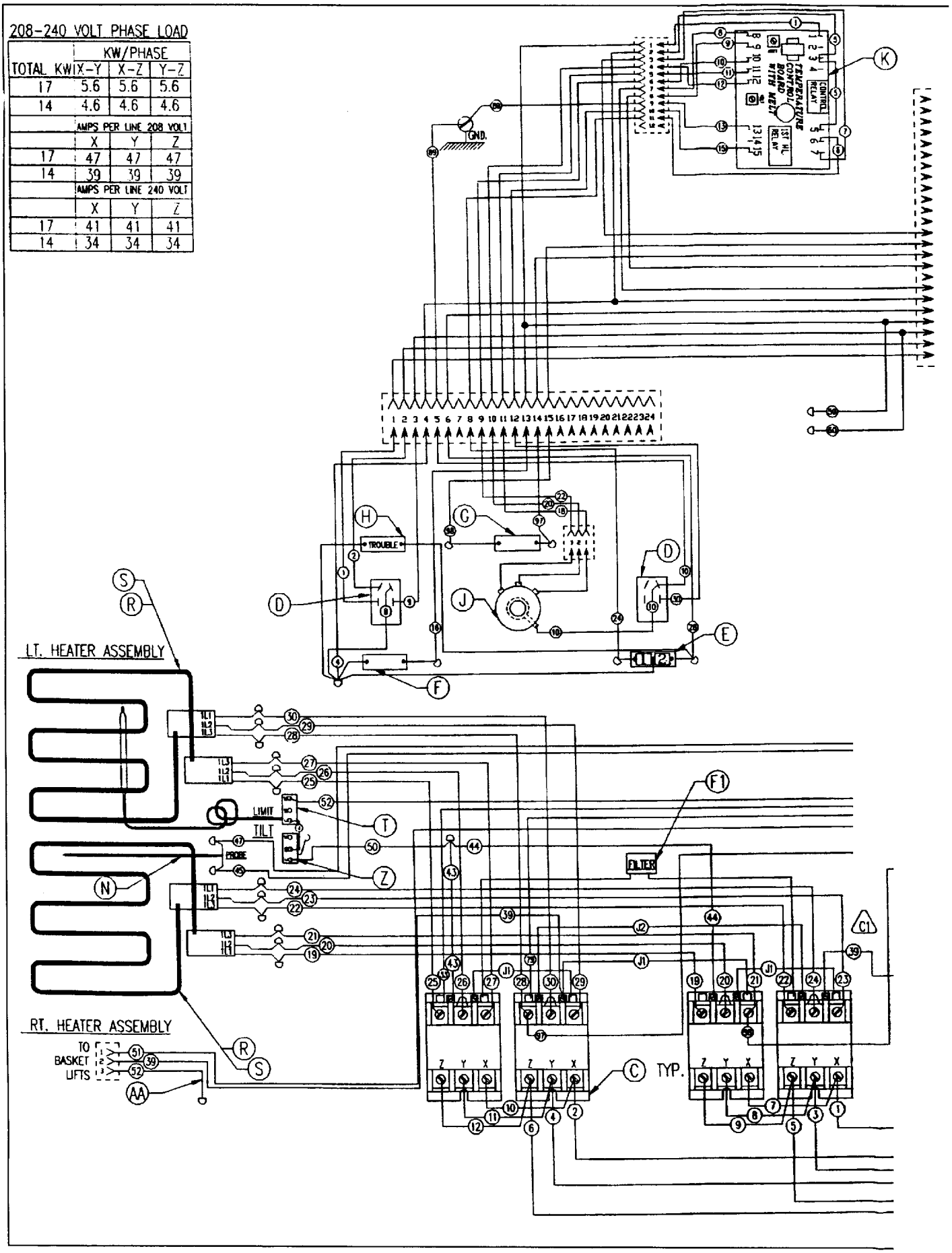
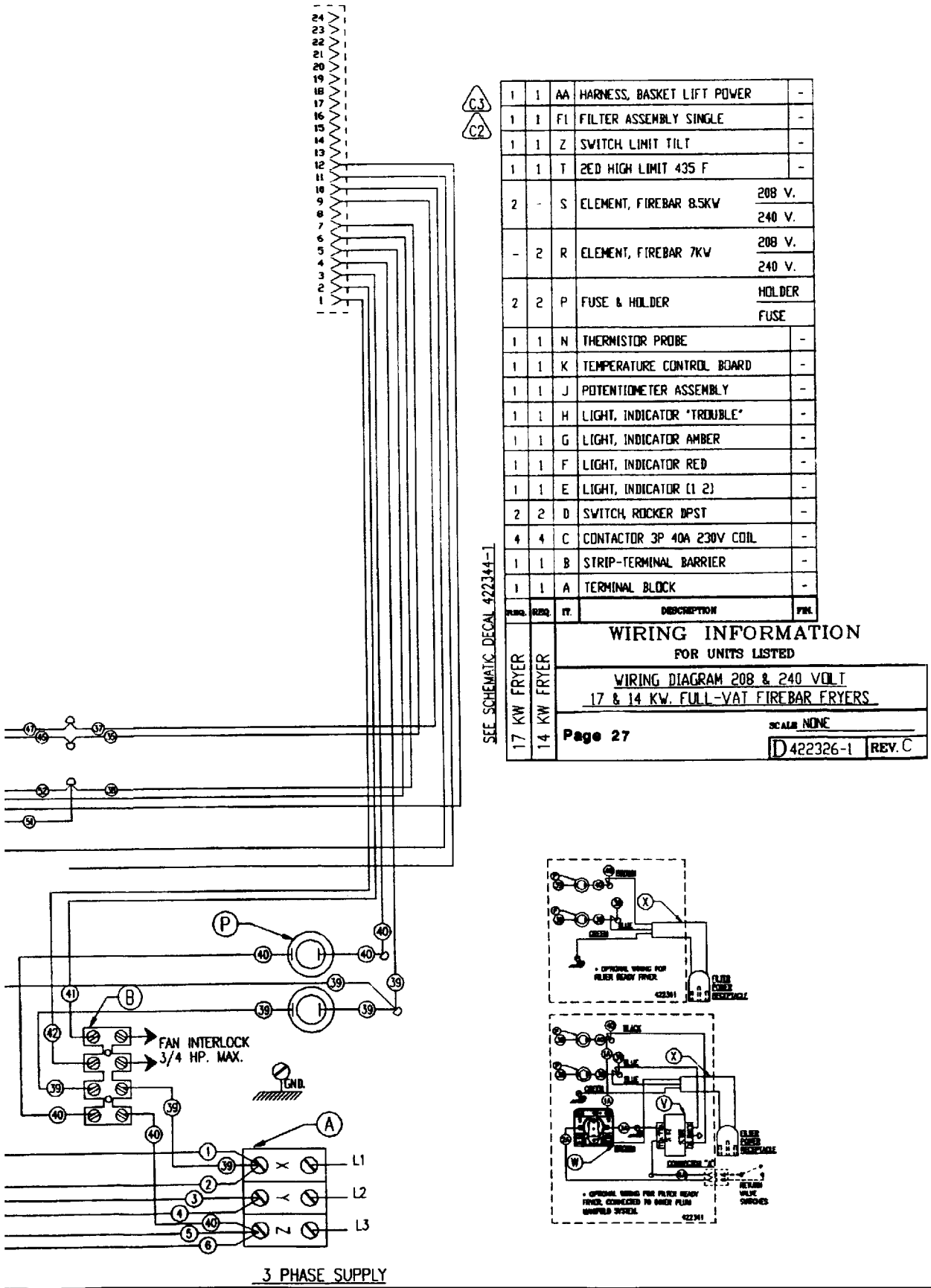
208-240 VOLT PHASE LOAD

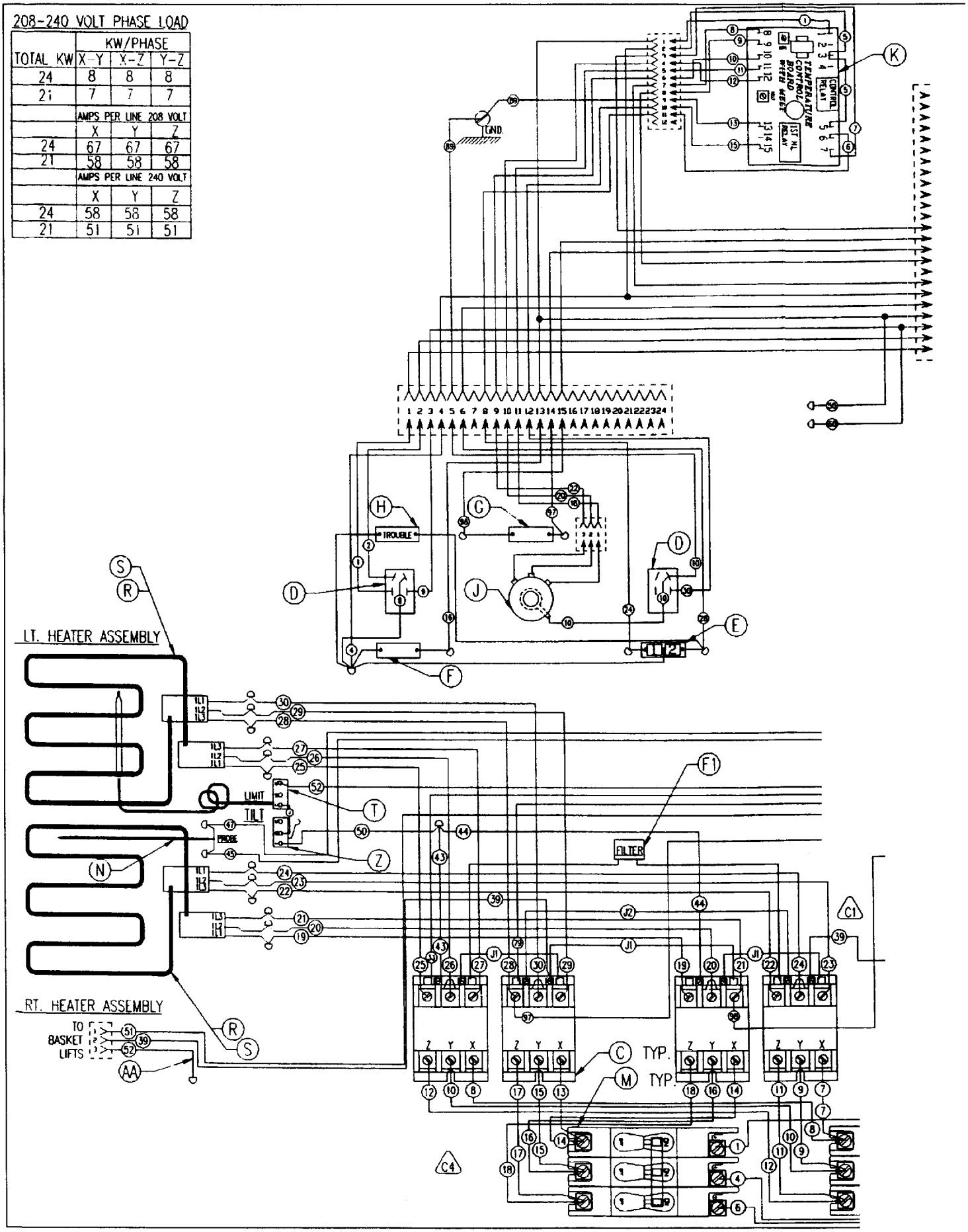
TOTAL KW	KW/PHASE X-Y	X-Z	Y-Z
17	5.6	5.6	5.6
14	4.6	4.6	4.6
	AMPS PER LINE 208 VOLT		
	X	Y	Z
17	47	47	47
14	39	39	39
	AMPS PER LINE 240 VOLT		
	X	Y	Z
17	41	41	41
14	34	34	34

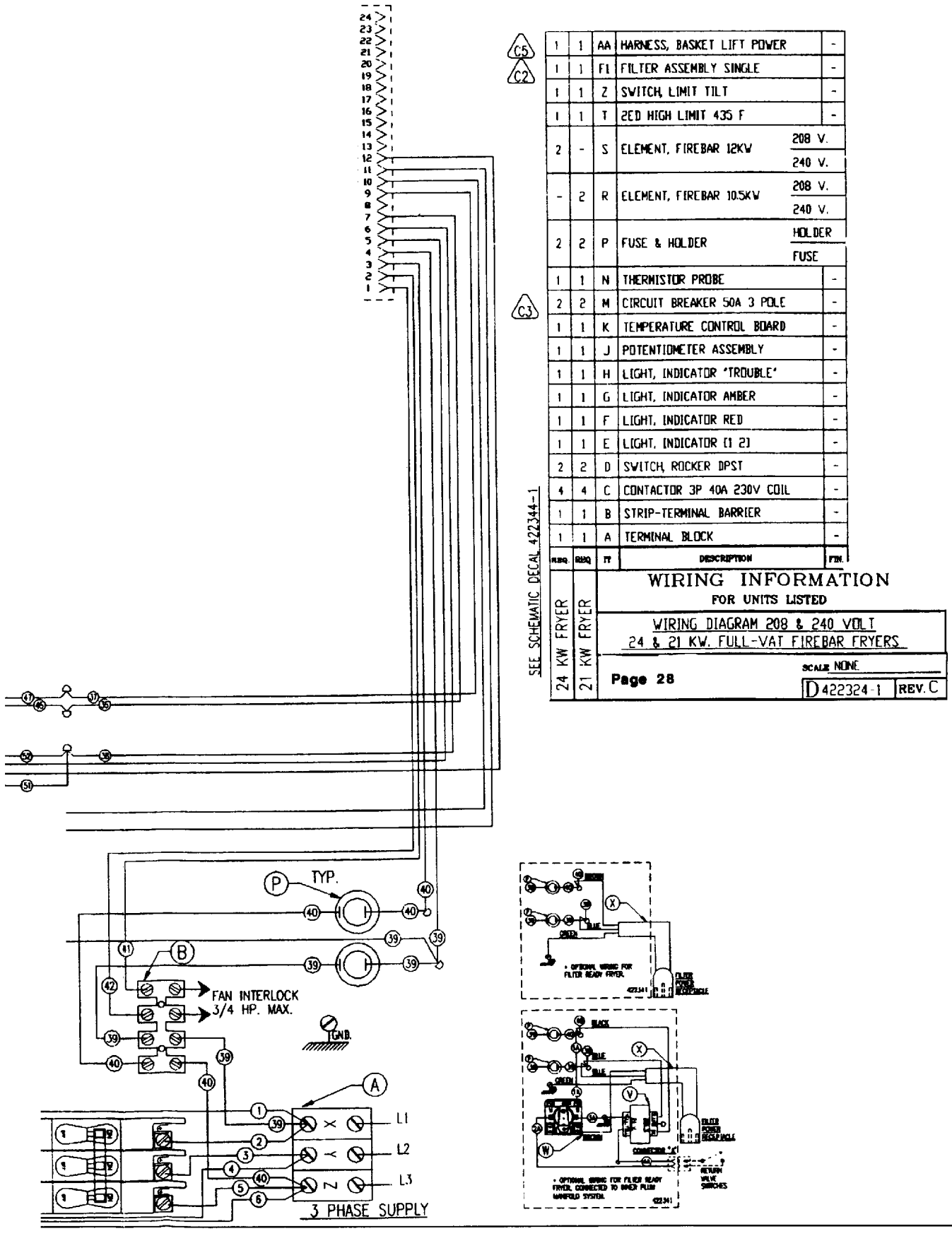



24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
C3
C2
1 1 AA HARNESS, BASKET LIFT POWER -
1 1 F1 FILTER ASSEMBLY SINGLE -
1 1 Z SWITCH LIMIT TILT -
1 1 T 2ED HIGH LIMIT 435 F -
2 - S ELEMENT, FIREBAR 8.5KW 208 V. / 240 V.
- 2 R ELEMENT, FIREBAR 7KW 208 V. / 240 V.
2 2 P FUSE & HOLDER HOLDER / FUSE
1 1 N THERMISTOR PROBE -
1 1 K TEMPERATURE CONTROL BOARD -
1 1 J POTENTIOMETER ASSEMBLY -
1 1 H LIGHT, INDICATOR "TROUBLE" -
1 1 G LIGHT, INDICATOR AMBER -
1 1 F LIGHT, INDICATOR RED -
1 1 E LIGHT, INDICATOR (1 2) -
2 2 D SWITCH, ROCKER DPST -
4 4 C CONTACTOR 3P 40A 230V COIL -
1 1 B STRIP-TERMINAL BARRIER -
1 1 A TERMINAL BLOCK -
REQD. REQ. IT. DESCRIPTION PRN.
SEE SCHEMATIC DECAL 422344-1
17 KW FRYER
14 KW FRYER
WIRING INFORMATION
FOR UNITS LISTED
WIRING DIAGRAM 208 & 240 VOLT
17 & 14 KW. FULL-VAT FIREBAR FRYERS
Page 27
SCALE NONE
D 422326-1
REV. C
P
B
A
FAN INTERLOCK
3/4 HP. MAX.
GND.
L1
L2
L3
3 PHASE SUPPLY

208-240 VOLT PHASE LOAD

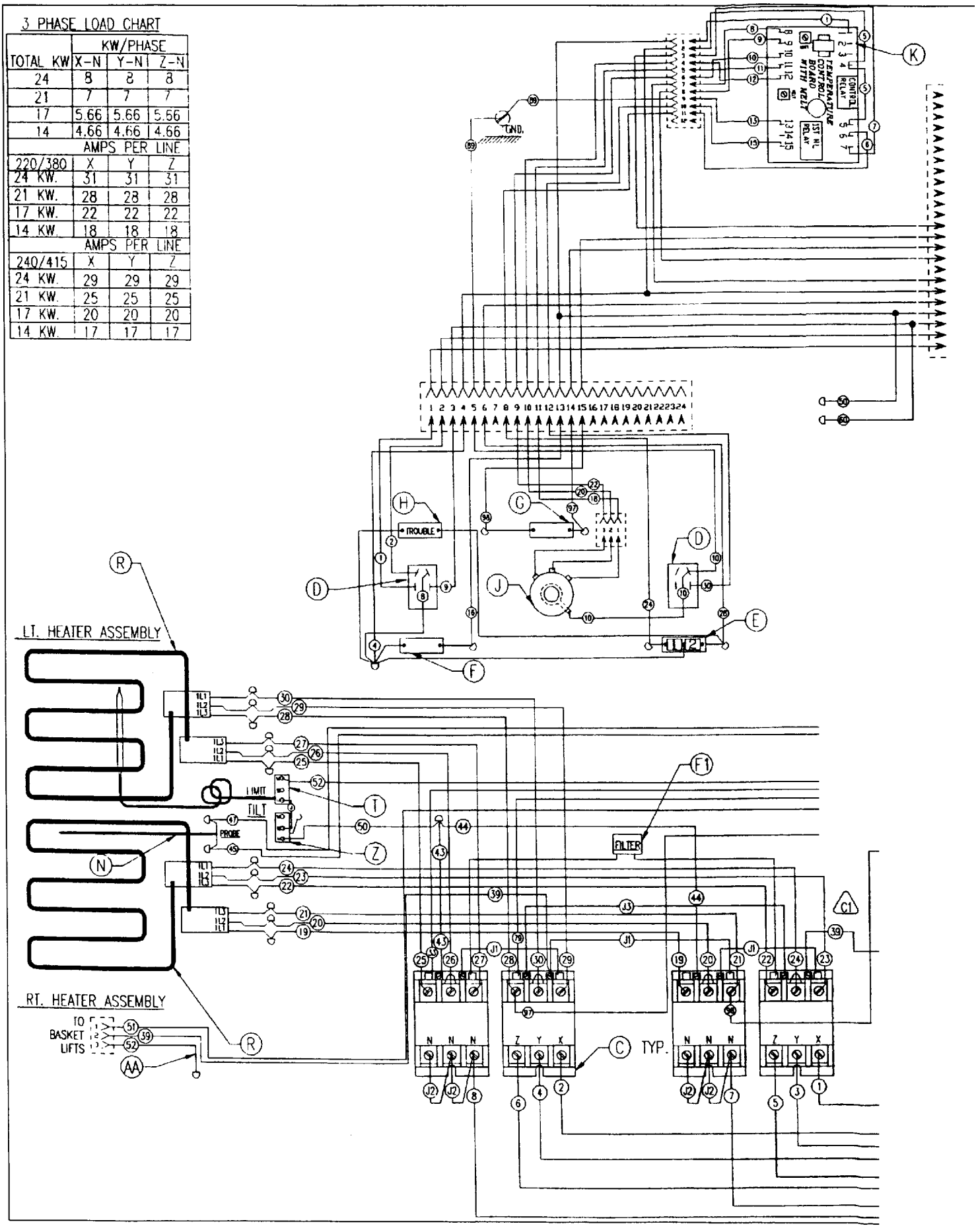
TOTAL KW	KW/PHASE X-Y	X-Z	Y-Z
24	8	8	8
21	7	7	7
	AMPS PER LINE 208 VOLT		
	X	Y	Z
24	67	67	67
21	58	58	58
	AMPS PER LINE 240 VOLT		
	X	Y	Z
24	58	58	58
21	51	51	51

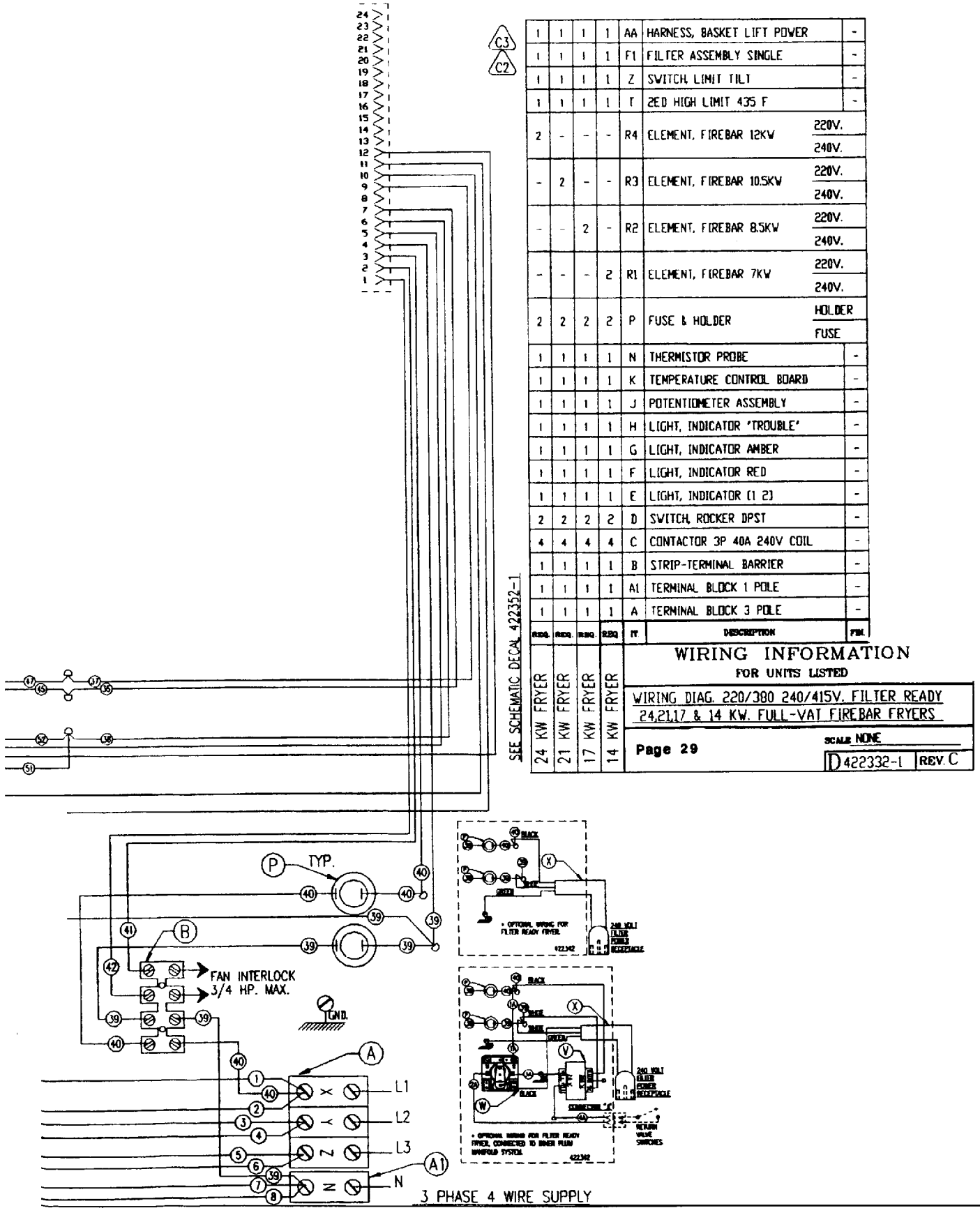



C5
C2
C3
1 1 AA HARNESS, BASKET LIFT POWER -
1 1 F1 FILTER ASSEMBLY SINGLE -
1 1 Z SWITCH, LIMIT TILT -
1 1 T 2ED HIGH LIMIT 435 F -
2 - S ELEMENT, FIREBAR 12KW 208 V.
240 V.
- 2 R ELEMENT, FIREBAR 10.5KW 208 V.
240 V.
2 2 P FUSE & HOLDER HOLDER
FUSE
1 1 N THERMISTOR PROBE -
2 2 M CIRCUIT BREAKER 50A 3 POLE -
1 1 K TEMPERATURE CONTROL BOARD -
1 1 J POTENTIOMETER ASSEMBLY -
1 1 H LIGHT, INDICATOR 'TROUBLE' -
1 1 G LIGHT, INDICATOR AMBER -
1 1 F LIGHT, INDICATOR RED -
1 1 E LIGHT, INDICATOR (1 2) -
2 2 D SWITCH, ROCKER DPST -
4 4 C CONTACTOR 3P 40A 230V COIL -
1 1 B STRIP-TERMINAL BARRIER -
1 1 A TERMINAL BLOCK -
REQ. REQ IT DESCRIPTION FIN.
SEE SCHEMATIC DECAL 422344-1
WIRING INFORMATION
FOR UNITS LISTED
24 KW FRYER
21 KW FRYER
WIRING DIAGRAM 208 & 240 VOLT
24 & 21 KW. FULL-VAT FIREBAR FRYERS
Page 28
SCALE NONE
D 422324-1 REV. C
TYP.
FAN INTERLOCK
3/4 HP. MAX.
IGNB.
L1
L2
L3
3 PHASE SUPPLY

3 PHASE LOAD CHART

TOTAL KW	KW/PHASE X-N	Y-N	Z-N
24	8	8	8
21	7	7	7
17	5.66	5.66	5.66
14	4.66	4.66	4.66
AMPS PER LINE			
220/380	X	Y	Z
24 KW.	31	31	31
21 KW.	28	28	28
17 KW.	22	22	22
14 KW.	18	18	18
AMPS PER LINE			
240/415	X	Y	Z
24 KW.	29	29	29
21 KW.	25	25	25
17 KW.	20	20	20
14 KW.	17	17	17





24 KW FRYER	21 KW FRYER	17 KW FRYER	14 KW FRYER	IT	DESCRIPTION	FIN.
1	1	1	1	AA	HARNESS, BASKET LIFT POWER	-
1	1	1	1	F1	FILTER ASSEMBLY SINGLE	-
1	1	1	1	Z	SWITCH, LIMIT TILT	-
1	1	1	1	T	2ED HIGH LIMIT 435 F	-
2	-	-	-	R4	ELEMENT, FIREBAR 12KW	220V. / 240V.
-	2	-	-	R3	ELEMENT, FIREBAR 10.5KW	220V. / 240V.
-	-	2	-	R2	ELEMENT, FIREBAR 8.5KW	220V. / 240V.
-	-	-	2	R1	ELEMENT, FIREBAR 7KW	220V. / 240V.
2	2	2	2	P	FUSE & HOLDER	HOLDER / FUSE
1	1	1	1	N	THERMISTOR PROBE	-
1	1	1	1	K	TEMPERATURE CONTROL BOARD	-
1	1	1	1	J	POTENTIOMETER ASSEMBLY	-
1	1	1	1	H	LIGHT, INDICATOR 'TROUBLE'	-
1	1	1	1	G	LIGHT, INDICATOR AMBER	-
1	1	1	1	F	LIGHT, INDICATOR RED	-
1	1	1	1	E	LIGHT, INDICATOR (1 2)	-
2	2	2	2	D	SWITCH, ROCKER DPST	-
4	4	4	4	C	CONTACTOR 3P 40A 240V COIL	-
1	1	1	1	B	STRIP-TERMINAL BARRIER	-
1	1	1	1	A1	TERMINAL BLOCK 1 POLE	-
1	1	1	1	A	TERMINAL BLOCK 3 POLE	-

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAG. 220/380 240/415V. FILTER READY
24,21,17 & 14 KW. FULL-VAT FIREBAR FRYERS

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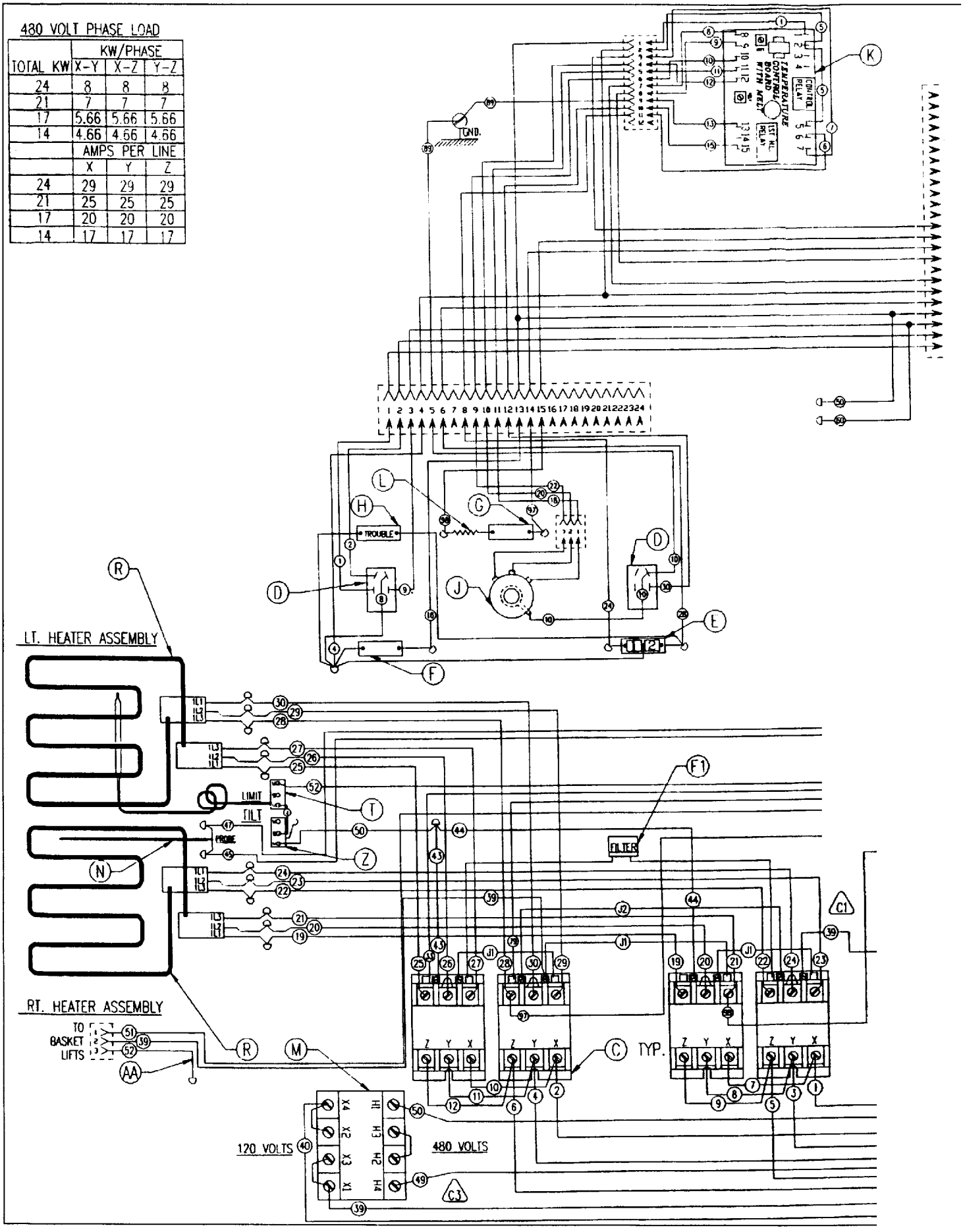
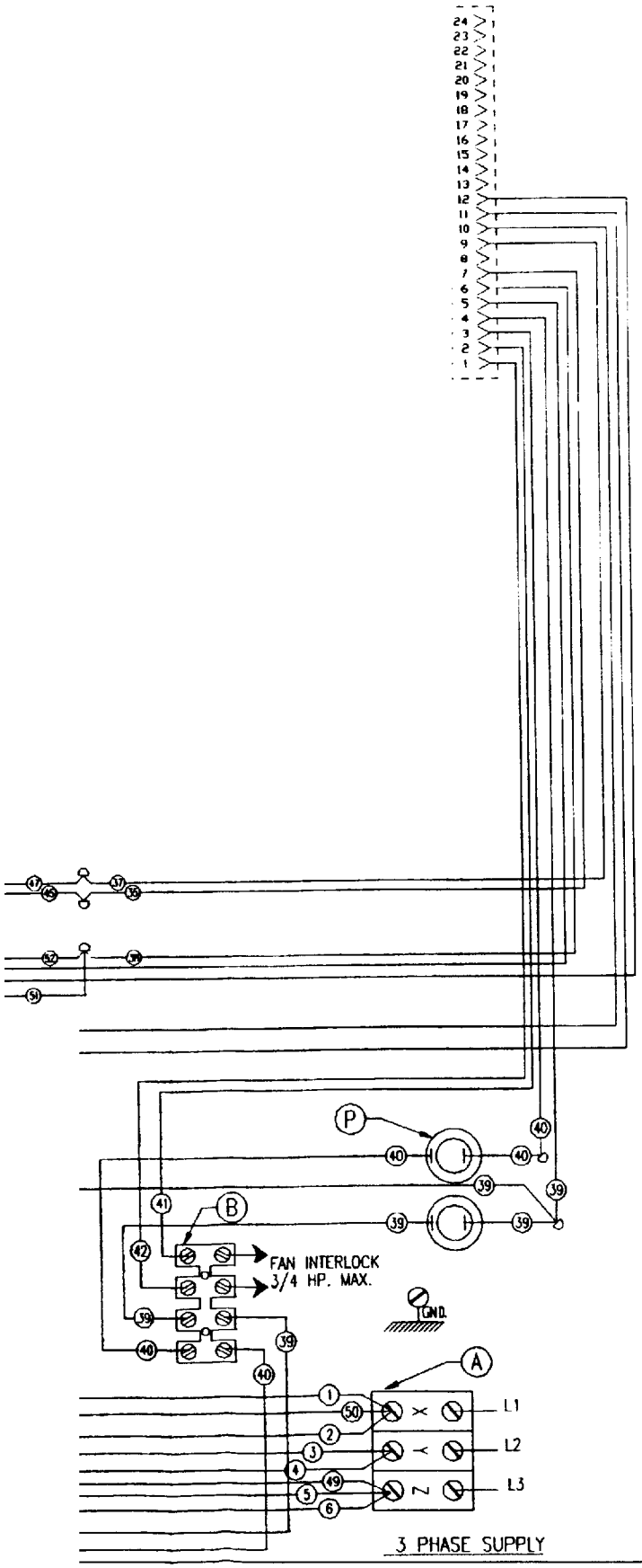
SCALE NONE

D 422332-1 REV. C

480 VOLT PHASE LOAD

TOTAL KW	KW/PHASE X-Y	X-Z	Y-Z
24	8	8	8
21	7	7	7
17	5.66	5.66	5.66
14	4.66	4.66	4.66
	AMPS PER LINE		
	X	Y	Z
24	29	29	29
21	25	25	25
17	20	20	20
14	17	17	17





C4 C2	1	1	1	1	AA	HARNESS, BASKET LIFT POWER	-
	1	1	1	1	F1	FILTER ASSEMBLY SINGLE	-
	1	1	1	1	Z	SWITCH, LIMIT TILT	-
	1	1	1	1	T	2ED HIGH LIMIT 435 F	-
	2	-	-	-	R4	ELEMENT, FIREBAR 480V. 12 KW.	-
	-	2	-	-	R3	ELEMENT, FIREBAR 480V. 10.5 KW.	-
	-	-	2	-	R2	ELEMENT, FIREBAR 480V. 8.5 KW.	-
	-	-	-	2	R1	ELEMENT, FIREBAR 480V. 7 KW.	-
	2	2	2	2	P	FUSE & HOLDER — HOLDER / FUSE	
	1	1	1	1	N	THERMISTOR PROBE	-
	1	1	1	1	M	TRANSFORMER, 50VA. 480-120V.	-
	1	1	1	1	L	RESISTOR, 300K 1/4W	-
	1	1	1	1	K	TEMPERATURE CONTROL BOARD	-
	1	1	1	1	J	POTENTIOMETER ASSEMBLY	-
	1	1	1	1	H	LIGHT, INDICATOR TROUBLE*	-
	1	1	1	1	G	LIGHT, INDICATOR AMBER	-
	1	1	1	1	F	LIGHT, INDICATOR RED	-
	1	1	1	1	E	LIGHT, INDICATOR (1 2)	-
	2	2	2	2	D	SWITCH, ROCKER DPST	-
	4	4	4	4	C	CONTACTOR 3P 40A 120V COIL	-
	1	1	1	1	B	STRIP-TERMINAL BARRIER	-
	1	1	1	1	A	TERMINAL BLOCK	-
	REQ.	REQ.	REQ.	REQ	IT	DESCRIPTION	FIN.

