CONTENTS

05-100 INTRODUCTION

DANGER
Set the circuit breaker (CB1) to Off if you want *all* voltages off. With the IPO switch turned off and CB1 on, AC line voltage is still present at the control supply and DC output voltages from the control supply are present at the A-A1 board, the operator panel, and the CE panel. Because of the charge on the capacitors in the arc-suppression networks across K1, K2, and K4, a voltage is still present on all circuits supplied by the contactor points when K1 and K2 are de-activated (see paragraph 05-315).

Input line voltage is supplied through the line filters, CB1, F302, and ACTB2 in the AC box to the control supply.

Plus and minus 5 Vdc, plus and minus 24 Vdc, and 48 Vac are supplied to the power logic board (C-A1) by the control supply. The control supply also supplies +24 Vdc to pick K1 and K2 in the AC box. When K1 picks, input line voltage is distributed to the following places:

- Base ferroresonant transformer and capacitor by way of F301
- Feature power supplies (if installed) by way of fuses F201, F202, F203, F204, and F207
- Feature AC box
- Diskette drive motor
- Gate and power fans

When K2 (and K4 for systems with 3 or 4 62PC disk drives) picks, input line voltage is sent to the disk drive motors.

Secondary AC outputs from the base ferroresonant transformer go to the +5V filter assembly, and to the multilevel filter assembly.

The DC outputs from the +5V and multilevel filter assemblies go to the DC distribution assembly.

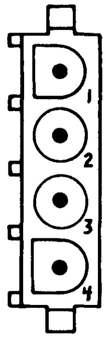
The DC voltages from the DC distribution assembly go to the A-gate and the B-gate (if installed). The point-to-point wiring can be found on FSL pages YA4xx and YA5xx.

05-200 POWER LOCATIONS

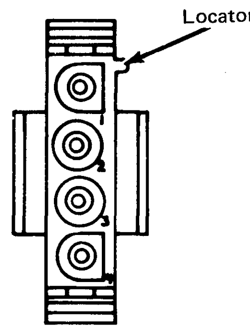
05-210 Connector Pin Locations

CAUTION
The board connectors might not be installed as shown in these drawings.

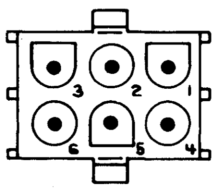
Connectors J2, J7, and J8:
4-Position
Board Connector
Pin Side
P/N 1473910



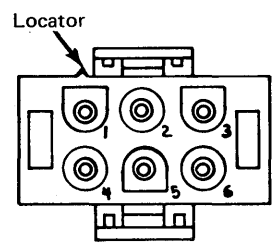
Connectors J2, J7, and J8:
4-Position
Cable Connector
Pin Side
P/N 1847528



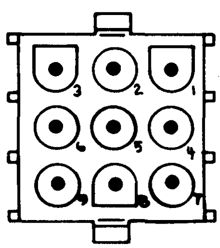
Connectors J4, J9, and C-B1J2
6-Position
Board Connector
Pin Side
P/N 1295112



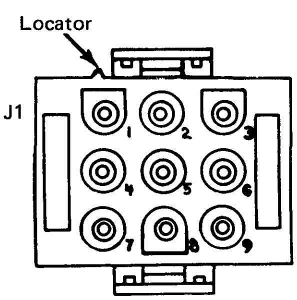
Connectors J4, J9, and C-B1J2
6-Position
Cable Connector
Pin Side
P/N 1847530



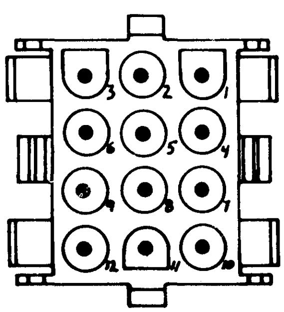
Connectors J10, J20, and C-B1J1
9-Position
Board Connector
Pin Side
P/N 1473911



Connectors J10, J20, and C-B1J1
9-Position
Cable Connector
Pin Side
P/N 1847532

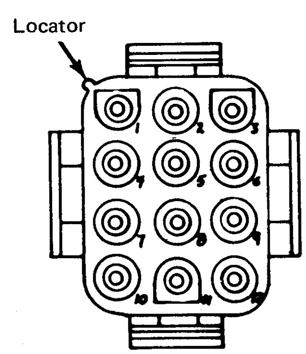


Connector J1
12-Position
Cable Connector
Pin Side
P/N 1847535



Connectors J13 and J14
12-Position
Board Connector (Pin configuration same as connector J1, above)
Pin Side
P/N 1295545

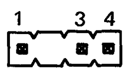
Connectors J1, J13, and J14
12-Position
Cable Connector
Pin Side
P/N 1847534

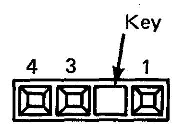


Connector J19
2-Position
Board Connector
Pin Side
P/N 2731398

Connector J19
2-Position
Cable Connector
Pin Side
P/N 2731397

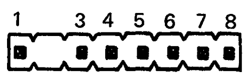
Connector J5
4-Position
Board Connector
Pin Side
P/N 2731815

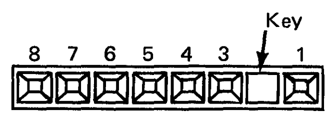




Connector J5
4-Position
Cable Connector
Pin Side
P/N 2731850

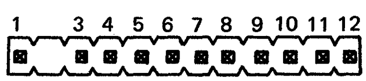
Connector J12
8-Position
Board Connector
Pin Side
P/N 2731816

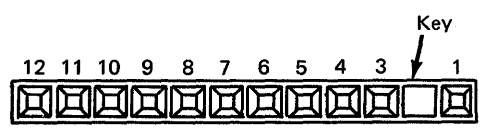




Connector J12
8-Position
Cable Connector
Pin Side
P/N 2731836

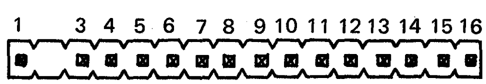
Connector J24
12-Position
Board Connector
Pin Side
P/N 2731818

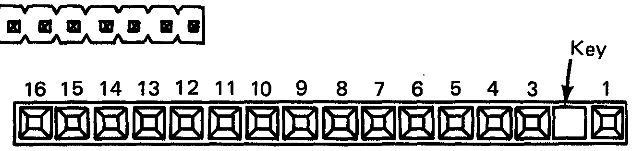




Connector J24
12-Position
Cable Connector
Pin Side
P/N 2731838

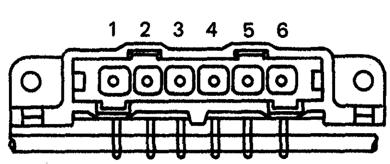
Connector J21
16-Position
Board Connector
Pin Side
P/N 2731820

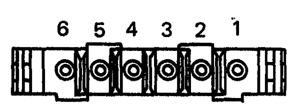




Connector J21
16-Position
Cable Connector
Pin Side
P/N 2731839

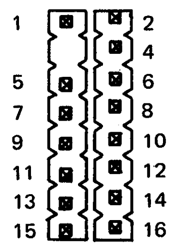
Connector J23
6-Position
Board Connector
Pin Side
P/N 2777213



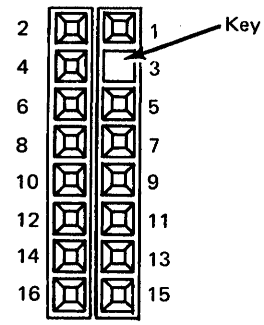


Connector J23
6-Position
Cable Connector
Pin Side
P/N 2777212

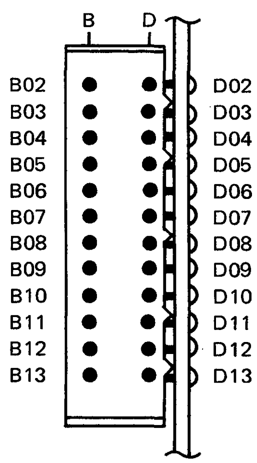
Connector C-B1J7
16-Position Dual Line
Board Connector
Pin Side
P/N 2731816
and
P/N 2637708



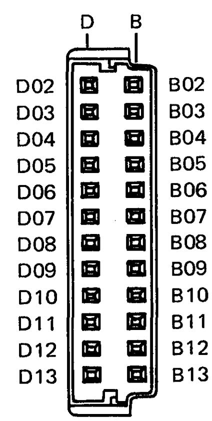
Connector C-B1J7
16-Position
Cable Connector
Pin Side
P/N 2731844



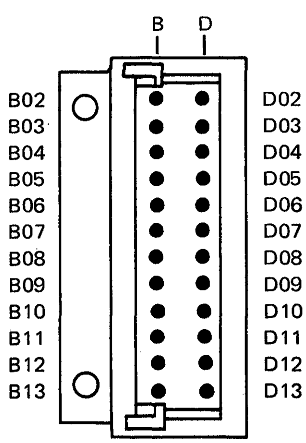
Connector J11,
C-B1J3, C-B1J4,
and C-B1J5
24-Position
Right Angle
Board Connector
Pin Side
P/N 818554



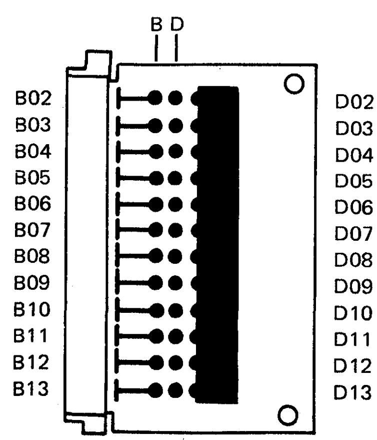
Connectors J6, J11,
C-B1J3, C-B1J4,
and C-B1J5
24-Position
Cable Connector
Pin Side
P/N 817329



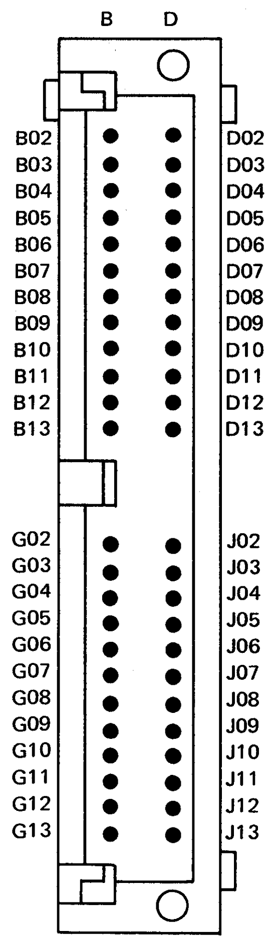
Connector J6
24-Position
Board Connector
Pin Side
P/N 818869