SEE SCHEMATIC DECAL 422348-1

24 KW FRYER	21 KW FRYER	17 KW FRYER	14 KW FRYER

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAGRAM 480 VOLT
24,21,17 & 14 KW. FULL-VAT FIREBAR FRYERS

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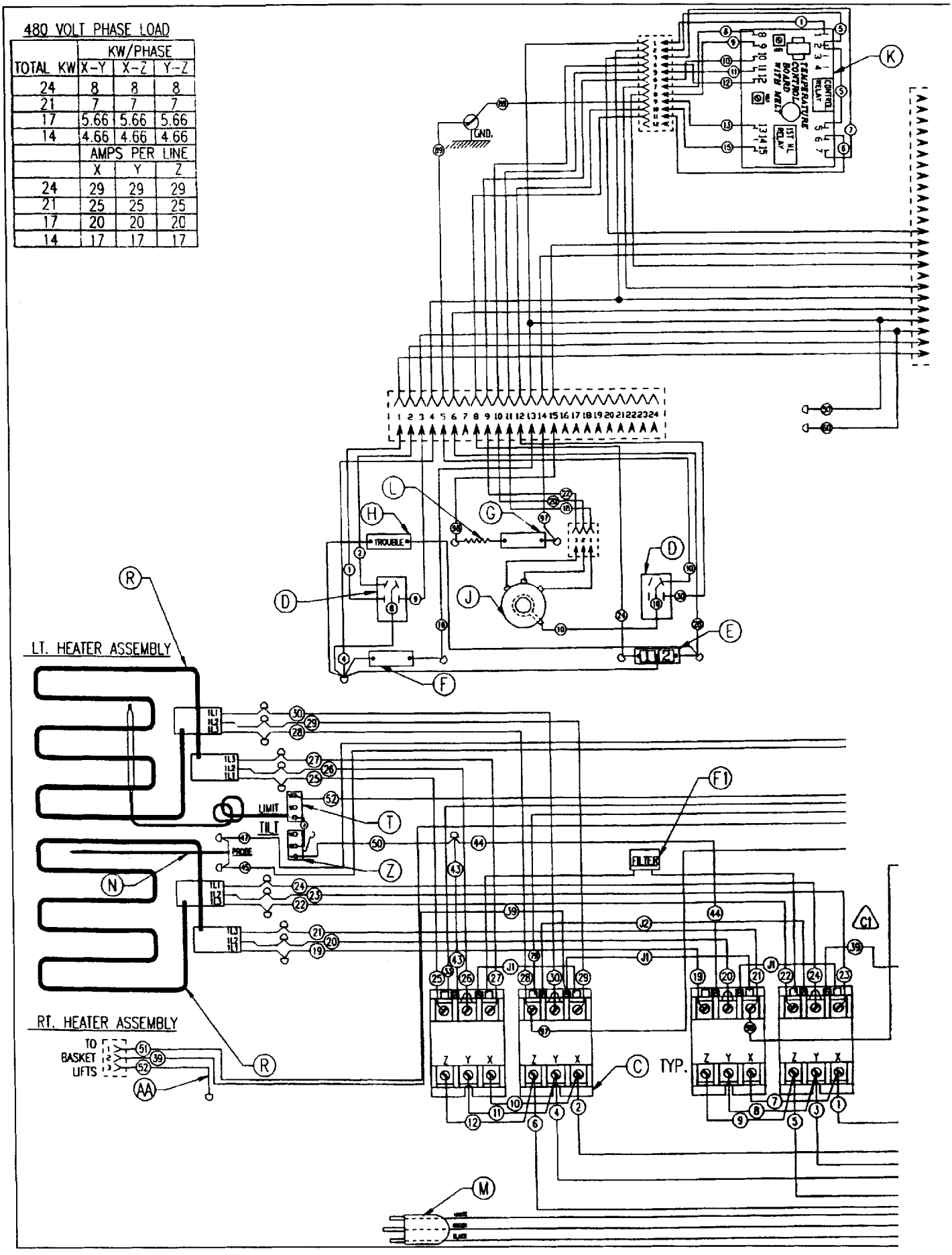
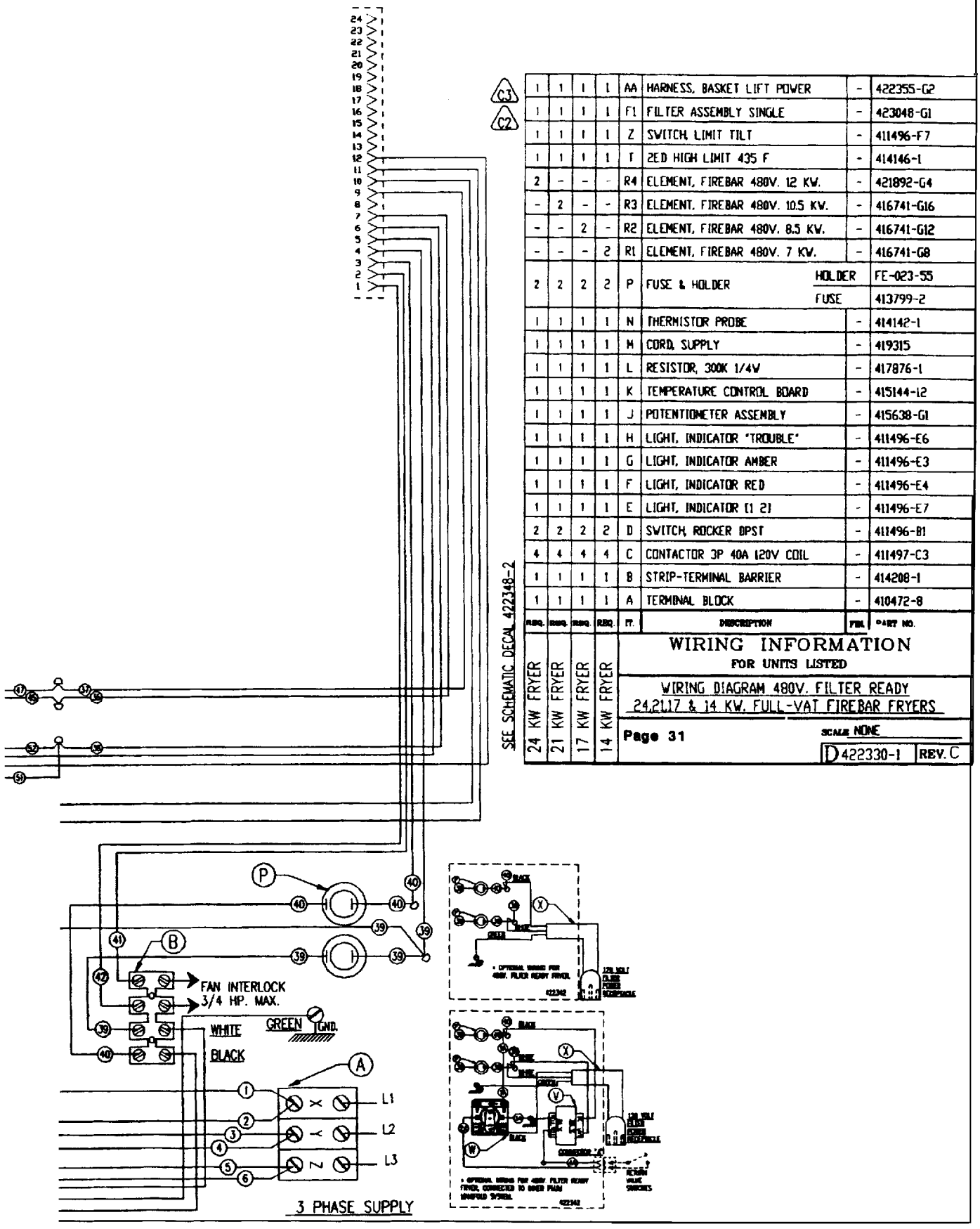
SCALE NONE

D 422328-1 REV. C

480 VOLT PHASE LOAD

TOTAL KW	KW/PHASE X-Y	X-Z	Y-Z
24	8	8	8
21	7	7	7
17	5.66	5.66	5.66
14	4.66	4.66	4.66
	AMPS PER LINE		
	X	Y	Z
24	29	29	29
21	25	25	25
17	20	20	20
14	17	17	17





C3 C2	1	1	1	1	AA	HARNESS, BASKET LIFT POWER	-	422355-G2
	1	1	1	1	F1	FILTER ASSEMBLY SINGLE	-	423048-G1
	1	1	1	1	Z	SWITCH, LIMIT TILT	-	411496-F7
	1	1	1	1	T	2ED HIGH LIMIT 435 F	-	414146-1
	2	-	-	-	R4	ELEMENT, FIREBAR 480V. 12 KW.	-	421892-G4
	-	2	-	-	R3	ELEMENT, FIREBAR 480V. 10.5 KW.	-	416741-G16
	-	-	2	-	R2	ELEMENT, FIREBAR 480V. 8.5 KW.	-	416741-G12
	-	-	-	2	R1	ELEMENT, FIREBAR 480V. 7 KW.	-	416741-G8
	2	2	2	2	P	FUSE & HOLDER	HOLDER	FE-023-55
							FUSE	413799-2
	1	1	1	1	N	THERMISTOR PROBE	-	414142-1
	1	1	1	1	M	CORD, SUPPLY	-	419315
	1	1	1	1	L	RESISTOR, 300K 1/4W	-	417876-1
	1	1	1	1	K	TEMPERATURE CONTROL BOARD	-	415144-12
	1	1	1	1	J	POTENTIOMETER ASSEMBLY	-	415638-G1
	1	1	1	1	H	LIGHT, INDICATOR "TROUBLE"	-	411496-E6
	1	1	1	1	G	LIGHT, INDICATOR AMBER	-	411496-E3
	1	1	1	1	F	LIGHT, INDICATOR RED	-	411496-E4
	1	1	1	1	E	LIGHT, INDICATOR (1 2)	-	411496-E7
	2	2	2	2	D	SWITCH, ROCKER DPST	-	411496-B1
	4	4	4	4	C	CONTACTOR 3P 40A 120V COIL	-	411497-C3
	1	1	1	1	B	STRIP-TERMINAL BARRIER	-	414208-1
	1	1	1	1	A	TERMINAL BLOCK	-	410472-8
	REQ.	REQ.	REQ.	REQ.	IT.	DESCRIPTION	FIN.	PART NO.

24 KW FRYER	21 KW FRYER	17 KW FRYER	14 KW FRYER

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAGRAM 480V. FILTER READY
24,21,17 & 14 KW. FULL-VAT FIREBAR FRYERS

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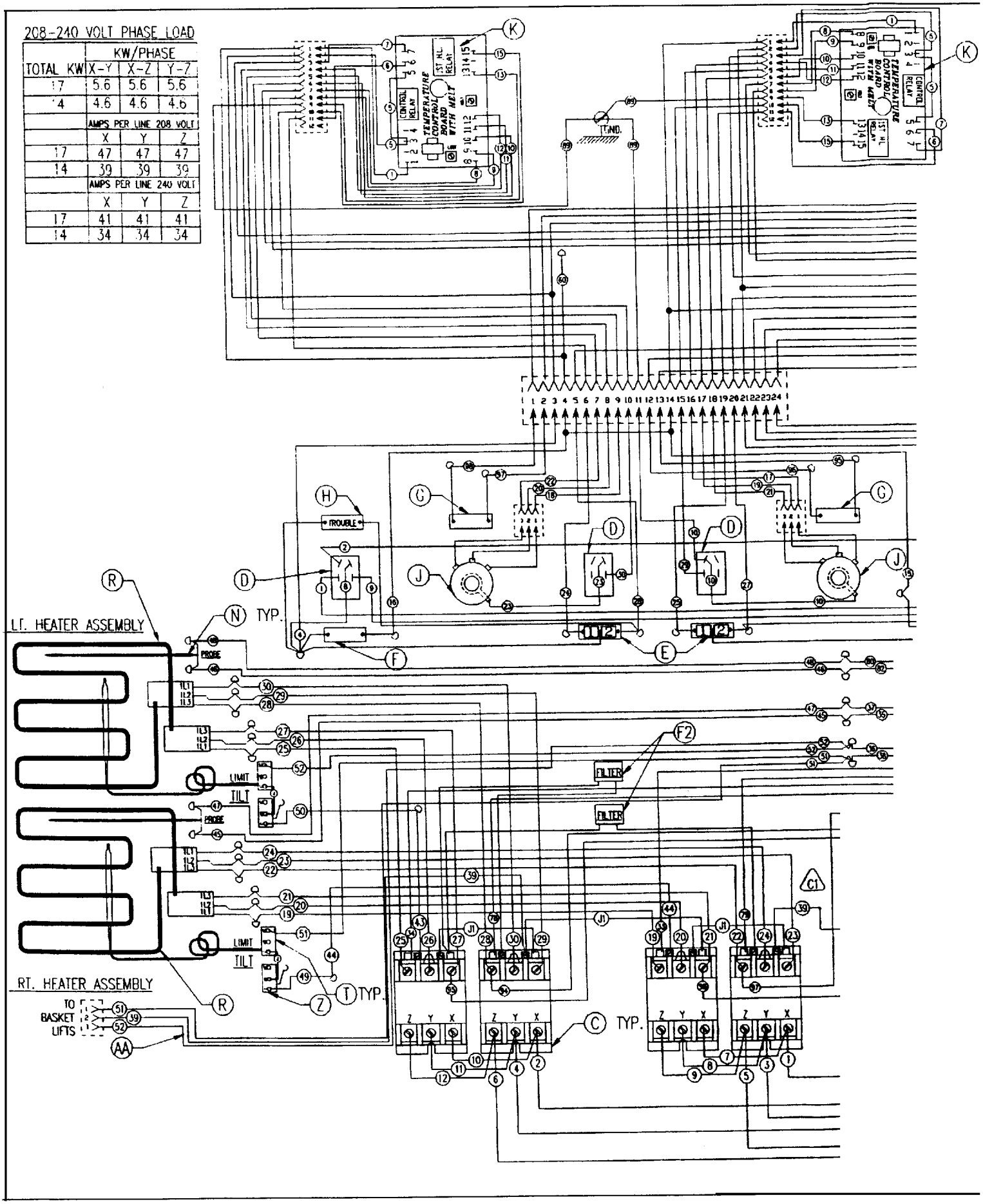
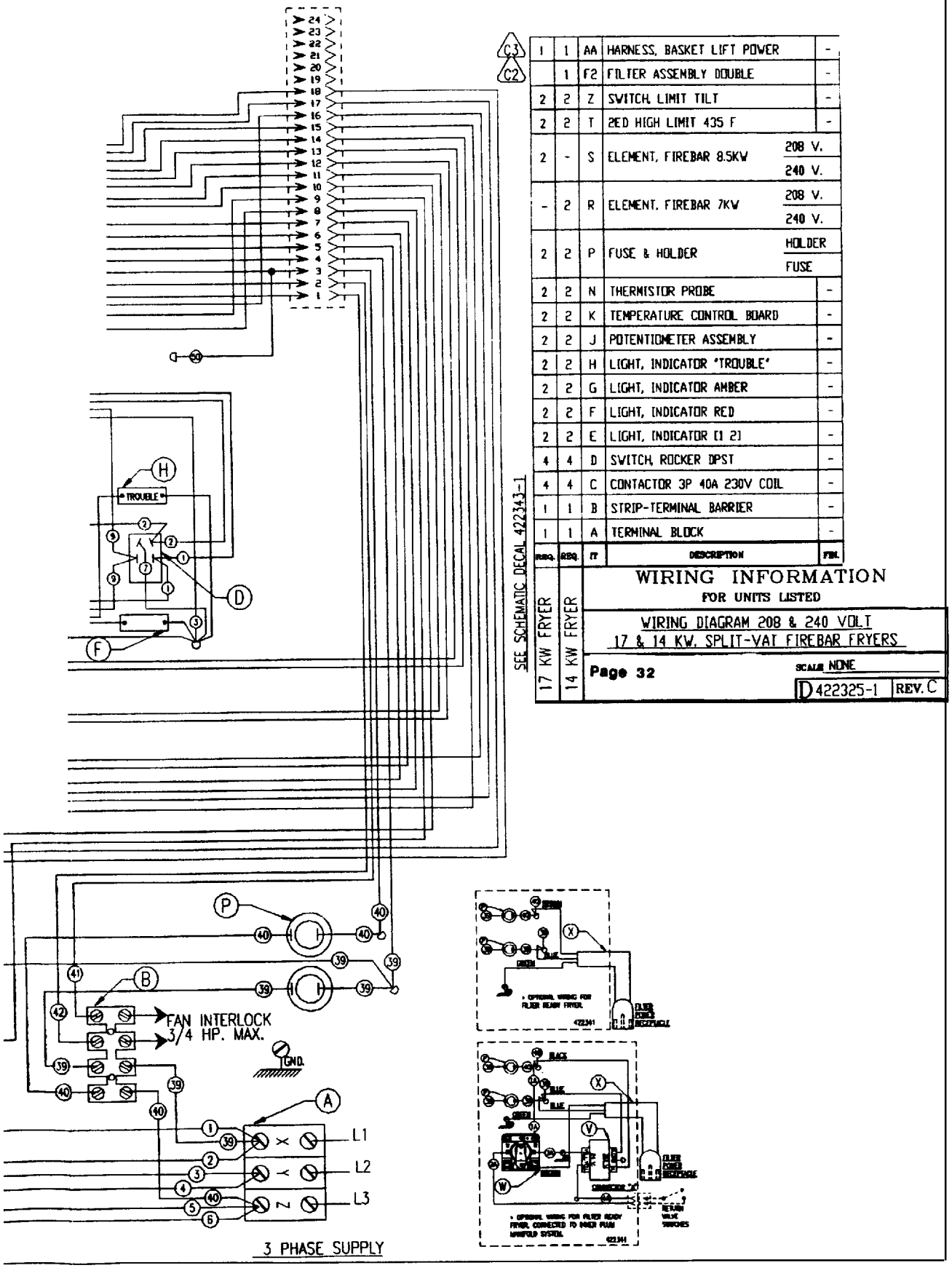
SCALE NONE

D 422330-1 REV. C

208-240 VOLT PHASE LOAD

TOTAL KW	KW/PHASE X-Y	X-Z	Y-Z
17	5.6	5.6	5.6
14	4.6	4.6	4.6
	AMPS PER LINE 208 VOLT		
	X	Y	Z
17	47	47	47
14	39	39	39
	AMPS PER LINE 240 VOLT		
	X	Y	Z
17	41	41	41
14	34	34	34





RQD.	RQD.	IT	DESCRIPTION	FIG.
1	1	AA	HARNESS, BASKET LIFT POWER	-
	1	F2	FILTER ASSEMBLY DOUBLE	-
2	2	Z	SWITCH, LIMIT TILT	-
2	2	T	2ED HIGH LIMIT 435 F	-
2	-	S	ELEMENT, FIREBAR 8.5KW	208 V. / 240 V.
-	2	R	ELEMENT, FIREBAR 7KW	208 V. / 240 V.
2	2	P	FUSE & HOLDER	HOLDER / FUSE
2	2	N	THERMISTOR PROBE	-
2	2	K	TEMPERATURE CONTROL BOARD	-
2	2	J	POTENTIOMETER ASSEMBLY	-
2	2	H	LIGHT, INDICATOR "TROUBLE"	-
2	2	G	LIGHT, INDICATOR AMBER	-
2	2	F	LIGHT, INDICATOR RED	-
2	2	E	LIGHT, INDICATOR (1 2)	-
4	4	D	SWITCH, ROCKER DPST	-
4	4	C	CONTACTOR 3P 40A 230V COIL	-
1	1	B	STRIP-TERMINAL BARRIER	-
1	1	A	TERMINAL BLOCK	-

17 KW FRYER
14 KW FRYER

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAGRAM 208 & 240 VOLT
17 & 14 KW. SPLIT-VAT FIREBAR FRYERS

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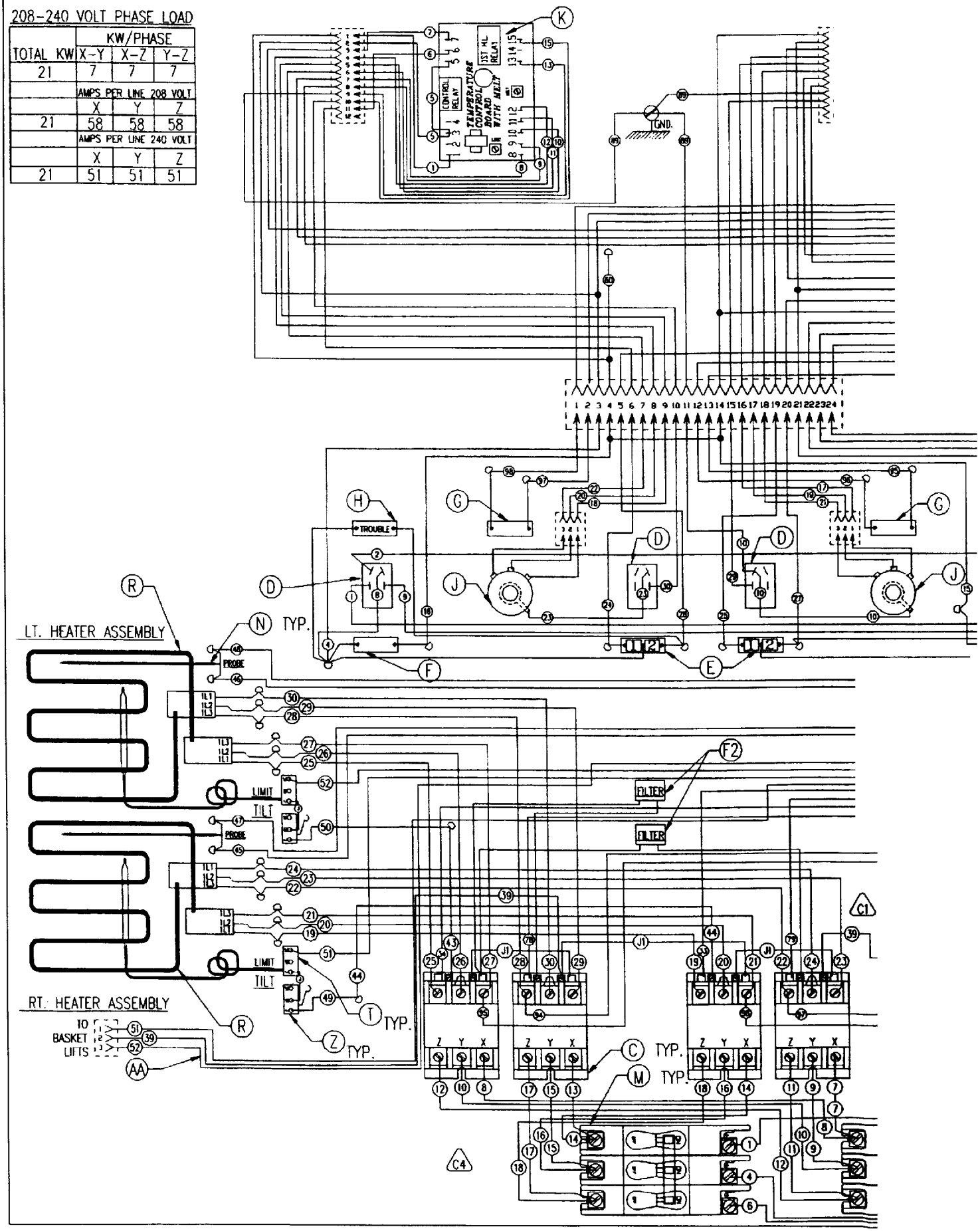
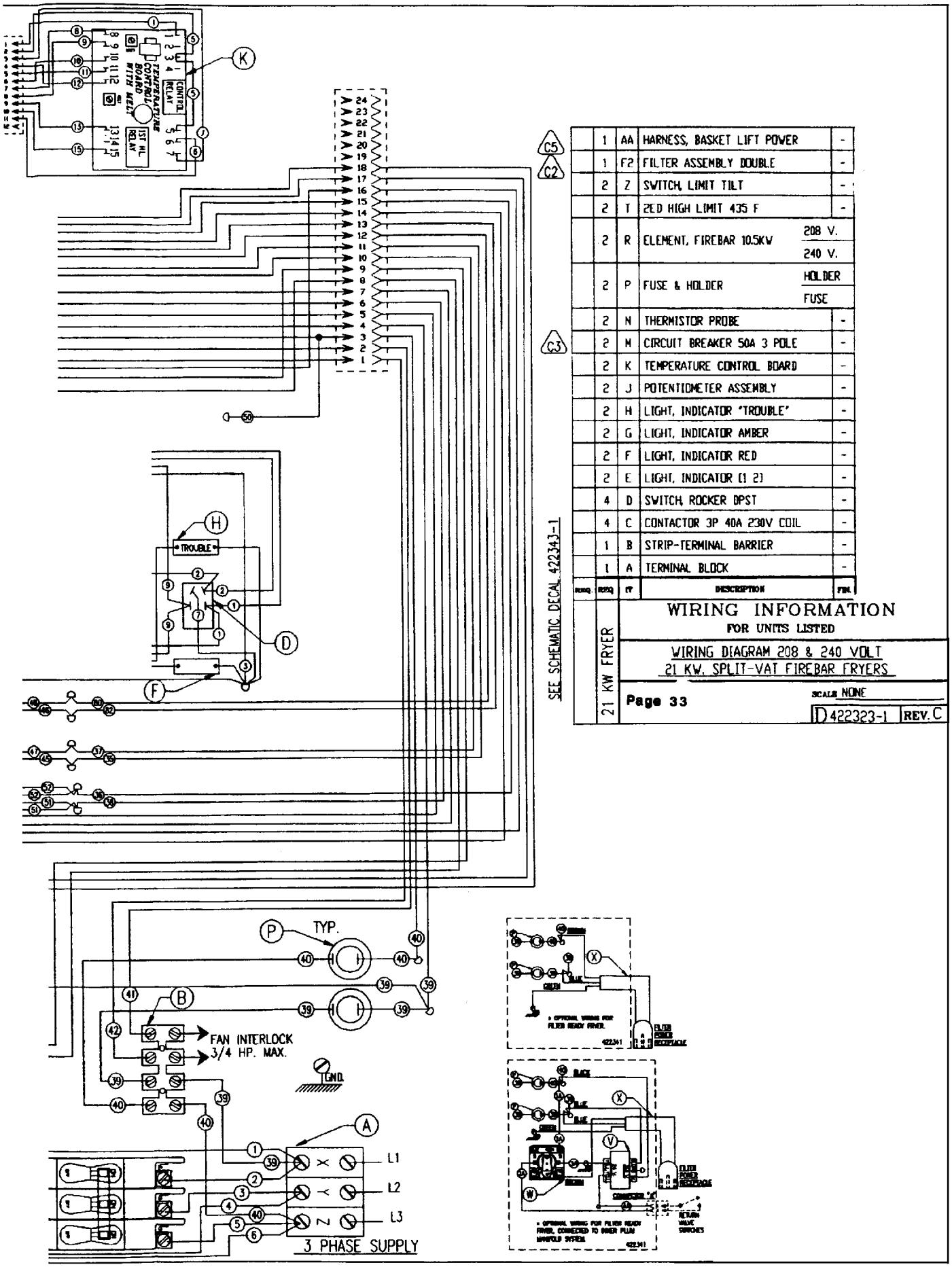
SCALE NONE

D 422325-1 REV. C

208-240 VOLT PHASE LOAD

	KW/PHASE		
TOTAL KW	X-Y	X-Z	Y-Z
21	7	7	7
	AMPS PER LINE 208 VOLT		
	X	Y	Z
21	58	58	58
	AMPS PER LINE 240 VOLT		
	X	Y	Z
21	51	51	51





	REQ.	IT	DESCRIPTION	P/N
C5 C2	1	AA	HARNESS, BASKET LIFT POWER	-
	1	F2	FILTER ASSEMBLY DOUBLE	-
	2	Z	SWITCH, LIMIT TILT	-
	2	T	2ED HIGH LIMIT 435 F	-
	2	R	ELEMENT, FIREBAR 10.5KW	208 V. / 240 V.
	2	P	FUSE & HOLDER	HOLDER / FUSE
	2	N	THERMISTOR PROBE	-
C3	2	M	CIRCUIT BREAKER 50A 3 POLE	-
	2	K	TEMPERATURE CONTROL BOARD	-
	2	J	POTENTIOMETER ASSEMBLY	-
	2	H	LIGHT, INDICATOR "TROUBLE"	-
	2	G	LIGHT, INDICATOR AMBER	-
	2	F	LIGHT, INDICATOR RED	-
	2	E	LIGHT, INDICATOR (1 2)	-
	4	D	SWITCH, ROCKER DPST	-
	4	C	CONTACTOR 3P 40A 230V COIL	-
	1	B	STRIP-TERMINAL BARRIER	-
	1	A	TERMINAL BLOCK	-

21 KW FRYER

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAGRAM 208 & 240 VOLT
21 KW. SPLIT-VAT FIREBAR FRYERS

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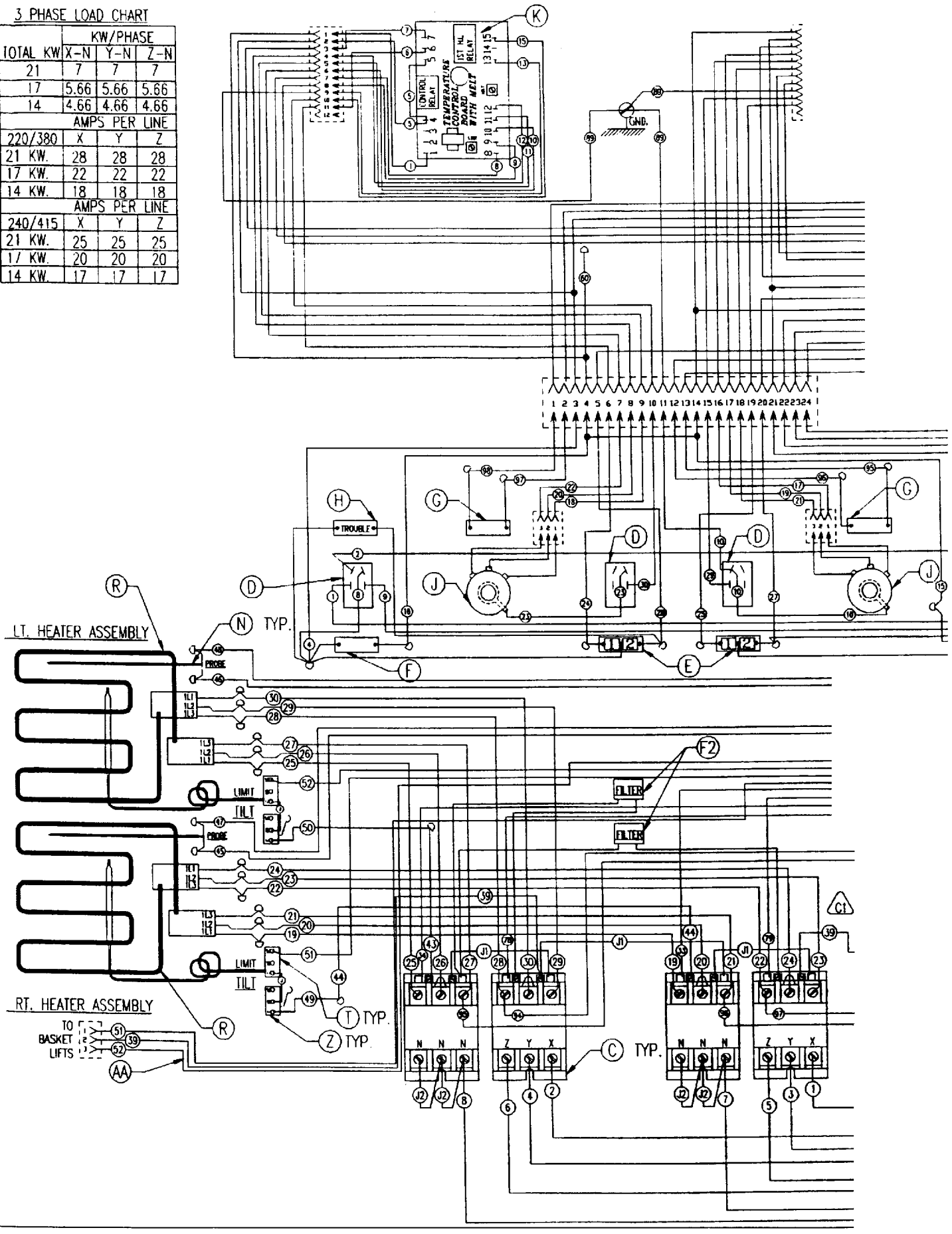
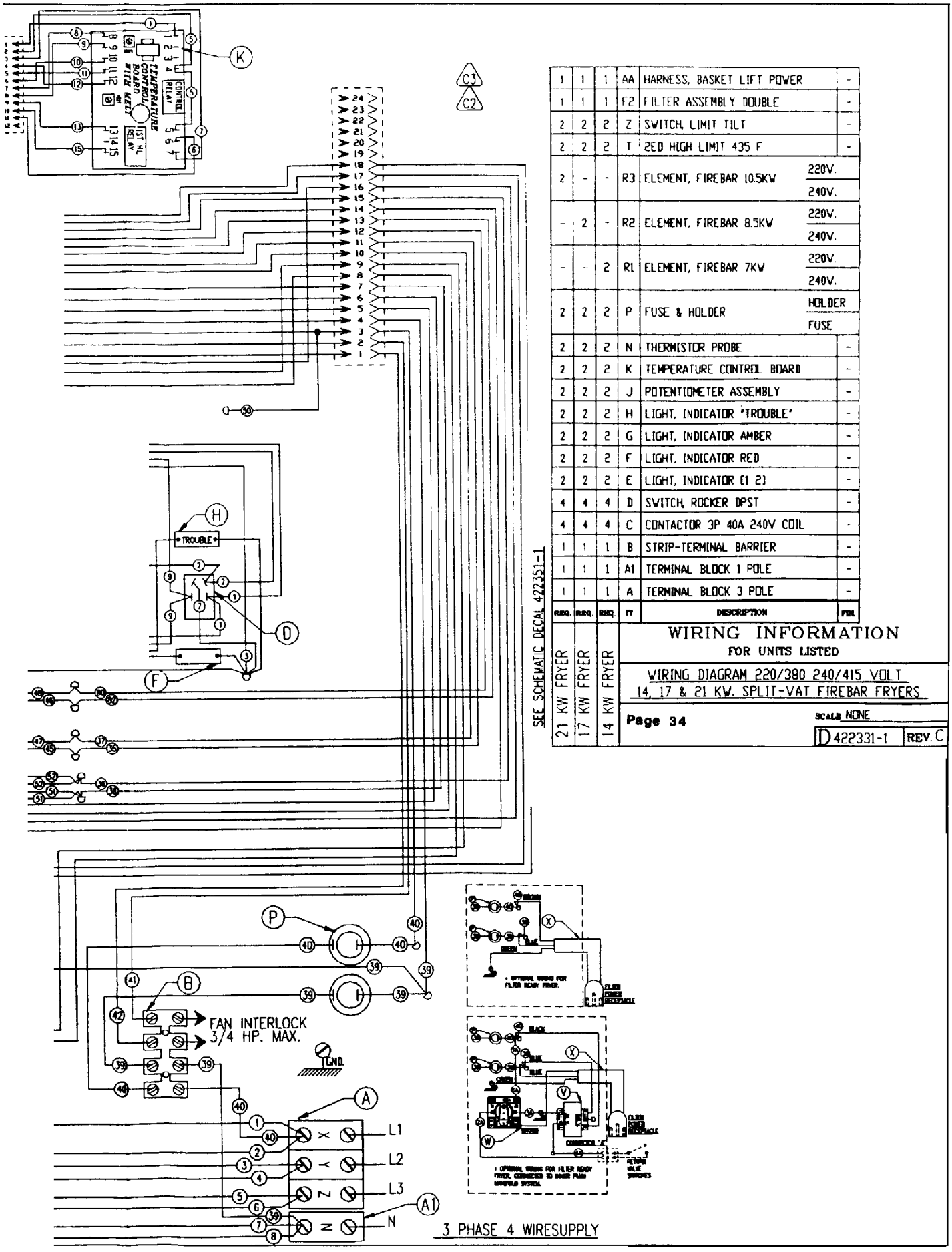
SCALE NONE

D 422323-1 REV. C

3 PHASE LOAD CHART

TOTAL KW	KW/PHASE X-N	Y-N	Z-N
21	7	7	7
17	5.66	5.66	5.66
14	4.66	4.66	4.66
AMPS PER LINE			
220/380	X	Y	Z
21 KW.	28	28	28
17 KW.	22	22	22
14 KW.	18	18	18
AMPS PER LINE			
240/415	X	Y	Z
21 KW.	25	25	25
17 KW.	20	20	20
14 KW.	17	17	17





1	1	1	AA	HARNESS, BASKET LIFT POWER	-
1	1	1	F2	FILTER ASSEMBLY DOUBLE	-
2	2	2	Z	SWITCH, LIMIT TILT	-
2	2	2	T	2ED HIGH LIMIT 435 F	-
2	-	-	R3	ELEMENT, FIREBAR 10.5KW	220V. / 240V.
-	2	-	R2	ELEMENT, FIREBAR 8.5KW	220V. / 240V.
-	-	2	R1	ELEMENT, FIREBAR 7KW	220V. / 240V.
2	2	2	P	FUSE & HOLDER	HOLDER / FUSE
2	2	2	N	THERMISTOR PROBE	-
2	2	2	K	TEMPERATURE CONTROL BOARD	-
2	2	2	J	POTENTIOMETER ASSEMBLY	-
2	2	2	H	LIGHT, INDICATOR 'TROUBLE'	-
2	2	2	G	LIGHT, INDICATOR AMBER	-
2	2	2	F	LIGHT, INDICATOR RED	-
2	2	2	E	LIGHT, INDICATOR (1 2)	-
4	4	4	D	SWITCH, ROCKER DPST	-
4	4	4	C	CONTACTOR 3P 40A 240V COIL	-
1	1	1	B	STRIP-TERMINAL BARRIER	-
1	1	1	A1	TERMINAL BLOCK 1 POLE	-
1	1	1	A	TERMINAL BLOCK 3 POLE	-
REQ.	REQ.	REQ.	IT	DESCRIPTION	PER.