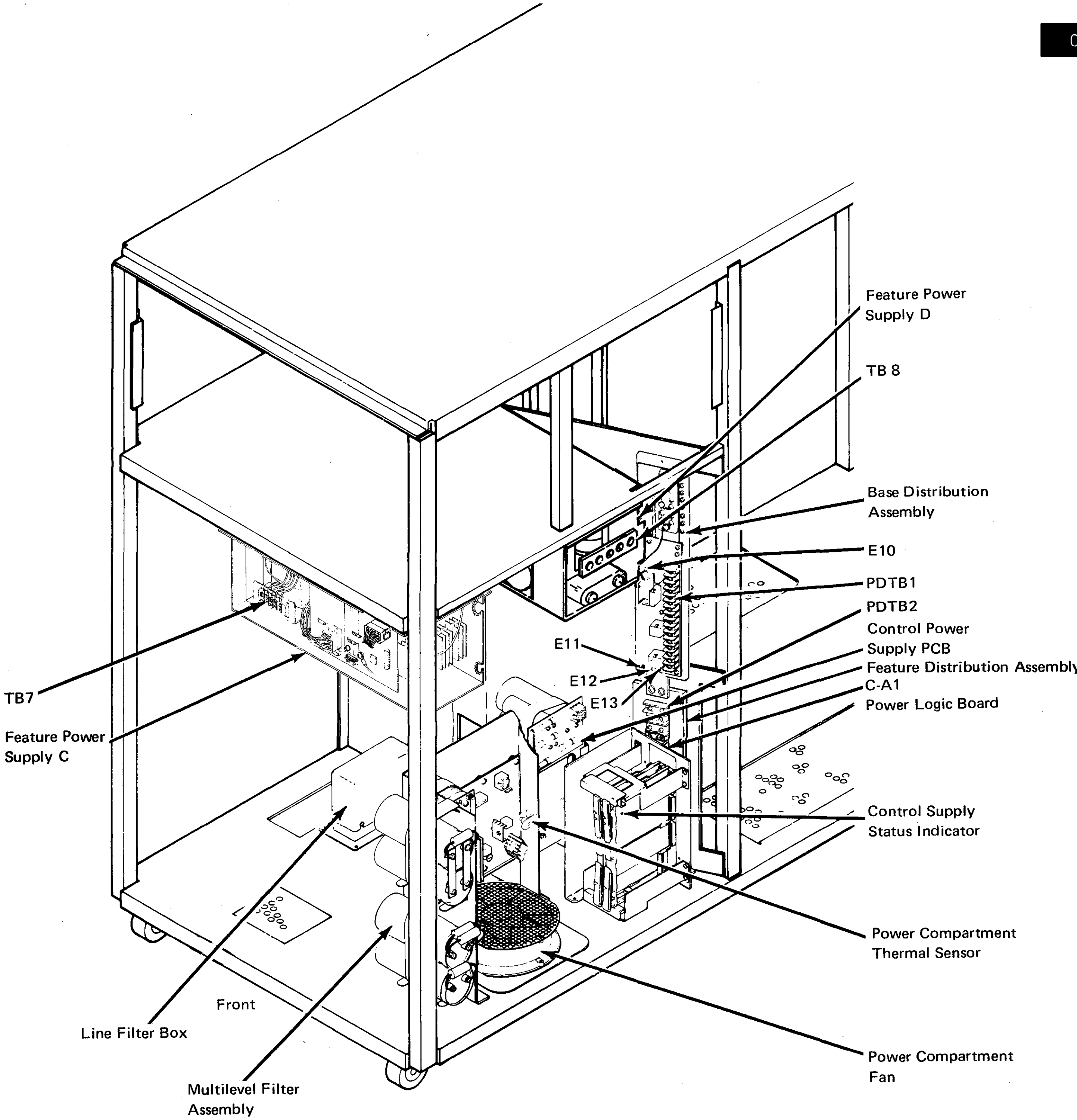
Connector J11,
C-B1J3, C-B1J4,
and C-B1J5
24-Position
Cable Connector
Probe Side
P/N 5800634



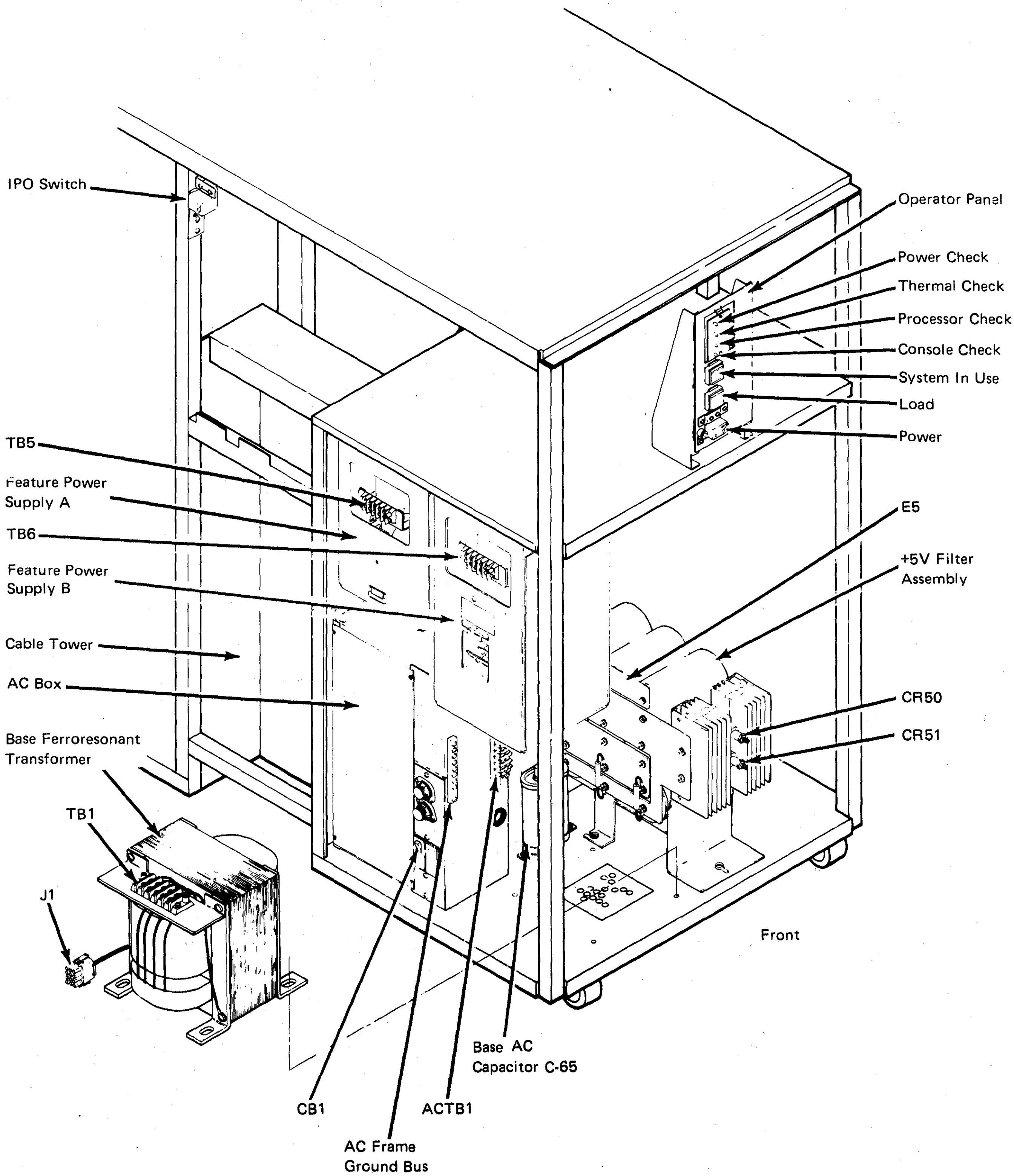
Connector C-B1J6
48-Position
Dual Line
Board Connector
Pin Side
P/N 813329



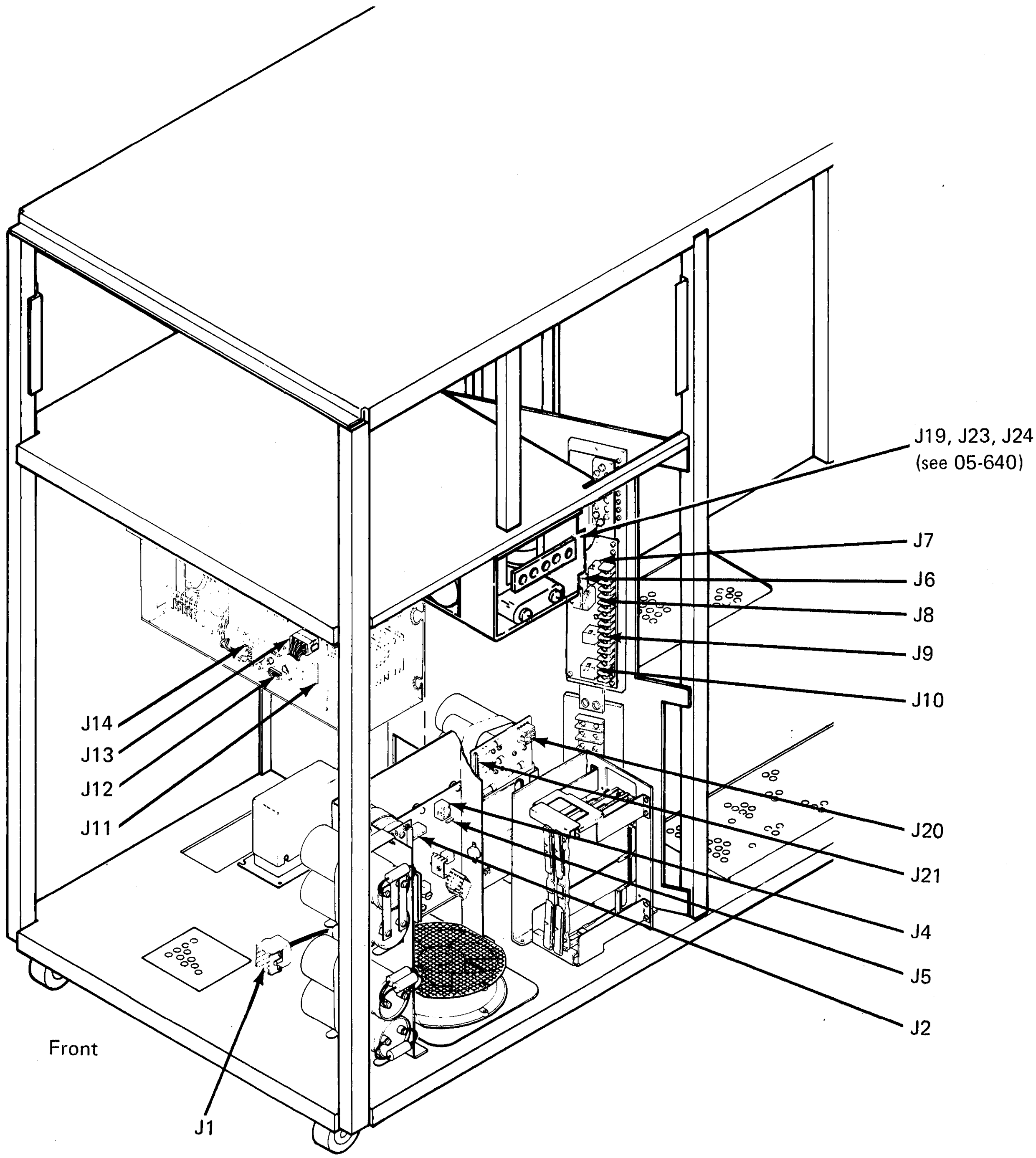
05-220 Right Side View

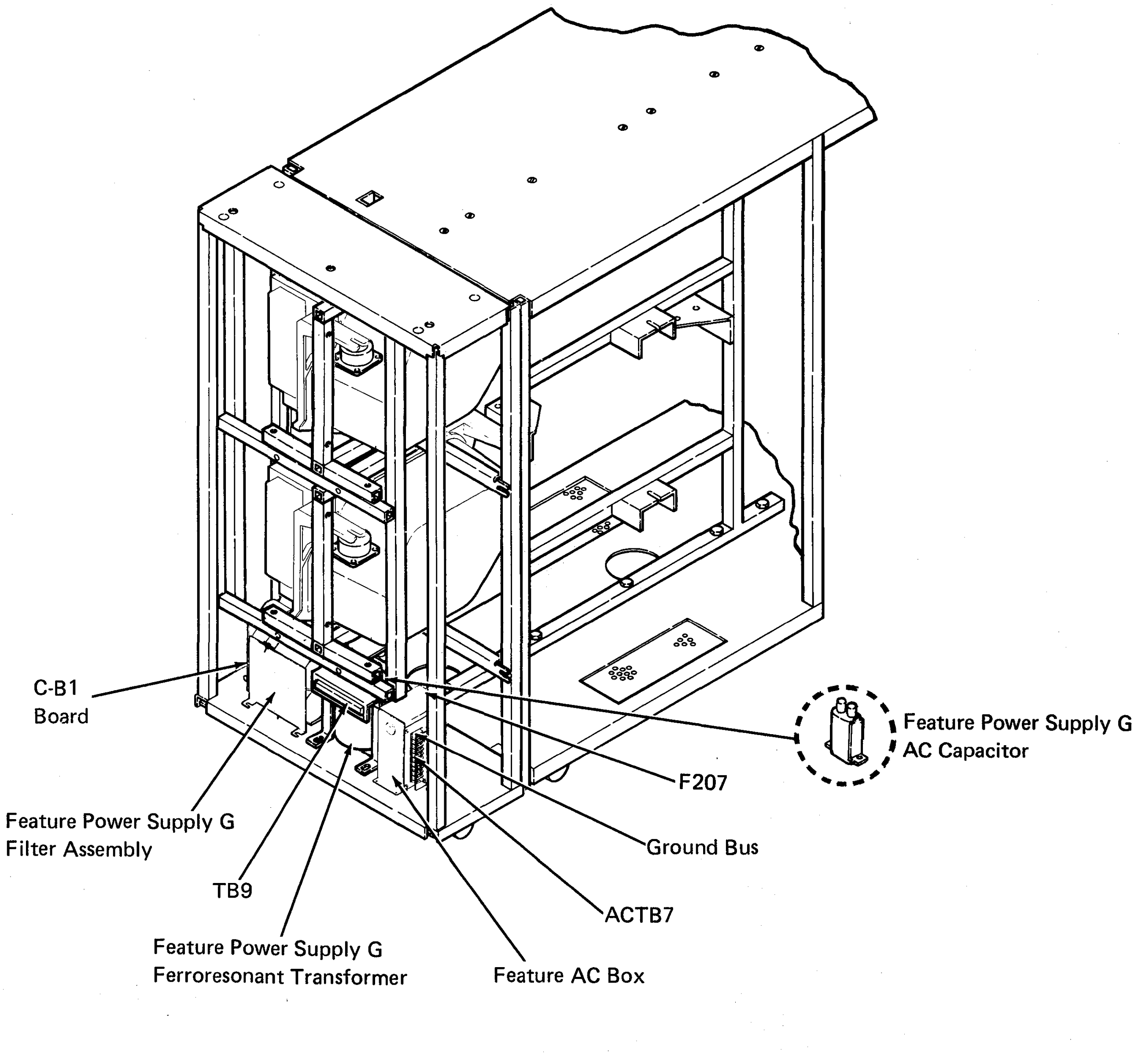


05-230 Left Side View

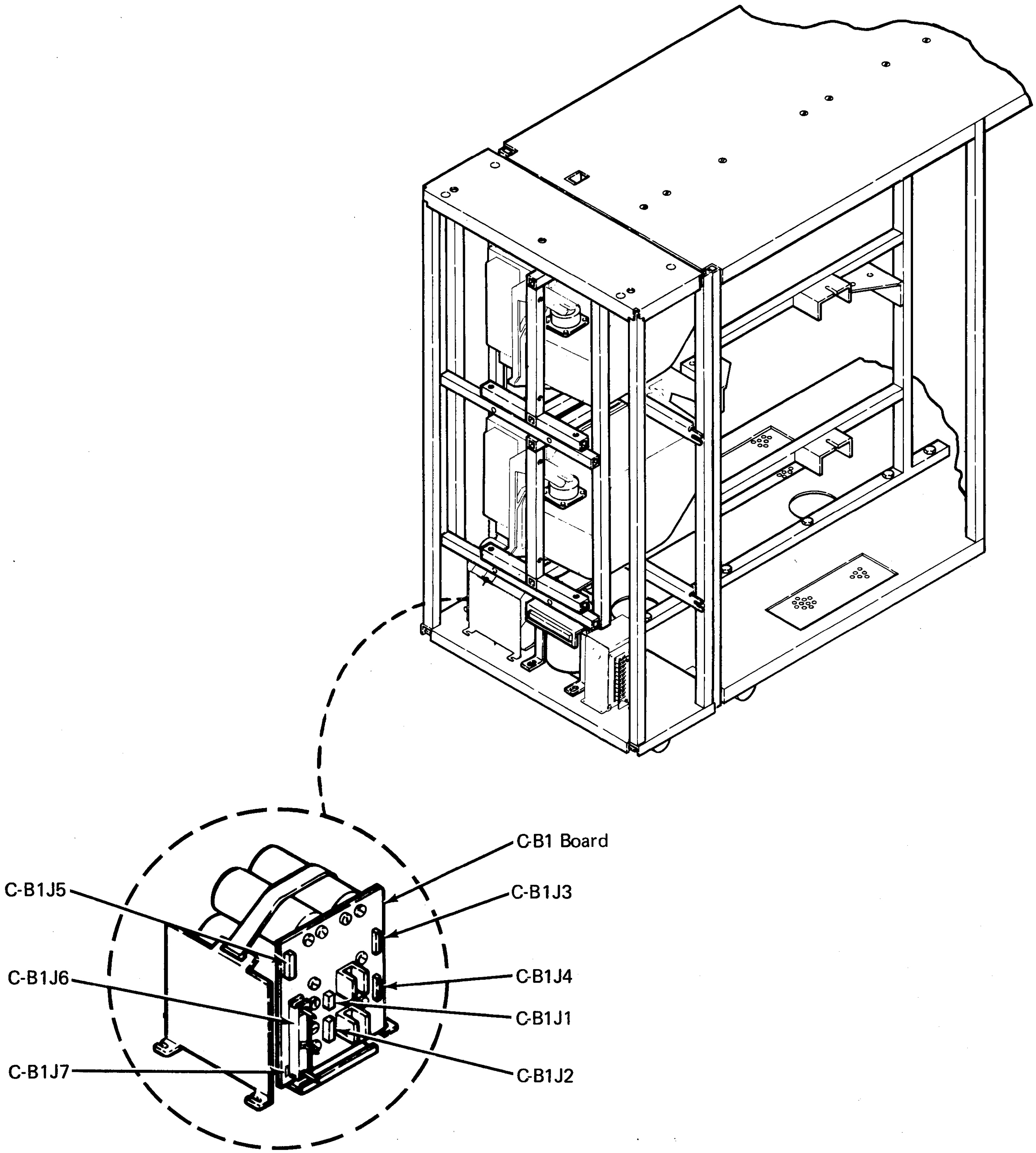


05-240 J-Connector Locations



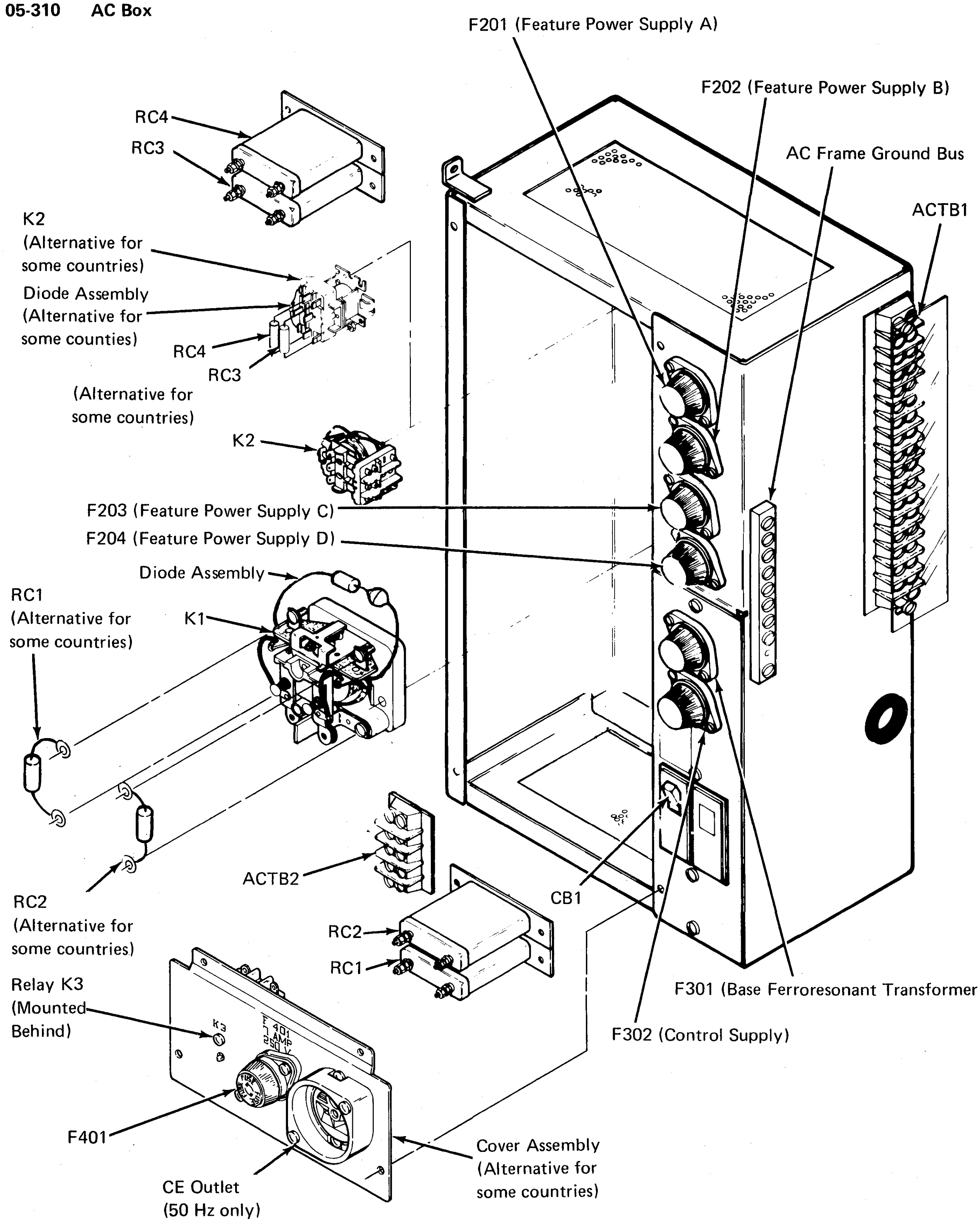

C-B1
Board
Feature Power Supply G
Filter Assembly
TB9
Feature Power Supply G
Ferroresonant Transformer
Feature AC Box
ACTB7
Ground Bus
F207
Feature Power Supply G
AC Capacitor

05-260 Feature Power Supply G C-B1 Connector Locations