21 KW FRYER	17 KW FRYER	14 KW FRYER

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAGRAM 220/380 240/415 VOLT
14, 17 & 21 KW. SPLIT-VAT FIREBAR FRYERS

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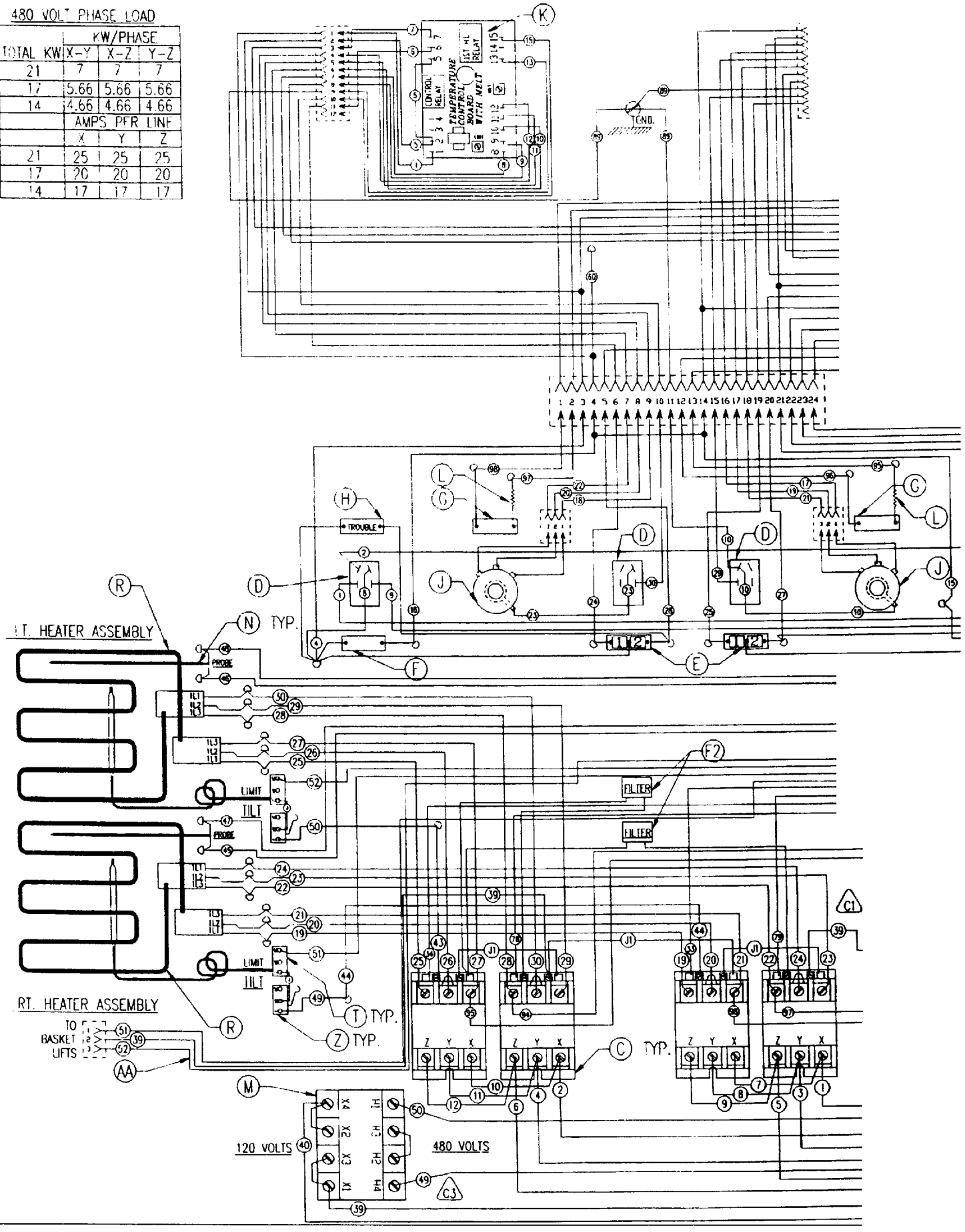
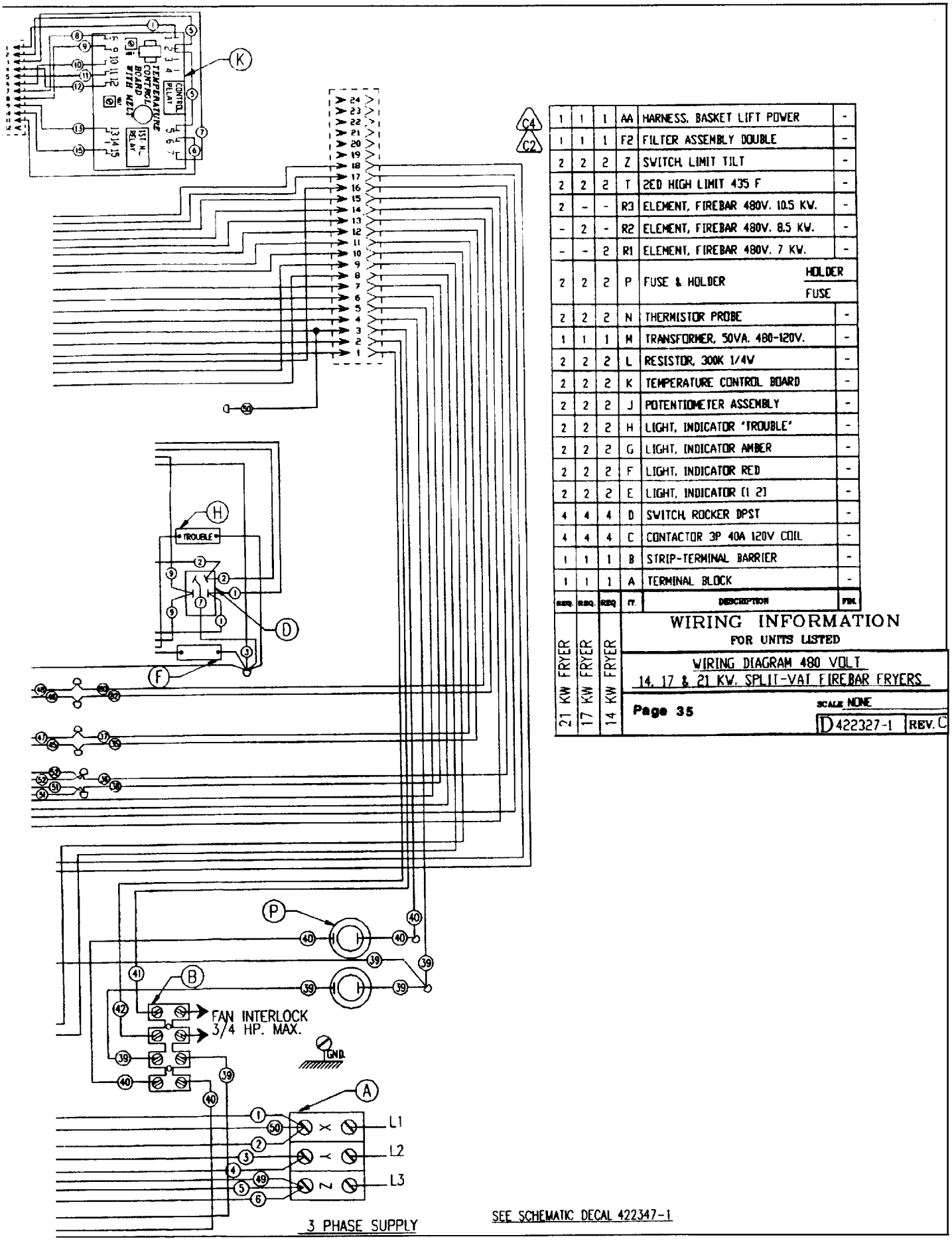
SCALE NONE

D 422331-1 REV. C

480 VOLT PHASE LOAD

TOTAL KW	KW/PHASE X-Y	X-Z	Y-Z
21	7	7	7
17	5.66	5.66	5.66
14	4.66	4.66	4.66
	AMPS PER LINE		
	X	Y	Z
21	25	25	25
17	20	20	20
14	17	17	17





21 KW FRYER	17 KW FRYER	14 KW FRYER	IT.	DESCRIPTION	FIN.
1	1	1	AA	HARNESS, BASKET LIFT POWER	-
1	1	1	F2	FILTER ASSEMBLY DOUBLE	-
2	2	2	Z	SWITCH, LIMIT TILT	-
2	2	2	T	2ED HIGH LIMIT 435 F	-
2	-	-	R3	ELEMENT, FIREBAR 480V. 10.5 KW.	-
-	2	-	R2	ELEMENT, FIREBAR 480V. 8.5 KW.	-
-	-	2	R1	ELEMENT, FIREBAR 480V. 7 KW.	-
2	2	2	P	FUSE & HOLDER — HOLDER / FUSE	
2	2	2	N	THERMISTOR PROBE	-
1	1	1	M	TRANSFORMER, 50VA. 480-120V.	-
2	2	2	L	RESISTOR, 300K 1/4W	-
2	2	2	K	TEMPERATURE CONTROL BOARD	-
2	2	2	J	POTENTIOMETER ASSEMBLY	-
2	2	2	H	LIGHT, INDICATOR 'TROUBLE'	-
2	2	2	G	LIGHT, INDICATOR AMBER	-
2	2	2	F	LIGHT, INDICATOR RED	-
2	2	2	E	LIGHT, INDICATOR (1 2)	-
4	4	4	D	SWITCH, ROCKER DPST	-
4	4	4	C	CONTACTOR 3P 40A 120V COIL	-
1	1	1	B	STRIP-TERMINAL BARRIER	-
1	1	1	A	TERMINAL BLOCK	-

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAGRAM 480 VOLT
14, 17 & 21 KW. SPLIT-VAT FIREBAR FRYERS

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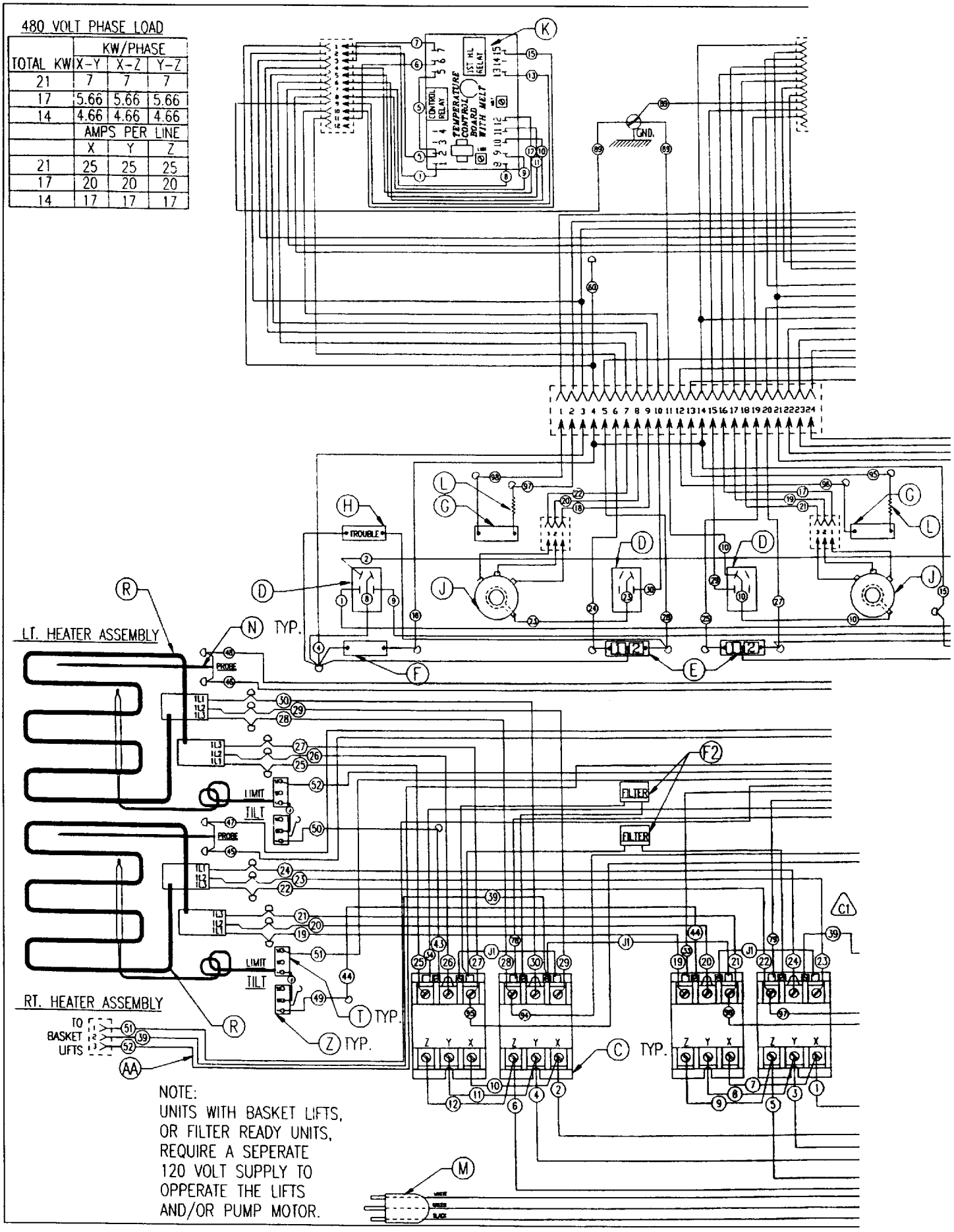
SCALE NONE

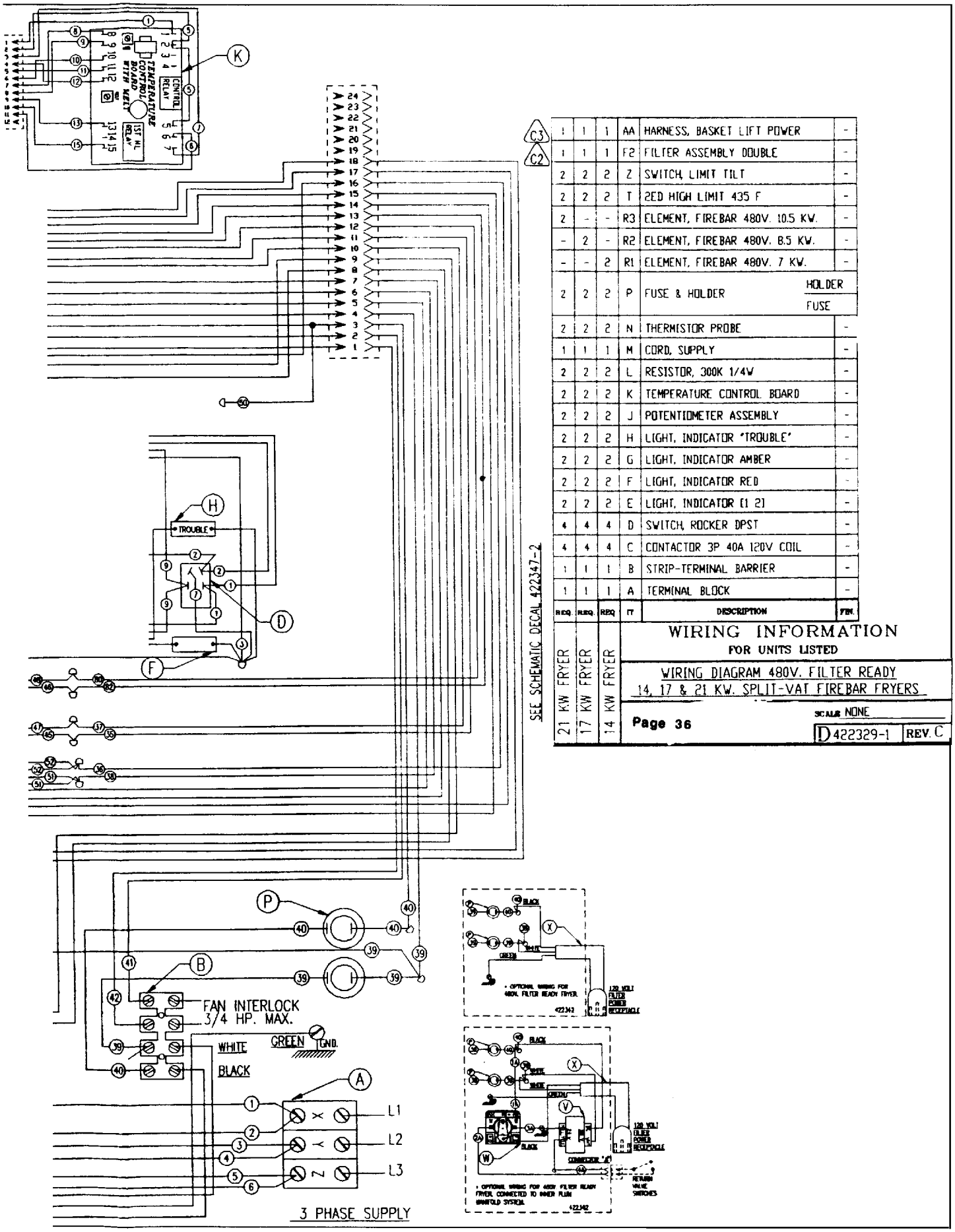
D 422327-1 REV. C

SEE SCHEMATIC DECAL 422347-1

480 VOLT PHASE LOAD

TOTAL KW	KW/PHASE X-Y	X-Z	Y-Z
21	7	7	7
17	5.66	5.66	5.66
14	4.66	4.66	4.66
	AMPS PER LINE		
	X	Y	Z
21	25	25	25
17	20	20	20
14	17	17	17





1	1	1	AA	HARNESS, BASKET LIFT POWER	-
1	1	1	F2	FILTER ASSEMBLY DOUBLE	-
2	2	2	Z	SWITCH, LIMIT TILT	-
2	2	2	T	2ED HIGH LIMIT 435 F	-
2	-	-	R3	ELEMENT, FIREBAR 480V. 10.5 KW.	-
-	2	-	R2	ELEMENT, FIREBAR 480V. 8.5 KW.	-
-	-	2	R1	ELEMENT, FIREBAR 480V. 7 KW.	-
2	2	2	P	FUSE & HOLDER / FUSE	HOLDER / FUSE
2	2	2	N	THERMISTOR PROBE	-
1	1	1	M	CORD, SUPPLY	-
2	2	2	L	RESISTOR, 300K 1/4W	-
2	2	2	K	TEMPERATURE CONTROL BOARD	-
2	2	2	J	POTENTIOMETER ASSEMBLY	-
2	2	2	H	LIGHT, INDICATOR 'TROUBLE'	-
2	2	2	G	LIGHT, INDICATOR AMBER	-
2	2	2	F	LIGHT, INDICATOR RED	-
2	2	2	E	LIGHT, INDICATOR (1 2)	-
4	4	4	D	SWITCH, ROCKER DPST	-
4	4	4	C	CONTACTOR 3P 40A 120V COIL	-
1	1	1	B	STRIP-TERMINAL BARRIER	-
1	1	1	A	TERMINAL BLOCK	-
REQ.	REQ.	REQ.	IT	DESCRIPTION	PART

21 KW FRYER
17 KW FRYER
14 KW FRYER

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAGRAM 480V. FILTER READY
14, 17 & 21 KW. SPLIT-VAT FIREBAR FRYERS

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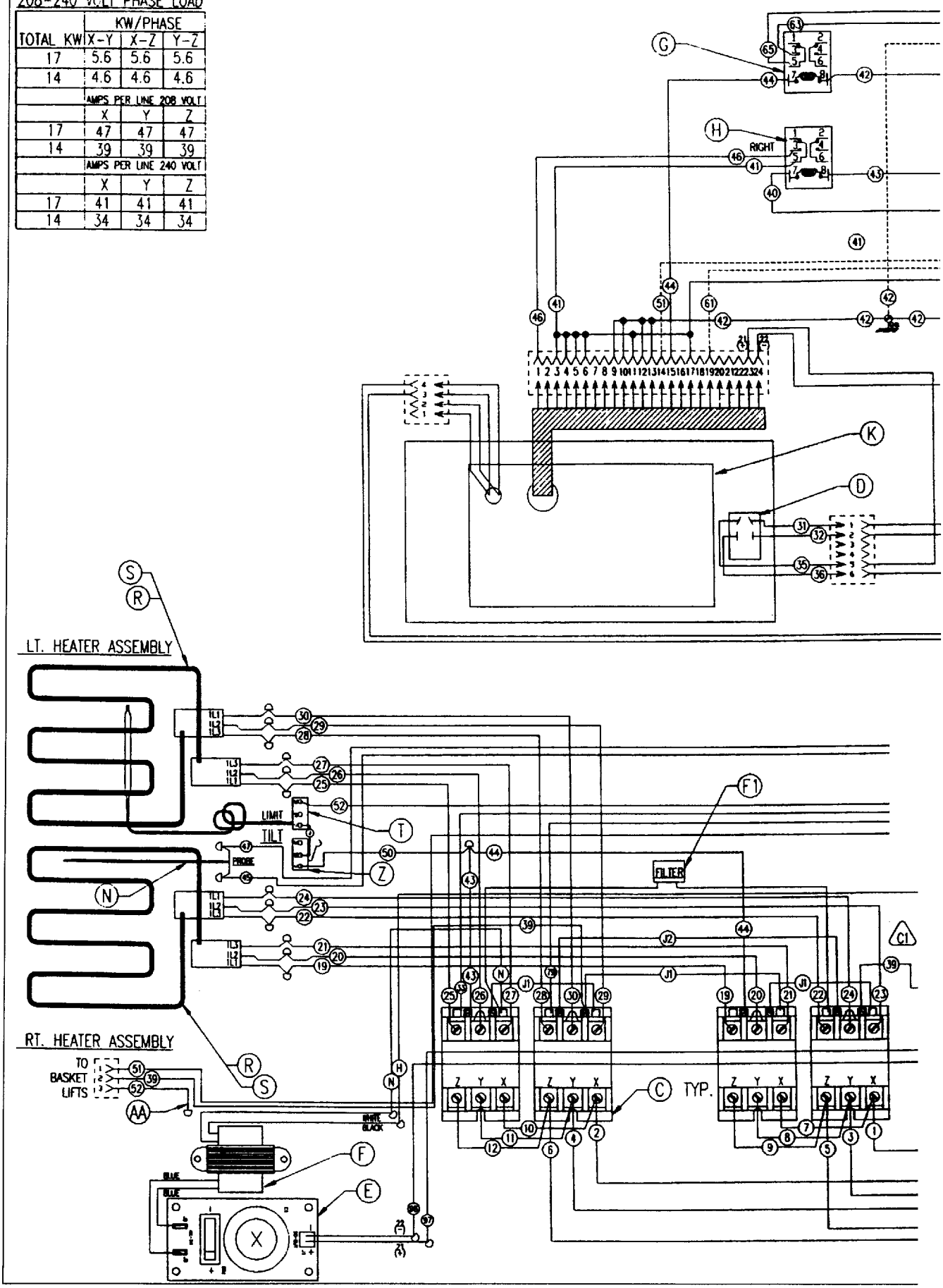
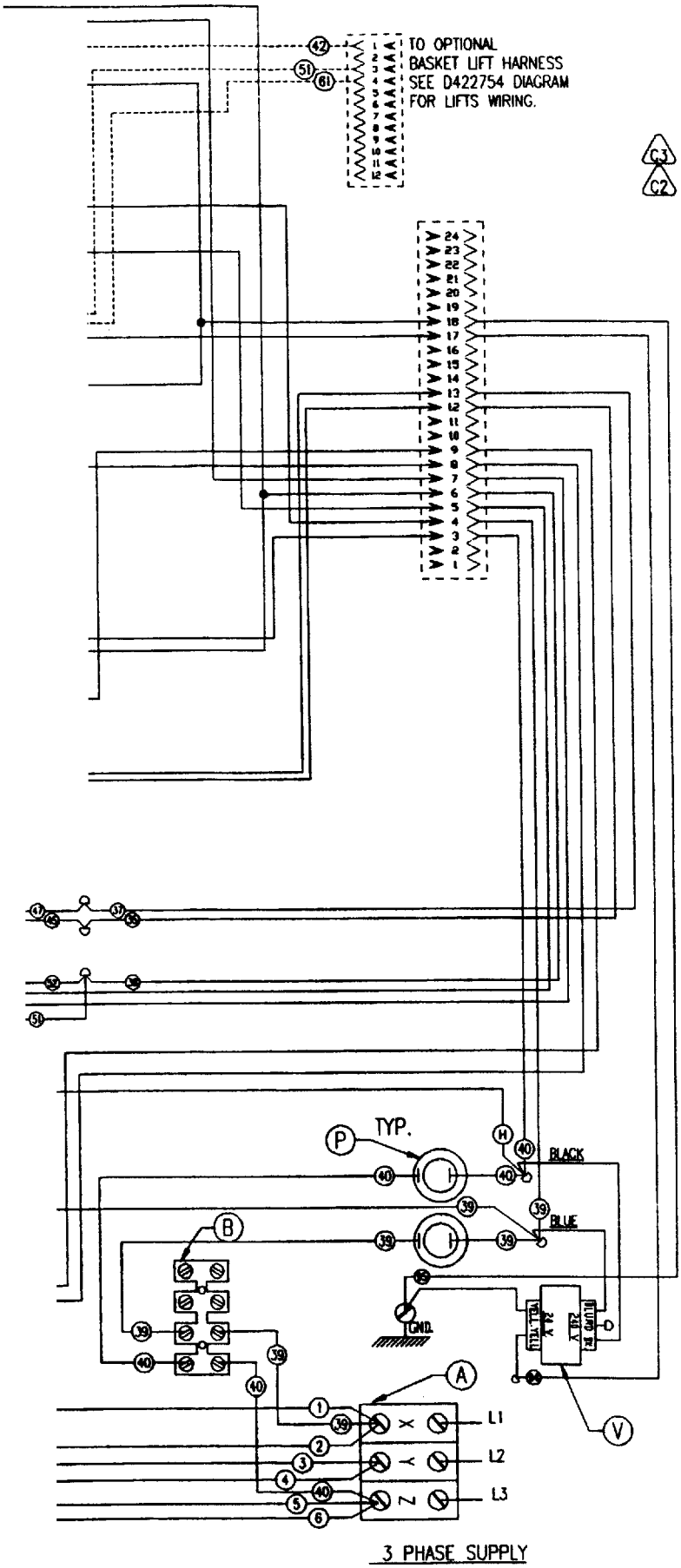
SCALE NONE

D 422329-1 REV. C

208-240 VOLT PHASE LOAD

TOTAL KW	KW/PHASE X-Y	X-Z	Y-Z
17	5.6	5.6	5.6
14	4.6	4.6	4.6
	AMPS PER LINE 208 VOLT		
	X	Y	Z
17	47	47	47
14	39	39	39
	AMPS PER LINE 240 VOLT		
	X	Y	Z
17	41	41	41
14	34	34	34





C3 C2 1	1	AA	HARNESS, BASKET LIFT POWER	-
1	1	F1	FILTER ASSEMBLY SINGLE	-
1	1	Z	SWITCH, LIMIT TILT	-
1	1	V	TRANSFORMER, 40VA 230/24VAC	-
1	1	T	ZED HIGH LIMIT 435 F	-
2	-	S	ELEMENT, FIREBAR 8.5KW	208 V. / 240 V.
-	2	R	ELEMENT, FIREBAR 7KW	208 V. / 240 V.
2	2	P	FUSE & HOLDER	HOLDER / FUSE
1	1	N	THERMISTOR PROBE	-
1	1	K	COMPUTER CONTROL	-
1	1	H	RELAY DPDT 240V COIL	-
1	1	G	RELAY, DPDT 24V COIL	-
1	1	F	TRANSFORMER 240-12V	-
1	1	E	BOARD, COMPUTER POWER SUPPLY	-
1	1	D	SWITCH, ROCKER DPST	-
4	4	C	CONTACTOR 3P 40A 230V COIL	-
1	1	B	STRIP-TERMINAL BARRIER	-
1	1	A	TERMINAL BLOCK	-
REQ.	REQ	IT	DESCRIPTION	FIN

17 KW FRYER
14 KW FRYER

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIA. 208 & 240 VOLT COMPUTER CONTROL
17 & 14 KW. FULL-VAT FIREBAR FRYERS

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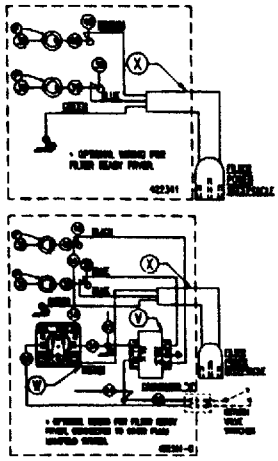
SCALE NONE

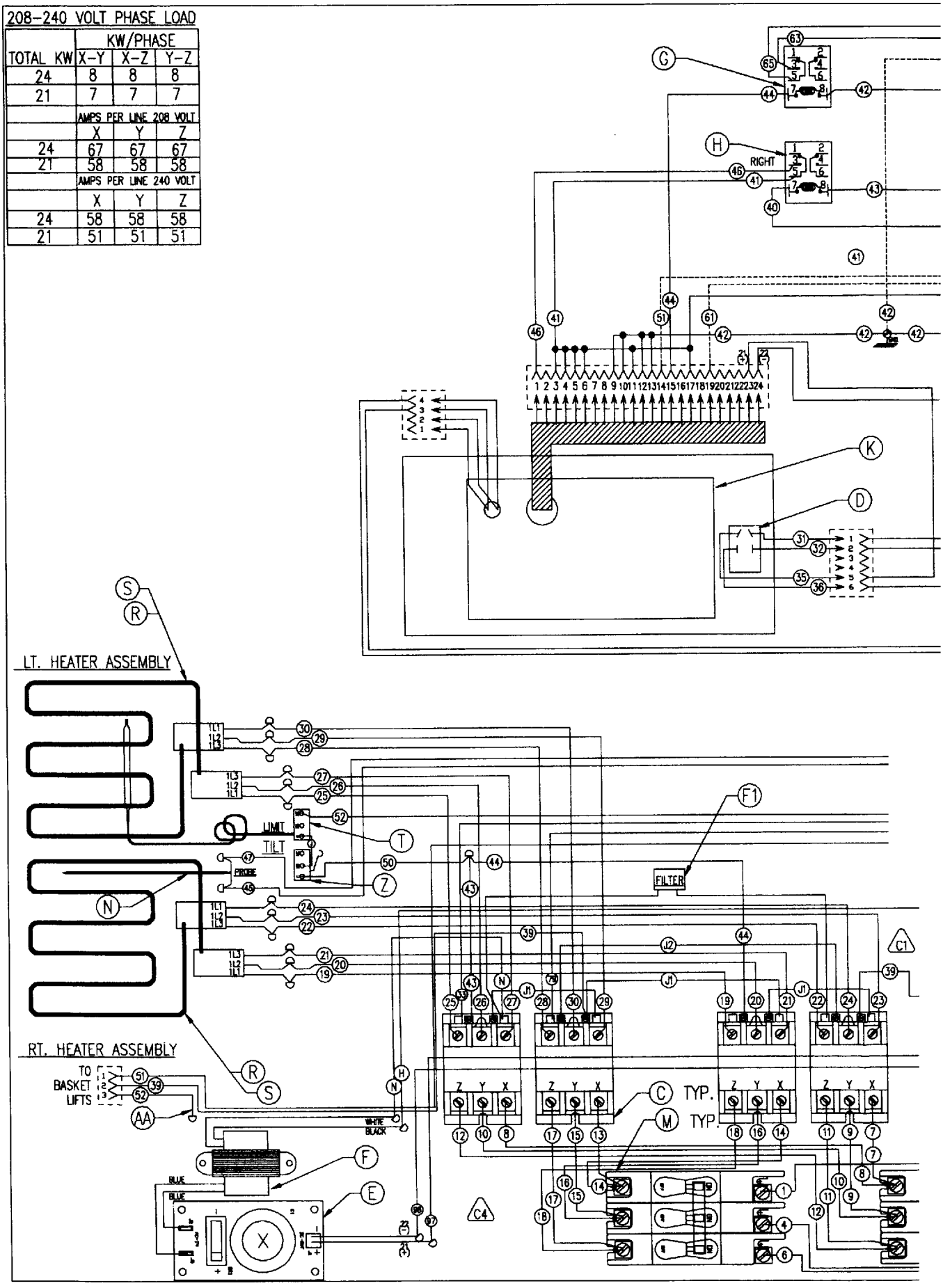
D422743-1 REV. C

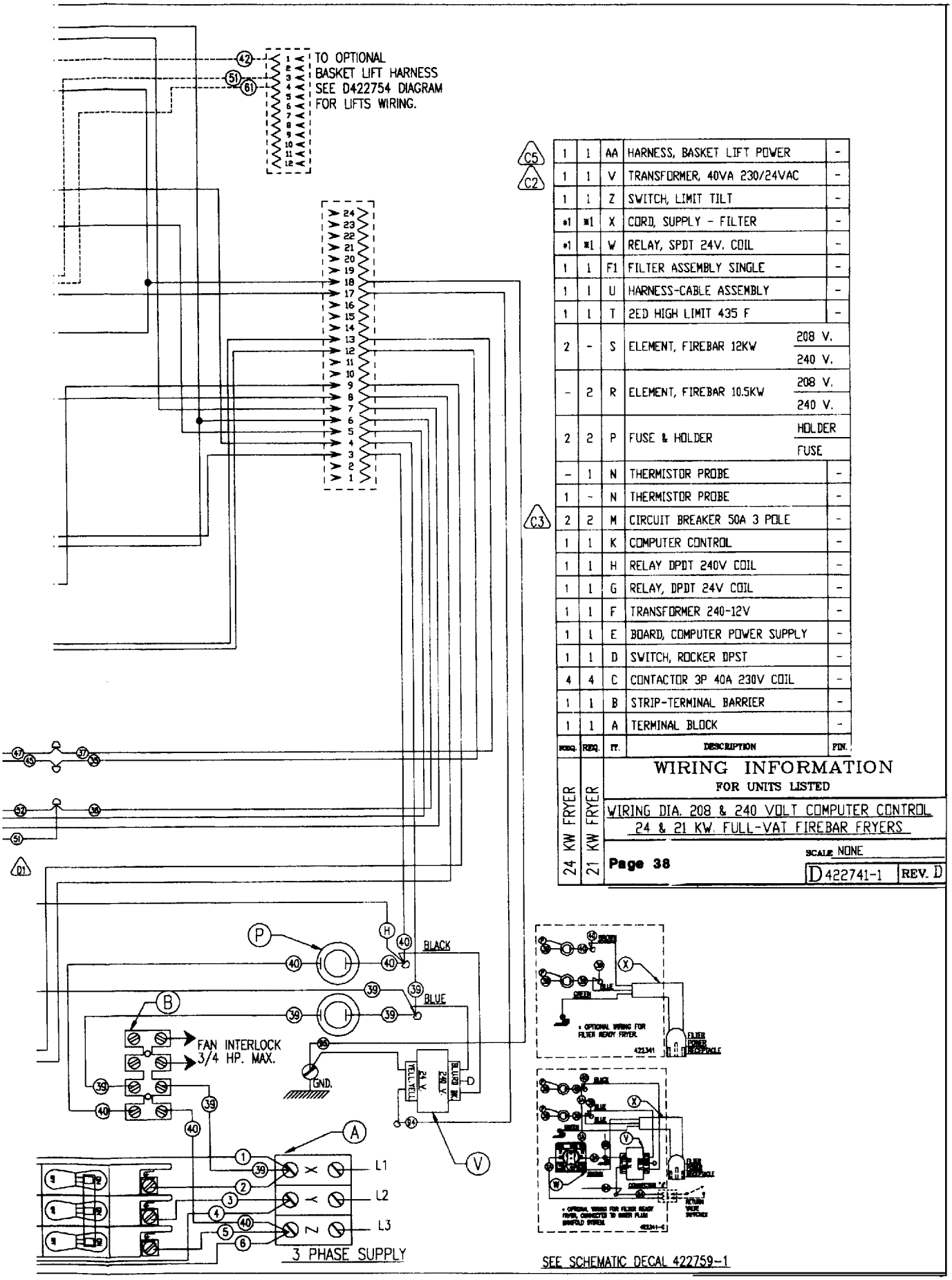


SEE SCHEMATIC DECAL 422759-1

208-240 VOLT PHASE LOAD

TOTAL KW	KW/PHASE X-Y	X-Z	Y-Z
24	8	8	8
21	7	7	7
	AMPS PER LINE 208 VOLT		
	X	Y	Z
24	67	67	67
21	58	58	58
	AMPS PER LINE 240 VOLT		
	X	Y	Z
24	58	58	58
21	51	51	51





C5 C2	1	1	AA	HARNESS, BASKET LIFT POWER -
C2	1	1	V	TRANSFORMER, 40VA 230/24VAC -
	1	1	Z	SWITCH, LIMIT TILT -
	*1	*1	X	CORD, SUPPLY - FILTER -
	*1	*1	W	RELAY, SPDT 24V. COIL -
	1	1	F1	FILTER ASSEMBLY SINGLE -
	1	1	U	HARNESS-CABLE ASSEMBLY -
	1	1	T	2ED HIGH LIMIT 435 F -
	2	-	S	ELEMENT, FIREBAR 12KW 208 V. / 240 V.
	-	2	R	ELEMENT, FIREBAR 10.5KW 208 V. / 240 V.
	2	2	P	FUSE & HOLDER HOLDER / FUSE
	-	1	N	THERMISTOR PROBE -
	1	-	N	THERMISTOR PROBE -
C3	2	2	M	CIRCUIT BREAKER 50A 3 POLE -
	1	1	K	COMPUTER CONTROL -
	1	1	H	RELAY DPDT 240V COIL -
	1	1	G	RELAY, DPDT 24V COIL -
	1	1	F	TRANSFORMER 240-12V -
	1	1	E	BOARD, COMPUTER POWER SUPPLY -
	1	1	D	SWITCH, ROCKER DPST -
	4	4	C	CONTACTOR 3P 40A 230V COIL -
	1	1	B	STRIP-TERMINAL BARRIER -
	1	1	A	TERMINAL BLOCK -
	REQ.	REQ.	IT.	DESCRIPTION FIN.

24 KW FRYER
21 KW FRYER

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIA. 208 & 240 VOLT COMPUTER CONTROL
24 & 21 KW. FULL-VAT FIREBAR FRYERS

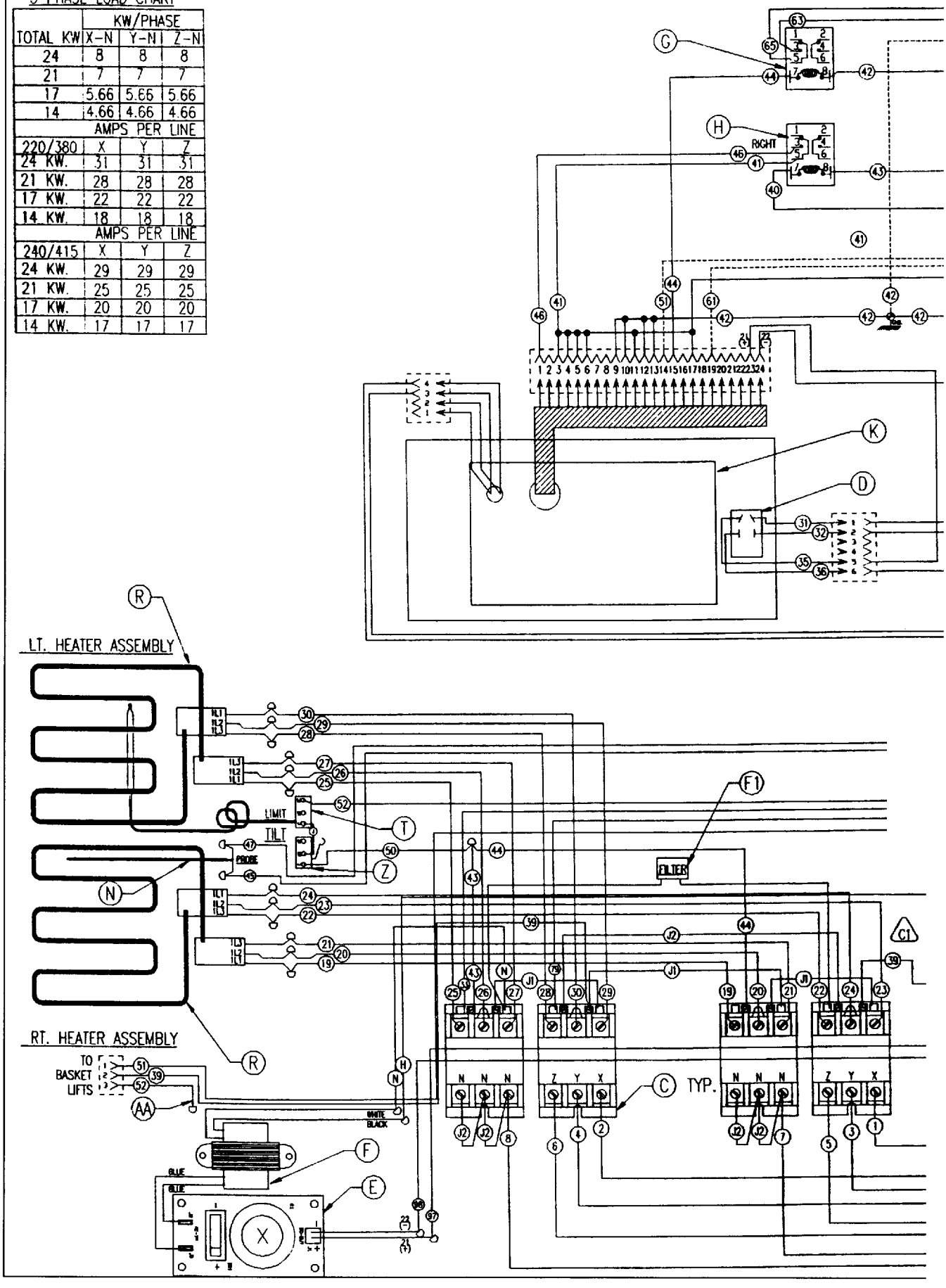
Page 38

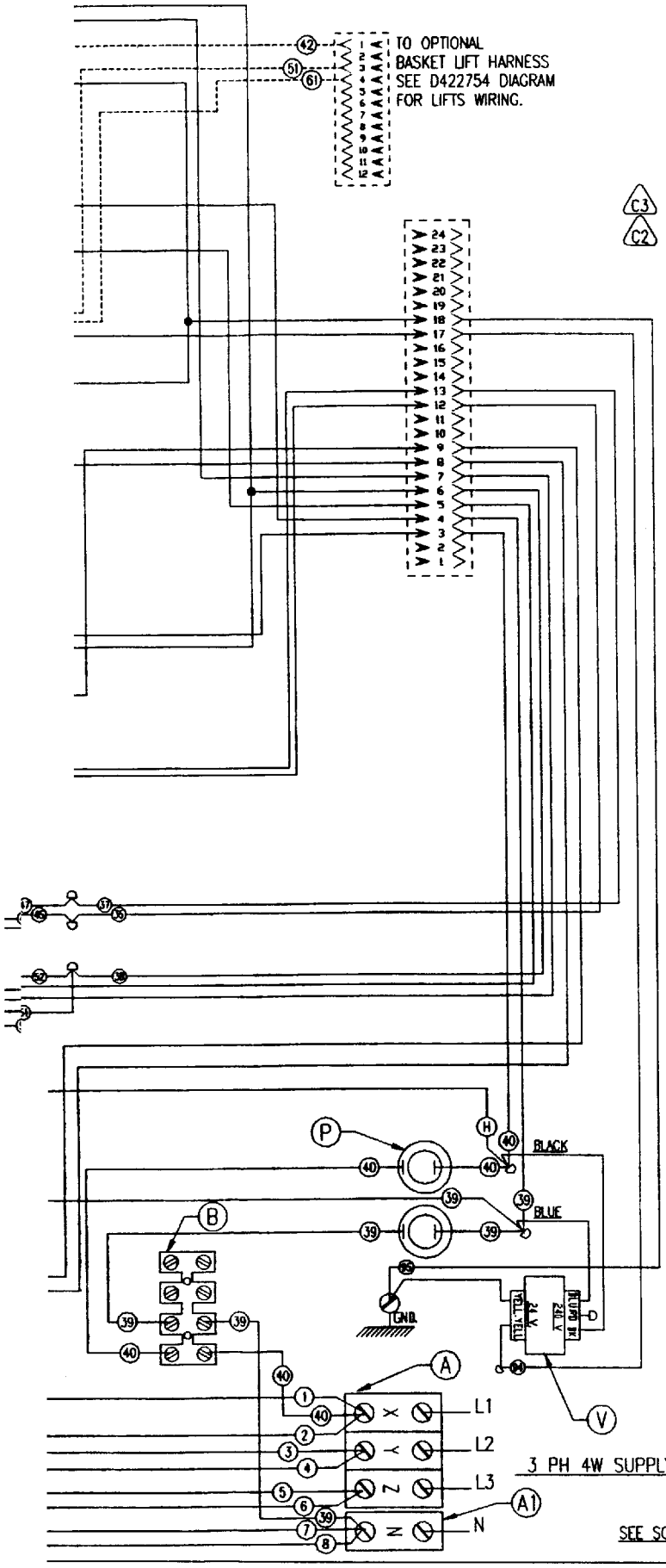
SCALE NONE

D422741-1 REV. D

3 PHASE LOAD CHART

	KW/PHASE		
TOTAL KW	X-N	Y-N	Z-N
24	8	8	8
21	7	7	7
17	5.66	5.66	5.66
14	4.66	4.66	4.66
AMPS PER LINE			
220/380	X	Y	Z
24 KW.	31	31	31
21 KW.	28	28	28
17 KW.	22	22	22
14 KW.	18	18	18
AMPS PER LINE			
240/415	X	Y	Z
24 KW.	29	29	29
21 KW.	25	25	25
17 KW.	20	20	20
14 KW.	17	17	17





1	1	1	1	AA	HARNESS, BASKET LIFT POWER	-
1	1	1	1	F1	FILTER ASSEMBLY SINGLE	-
1	1	1	1	Z	SWITCH, LIMIT TILT	-
1	1	1	1	V	TRANSFORMER, 40VA 230/24VAC	-
1	1	1	1	T	2ED HIGH LIMIT 435 F	-
2	-	-	-	R4	ELEMENT, FIREBAR 12KW	220V. / 240V.
-	2	-	-	R3	ELEMENT, FIREBAR 10.5KW	220V. / 240V.
-	-	2	-	R2	ELEMENT, FIREBAR 8.5KW	220V. / 240V.
-	-	-	2	R1	ELEMENT, FIREBAR 7KW	220V. / 240V.
2	2	2	2	P	FUSE & HOLDER	HOLDER / FUSE
1	1	1	1	N	THERMISTOR PROBE	-
1	1	1	1	K	COMPUTER CONTROL	-
1	1	1	1	H	RELAY DPDT 240V COIL	-
1	1	1	1	G	RELAY, DPDT 24V COIL	-
1	1	1	1	F	TRANSFORMER 240-12V	-
1	1	1	1	E	BOARD, COMPUTER POWER SUPPLY	-
1	1	1	1	D	SWITCH, ROCKER DPST	-
4	4	4	4	C	CONTACTOR 3P 40A 230V COIL	-
1	1	1	1	B	STRIP-TERMINAL BARRIER	-
1	1	1	1	A	TERMINAL BLOCK	-
REQ.	REQ.	REQ.	REQ.	IT	DESCRIPTION	PER

24 KW FRYER	21 KW FRYER	17 KW FRYER	14 KW FRYER

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIA. 220/380 240/415 V. COMP.CONTROL
24,21,17 & 14 KW. FULL-VAT FIREBAR FRYERS

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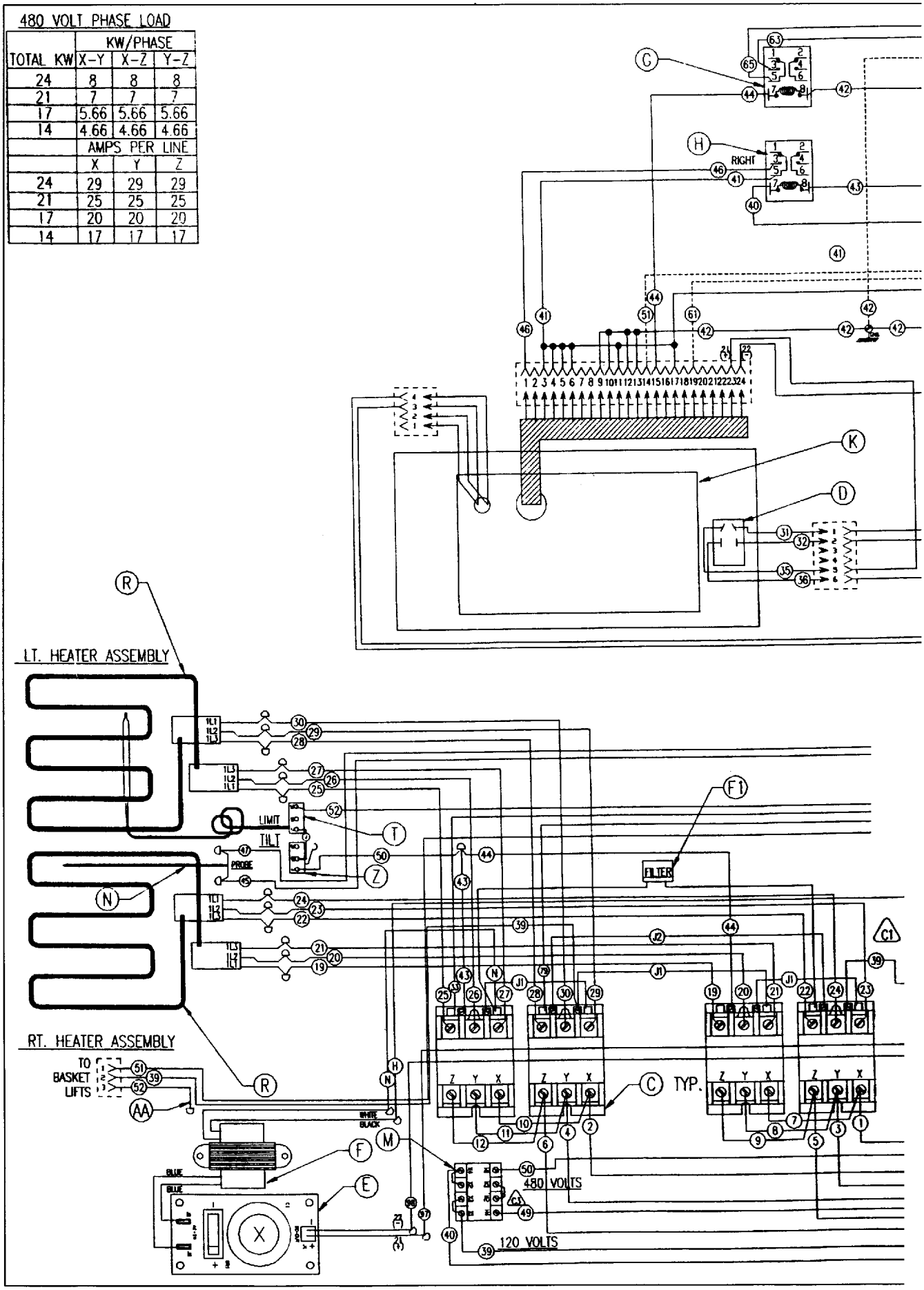
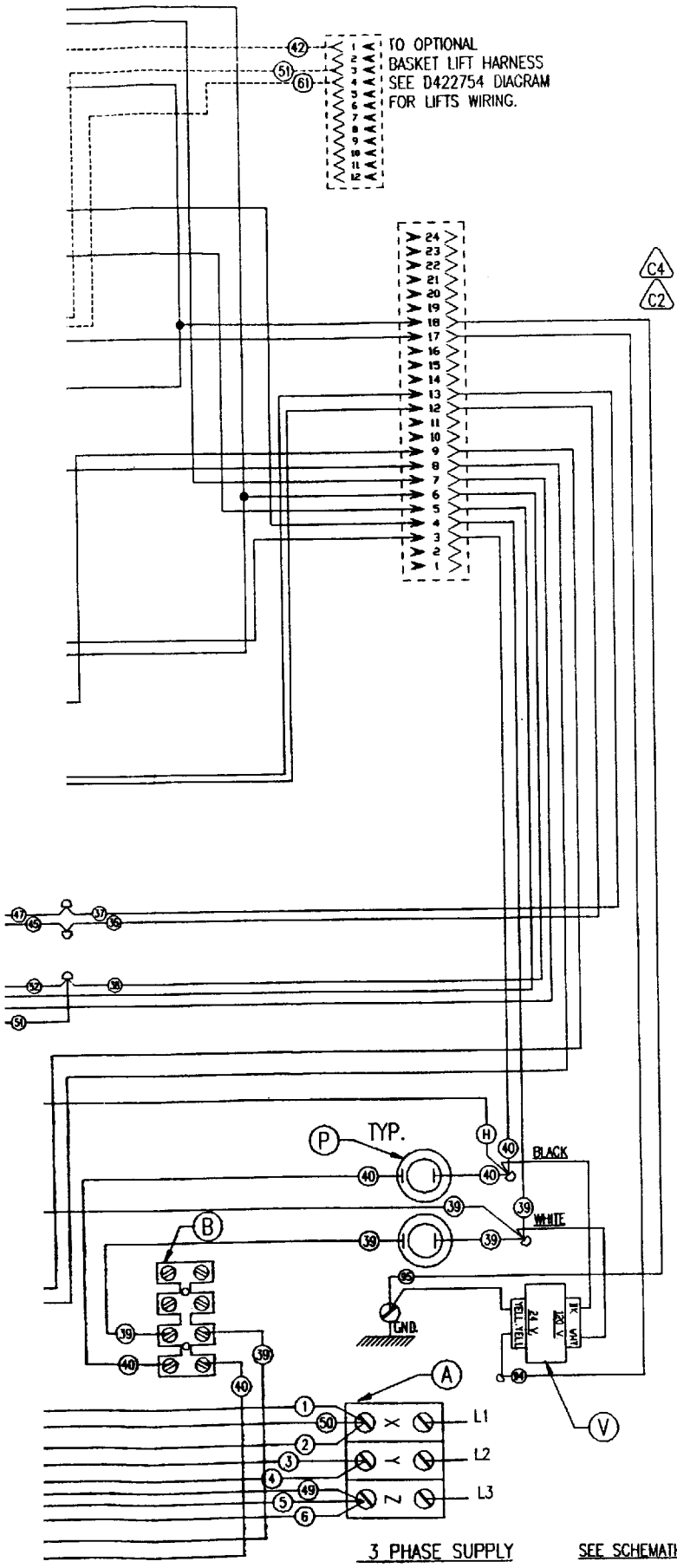
SCALE NONE

D422749-1 REV. C

480 VOLT PHASE LOAD

TOTAL KW	KW/PHASE X-Y	X-Z	Y-Z
24	8	8	8
21	7	7	7
17	5.66	5.66	5.66
14	4.66	4.66	4.66
	AMPS PER LINE		
	X	Y	Z
24	29	29	29
21	25	25	25
17	20	20	20
14	17	17	17





C4	1	1	1	1	AA	HARNESS, BASKET LIFT POWER	-
C2	1	1	1	1	FI	FILTER ASSEMBLY SINGLE	-
	1	1	1	1	Z	SWITCH, LIMIT TILT	-
	1	1	1	1	V	TRANSFORMER, 40VA 120/24VAC	-
	1	1	1	1	T	2ED HIGH LIMIT 435 F	-
	2	-	-	-	R3	ELEMENT, FIREBAR 480V. 12 KW.	-
	-	2	-	-	R3	ELEMENT, FIREBAR 480V. 10.5 KW.	-
	-	-	2	-	R2	ELEMENT, FIREBAR 480V. 8.5 KW.	-
	-	-	-	2	R1	ELEMENT, FIREBAR 480V. 7 KW.	-
	2	2	2	2	P	FUSE & HOLDER — HOLDER / FUSE	
	1	1	1	1	M	TRANSFORMER, 50VA. 480-120V.	-
	1	-	-	-	N	THERMISTOR PROBE	-
	-	1	1	1	N	THERMISTOR PROBE	-
	1	1	1	1	K	COMPUTER CONTROL	-
	1	1	1	1	H	RELAY DPDT 120V COIL	-
	1	1	1	1	G	RELAY, DPDT 24V COIL	-
	1	1	1	1	F	TRANSFORMER 120-12V	-
	1	1	1	1	E	BOARD, COMPUTER POWER SUPPLY	-
	1	1	1	1	D	SWITCH, ROCKER DPST	-
	4	4	4	4	C	CONTACTOR 3P 40A 120V COIL	-
	1	1	1	1	B	STRIP-TERMINAL BARRIER	-
	1	1	1	1	A	TERMINAL BLOCK	-
	REQ.	REQ.	REQ.	REQ.	ITT.	DESCRIPTION	FIG.

WIRING INFORMATION

FOR UNITS LISTED

24 KW FRYER
21 KW FRYER
17 KW FRYER
14 KW FRYER

WIRING DIA. 480V COMPUTER CONTROL
24,21,17 & 14KW. FULL-VAT FIREBAR FRYERS

Page 40

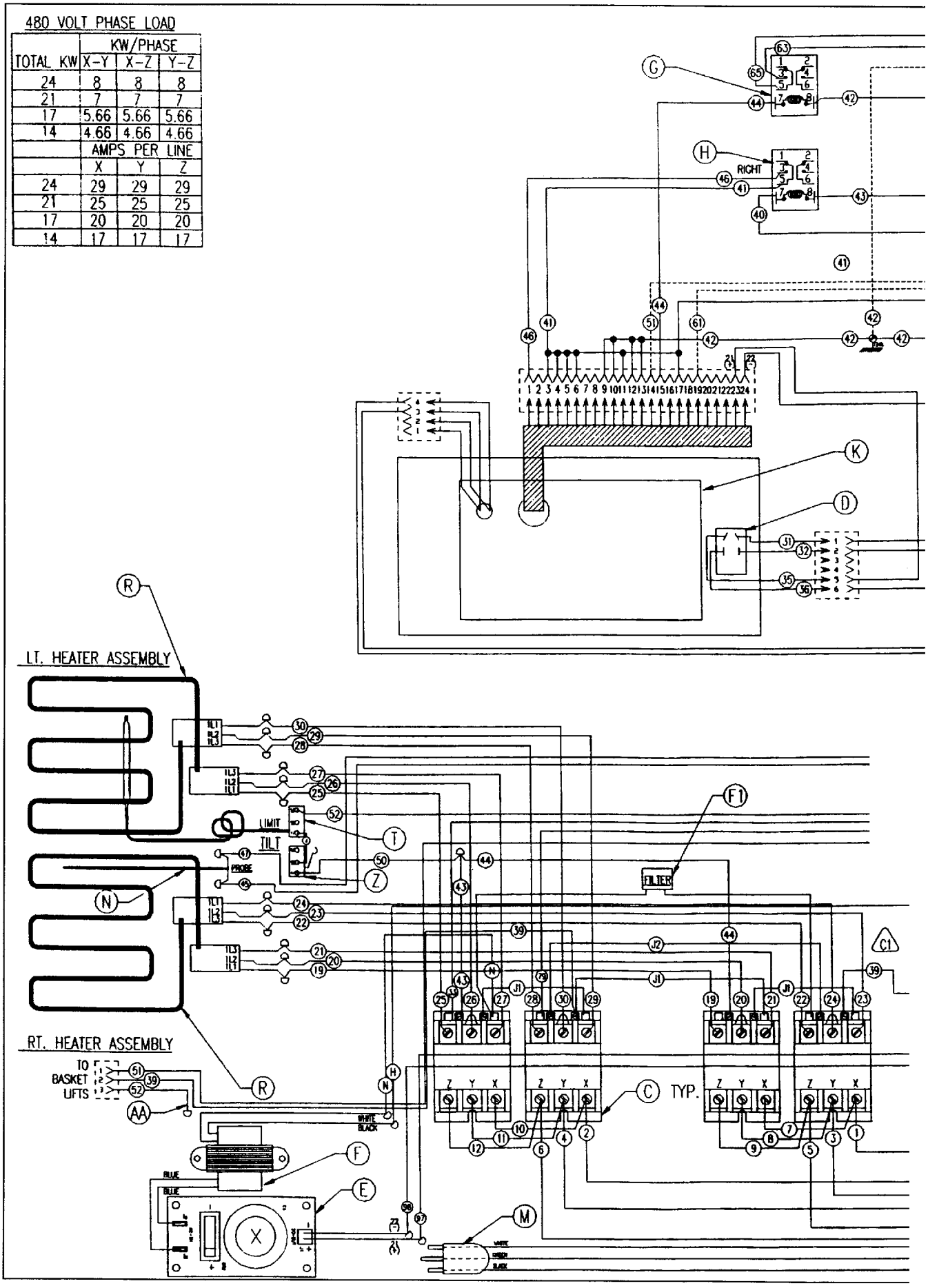
SCALE NONE

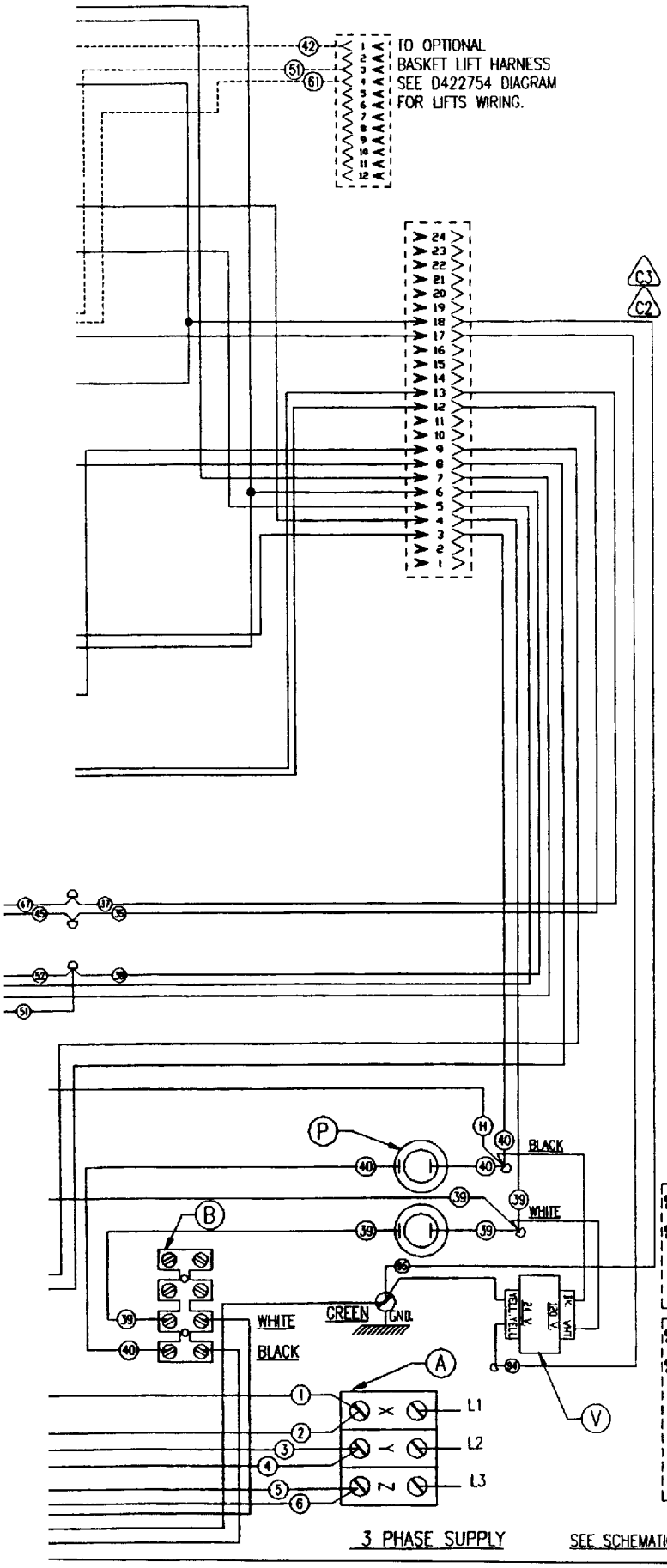
D422745-1 REV. C

SEE SCHEMATIC DECAL 422763-1

480 VOLT PHASE LOAD

TOTAL KW	KW/PHASE X-Y	X-Z	Y-Z
24	8	8	8
21	7	7	7
17	5.66	5.66	5.66
14	4.66	4.66	4.66
	AMPS PER LINE		
	X	Y	Z
24	29	29	29
21	25	25	25
17	20	20	20
14	17	17	17





24 KW FRYER	21 KW FRYER	17 KW FRYER	14 KW FRYER	IT.	DESCRIPTION	FIG.
1	1	1	1	AA	HARNESS, BASKET LIFT POWER	-
1	1	1	1	FI	FILTER ASSEMBLY SINGLE	-
1	1	1	1	Z	SWITCH, LIMIT TILT	-
1	1	1	1	V	TRANSFORMER, 40VA 120/24VAC	-
1	1	1	1	T	2ED HIGH LIMIT 435 F	-
2	-	-	-	R3	ELEMENT, FIREBAR 480V. 12 KW.	-
-	2	-	-	R3	ELEMENT, FIREBAR 480V. 10.5 KW.	-
-	-	2	-	R2	ELEMENT, FIREBAR 480V. 8.5 KW.	-
-	-	-	2	RI	ELEMENT, FIREBAR 480V. 7 KW.	-
2	2	2	2	P	FUSE & HOLDER — HOLDER / FUSE	
1	1	1	1	M	CORD, SUPPLY	-
1	-	-	-	N	THERMISTOR PROBE	-
-	1	1	1	N	THERMISTOR PROBE	-
1	1	1	1	K	COMPUTER CONTROL	-
1	1	1	1	H	RELAY DPDT 120V COIL	-
1	1	1	1	G	RELAY, DPDT 24V COIL	-
1	1	1	1	F	TRANSFORMER 120-12V	-
1	1	1	1	E	BOARD, COMPUTER POWER SUPPLY	-
1	1	1	1	D	SWITCH, ROCKER DPST	-
4	4	4	4	C	CONTACTOR 3P 40A 120V COIL	-
1	1	1	1	B	STRIP-TERMINAL BARRIER	-
1	1	1	1	A	TERMINAL BLOCK	-