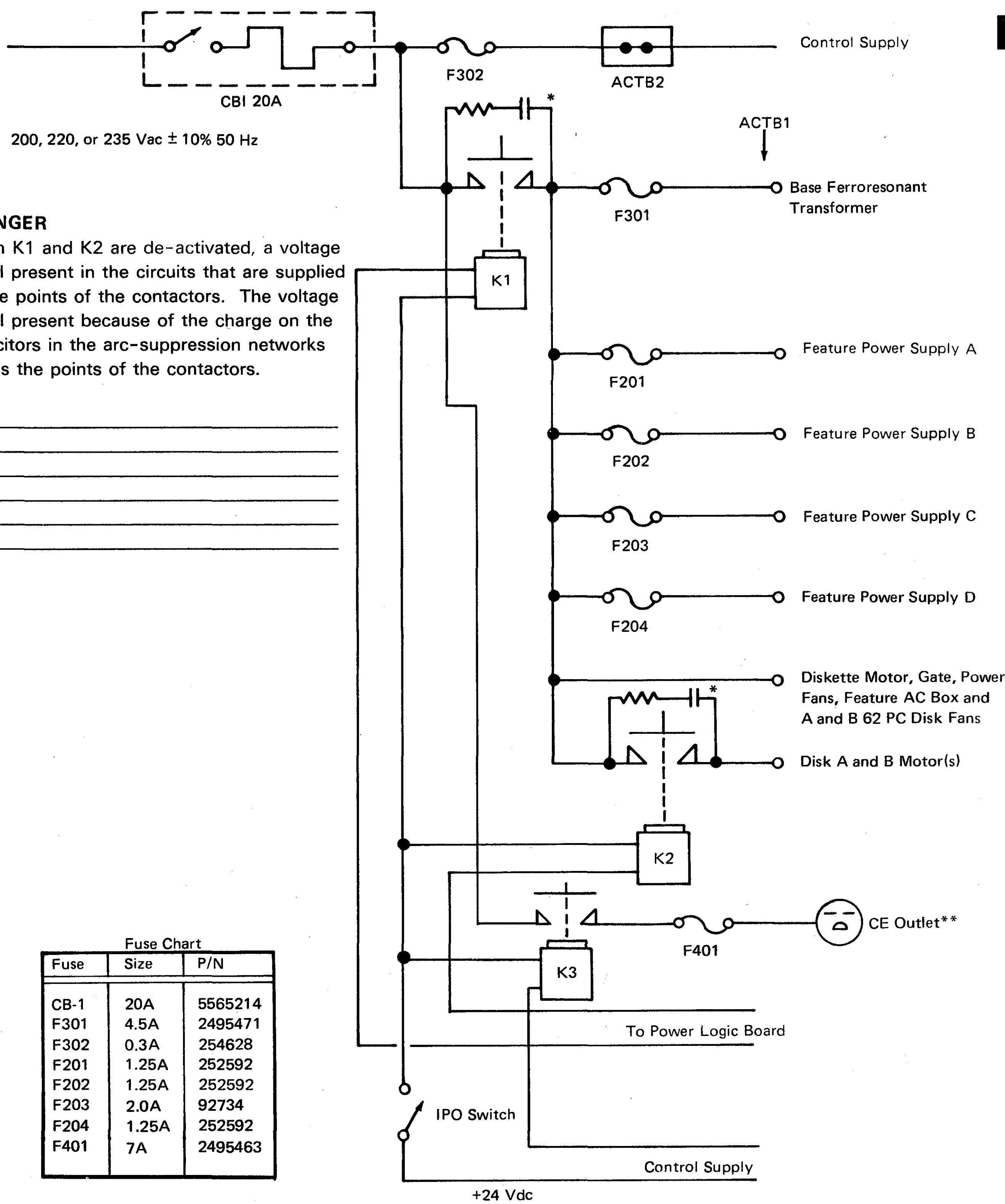
05-300 FUNCTIONAL UNITS

05-310 AC Box



05-315 AC Box (Second Level)

See FSL page YA000.



***DANGER**

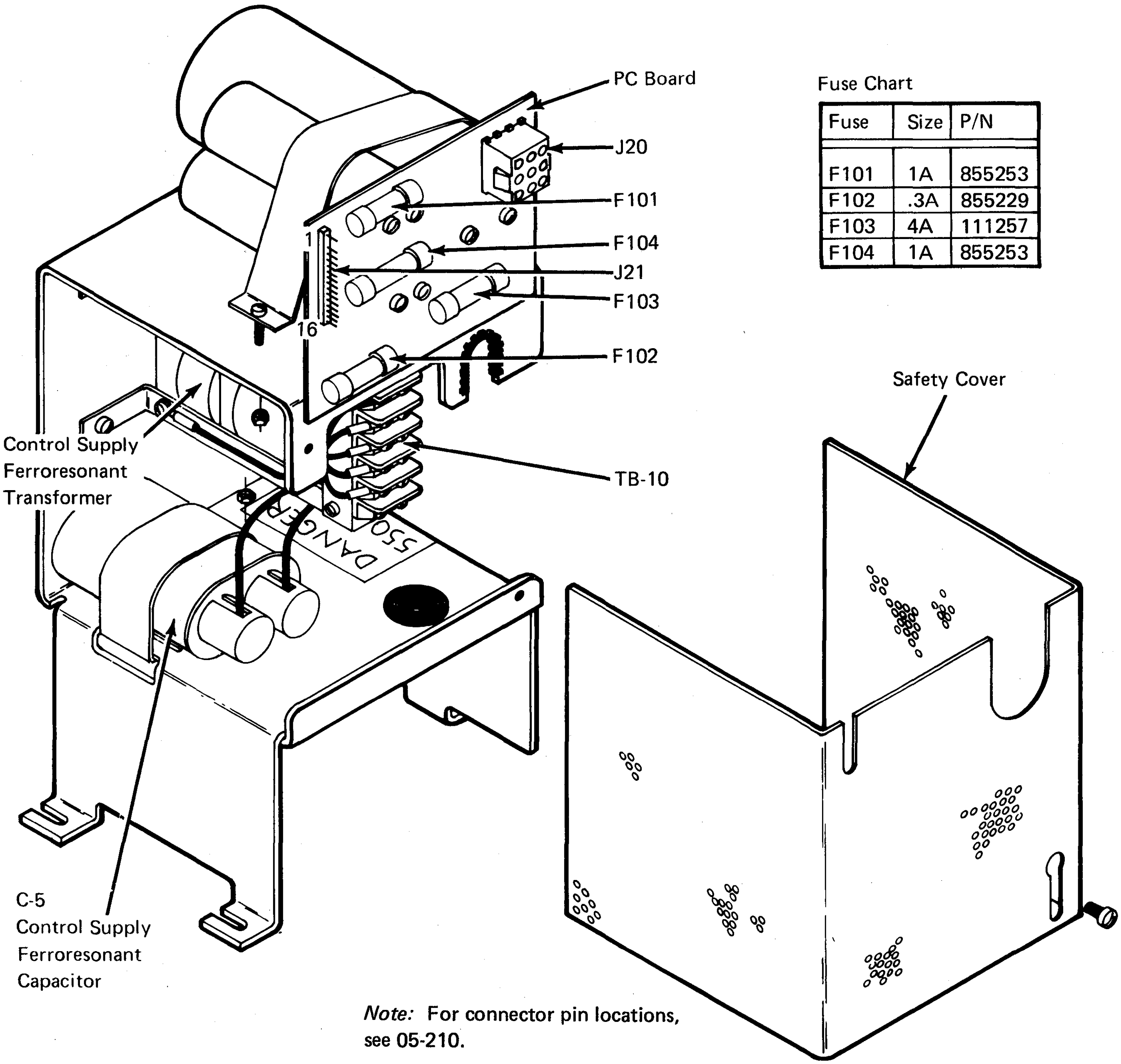
When K1 and K2 are de-activated, a voltage is still present in the circuits that are supplied by the points of the contactors. The voltage is still present because of the charge on the capacitors in the arc-suppression networks across the points of the contactors.