WIRING INFORMATION
FOR UNITS LISTED

WIRING DIA. 480V COMP. CONTROL FILT. READY
24,21,17 & 14KW. FULL-VAT FIREBAR FRYERS

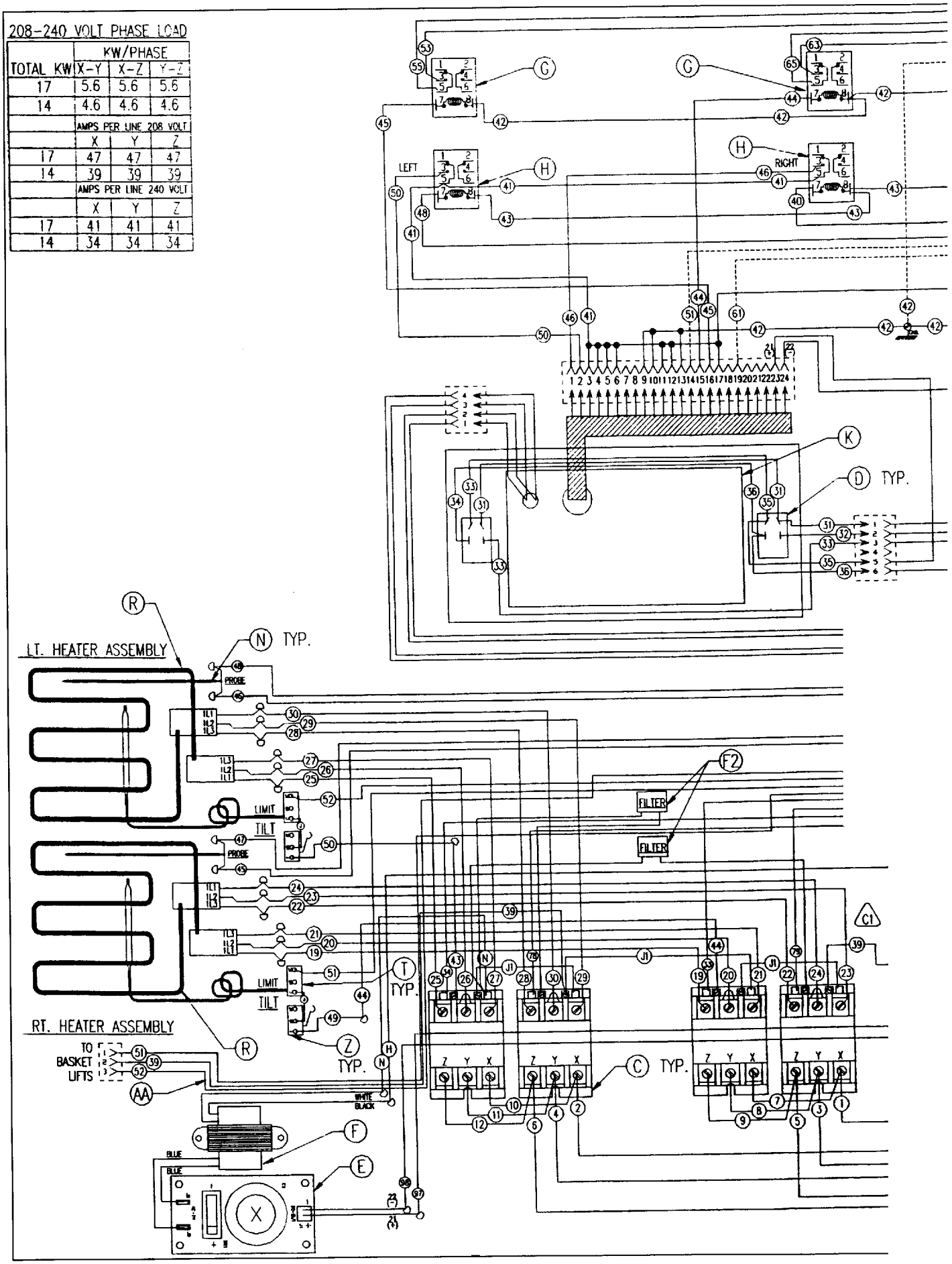
Page 41

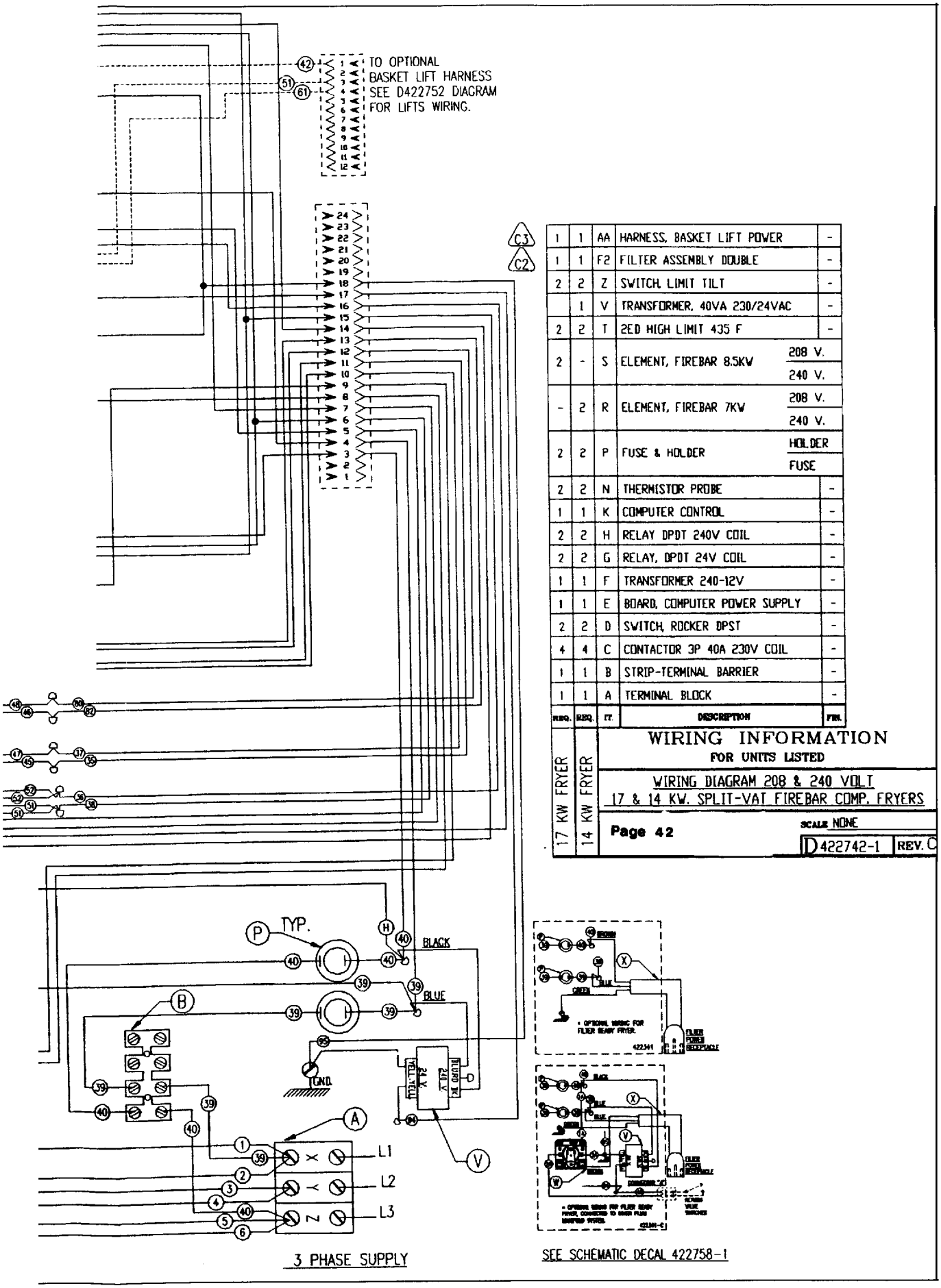
SCALE NONE

D422747-1 REV. C

208-240 VOLT PHASE LOAD

TOTAL KW	KW/PHASE X-Y	X-Z	Y-Z
17	5.6	5.6	5.6
14	4.6	4.6	4.6
	AMPS PER LINE 208 VOLT		
	X	Y	Z
17	47	47	47
14	39	39	39
	AMPS PER LINE 240 VOLT		
	X	Y	Z
17	41	41	41
14	34	34	34





QTY. REQ.	QTY. REQ.	IT.	DESCRIPTION	PART NO.
1	1	AA	HARNESS, BASKET LIFT POWER	-
1	1	F2	FILTER ASSEMBLY DOUBLE	-
2	2	Z	SWITCH, LIMIT TILT	-
	1	V	TRANSFORMER, 40VA 230/24VAC	-
2	2	T	2ED HIGH LIMIT 435 F	-
2	-	S	ELEMENT, FIREBAR 8.5KW	208 V. / 240 V.
-	2	R	ELEMENT, FIREBAR 7KW	208 V. / 240 V.
2	2	P	FUSE & HOLDER	HOLDER / FUSE
2	2	N	THERMISTOR PROBE	-
1	1	K	COMPUTER CONTROL	-
2	2	H	RELAY DPDT 240V COIL	-
2	2	G	RELAY, DPDT 24V COIL	-
1	1	F	TRANSFORMER 240-12V	-
1	1	E	BOARD, COMPUTER POWER SUPPLY	-
2	2	D	SWITCH, ROCKER DPST	-
4	4	C	CONTACTOR 3P 40A 230V COIL	-
1	1	B	STRIP-TERMINAL BARRIER	-
1	1	A	TERMINAL BLOCK	-

17 KW FRYER
14 KW FRYER

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAGRAM 208 & 240 VOLT
17 & 14 KW. SPLIT-VAT FIREBAR COMP. FRYERS

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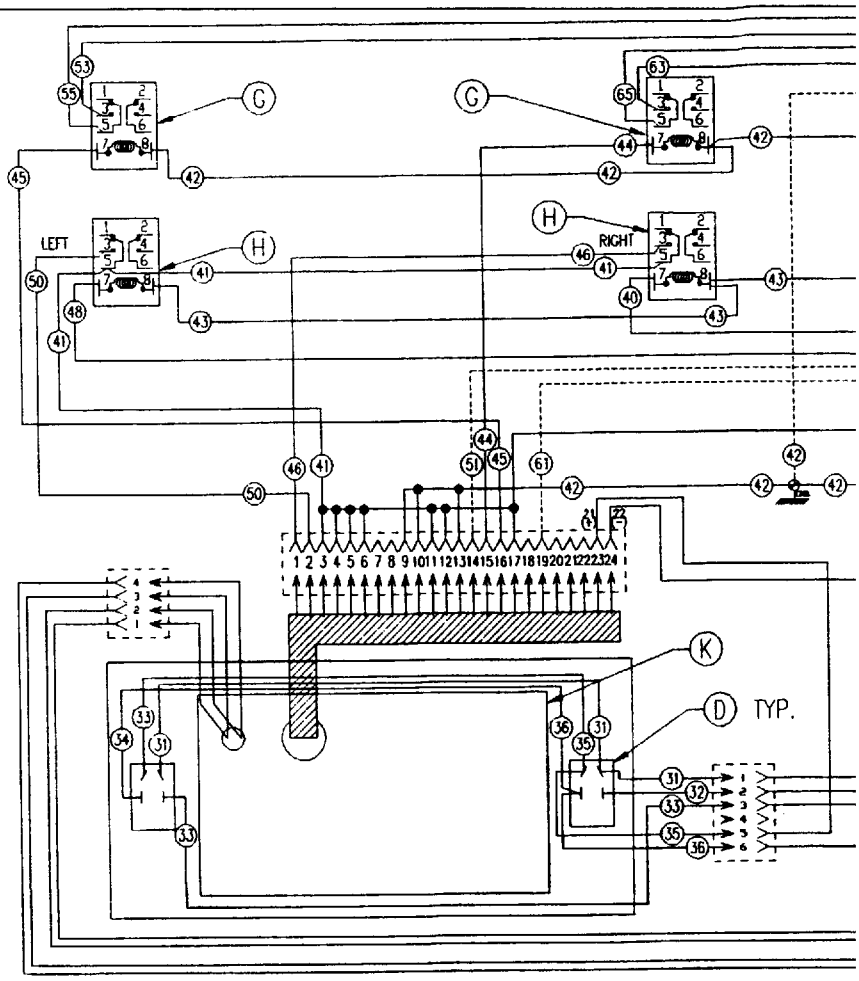
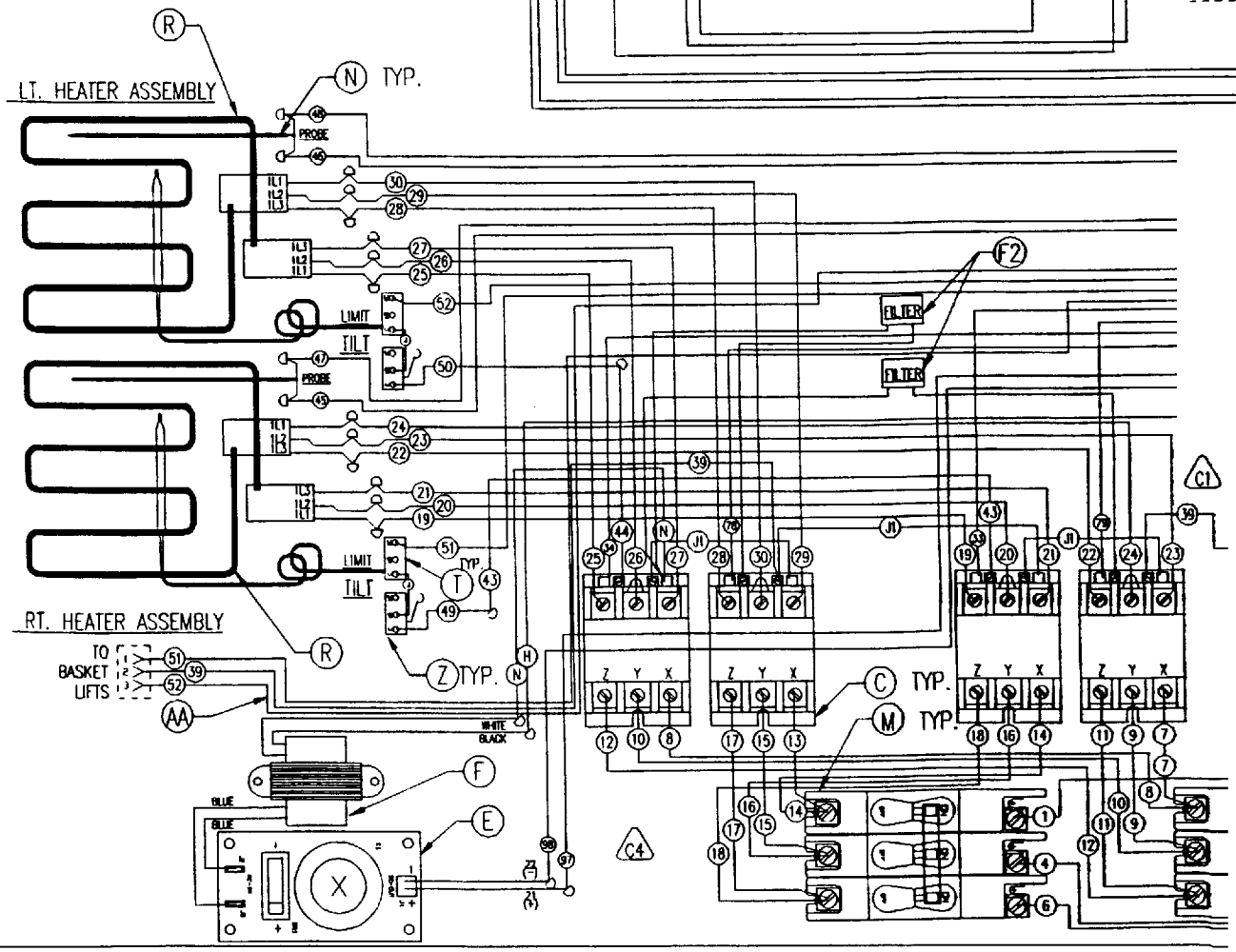
SCALE NONE

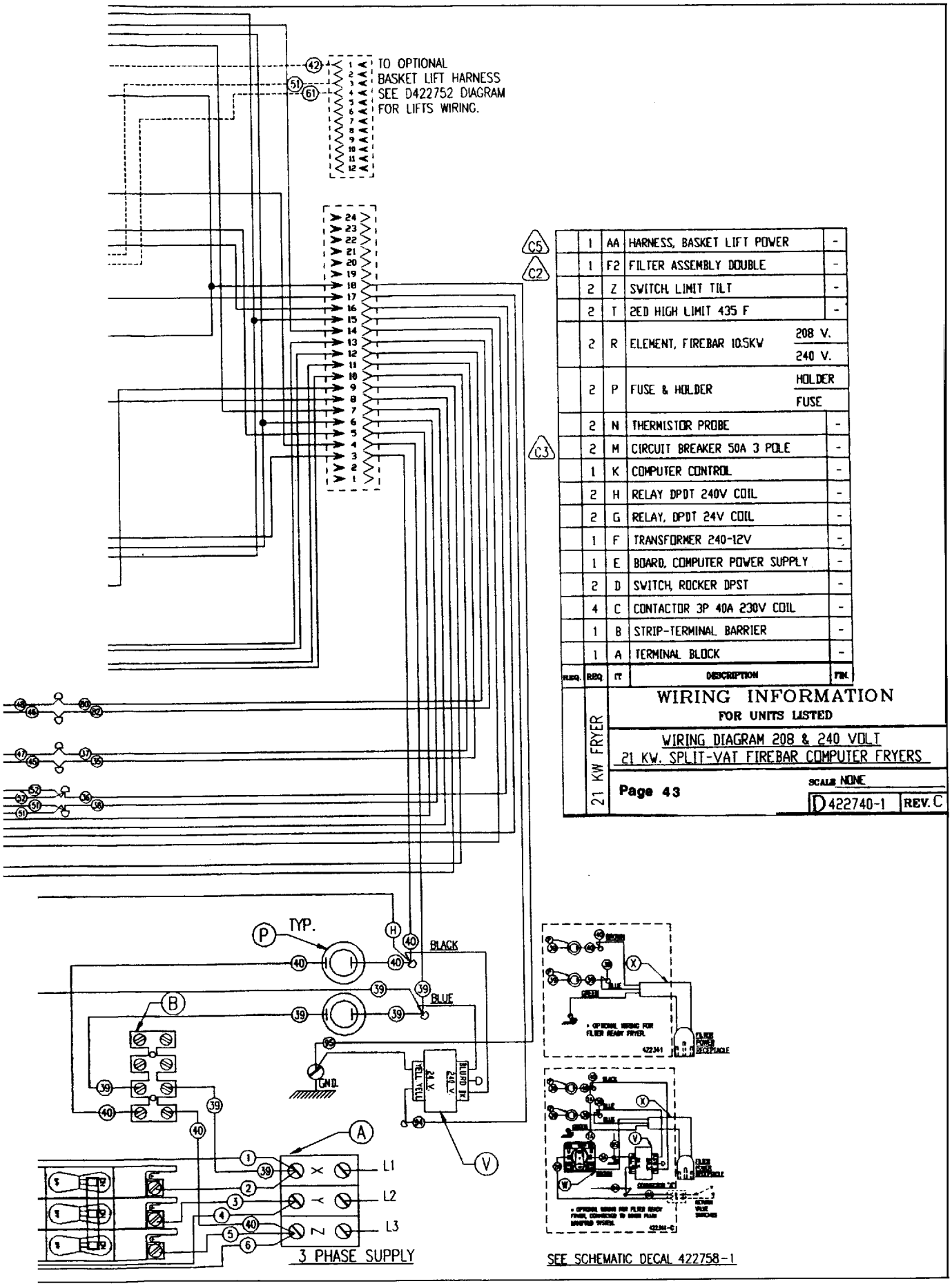
D422742-1 REV. C

208-240 VOLT PHASE LOAD

	KW/PHASE		
TOTAL KW	X-Y	X-Z	Y-Z
21	7	7	7
	AMPS PER LINE 208 VOLT		
	X	Y	Z
21	58	58	58
	AMPS PER LINE 240 VOLT		
	X	Y	Z
21	51	51	51







	QTY	IT	DESCRIPTION	FIN.
C5	1	AA	HARNESS, BASKET LIFT POWER	-
C2	1	F2	FILTER ASSEMBLY DOUBLE	-
	2	Z	SWITCH, LIMIT TILT	-
	2	T	2ED HIGH LIMIT 435 F	-
	2	R	ELEMENT, FIREBAR 10.5KW	208 V. / 240 V.
	2	P	FUSE & HOLDER	HOLDER / FUSE
	2	N	THERMISTOR PROBE	-
C3	2	M	CIRCUIT BREAKER 50A 3 POLE	-
	1	K	COMPUTER CONTROL	-
	2	H	RELAY DPDT 240V COIL	-
	2	G	RELAY, DPDT 24V COIL	-
	1	F	TRANSFORMER 240-12V	-
	1	E	BOARD, COMPUTER POWER SUPPLY	-
	2	D	SWITCH, ROCKER DPST	-
	4	C	CONTACTOR 3P 40A 230V COIL	-
	1	B	STRIP-TERMINAL BARRIER	-
	1	A	TERMINAL BLOCK	-

WIRING INFORMATION

FOR UNITS LISTED

21 KW FRYER

WIRING DIAGRAM 208 & 240 VOLT
21 KW. SPLIT-VAT FIREBAR COMPUTER FRYERS

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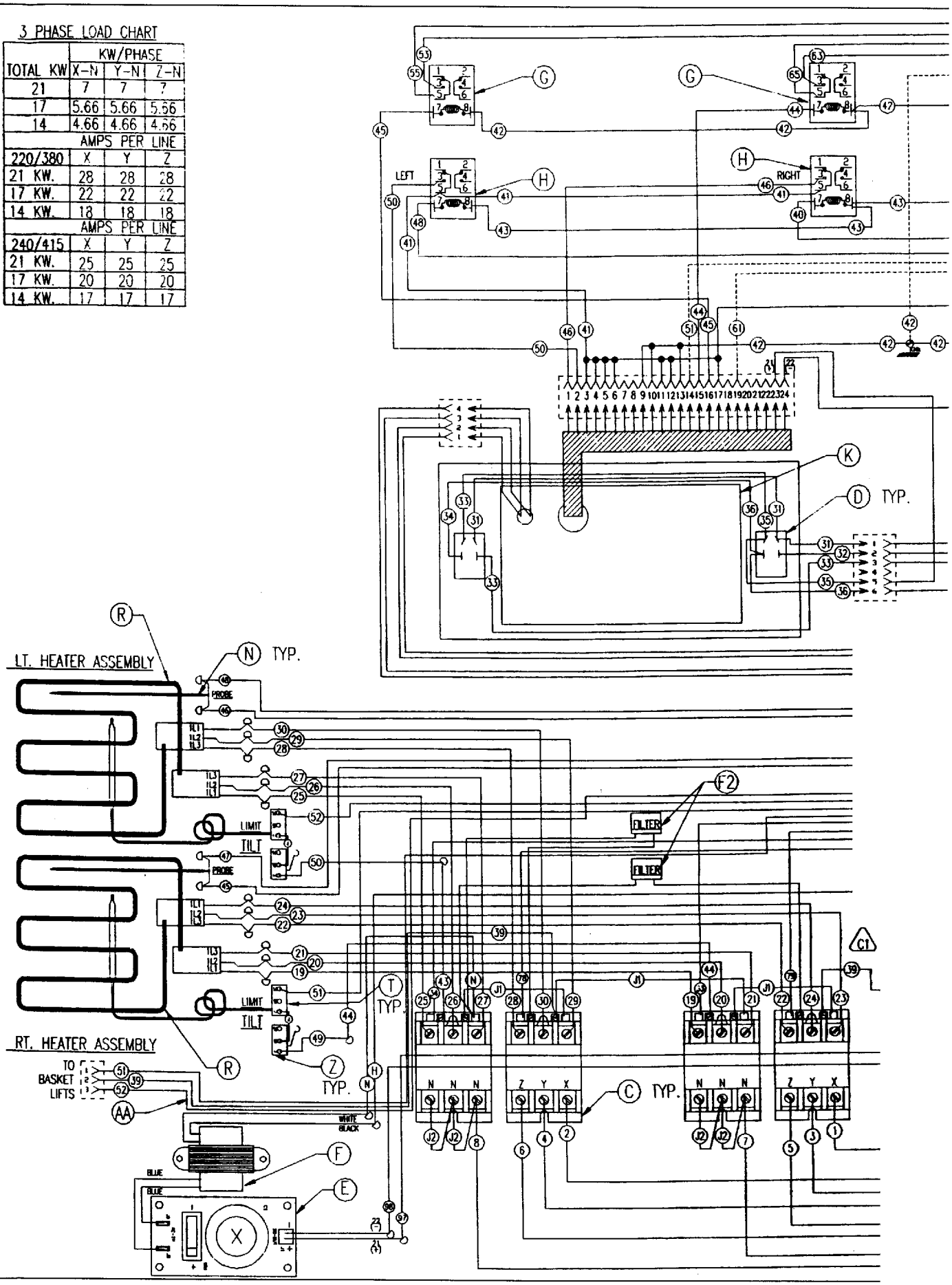
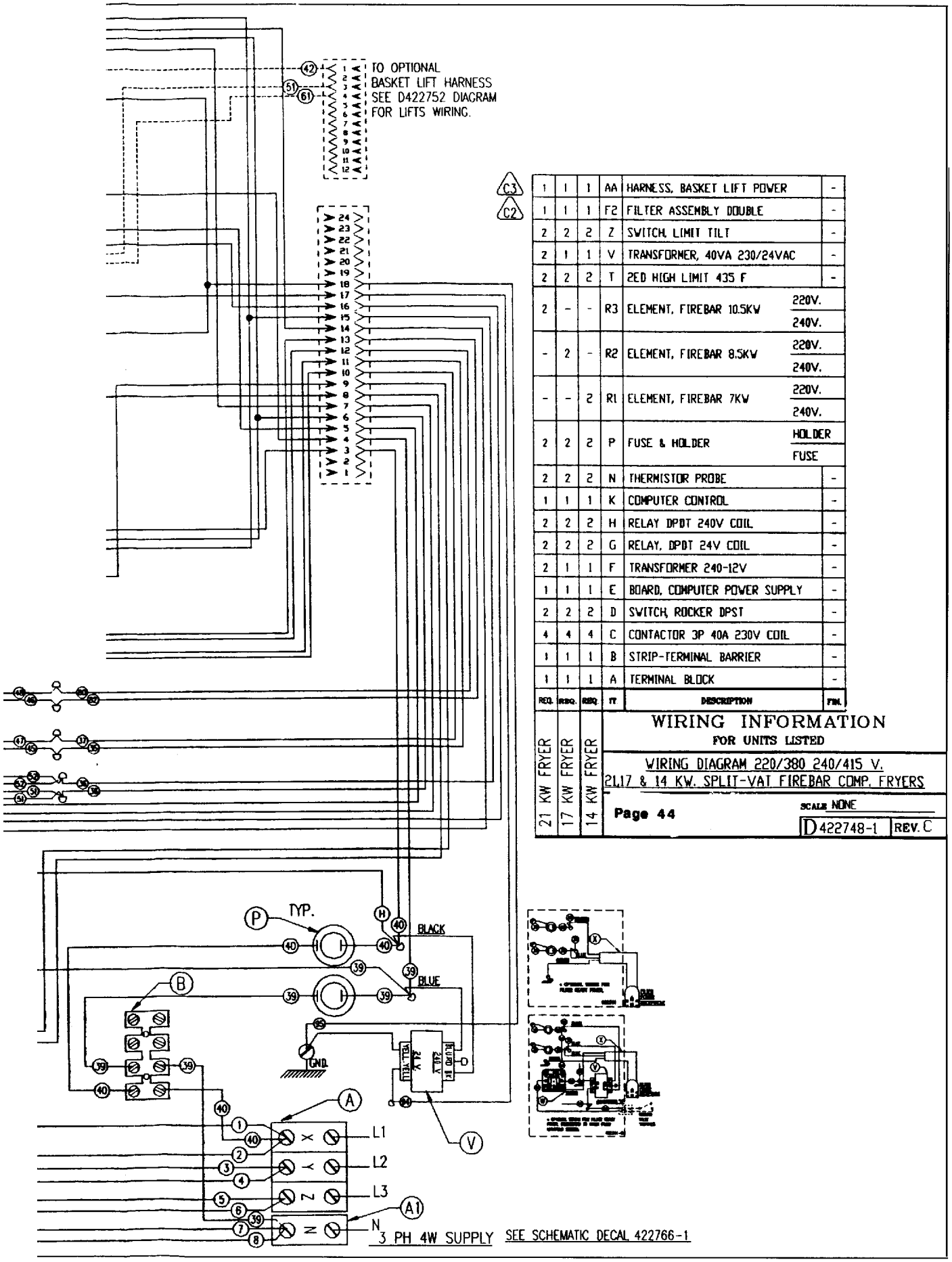
SCALE NONE

D422740-1 REV. C

3 PHASE LOAD CHART

	KW/PHASE		
TOTAL KW	X-N	Y-N	Z-N
21	7	7	7
17	5.66	5.66	5.66
14	4.66	4.66	4.66
	AMPS PER LINE		
220/380	X	Y	Z
21 KW.	28	28	28
17 KW.	22	22	22
14 KW.	18	18	18
	AMPS PER LINE		
240/415	X	Y	Z
21 KW.	25	25	25
17 KW.	20	20	20
14 KW.	17	17	17





1	1	1	AA	HARNESS, BASKET LIFT POWER	-
1	1	1	F2	FILTER ASSEMBLY DOUBLE	-
2	2	2	Z	SWITCH, LIMIT TILT	-
2	1	1	V	TRANSFORMER, 40VA 230/24VAC	-
2	2	2	T	2ED HIGH LIMIT 435 F	-
2	-	-	R3	ELEMENT, FIREBAR 10.5KW	220V. / 240V.
-	2	-	R2	ELEMENT, FIREBAR 8.5KW	220V. / 240V.
-	-	2	R1	ELEMENT, FIREBAR 7KW	220V. / 240V.
2	2	2	P	FUSE & HOLDER	HOLDER / FUSE
2	2	2	N	THERMISTOR PROBE	-
1	1	1	K	COMPUTER CONTROL	-
2	2	2	H	RELAY DPDT 240V COIL	-
2	2	2	G	RELAY, DPDT 24V COIL	-
2	1	1	F	TRANSFORMER 240-12V	-
1	1	1	E	BOARD, COMPUTER POWER SUPPLY	-
2	2	2	D	SWITCH, ROCKER DPST	-
4	4	4	C	CONTACTOR 3P 40A 230V COIL	-
1	1	1	B	STRIP-TERMINAL BARRIER	-
1	1	1	A	TERMINAL BLOCK	-
REQ.	REQ.	REQ.	IT	DESCRIPTION	FIN.