Fuse Chart

Fuse	Size	P/N
CB-1	20A	5565214
F301	4.5A	2495471
F302	0.3A	254628
F201	1.25A	252592
F202	1.25A	252592
F203	2.0A	92734
F204	1.25A	252592
F401	7A	2495463

**Available only in some 50 Hz countries

05-320 Control Supply



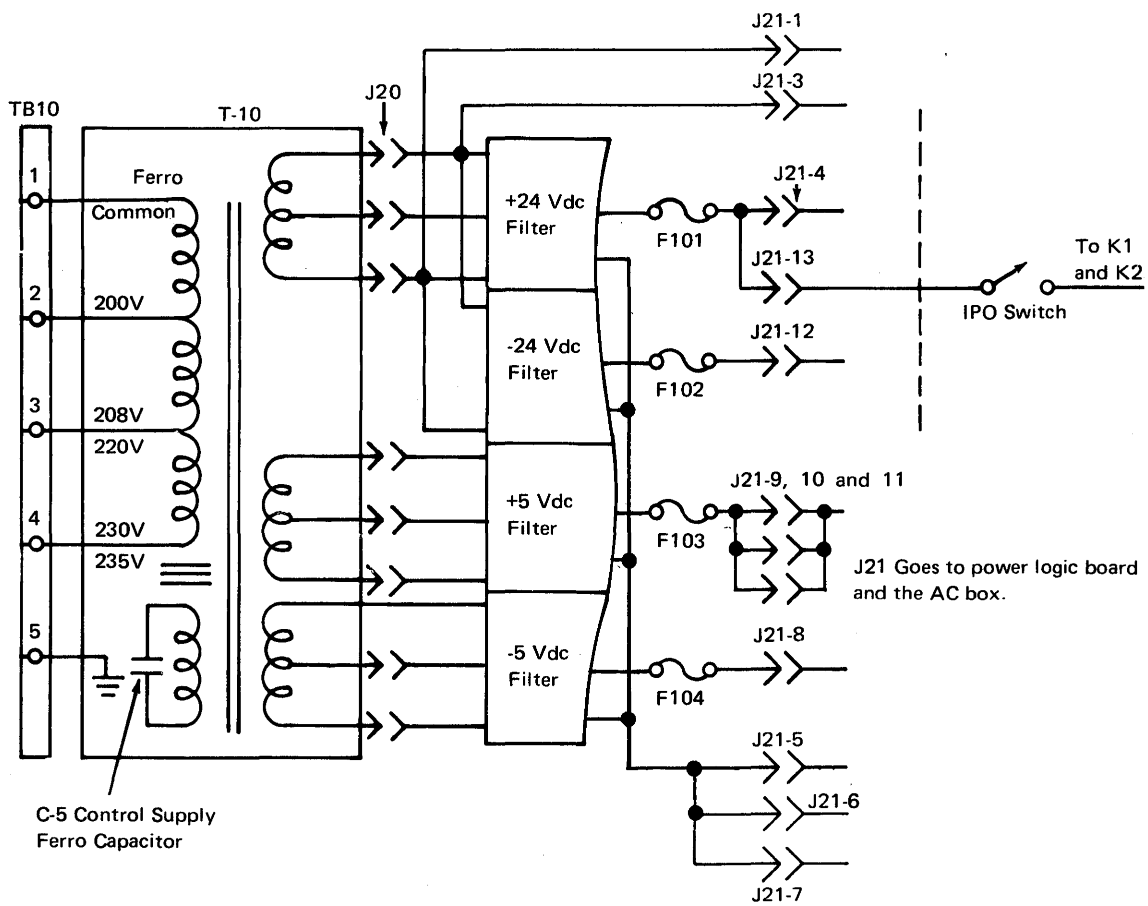
Fuse Chart

Fuse	Size	P/N
F101	1A	855253
F102	.3A	855229
F103	4A	111257
F104	1A	855253

Note: For connector pin locations, see 05-210.

Control Supply (Second Level)

See FSL page YA020.

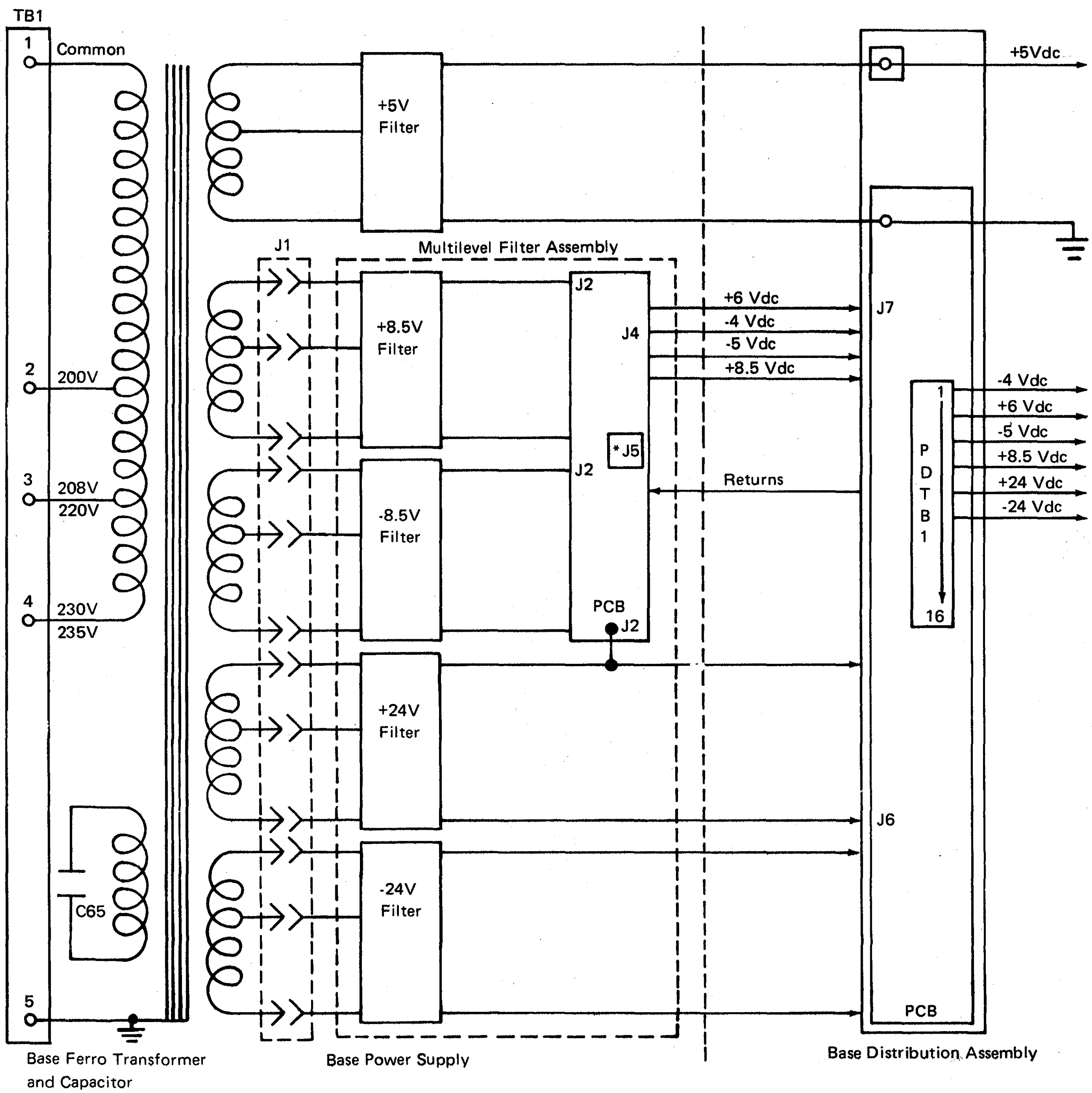


05-330 Base Power Supply and Base Distribution Assembly

The base ferroresonant transformer receives input AC line voltage through CB1, contactor K1 points, fuse 301 and ACTB1 on the AC box. See FSL page YA040.

The transformer has five secondary outputs:

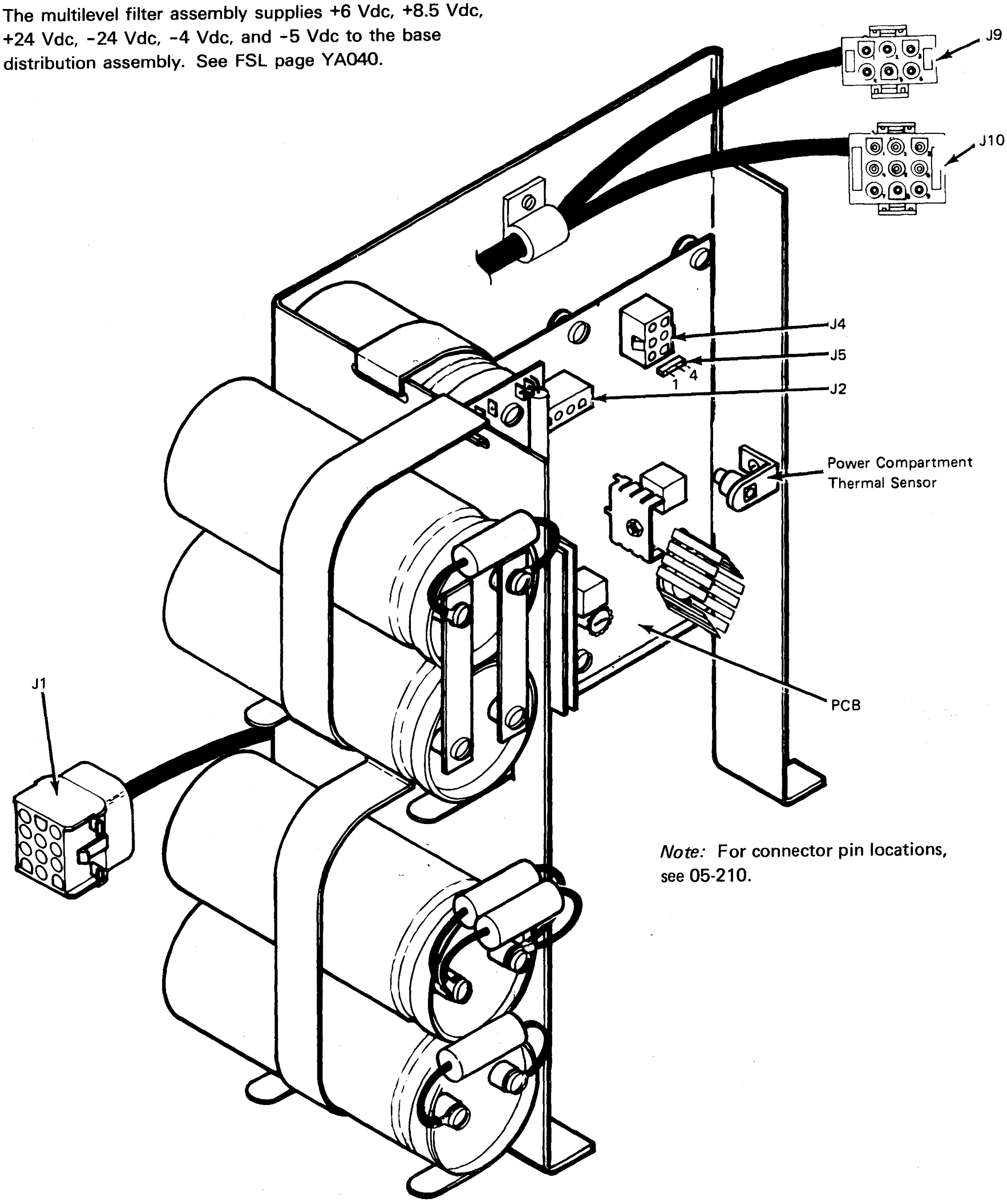
- 5 Vac to the +5V filter assembly
- 8.5 Vac to the multilevel filter assembly for +8.5 Vdc
- 8.5 Vac to the multilevel filter assembly for −8.5 Vdc
- 24 Vac to the multilevel filter assembly for +24 Vdc
- 24 Vac to the multilevel filter assembly for −24 Vdc