21 KW FRYER
17 KW FRYER
14 KW FRYER

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAGRAM 220/380 240/415 V.
21,17 & 14 KW. SPLIT-VAT FIREBAR COMP. FRYERS

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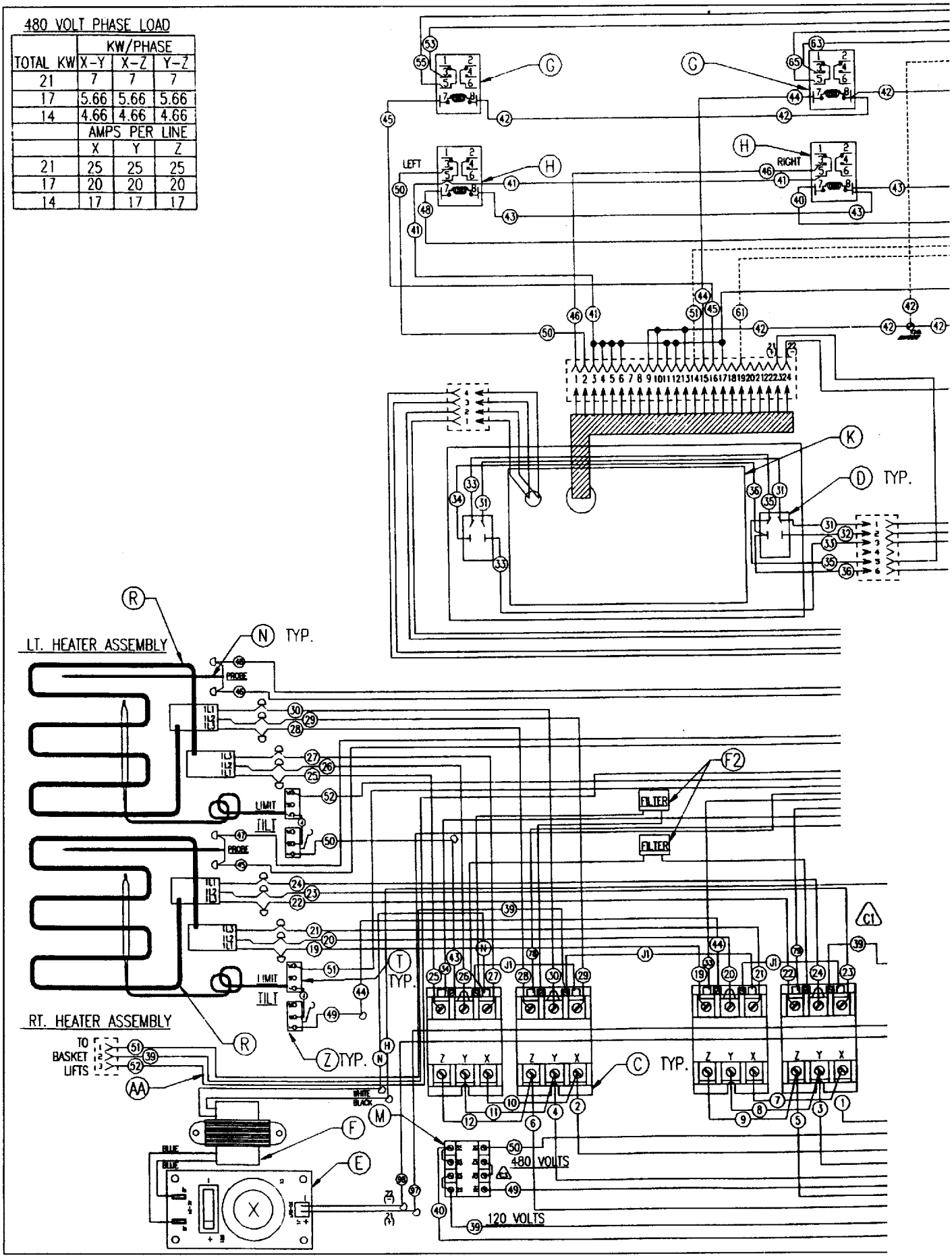
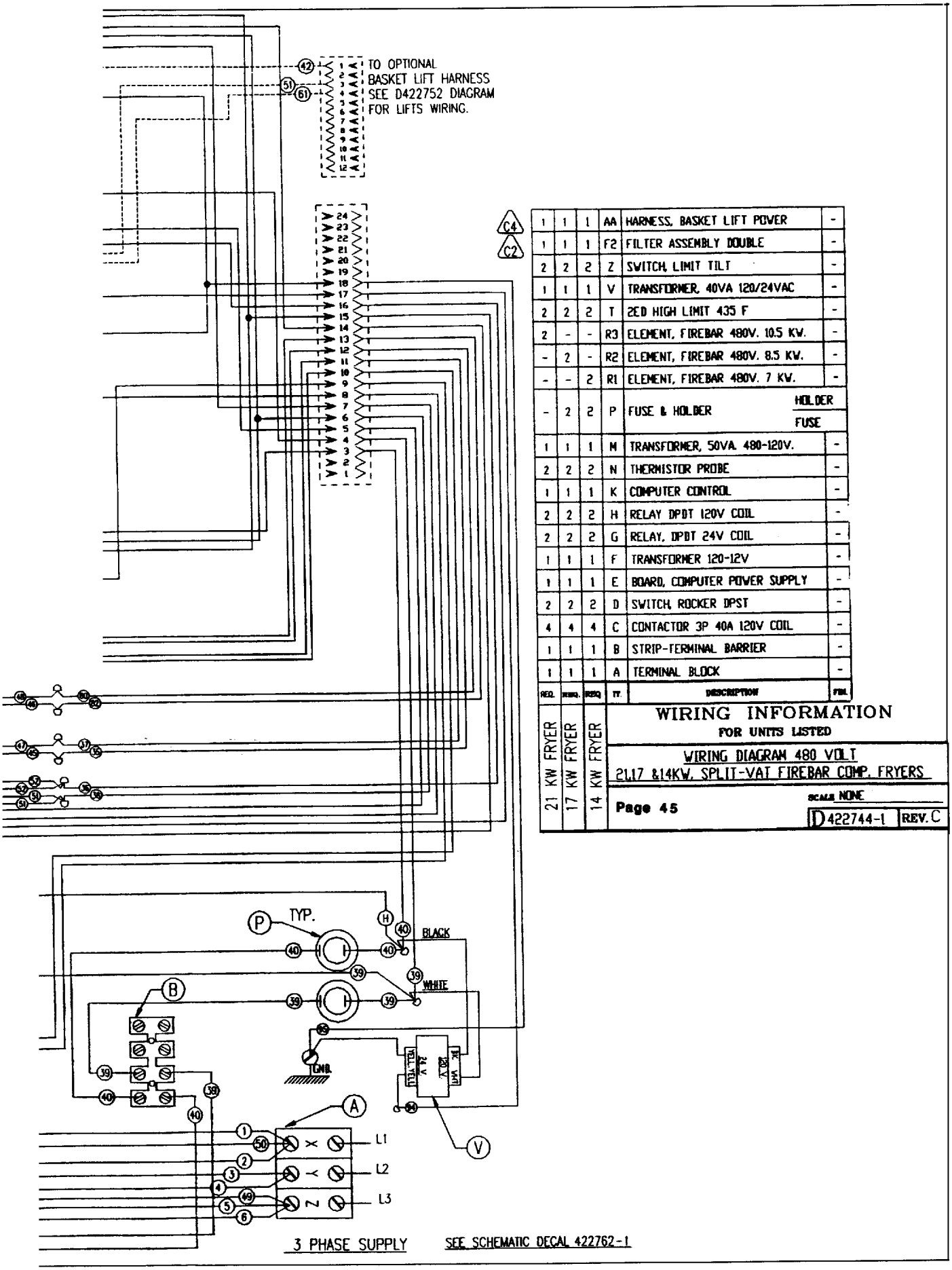
SCALE NONE

D422748-1 REV. C

480 VOLT PHASE LOAD

TOTAL KW	KW/PHASE		
	X-Y	X-Z	Y-Z
21	7	7	7
17	5.66	5.66	5.66
14	4.66	4.66	4.66
	AMPS PER LINE		
	X	Y	Z
21	25	25	25
17	20	20	20
14	17	17	17



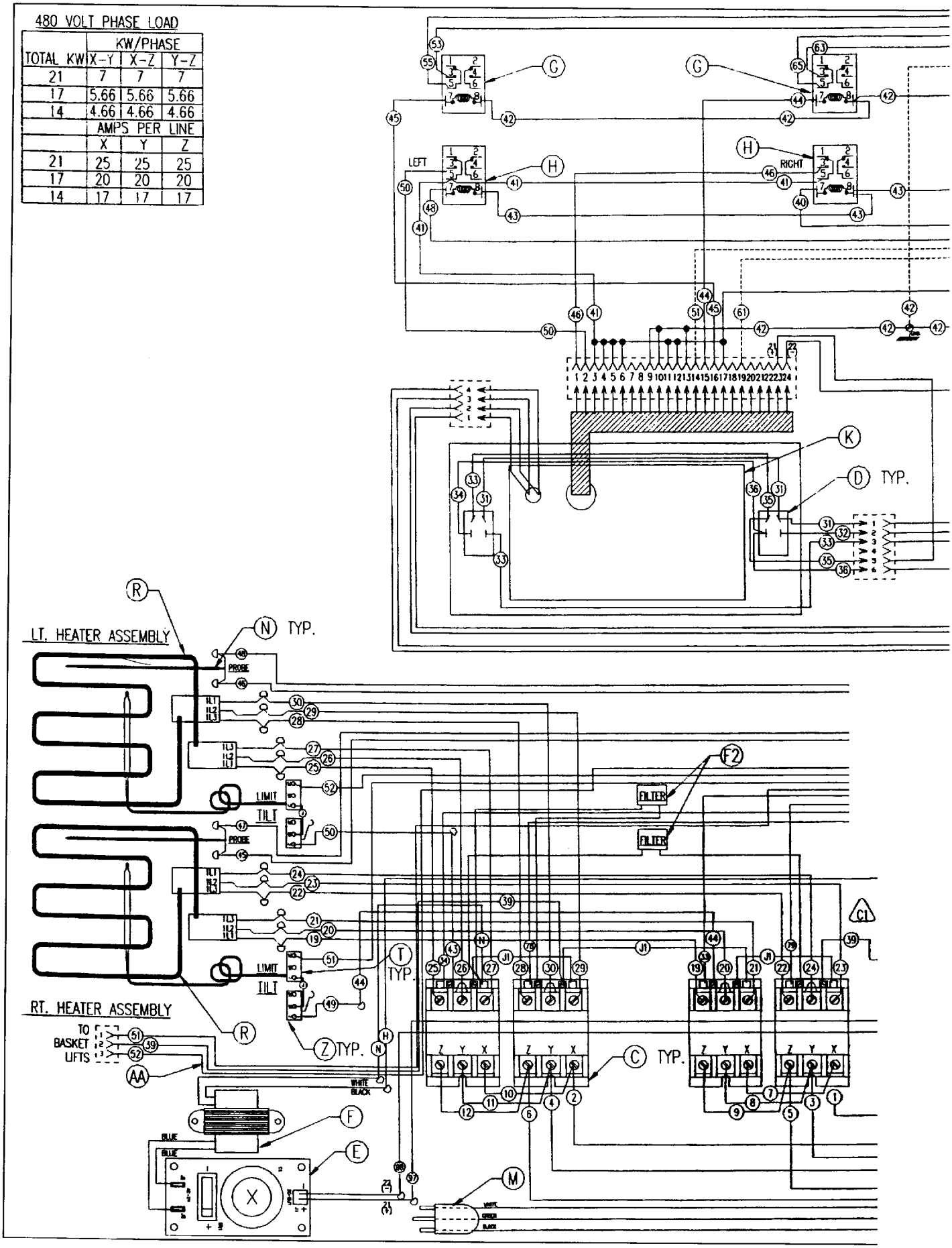


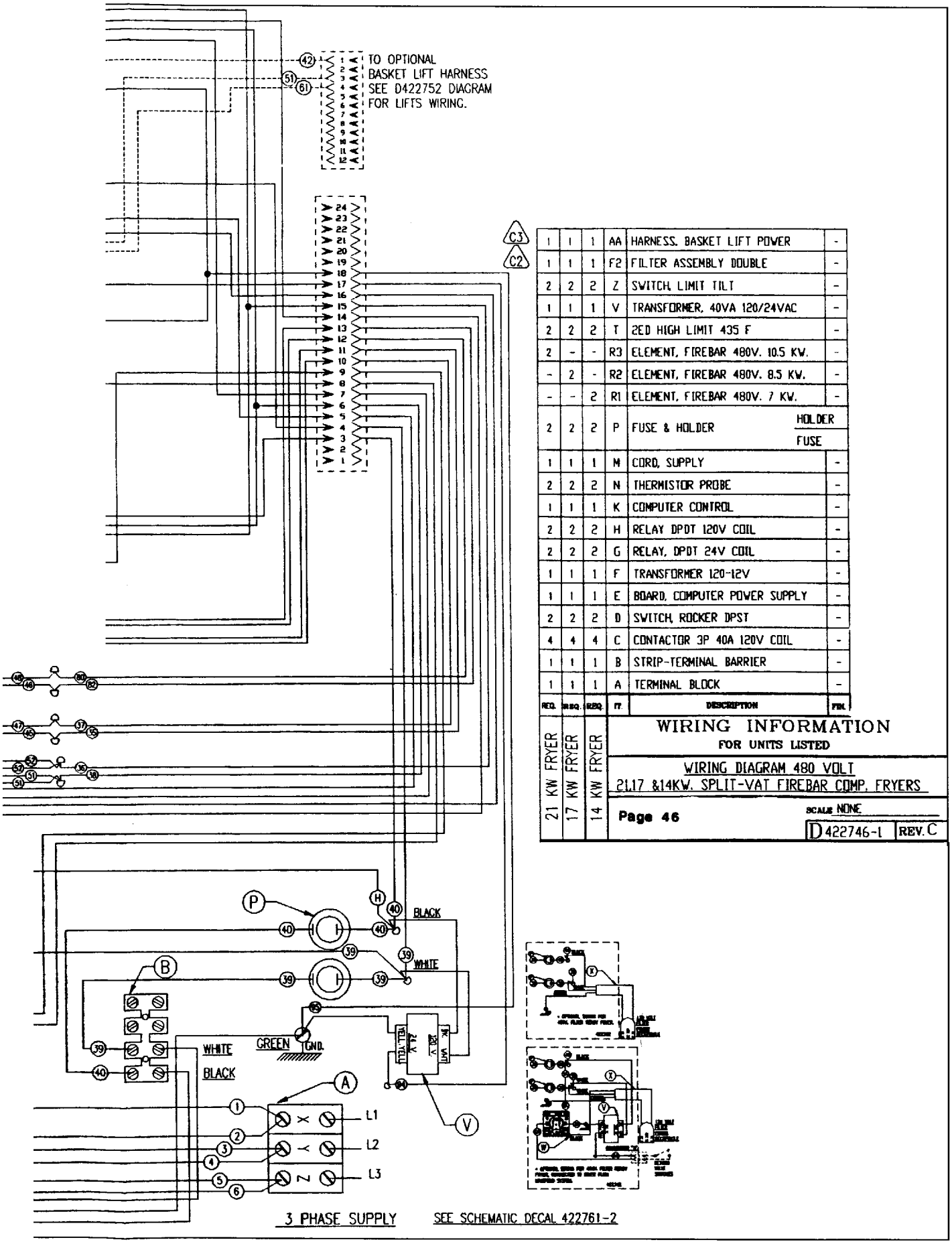
C4 C2	1	1	1	AA	HARNESS, BASKET LIFT POWER
	1	1	1	F2	FILTER ASSEMBLY DOUBLE
	2	2	2	Z	SWITCH, LIMIT TILT
	1	1	1	V	TRANSFORMER, 40VA 120/24VAC
	2	2	2	T	2ED HIGH LIMIT 435 F
	2	-	-	R3	ELEMENT, FIREBAR 480V. 10.5 KW.
	-	2	-	R2	ELEMENT, FIREBAR 480V. 8.5 KW.
	-	-	2	R1	ELEMENT, FIREBAR 480V. 7 KW.
	-	2	2	P	FUSE & HOLDER — HOLDER / FUSE
	1	1	1	M	TRANSFORMER, 50VA. 480-120V.
	2	2	2	N	THERMISTOR PROBE
	1	1	1	K	COMPUTER CONTROL
	2	2	2	H	RELAY DPDT 120V COIL
	2	2	2	G	RELAY, DPDT 24V COIL
	1	1	1	F	TRANSFORMER 120-12V
	1	1	1	E	BOARD, COMPUTER POWER SUPPLY
	2	2	2	D	SWITCH, ROCKER DPST
	4	4	4	C	CONTACTOR 3P 40A 120V COIL
	1	1	1	B	STRIP-TERMINAL BARRIER
	1	1	1	A	TERMINAL BLOCK
	REQ.	REQ.	REQ	TY.	DESCRIPTION

21 KW FRYER 17 KW FRYER 14 KW FRYER	WIRING INFORMATION FOR UNITS LISTED
	WIRING DIAGRAM 480 VOLT 21,17 &14KW. SPLIT-VAT FIREBAR COMP. FRYERS
	Page 45 — SCALE NONE — D422744-1 — REV. C

480 VOLT PHASE LOAD

	KW/PHASE		
TOTAL KW	X-Y	X-Z	Y-Z
21	7	7	7
17	5.66	5.66	5.66
14	4.66	4.66	4.66
	AMPS PER LINE		
	X	Y	Z
21	25	25	25
17	20	20	20
14	17	17	17





1	1	1	AA	HARNESS, BASKET LIFT POWER	-
1	1	1	F2	FILTER ASSEMBLY DOUBLE	-
2	2	2	Z	SWITCH, LIMIT TILT	-
1	1	1	V	TRANSFORMER, 40VA 120/24VAC	-
2	2	2	T	2ED HIGH LIMIT 435 F	-
2	-	-	R3	ELEMENT, FIREBAR 480V. 10.5 KW.	-
-	2	-	R2	ELEMENT, FIREBAR 480V. 8.5 KW.	-
-	-	2	R1	ELEMENT, FIREBAR 480V. 7 KW.	-
2	2	2	P	FUSE & HOLDER — HOLDER / FUSE	
1	1	1	M	CORD, SUPPLY	-
2	2	2	N	THERMISTOR PROBE	-
1	1	1	K	COMPUTER CONTROL	-
2	2	2	H	RELAY DPDT 120V COIL	-
2	2	2	G	RELAY, DPDT 24V COIL	-
1	1	1	F	TRANSFORMER 120-12V	-
1	1	1	E	BOARD, COMPUTER POWER SUPPLY	-
2	2	2	D	SWITCH, ROCKER DPST	-
4	4	4	C	CONTACTOR 3P 40A 120V COIL	-
1	1	1	B	STRIP-TERMINAL BARRIER	-
1	1	1	A	TERMINAL BLOCK	-
REQ.	REQ.	REQ.	IT.	DESCRIPTION	REM.

21 KW FRYER
17 KW FRYER
14 KW FRYER

WIRING INFORMATION

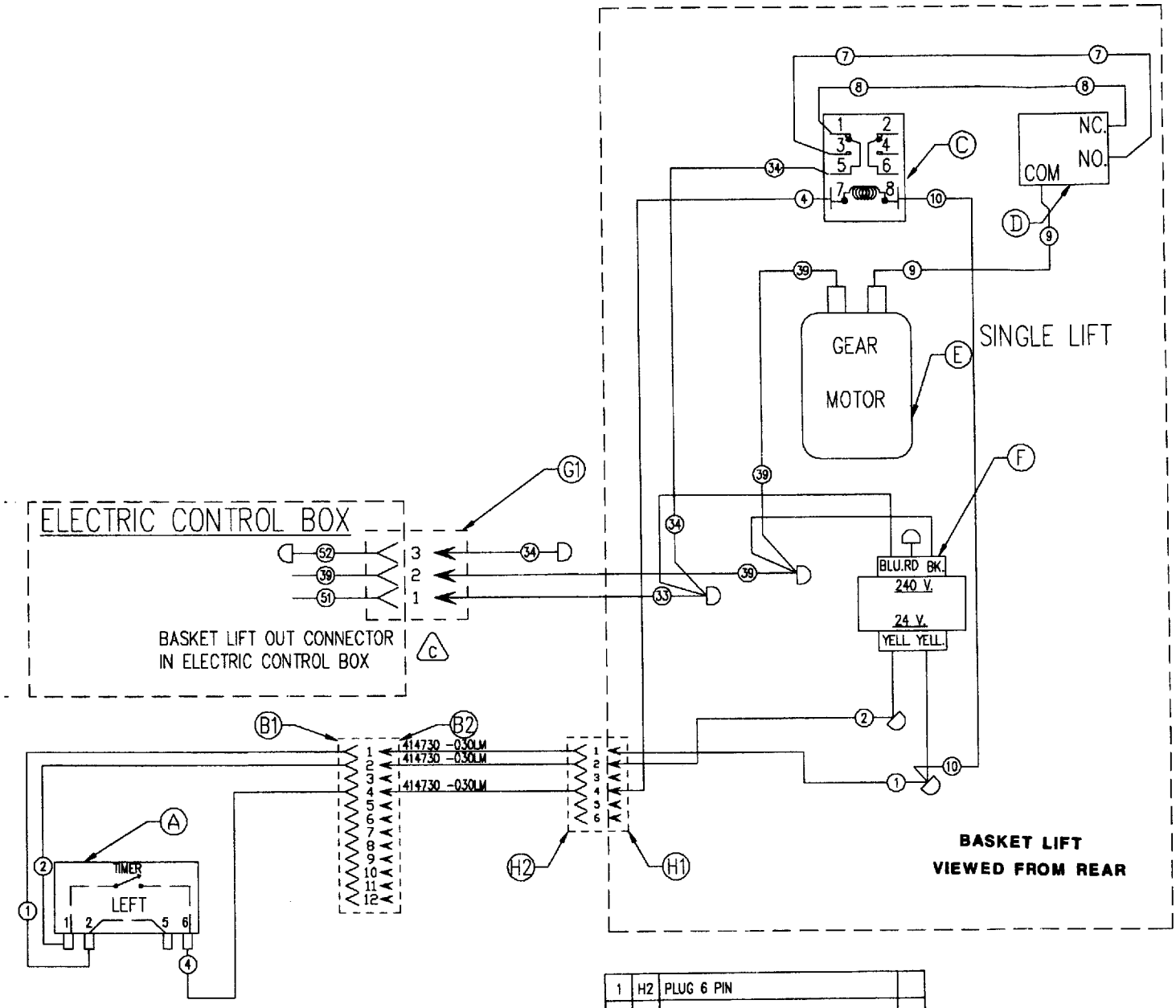
FOR UNITS LISTED

WIRING DIAGRAM 480 VOLT
21,17 &14KW. SPLIT-VAT FIREBAR COMP. FRYERS

Page 46

SCALE NONE

D422746-1 REV. C



TIMER VIEW FROM THE FRONT

REQ.	IT.	DESCRIPTION	FIN.
1	H2	PLUG 6 PIN	
1	H1	RECEPTACLE 6 PIN	
C 1	G1	CABLE, LIFT POWER ASSEMBLY	
1	F	TRANSFORMER 40VA 208/240-24	-
1	E	MOTOR - GEAR 240 V. 60 HZ.	-
1	D	SWITCH MICRO	
1	C	RELAY DPDT 24 VAC. COIL	-
1	B2	PLUG 12 PIN	
1	B1	RECEPTACLE 12 PIN	
D 1	A	TIMER, BASKET LIFT 24V. 15 MIN. / 7 MIN.	

WIRING INFORMATION

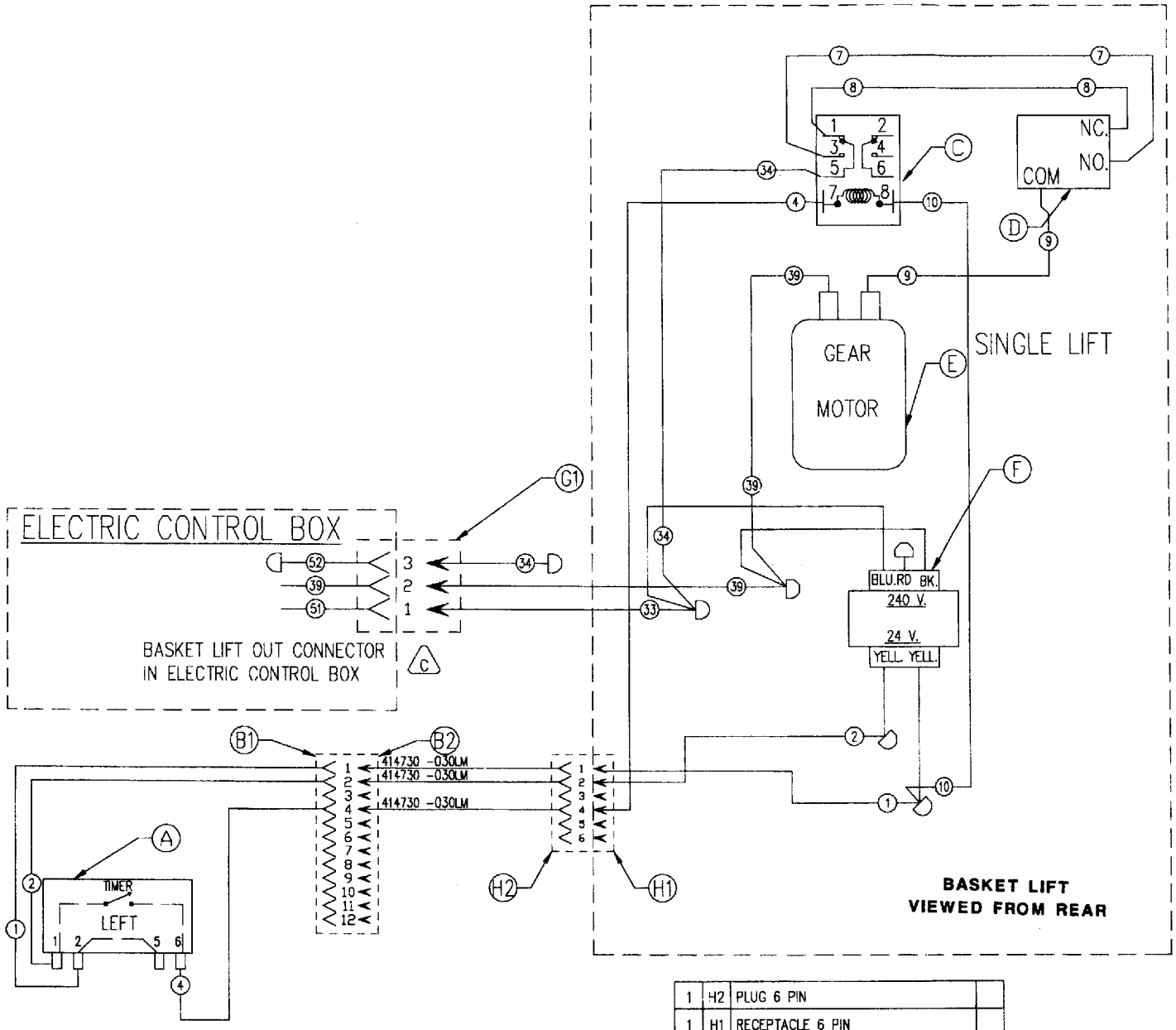
FOR UNITS LISTED

WIRING DIAGRAM SINGLE BASKET LIFTS, ELECTRIC
208 & 240 VOLT FULL VAT FRYERS

Page 47

SCALE NONE

D 422337-1 REV. D



TIMER VIEW FROM THE FRONT

REQ.	IT.	DESCRIPTION	FIN.
1	H2	PLUG 6 PIN	
1	H1	RECEPTACLE 6 PIN	
1	G1	CABLE, LIFT POWER ASSEMBLY	
1	F	TRANSFORMER 40VA 120-24	-
1	E	MOTOR - GEAR 120 V. 60 HZ.	-
1	D	SWITCH MICRO	
1	C	RELAY DPDT 24 VAC. COIL	-
1	B2	PLUG 12 PIN	
1	B1	RECEPTACLE 12 PIN	
1	A	TIMER, BASKET LIFT 24V. 15 MIN. / 7 MIN.	

WIRING INFORMATION

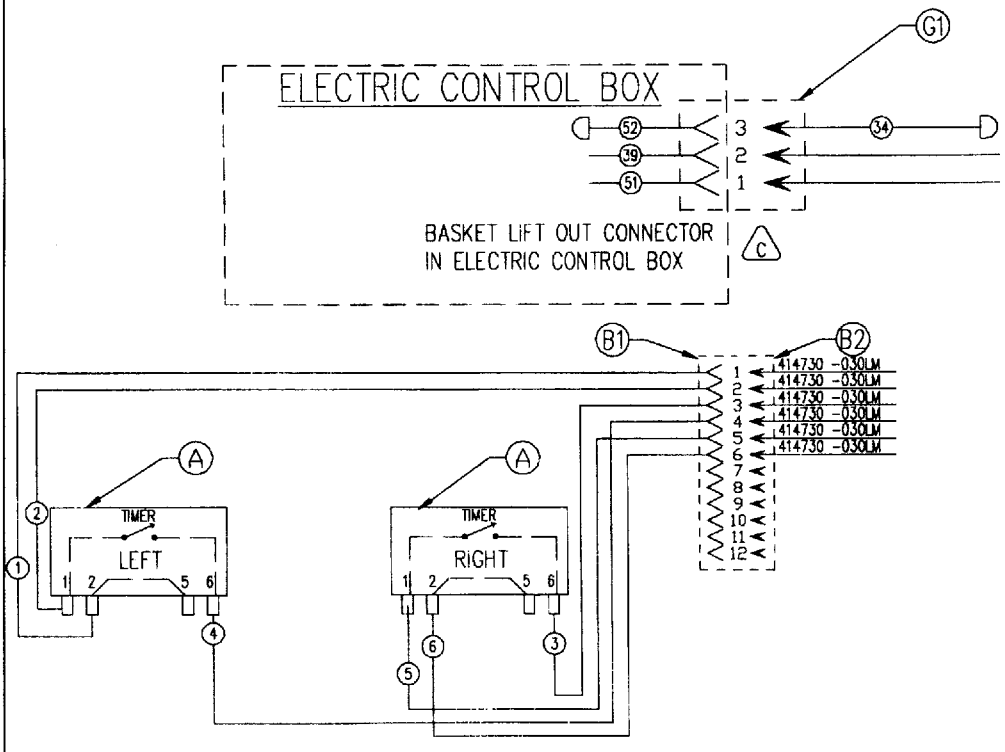
FOR UNITS LISTED

WIRING DIAGRAM SINGLE BASKET LIFTS, ELECTRIC
480 VOLT FULL VAT FRYERS

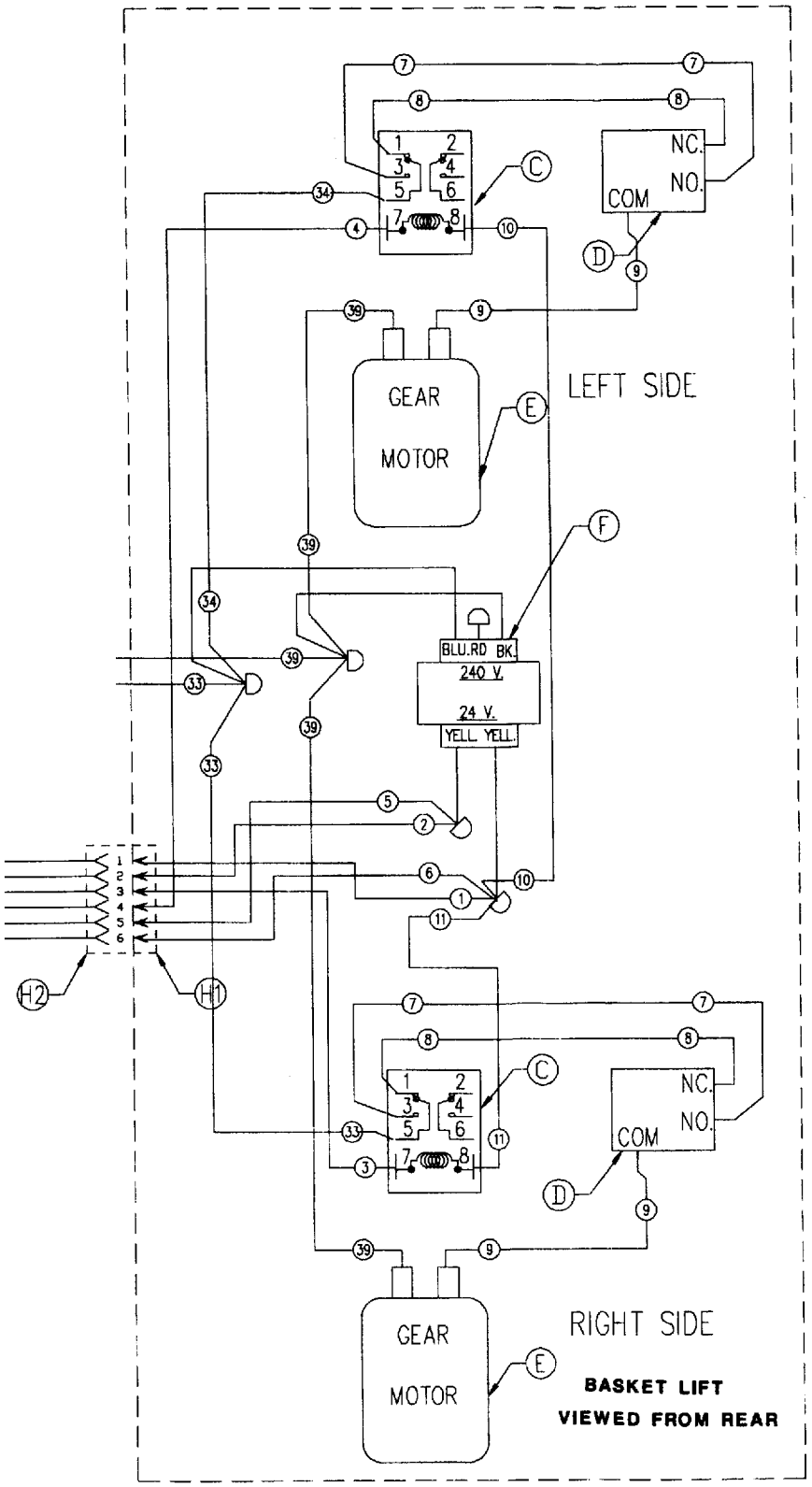
Page 48

SCALE NONE

D 422340-1 REV. D



TIMERS VIEW FROM THE FRONT



REQ.	IT.	DESCRIPTION	FIN.
1	H2	PLUG 6 PIN	
1	H1	RECEPTACLE 6 PIN	
1 (C)	G1	CABLE, LIFT POWER ASSEMBLY	
1	F	TRANSFORMER 40VA 208/240-24	-
2	E	MOTOR - GEAR 240 V. 60 HZ.	-
2	D	SWITCH MICRO	
2	C	RELAY DPDT 24 VAC. COIL	-
1	B2	PLUG 12 PIN	
1	B1	RECEPTACLE 12 PIN	
2 (D)	A	TIMER, BASKET LIFT 24V. 15 MIN. / 7 MIN.	

WIRING INFORMATION
FOR UNITS LISTED

WIRING DIAGRAM DUAL BASKET LIFTS, ELECTRIC
208 & 240 VOLT FULL VAT FRYERS

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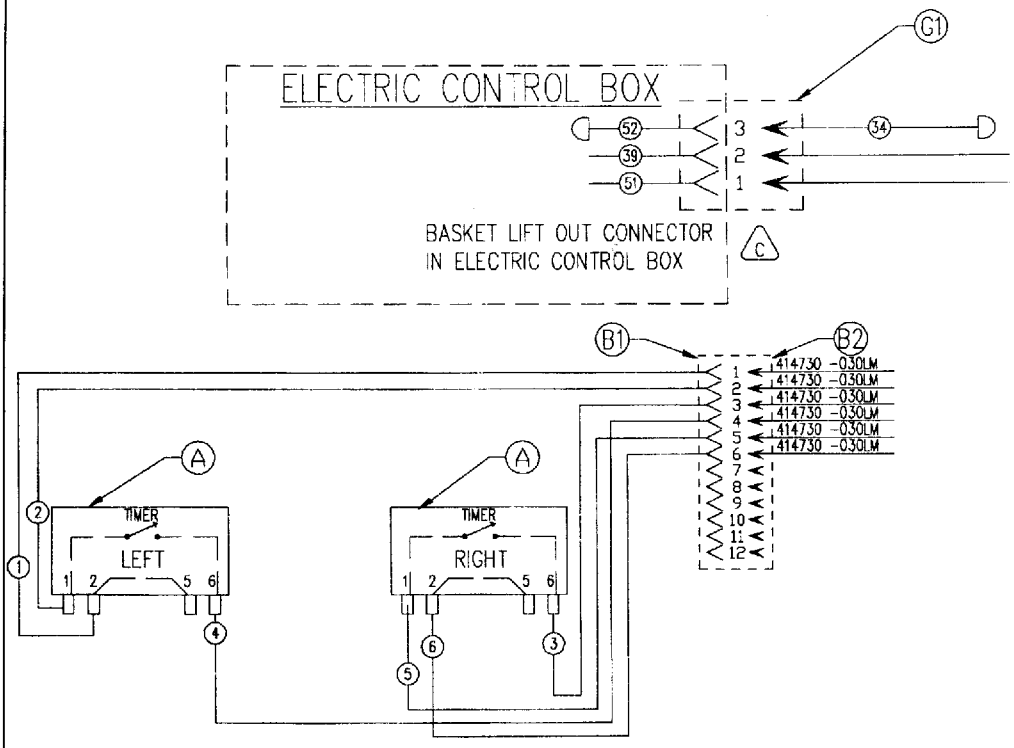
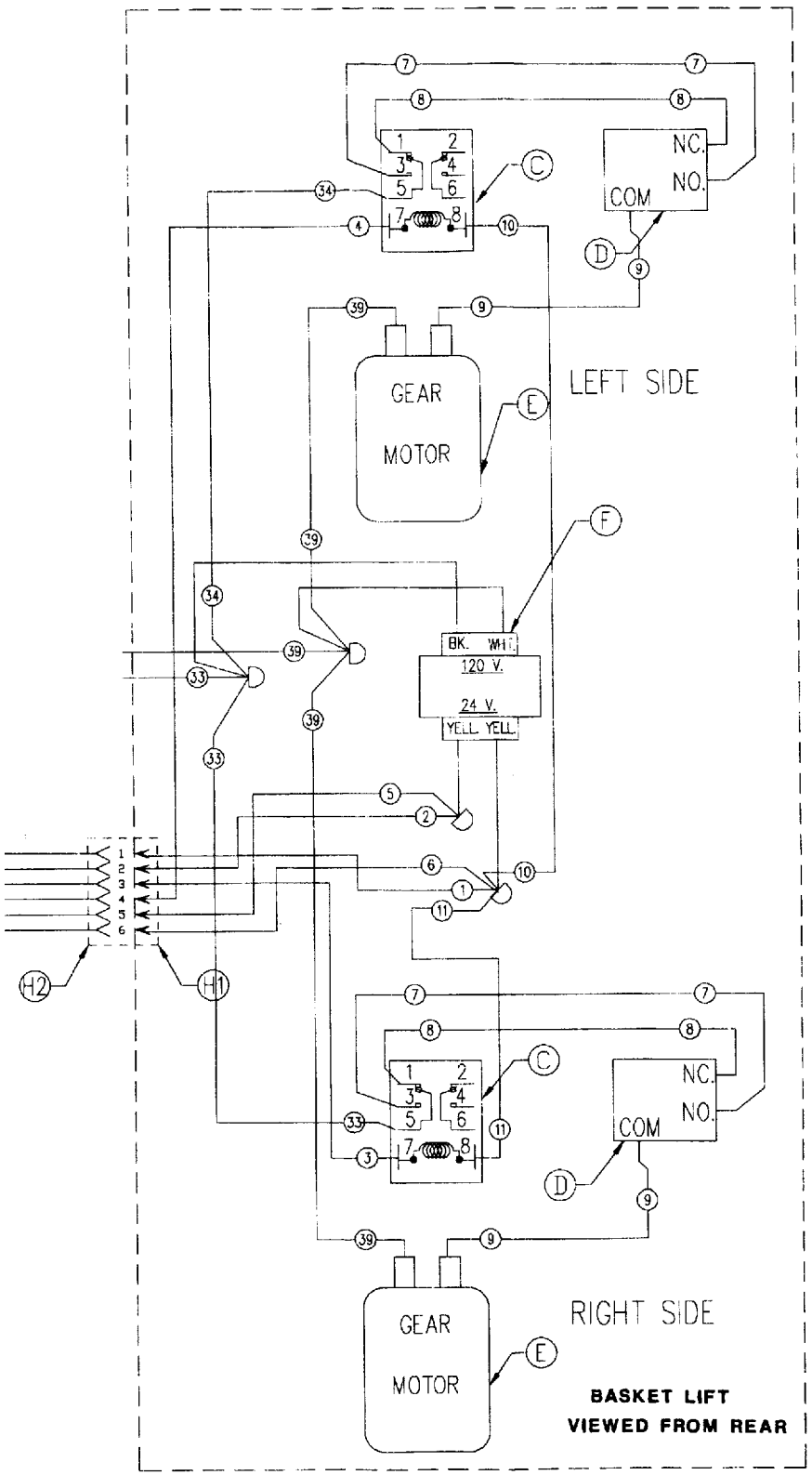
SCALE NONE

D422336-1 REV. D



TIMERS VIEW FROM THE FRONT



REQ.	IT.	DESCRIPTION	FIN.
1	H2	PLUG 6 PIN	
1	H1	RECEPTACLE 6 PIN	
C 1	G1	CABLE, LIFT POWER ASSEMBLY	
1	F	TRANSFORMER 40VA 120-24	-
2	E	MOTOR - GEAR 120 V. 60 HZ.	-
2	D	SWITCH MICRO	
2	C	RELAY DPDT 24 VAC. COIL	-
1	B2	PLUG 12 PIN	
1	B1	RECEPTACLE 12 PIN	
D 2	A	TIMER, BASKET LIFT 24V. 15 MIN. / 7 MIN.	