* J5 is used to send an overcurrent sense signal to the C-A1 board

05-333 Multilevel Filter Assembly

The multilevel filter assembly supplies +6 Vdc, +8.5 Vdc, +24 Vdc, -24 Vdc, -4 Vdc, and -5 Vdc to the base distribution assembly. See FSL page YA040.

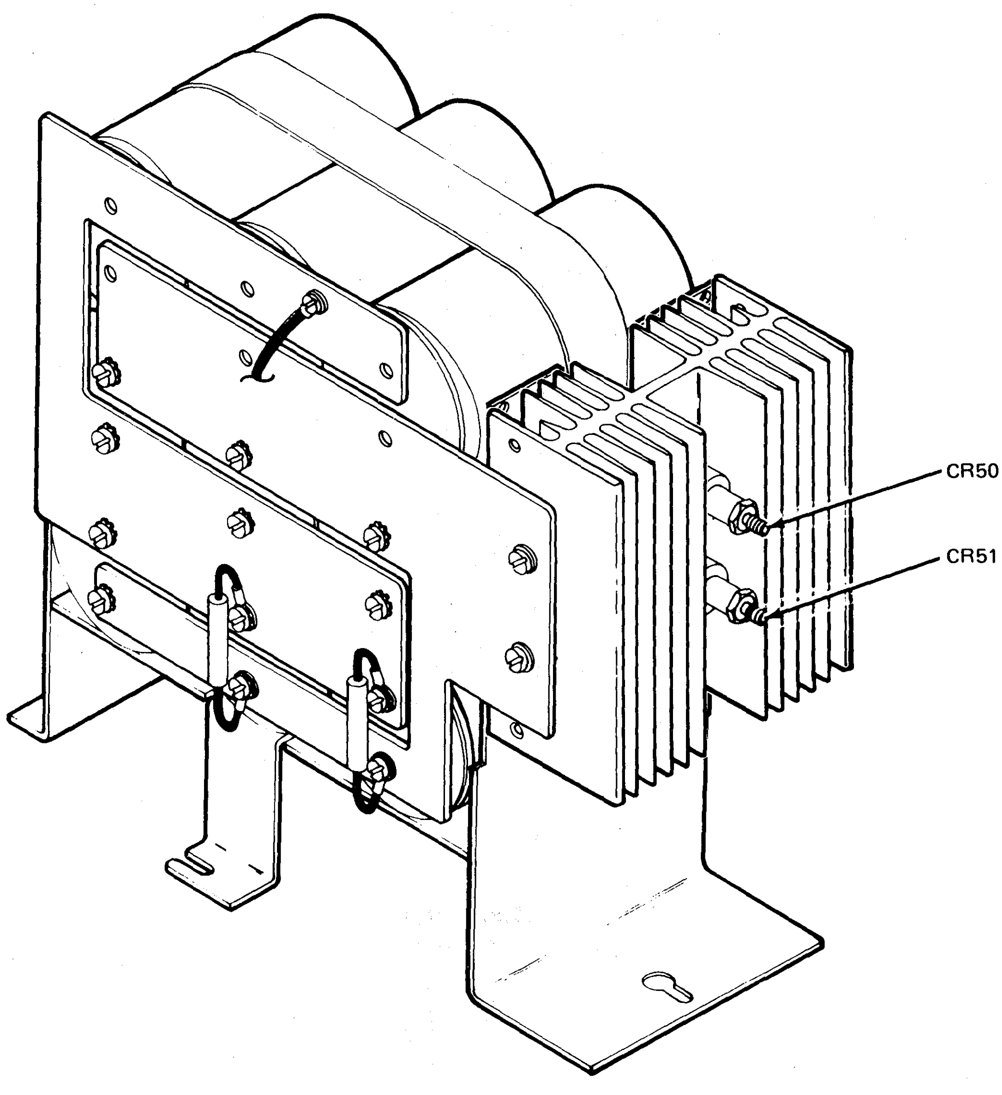


Note: For connector pin locations, see 05-210.

Multilevel Filter Assembly

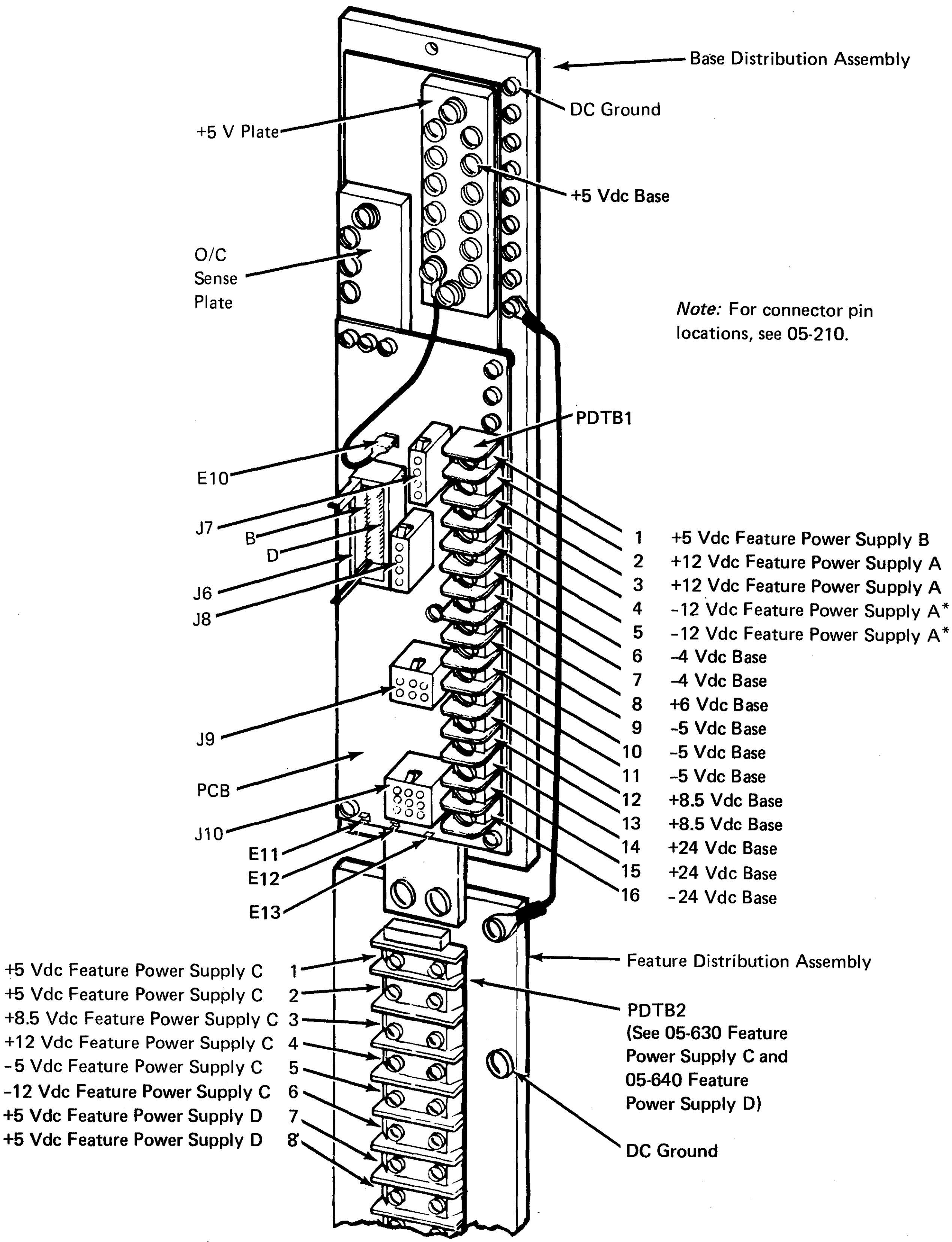
05-335 Base +5V Filter Assembly

See FSL page YA040.



05-360 DC Distribution Assemblies

See FSL pages YA080 and YA090



Note: For connector pin locations, see 05-210.

*Or regulator

05-370 Power Logic Board C-A1

The power logic board contains the following cards:

- *Protect card* C-A1B2 contains circuits for turning power on and off, registers for storing the causes of power failures, and circuits for turning on the Power Check light, Thermal Check light, and displaying the power fault registers in CE byte 0.
- *Base sense card* C-A1C2 contains circuits for sensing undervoltage, overvoltage, and overcurrent conditions for the base power system. Attached to this card is an LED (light-emitting diode) known as the Control Supply Status indicator. When the Lamp Test switch is pressed, the LED comes on only if none of the control supply fuses (F101 through F104) has failed.