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAGRAM DUAL BASKET LIFTS, ELECTRIC
480 VOLT FULL VAT FRYERS

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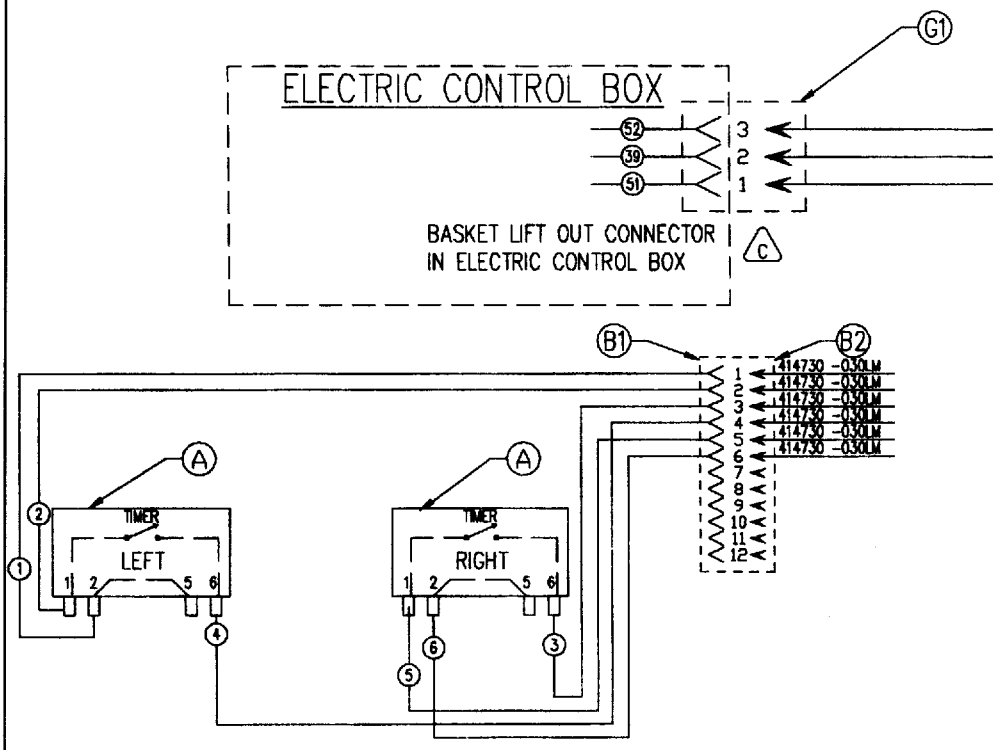
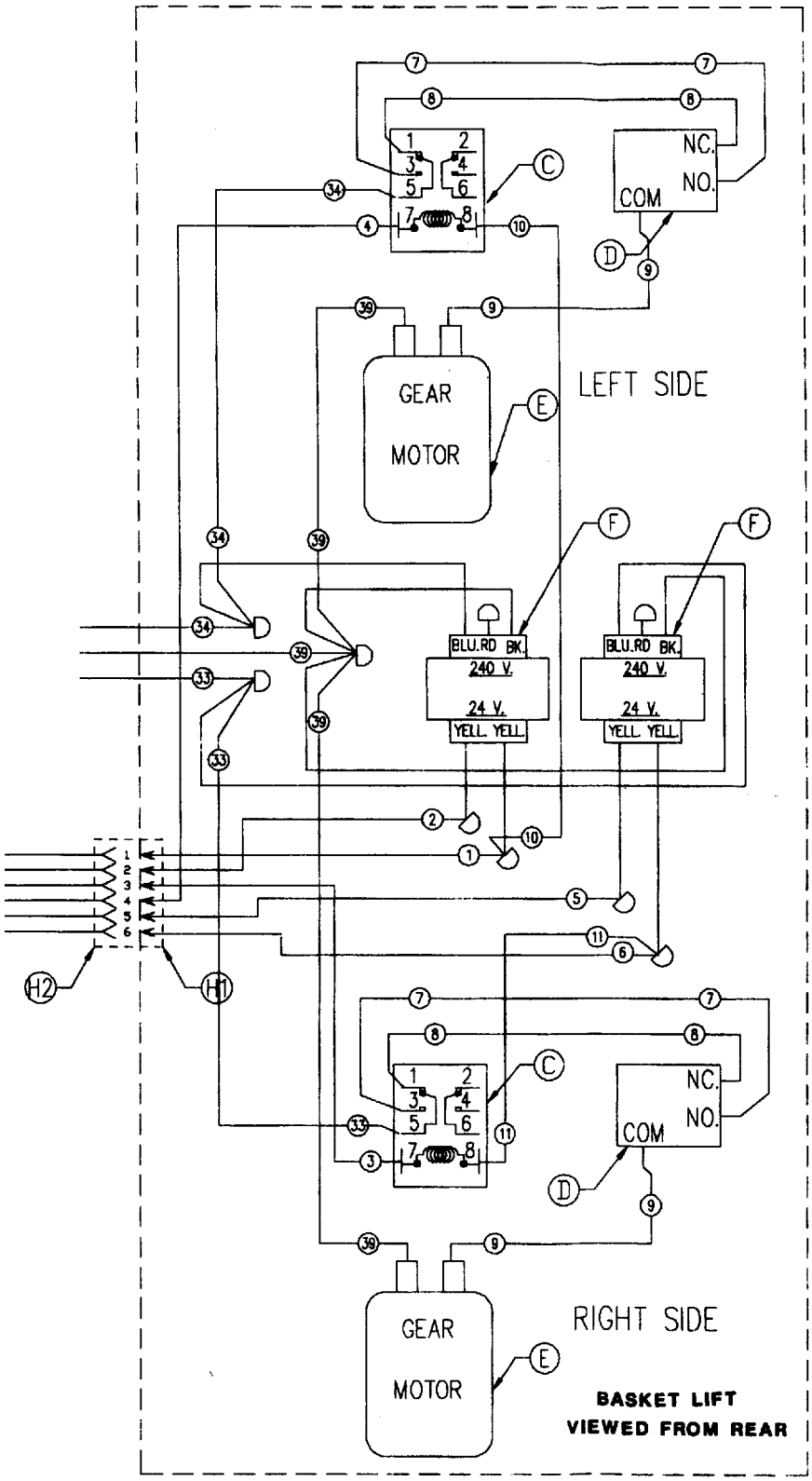
SCALE NONE

D 422339-1 REV. D



TIMERS VIEW FROM THE FRONT



REQ.	IT.	DESCRIPTION	FIG.
1	H2	PLUG 6 PIN	
1	H1	RECEPTACLE 6 PIN	
C 1	G1	CABLE, LIFT POWER ASSEMBLY	
2	F	TRANSFORMER 40VA 208/240-24	–
2	E	MOTOR – GEAR 240 V. 60 HZ.	–
2	D	SWITCH MICRO	
2	C	RELAY DPDT 24 VAC. COIL	–
1	B2	PLUG 12 PIN	
1	B1	RECEPTACLE 12 PIN	
D 2	A	TIMER, BASKET LIFT 24V. 15 MIN. / 7 MIN.	

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAGRAM BASKET LIFTS, ELECTRIC
208 & 240 VOLT SPLIT VAT FRYERS

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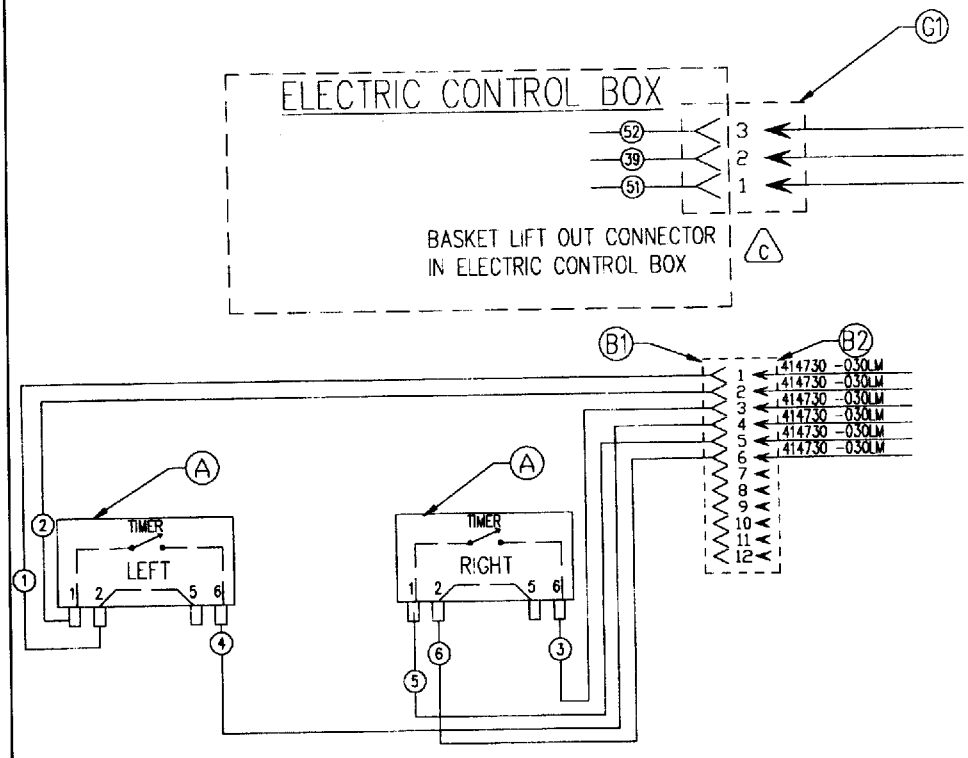
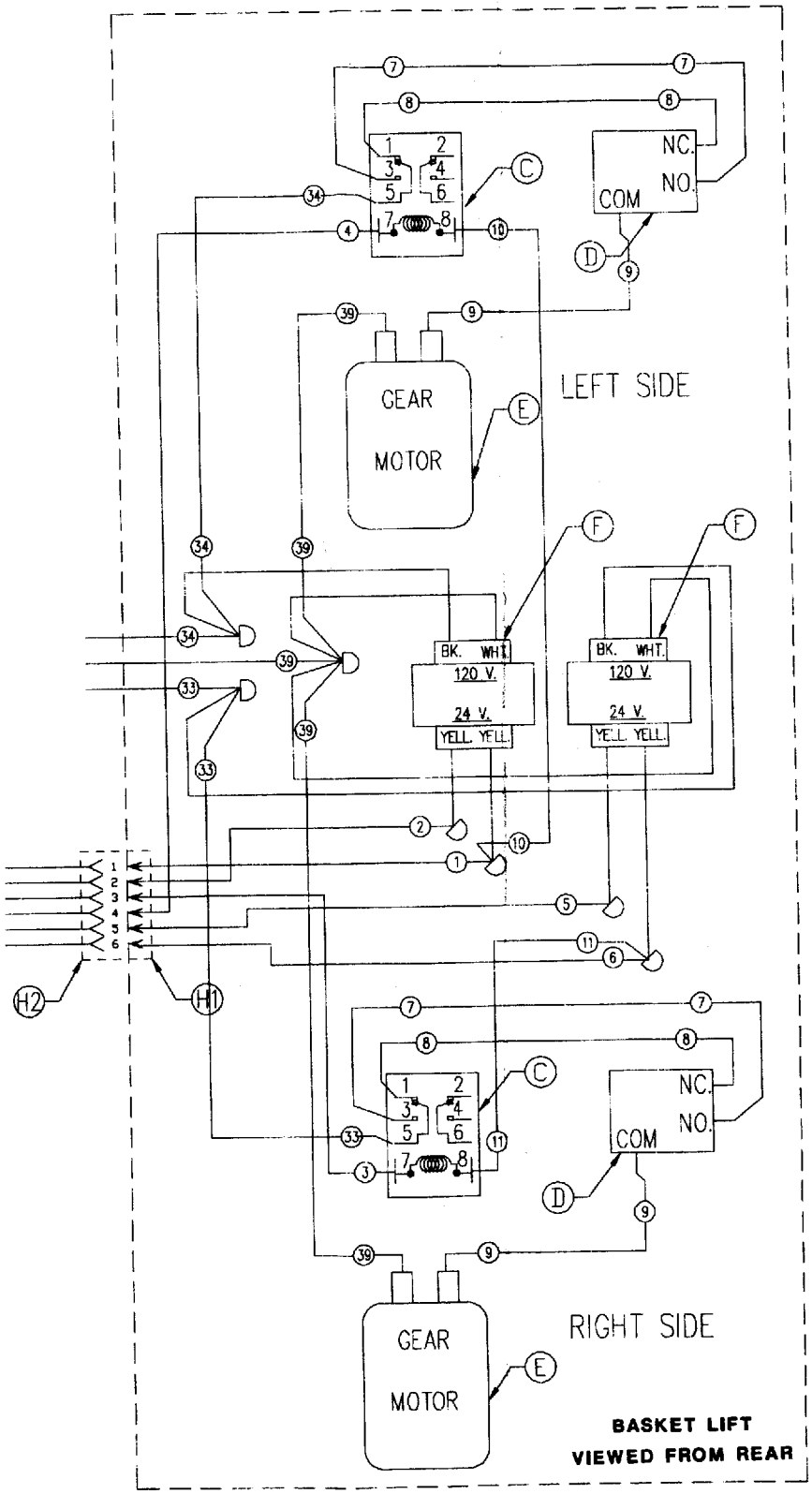
SCALE NONE

D 422335-1 REV. D



TIMERS VIEW FROM THE FRONT



REQ.	IT.	DESCRIPTION	FIN.
1	H2	PLUG 6 PIN	
1	H1	RECEPTACLE 6 PIN	
C 1	G1	CABLE, LIFT POWER ASSEMBLY	
2	F	TRANSFORMER 40VA 120-24	-
2	E	MOTOR - GEAR 120 V. 60 HZ.	-
2	D	SWITCH MICRO	
2	C	RELAY DPDT 24 VAC. COIL	-
1	B2	PLUG 12 PIN	
1	B1	RECEPTACLE 12 PIN	
D 2	A	TIMER, BASKET LIFT 24V. 15 MIN. / 7 MIN.	

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAGRAM, ELECTRIC, BASKET LIFTS
480V. FIREBAR SPLIT VAT FRYERS

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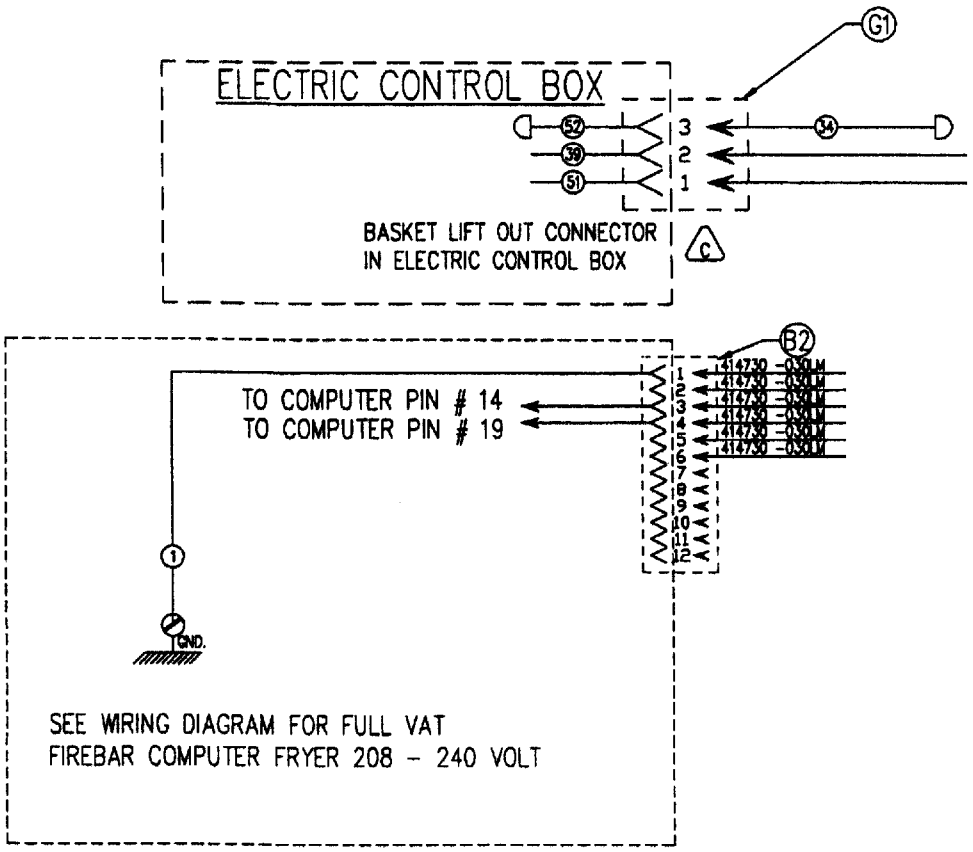
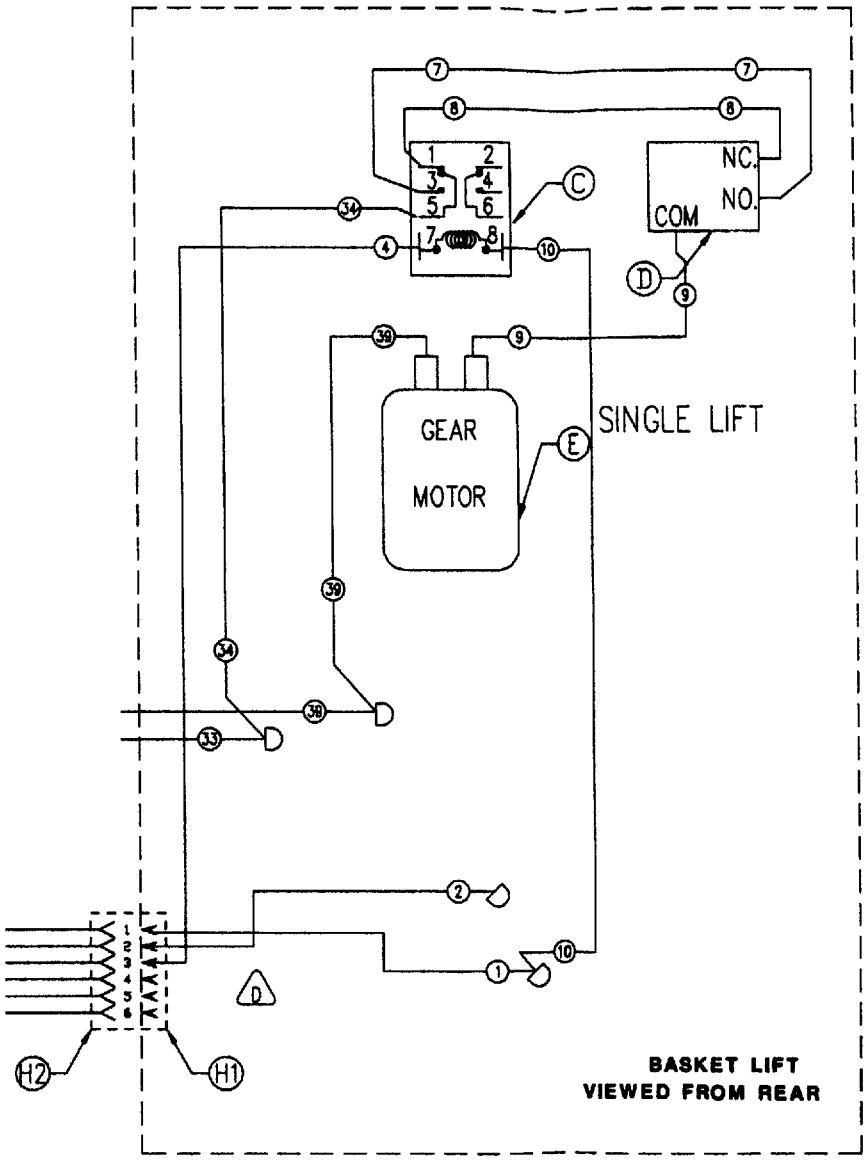
SCALE NONE

D422338-1 REV. D


G1
ELECTRIC CONTROL BOX
52
39
51
3
2
1
34
BASKET LIFT OUT CONNECTOR
IN ELECTRIC CONTROL BOX
C
B2
TO COMPUTER PIN # 14
TO COMPUTER PIN # 19
1
2
3
4
5
6
7
8
9
10
11
12
1
GND.
SEE WIRING DIAGRAM FOR FULL VAT
FIREBAR COMPUTER FRYER 208 - 240 VOLT



REQ.	IT.	DESCRIPTION	FIX.
1	H2	PLUG 6 PIN	
1	H1	RECEPTACLE 6 PIN	
1	G1	CABLE, LIFT POWER ASSEMBLY	
1	E	MOTOR - GEAR 240 V. 60 HZ.	-
1	D	SWITCH MICRO	
1	C	RELAY DPDT 24 VAC. COIL	-
1	B2	PLUG 12 PIN	

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAGRAM SINGLE BASKET LIFTS, ELECTRIC
208 & 240 VOLT FULL VAT COMPUTER FRYERS

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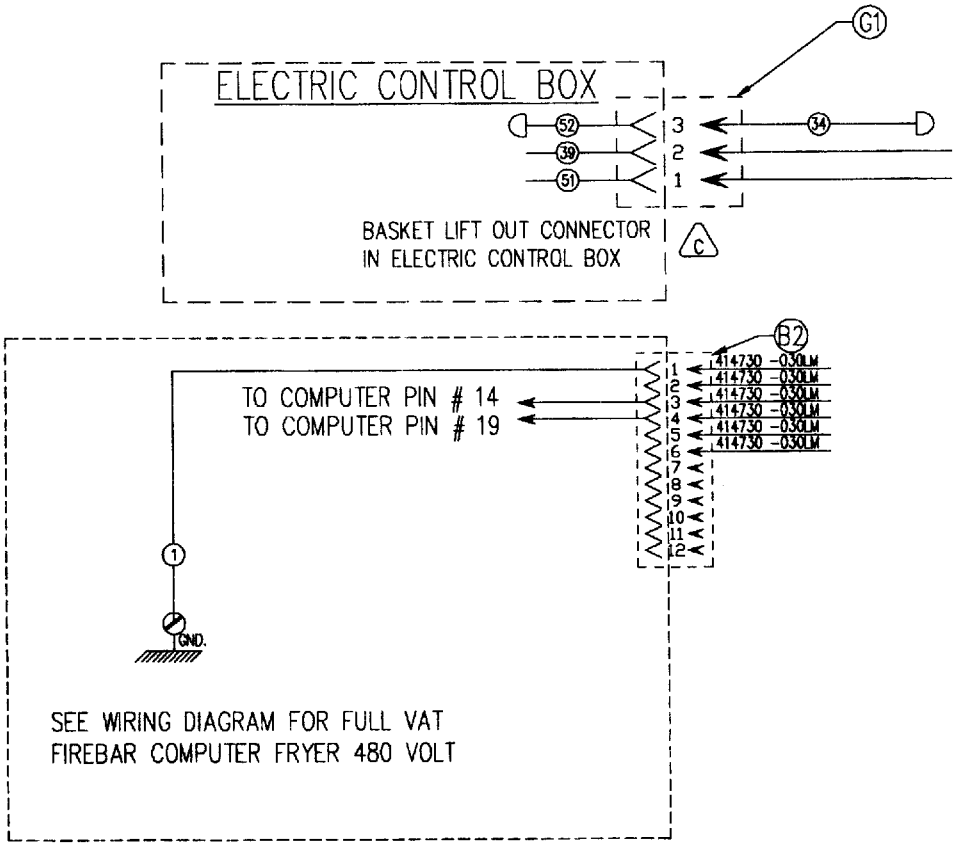
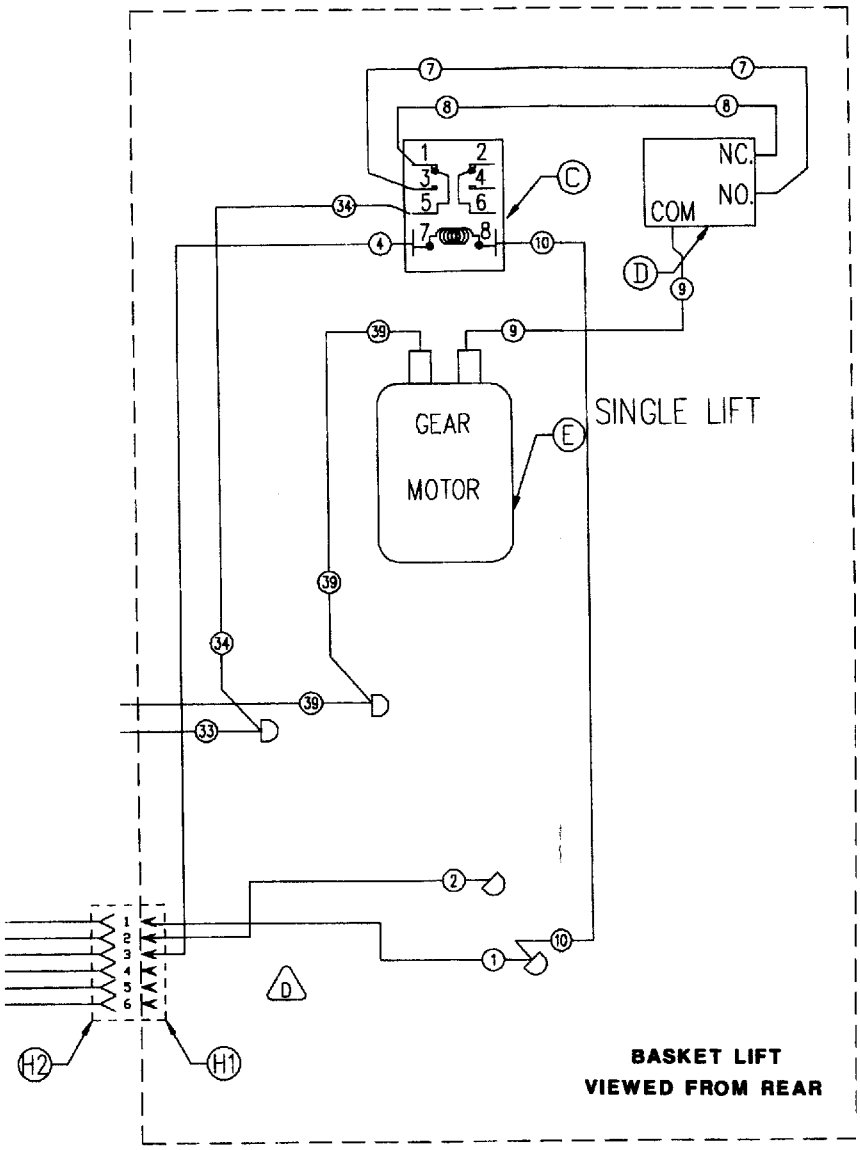
SCALE NONE

D 422754-1 REV. D


G1
ELECTRIC CONTROL BOX
52
39
51
3
2
1
34
BASKET LIFT OUT CONNECTOR
IN ELECTRIC CONTROL BOX
C
B2
TO COMPUTER PIN # 14
TO COMPUTER PIN # 19
1
GND.
SEE WIRING DIAGRAM FOR FULL VAT
FIREBAR COMPUTER FRYER 480 VOLT



REQ.	PT.	DESCRIPTION	FIN.
1	H2	PLUG 6 PIN	
1	H1	RECEPTACLE 6 PIN	
1	G1	CABLE, LIFT POWER ASSEMBLY	
1	E	MOTOR - GEAR 120 V. 60 HZ.	-
1	D	SWITCH MICRO	
1	C	RELAY DPDT 24 VAC. COIL	-
1	B2	PLUG 12 PIN	

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAGRAM SINGLE BASKET LIFTS, ELECTRIC
480 VOLT FULL VAT COMPUTER FRYERS

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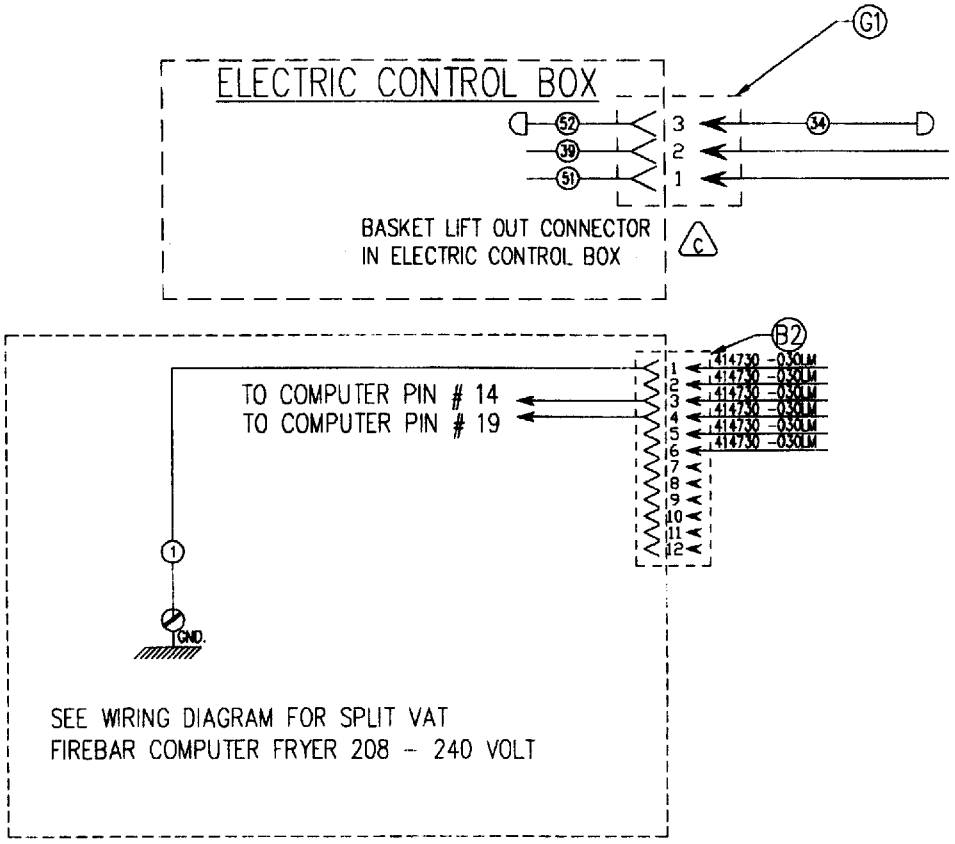
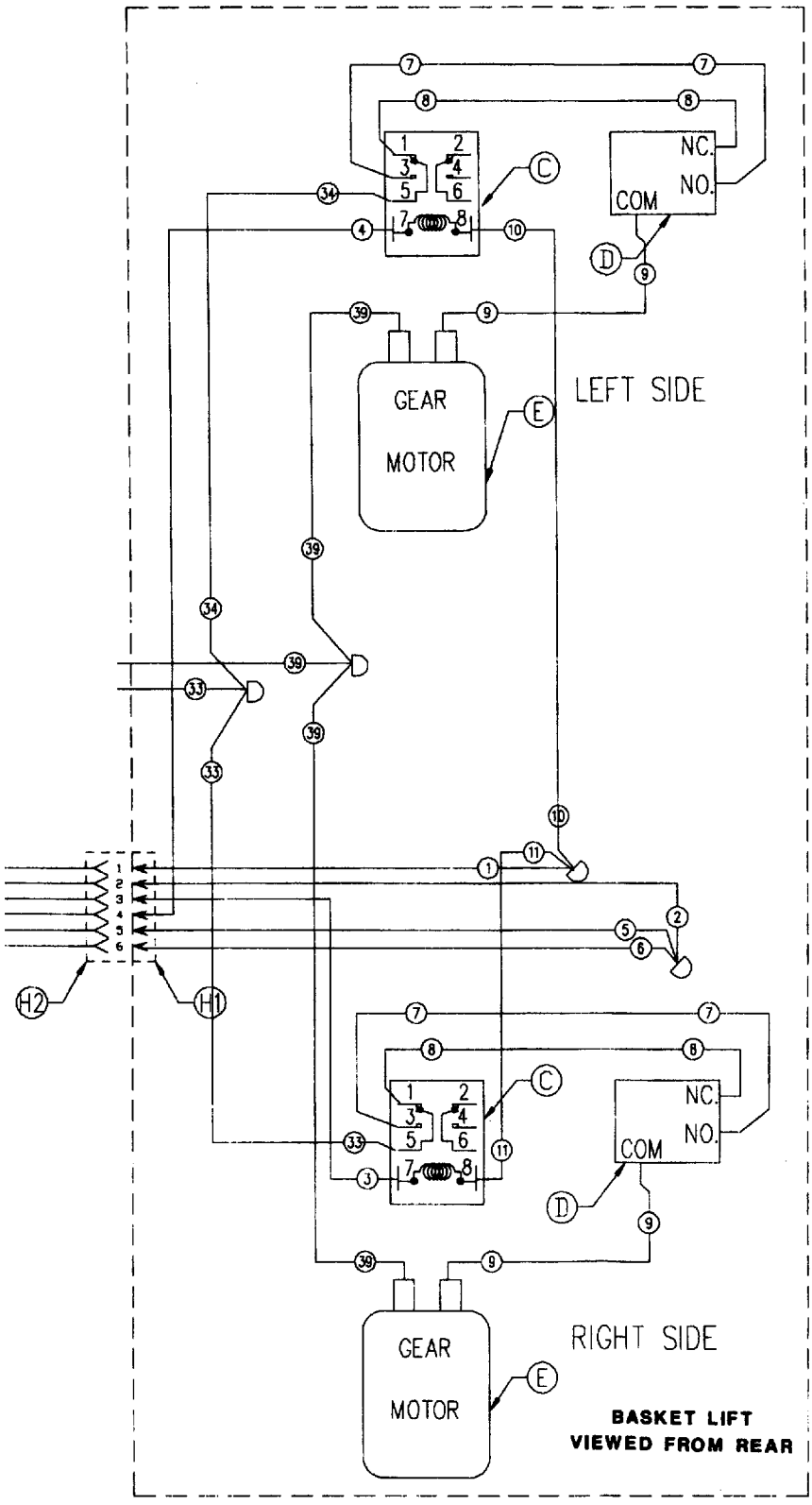
SCALE NONE