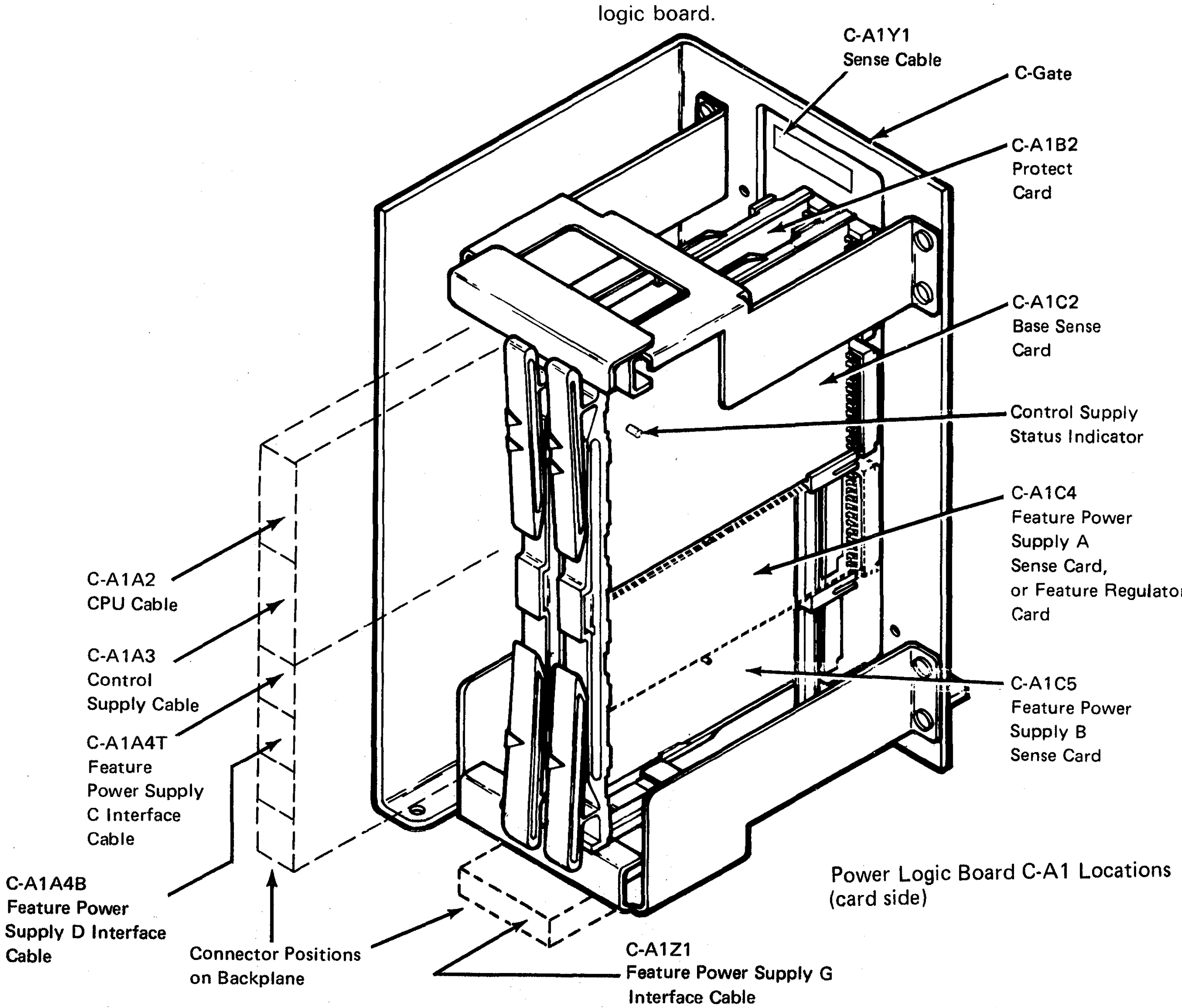
Additional Cards for Optional Features

The 62PC Disk Drive feature or the 2400 BPS Integrated Modem feature adds feature power supply A to the System/34. Sensing the output of the added supply is done by a sense card that goes into C-A1C4 on the power logic board.

Note: If a first or second communications adapter uses the 1200 BPS Integrated Modem feature or the EIA/CCITT feature and the system does not include feature power supply A, a feature regulator card (C-A1C4) must be installed.

The MLCA feature adds feature power supply C to the System/34.

The 1255 MICR Reader/Sorter attachment feature adds feature power supply B to the System/34 if the System/34 also contains either a 62PC disk drive or a 72MD magazine drive. Sensing the output of the added supply is done by a sense card in C-A1C5 on the power logic board.



Power Logic Board C-A1 Locations (card side)

05-400 POWER FAULT INDICATIONS

05-401 System Power-Off Conditions

The system powers off (or fails to power on) if any of the following conditions is present:

1. The temperature rises high enough to open the thermal switch in either the A-gate (117°-127°F) or the power compartment (129°-139°F).
2. The output voltage of any of the supplies is too high (overvoltage).
3. The load on any of the power supplies conducts more current from the power supply than is safe for the load (overcurrent).
4. The output voltage of any of the supplies is too low (undervoltage).
5. An AC input power failure occurs.
6. The IPO switch is turned off.
7. The cards at C-A1C4 or C-A1C5 (if installed) are either not seated correctly or are missing.
8. The cables to feature power supply C, D, or G (if installed) are either not seated correctly or are missing.
9. The Power switch on the operator panel is turned off.

A system power off caused by condition 1 lights the Thermal Check light on the operator panel. A system power off caused by conditions 2 through 7 lights the Power Check light on the operator panel.

05-410 Power Fault Registers

When a Power Check occurs on the System/34, power fault codes that indicate the cause of the fault are stored so that you can display the codes and isolate the cause of the power check.

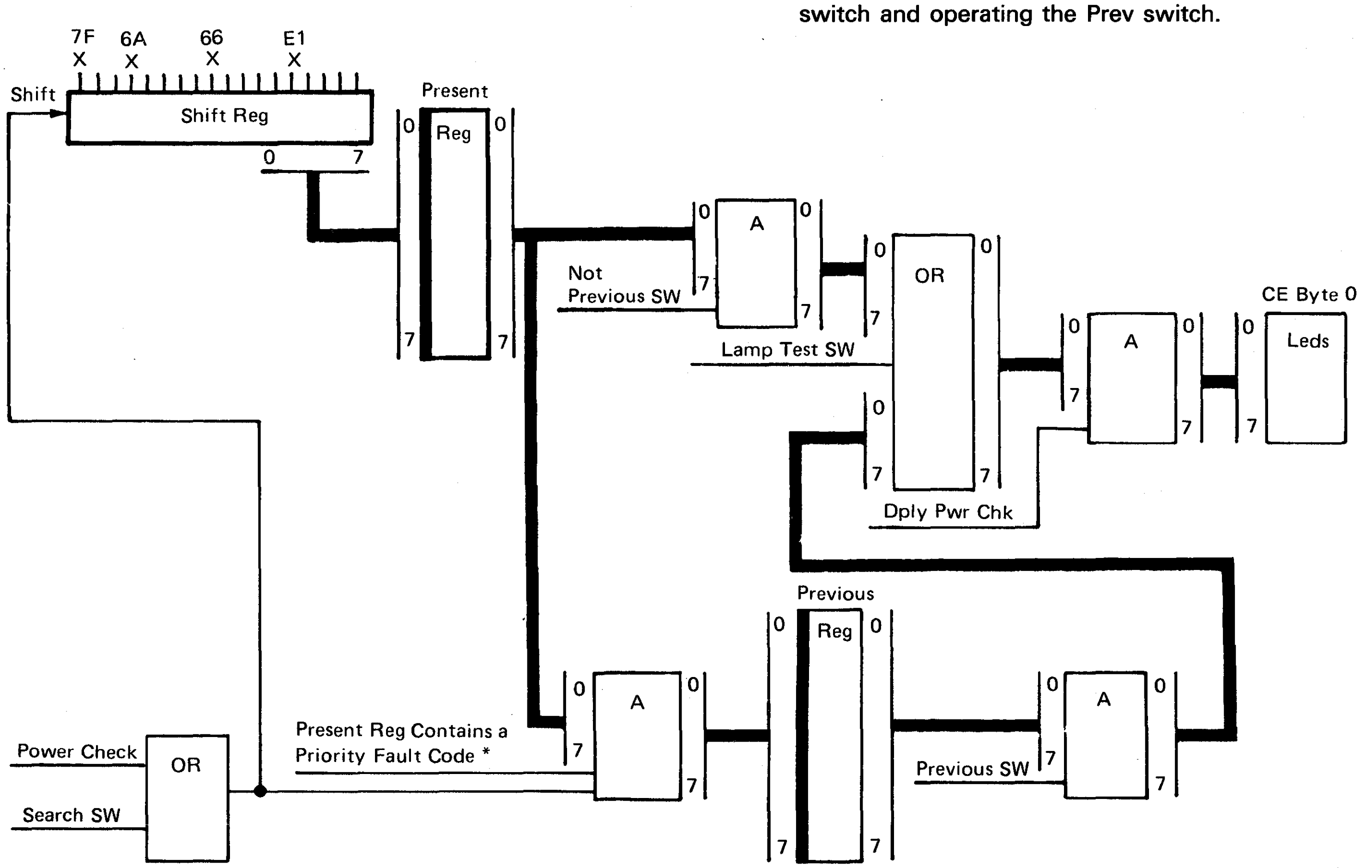
Power fault codes are divided into two groups: priority fault codes and additional fault codes.

Priority fault codes indicate that some power supply was overvoltage, undervoltage, overcurrent, or that a feature sense card is missing. Priority fault codes all have bit 0 active.

Additional fault codes generally further specify the cause of the priority fault by either indicating *which* power supply has the wrong voltage, or by indicating that *all* power supplies have the wrong voltage.

The protect card (C-A1B2) has three registers that store power fault codes when a power check occurs.

1. The shift register:
   - Stores up to 43 fault codes.
   - Stores the priority fault code and any additional fault codes controlled by the sensing circuits on the base sense card, feature sense cards, or feature power supplies during 320 microseconds after a power check.
   - Increments each time a search operation is performed.
2. The present register:
   - Stores one fault code at a time.
   - Stores the fault code each time the shift register increments.
   - Can be displayed by pressing the Dply Pwr Chk switch.
3. The previous register:
   - Stores one priority fault at a time.
   - Is loaded from the present register if the fault code in the present register is a priority fault code (bit 0 on) and either a power check occurs or a search operation is performed.
   - Can be displayed by pressing the Dply Pwr Chk switch and operating the Prev switch.



* Bit 0 On

Three CE panel switches are used to display this information in byte 0 of the CE panel display. The switches are:

- The Dply Pwr Chk switch
- The Pwr Fault Dply (two switches: Prev and Search)

CAUTION
Information concerning power supply failures that is stored in the power failure latches is lost if all system power is removed by turning off the circuit breaker (CB1).