D 422757-1 REV. D


G1
ELECTRIC CONTROL BOX
52
39
51
3
2
1
34
BASKET LIFT OUT CONNECTOR
IN ELECTRIC CONTROL BOX
C
B2
TO COMPUTER PIN # 14
TO COMPUTER PIN # 19
1
GND.
SEE WIRING DIAGRAM FOR SPLIT VAT
FIREBAR COMPUTER FRYER 208 - 240 VOLT



REQ.	IT.	DESCRIPTION	FIN.
1	H2	PLUG 6 PIN	
1	H1	RECEPTACLE 6 PIN	
1	G1	CABLE, LIFT POWER ASSEMBLY	
2	E	MOTOR - GEAR 240 V. 60 HZ.	–
2	D	SWITCH MICRO	
2	C	RELAY DPDT 24 VAC. COIL	–
1	B2	PLUG 12 PIN	

WIRING INFORMATION
FOR UNITS LISTED

WIRING DIAGRAM BASKET LIFTS, ELECTRIC
208 & 240 VOLT FULL VAT COMPUTER FRYERS

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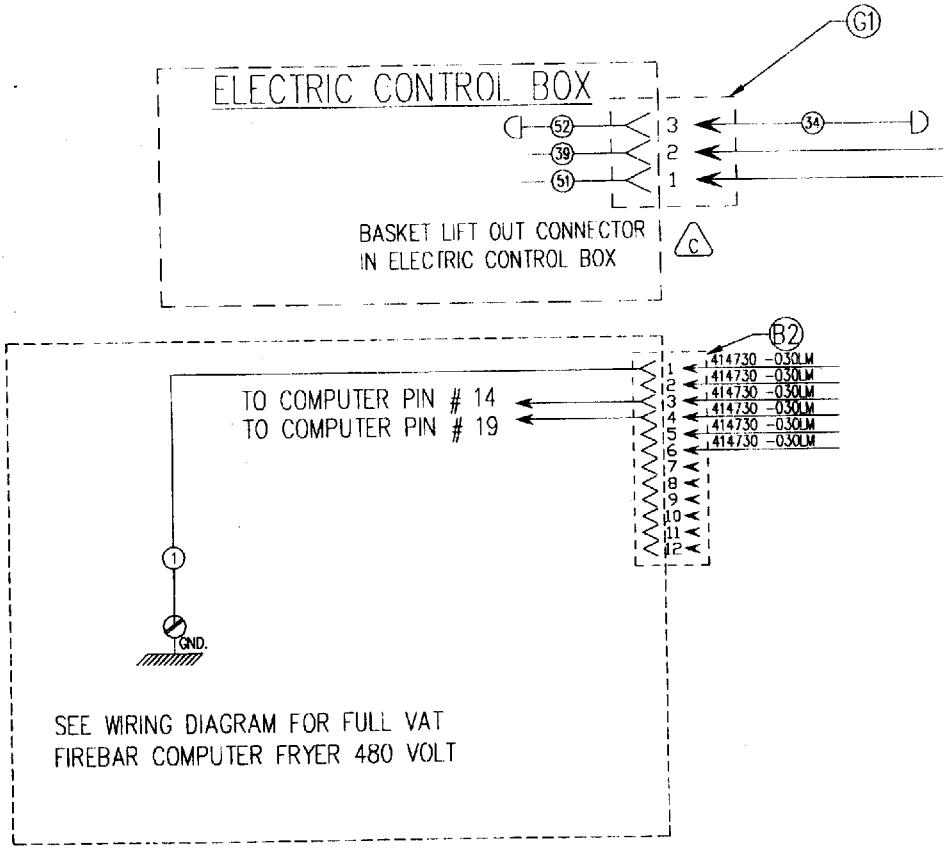
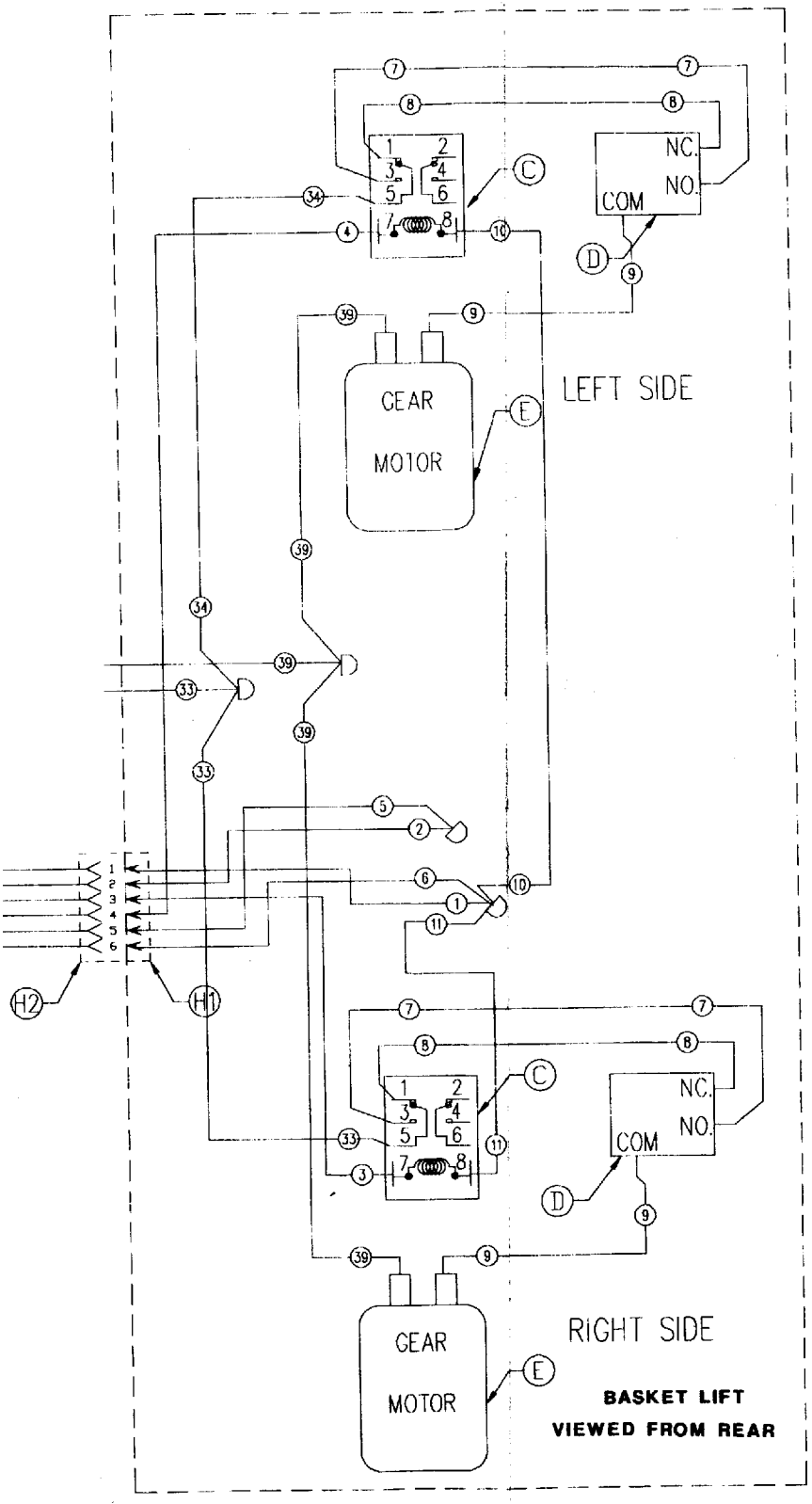
SCALE NONE

D 422753-1 REV. C


G1
ELECTRIC CONTROL BOX
52
39
51
3
2
1
34
BASKET LIFT OUT CONNECTOR
IN ELECTRIC CONTROL BOX
C
B2
414730 -030LM
414730 -030LM
414730 -030LM
414730 -030LM
414730 -030LM
414730 -030LM
TO COMPUTER PIN # 14
TO COMPUTER PIN # 19
1
GND.
SEE WIRING DIAGRAM FOR FULL VAT
FIREBAR COMPUTER FRYER 480 VOLT



REQ.	IT.	DESCRIPTION
1	H2	PLUG 6 PIN
1	H1	RECEPTACLE 6 PIN
1	G1	CABLE, LIFT POWER ASSEMBLY
2	E	MOTOR -- GEAR 120 V. 60 HZ.
2	D	SWITCH MICRO
2	C	RELAY DPDT 24 VAC. COIL
1	B2	PLUG 12 PIN

WIRING INFORMATION
FOR UNITS LISTED

WIRING DIAGRAM DUAL BASKET LIFTS, ELECTRIC
480 VOLT FULL VAT COMPUTER FRYERS

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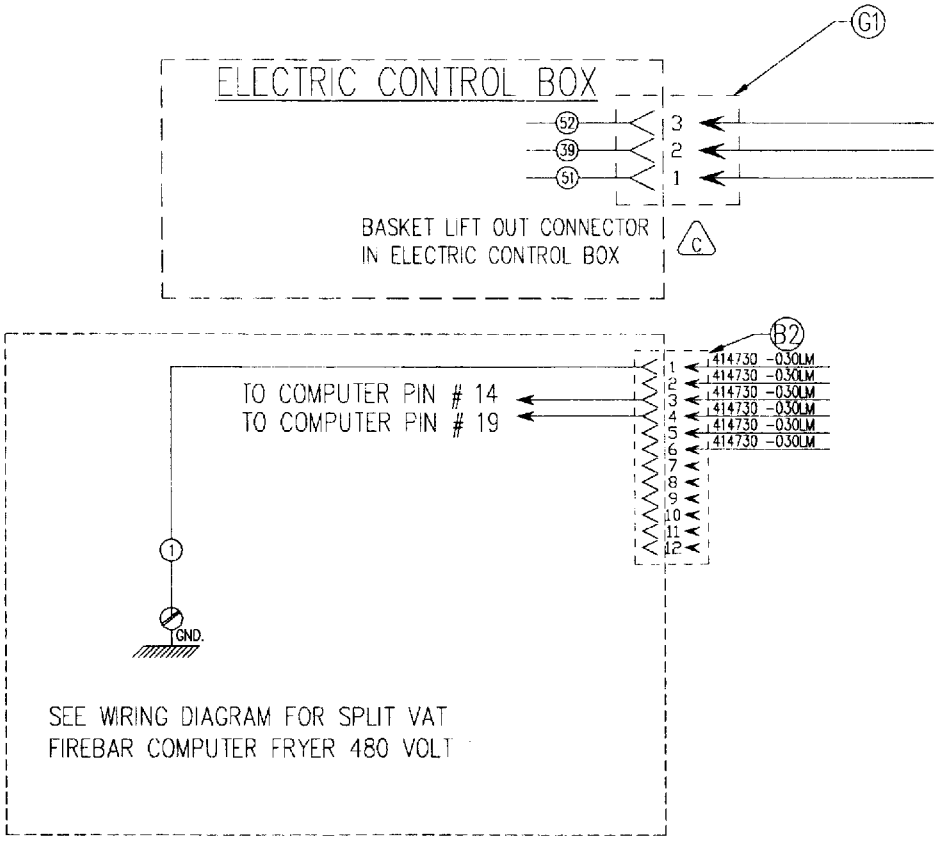
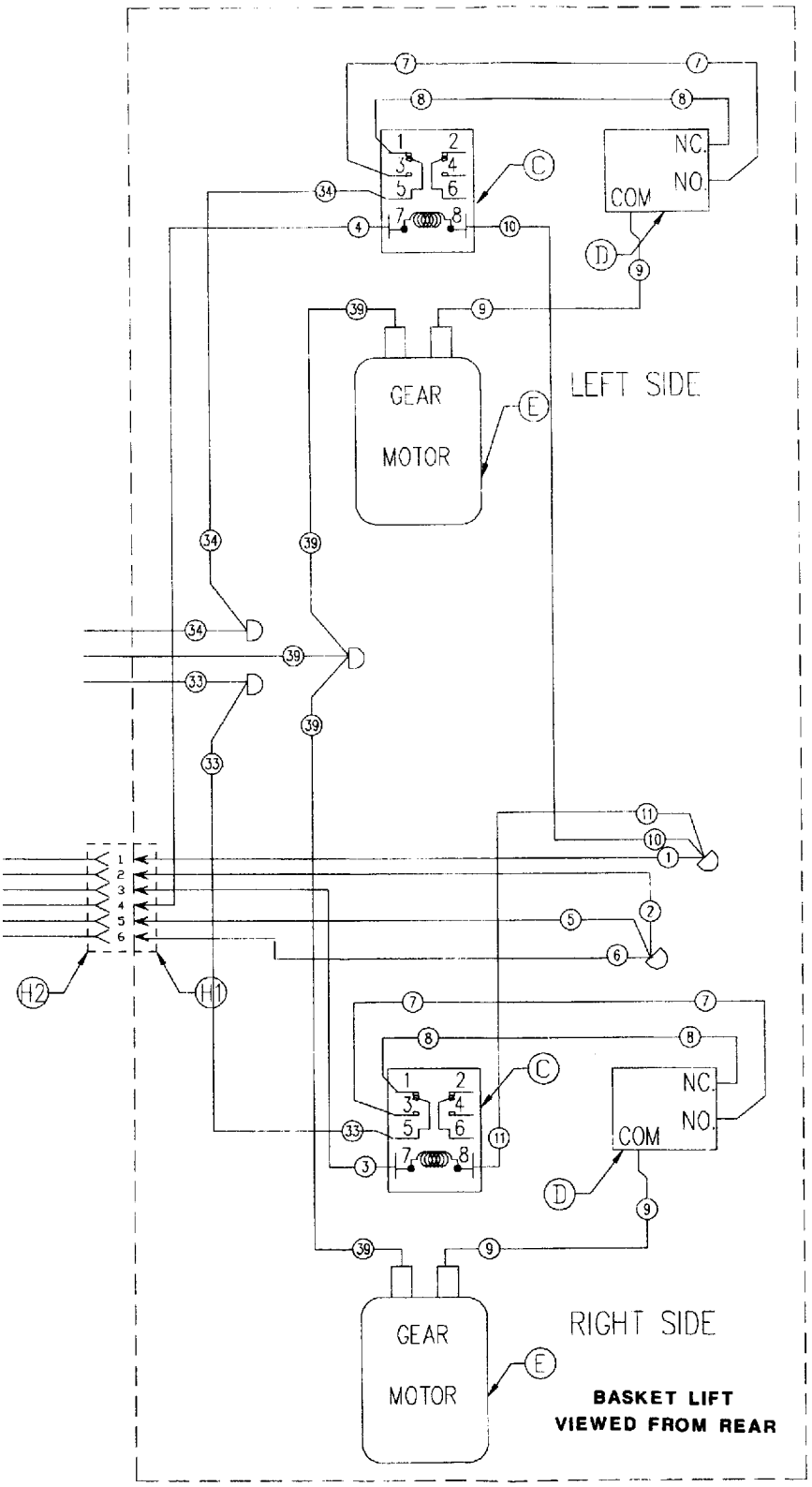
SCALE NONE

D 422756-1 REV. C


G1
ELECTRIC CONTROL BOX
52
39
51
3
2
1
BASKET LIFT OUT CONNECTOR
IN ELECTRIC CONTROL BOX
C
B2
TO COMPUTER PIN # 14
TO COMPUTER PIN # 19
414730 -030LM
1
2
3
4
5
6
7
8
9
10
11
12
GND.
SEE WIRING DIAGRAM FOR SPLIT VAT
FIREBAR COMPUTER FRYER 480 VOLT



REQ.	IT.	DESCRIPTION	FIN.
1	H2	PLUG 6 PIN	
1	H1	RECEPTACLE 6 PIN	
1	G1	CABLE, LIFT POWER ASSEMBLY	
2	E	MOTOR – GEAR 120 V. 60 HZ.	–
2	D	SWITCH MICRO	
2	C	RELAY DPDT 24 VAC. COIL	–
1	B2	PLUG 12 PIN	
1	B1	RECEPTACLE 12 PIN	

C

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAGRAM, ELECTRIC, BASKET LIFTS
480V. FIREBAR SPLIT VAT COMPUTER FRYERS

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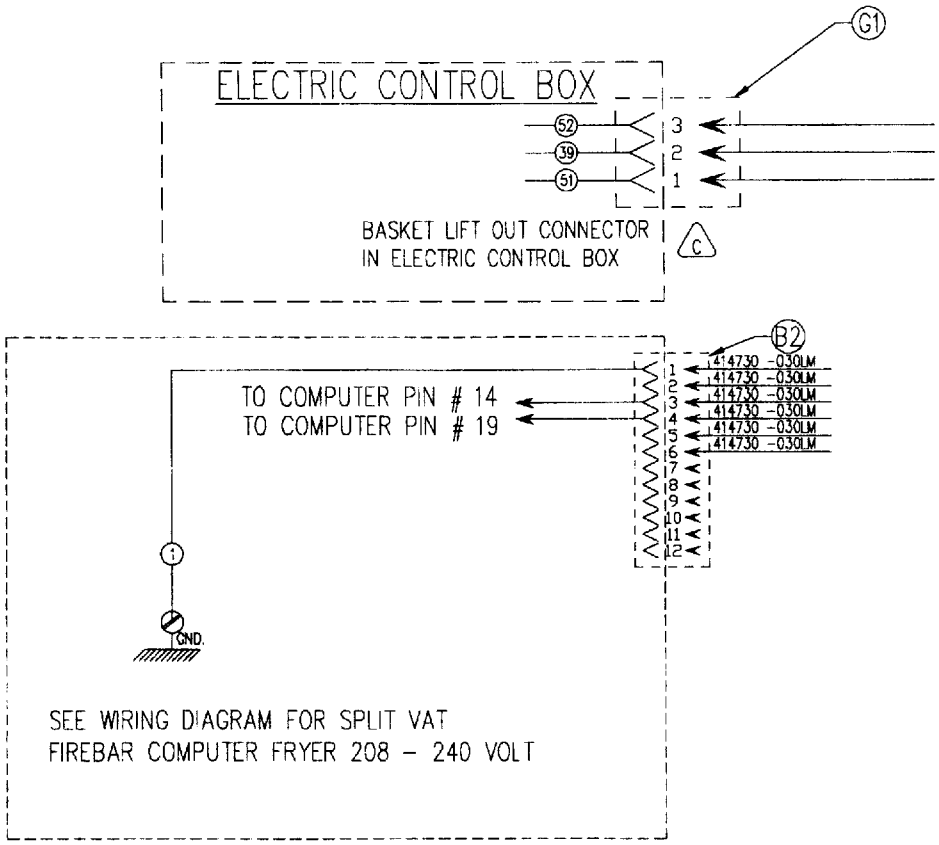
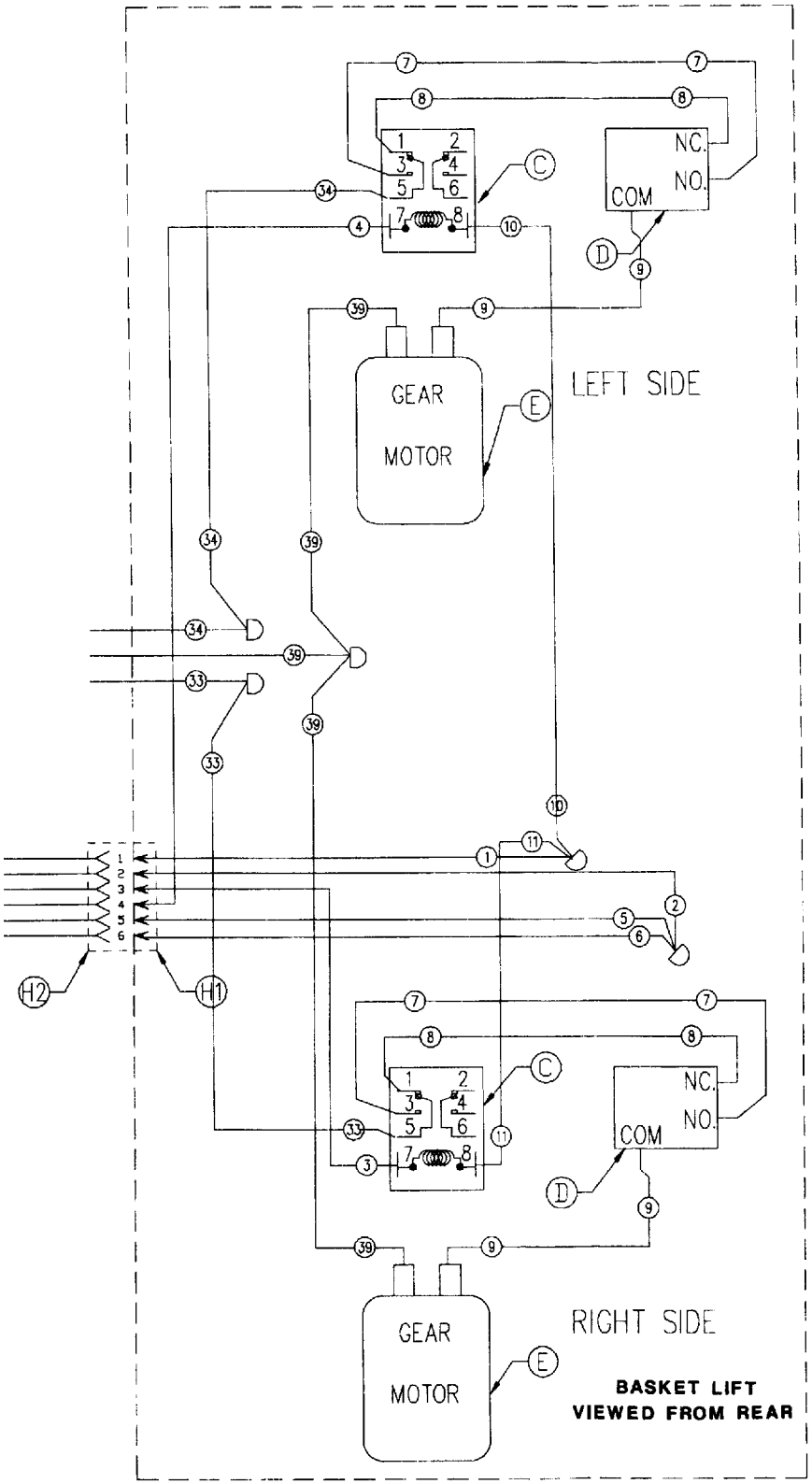
SCALE NONE

D 422755-1 REV. C


G1
ELECTRIC CONTROL BOX
52
39
51
3
2
1
BASKET LIFT OUT CONNECTOR
IN ELECTRIC CONTROL BOX
C
B2
TO COMPUTER PIN # 14
TO COMPUTER PIN # 19
414730 -030LM
414730 -030LM
414730 -030LM
414730 -030LM
414730 -030LM
414730 -030LM
1
GND.
SEE WIRING DIAGRAM FOR SPLIT VAT
FIREBAR COMPUTER FRYER 208 - 240 VOLT



REQ.	IT.	DESCRIPTION	FIN.
1	H2	PLUG 6 PIN	
1	H1	RECEPTACLE 6 PIN	
1	G1	CABLE, LIFT POWER ASSEMBLY	
2	E	MOTOR - GEAR 240 V. 60 HZ.	-
2	D	SWITCH MICRO	
2	C	RELAY DPDT 24 VAC. COIL	-
1	B2	PLUG 12 PIN	

C

WIRING INFORMATION

FOR UNITS LISTED

WIRING DIAGRAM BASKET LIFTS, ELECTRIC
208 & 240 VOLT SPLIT VAT COMPUTER FRYERS

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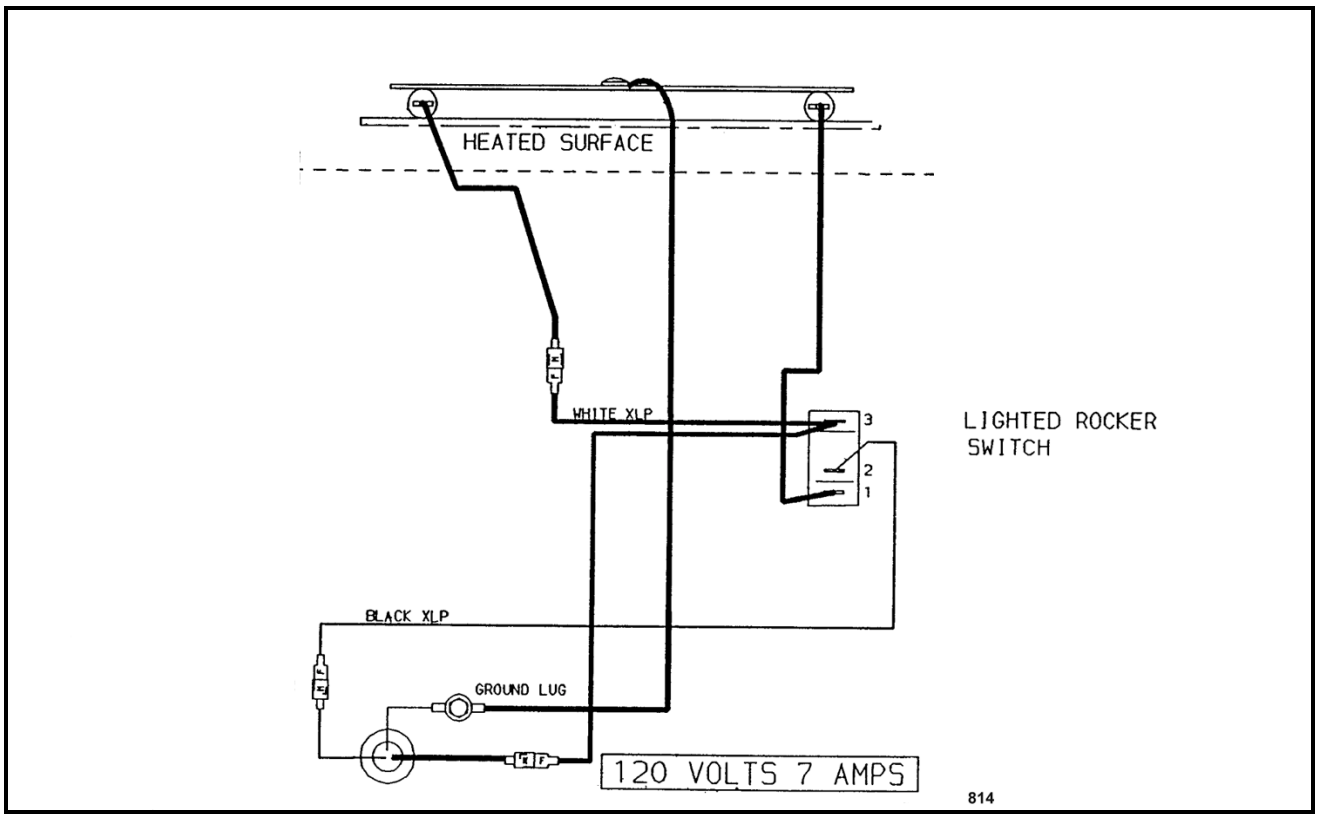
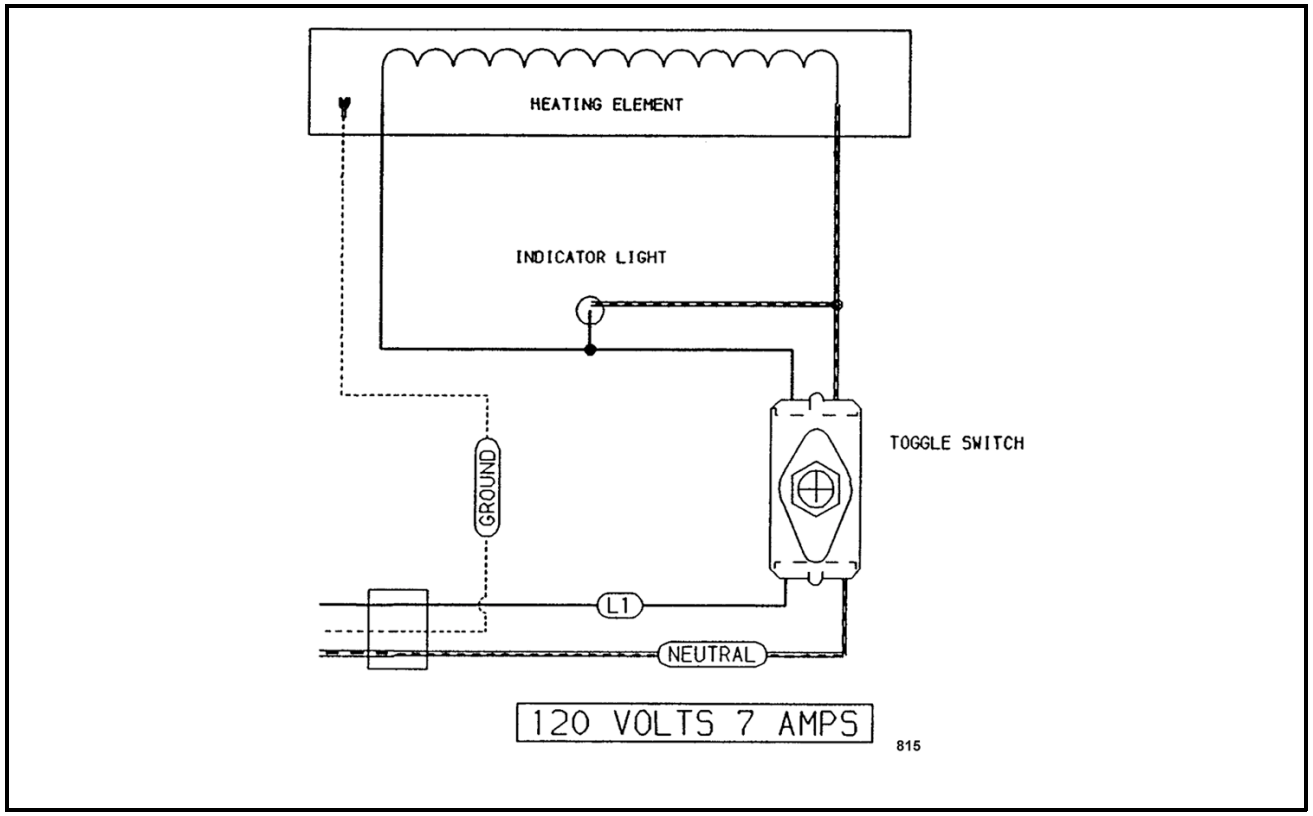
SCALE NONE

D 422752-1 REV. C

Serve Station Units





TROUBLESHOOTING

COMPUTER CONTROL HARNESS PIN-OUTS CHART

COMPUTER CONTROL PIN-OUTS			
Pin #	Description	Pin #	Description
1	Right power input	13	24 VAC ground
2	Left power input	14	Right basket output
3	Right pilot valve input	15	Right heat output
4	Left pilot valve input	16	Left heat output
5	Right main valve input	17	24 VAC
6	Left main valve input	18	no connection
7	Right high limit	19	Left basket output
8	Left high limit	20	no connection
9	Ignition system type input	21	no connection
10	Air filter input	22	no connection
11	Door input	23	DC power input (+)
12	“Full” or “Split” mode input	24	DC power input (-)

SOLID STATE CONTROL

SYMPTOM	POSSIBLE CAUSES
Fryer does not heat. Power light is not on.	1. Power switch off or inoperative. 2. Main circuit breaker tripped. 3. Fuse in control circuit open.
Ventilator off, power switch on, power light on.	1. Ventilator hood circuit breaker open. 2. Interlock wiring open. 3. Power switch malfunction.
No heating light, power switch on, power light on.	1. Temperature control set too low or not calibrated. 2. Heating light inoperative. 3. Control board inoperative.
No heating light. Power switch on, power light on, trouble light and second high limit on.	1. Shortening temperature above 435°F, first high limit inoperative. 2. Second high limit inoperative.
Excessive time to melt shortening. (more than 45 minutes).	1. Melt cycle timing incorrect. 2. Heating elements malfunctioning. 3. Supply power incorrect voltage.
Fryer shuts down on first high limit.	1. Low oil. 2. Control not calibrated. 3. Contactor malfunction. 4. Control board inoperative.
Fryer shuts down on second high limit.	1. Low oil. 2. Control board inoperative. 3. High limit malfunction.
Thermostat out of calibration by more than 25°F.	1. Control board inoperative. 2. Probe touching element.
Light(s) not on when required.	1. Light inoperative. 2. Wiring problem.

COMPUTER CONTROL

NOTE: The computer control is also used in other equipment, therefore it is possible for unrelated error prompts to appear if a problem occurs in the computer main harness plug.

SYMPTOM	POSSIBLE CAUSES
Fryer does not heat.	1. Power switch off or inoperative. 2. Main circuit breaker off or open. 3. Open fuse in control box. 4. Malfunctioning heat control relay (2 relays for spilt vat). 5. Malfunctioning computer power input relay (2 relays for split vat). 6. Computer power supply board, transformer malfunctioning. 7. Open pins 23 or 24 (12 VDC). 8. Open 24 VAC pin 1 (full vat), pin 1 or pin 2 (split vat). 9. Open pin 15 (full vat), pin 15 right heat or pin 16 left heat for split vat. 10. Malfunctioning computer control.
Fryer displays "TEMP TOO HI"	1. Low oil. 2. High limit malfunction. 3. Malfunctioning computer control.
Fryer heats slowly.	1. Incoming voltage incorrect. 2. Heating element(s) malfunction.
Fryer displays "CALL SERVICE"	1. High limit malfunctioning. 2. Malfunctioning probe. 3. Failed self-check. 4. Malfunctioning control board.
Fryer displays " IGN FAILURE"	1. Pins 3, 4, 5 or 6 not connected to 24VAC.
Fryer displays " DOOR OPEN"	1. Pin 11 not connected to 24VAC.
Fryer displays "OFF"	1. Second high limit or tilt switch open.

SERVE STATION (with optional heater)

SYMPTOM	POSSIBLE CAUSES
No heat.	1. Unplugged. 2. Power switch off or inoperative. 3. Main circuit breaker off or open. 4. Malfunctioning heating unit assembly.