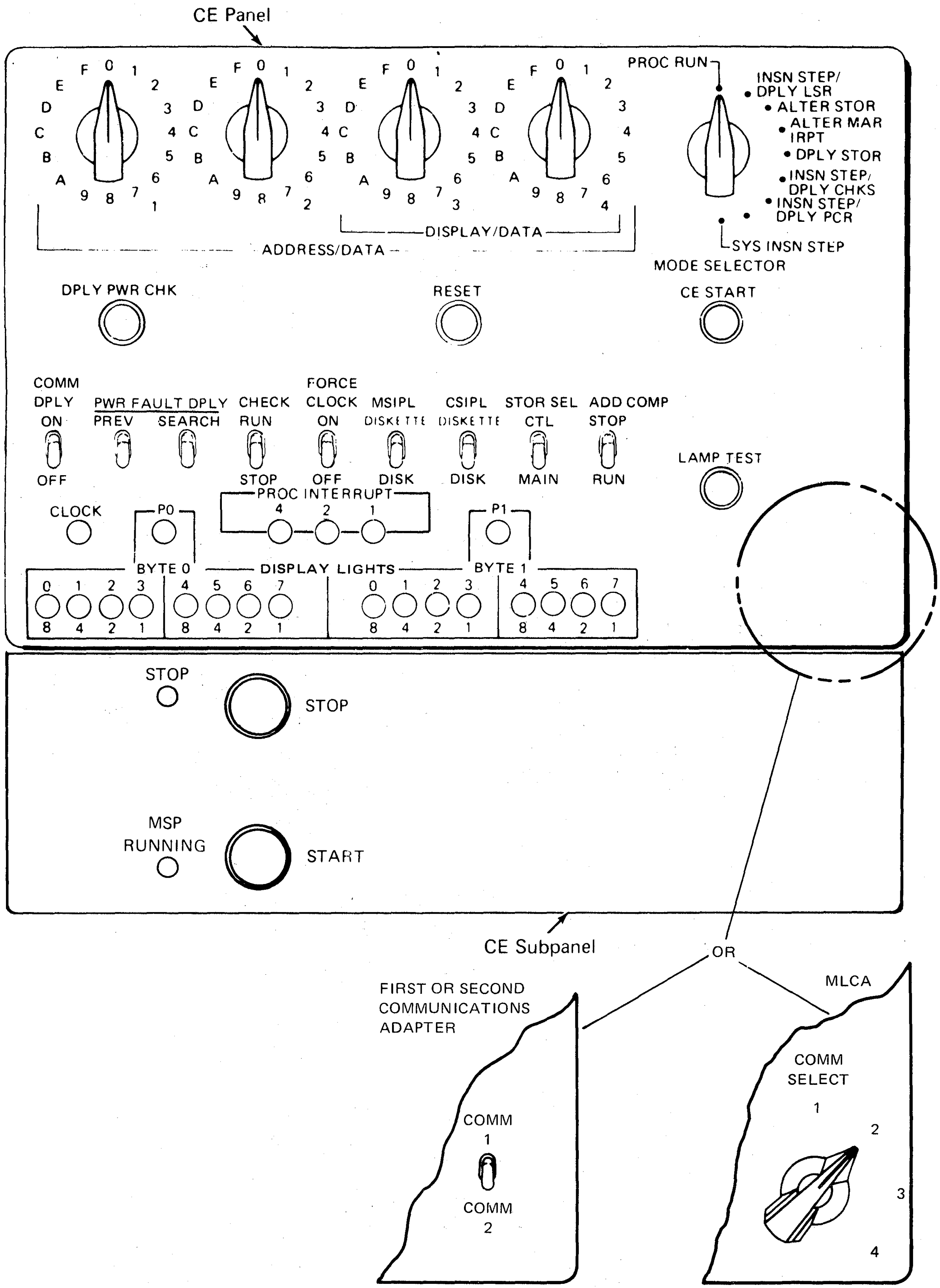
05-420 Dply Pwr Chk Switch

CAUTION
Do not operate the Search switch until you have displayed and recorded the previous power fault register. Operating the Search switch moves the present power fault register data to the previous power fault register.

When a power check occurs, press Lamp Test and look at the Control Supply Status indicator on the card at C-A1C2 (see paragraph 05-370) to ensure that it lights with Lamp Test. If the indicator does not light, the indicators in CE byte 0 (when the Dply Pwr Chk switch is pressed) are not reliable. If the Control Supply Status indicator does not light when Lamp Test is pressed, the power check was probably caused by a fuse on the control supply. If the Control Supply Status indicator does light with Lamp Test, press Dply Pwr Chk to display the cause of the power check in CE byte 0.

1. Press Dply Pwr Chk and operate the Prev switch (see paragraph 05-431) to display the cause of the power check that occurred before the present power check.

2. Press Dply Pwr Chk and operate the Search switch (see paragraph 05-432) to display all of the additional fault conditions that caused the present power check (one display for each operation of the Search switch). When the CE byte 0 lights display hexadecimal 7F, the search is complete and all of the conditions have been displayed.


CE Panel
PROC RUN
INSN STEP/ DPLY LSR
ALTER STOR
ALTER MAR IRPT
DPLY STOR
INSN STEP/ DPLY CHKS
INSN STEP/ DPLY PCR
SYS INSN STEP
MODE SELECTOR
ADDRESS/DATA
DISPLAY/DATA
DPLY PWR CHK
RESET
CE START
COMM DPLY
ON
OFF
PWR FAULT DPLY
PREV
SEARCH
CHECK
RUN
STOP
FORCE CLOCK
ON
OFF
MSIPL
DISKETTE
DISK
CSIPL
DISKETTE
DISK
STOR SEL
CTL
MAIN
ADD COMP
STOP
RUN
LAMP TEST
CLOCK
P0
PROC INTERRUPT
P1
BYTE 0
DISPLAY LIGHTS
BYTE 1
STOP
STOP
MSP RUNNING
START
CE Subpanel
OR
FIRST OR SECOND COMMUNICATIONS ADAPTER
COMM 1
COMM 2
MLCA
COMM SELECT

05-430 Pwr Fault Dply Switches

05-431 Prev Switch

Pressing Dply Pwr Chk when the Prev switch is in the normal (down) position displays the cause of the latest power failure in CE byte 0. Bits in CE byte 0 have the meanings shown in the following chart.

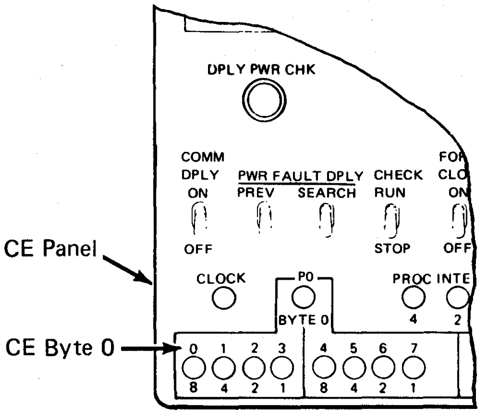
Pressing Dply Pwr Chk while holding the Prev switch in the Prev position (up) displays the cause of the preceding power failure in CE byte 0.

05-432 Search Switch

Hold Dply Pwr Chk while operating the Search switch to the Search position (up) to display other power supply failures that occurred during the 320 microsecond period after the power check. A different failing condition is displayed for each time the Search switch is operated. When the search is complete, CE byte 0 contains 0111 1111 (hexadecimal 7F).

Note: The search function will not work unless the system power is off because of a power fault.

When you have determined which power supply is causing the power check, use the manual bring-up procedure (see paragraph 05-550) to force power on long enough to measure the output of the failing power supply.



Type of Failure

	Code	Type of Failure
Priority Fault Codes	1 0 0 1 x x x x	**Feature Sense Card or Cable Missing (hex 9)**
	1 0 1 0 x x x x	Over Voltage (hex A)
	1 1 0 0 x x x x	Over Current (hex C)
	1 1 1 0 x x x x	Under Voltage (hex E)
Additional Fault Codes	0 0 0 1 x x x x	**Feature Sense Card or Cable Missing (hex 1)**
	0 0 1 0 x x x x	Over Voltage (hex 2)
	0 1 0 0 x x x x	Over Current (hex 4)
	0 1 1 0 x x x x	Under Voltage (hex 6)

Failing Voltage Level or Supply

0 0 0 1	+5V Power Supply (hex 1)
0 0 1 0	+8.5V Power Supply (hex 2)
0 0 1 1	+24V Power Supply (hex 3)
0 1 0 0	-24V Power Supply (hex 4)
0 1 0 1	+6V Regulator (hex 5)
0 1 1 0	-4V Regulator (hex 6)
0 1 1 1	-5V Regulator (hex 7)
1 0 0 0	+12V Feature Power Supply A (hex 8)
1 0 0 1	-12V Feature Power Supply A or Feature Regulator Card (hex 9)
1 0 1 0	+5V Feature Power Supply B (hex A)
1 0 1 1	Feature Power Supply C or Cable (hex B)
1 1 0 0	Feature Power Supply D (hex C)
1 1 1 1	Feature Power Supply G (hex F)

Miscellaneous Power Fault Codes

0 0 0 0 0 0 0 0	No faults since the last time AC power was restored (hex 00)
0 1 1 1 1 1 1 1	Search Complete (hex 7F)

Thermal Check Codes (Thermal Check LED on)

1 1 1 0 0 0 0 1	Thermal Check when power was off (hex E1)
1 1 1 1 1 1 1 1	Thermal Check when power was on (hex FF)

05-500 IMMEDIATE POWER OFF (IPO)

Operating the IPO switch causes an undervoltage condition that turns on the Power Check light on the operator panel.

When the IPO switch is turned off, contactors K1, K2, and K3 (50 Hz only) de-activate. When the contactor points open, AC line voltage is removed from the following places:

- The gate and power fans
- The diskette motor
- The base ferroresonant transformer and capacitor
- Any optional feature power supplies that are installed
- The feature AC box and K4 (if installed)
- The disk motors

DANGER
Set the circuit breaker (CB1) to Off if you want *all* voltages off. With the IPO switch turned off and CB1 on, AC line voltage is still present at the control supply and DC output voltages from the control supply are present at the A-A1 board, the operator panel, and the CE panel. Because of the charge on the capacitors in the arc-suppression networks across K1, K2, and K4, voltage is still present on all circuits supplied by the contactor points when K1, K2, and K4 are de-activated (see paragraphs 05-315 and 05-670).

05-550 MANUAL BRING-UP PROCEDURE

Use the following procedure to measure the output voltage of power supplies that are causing power checks.

1. Set the IPO switch to O.
2. Attach the CE multimeter to the output of the failing power supply.
3. Attach a jumper from C-A1B2G13 to C-A1B2J08 on the power logic board.
4. Set the IPO switch to I only long enough to read the scale on the multimeter, and then set the IPO switch back to O.
5. Remove the jumper and set the IPO switch to I.

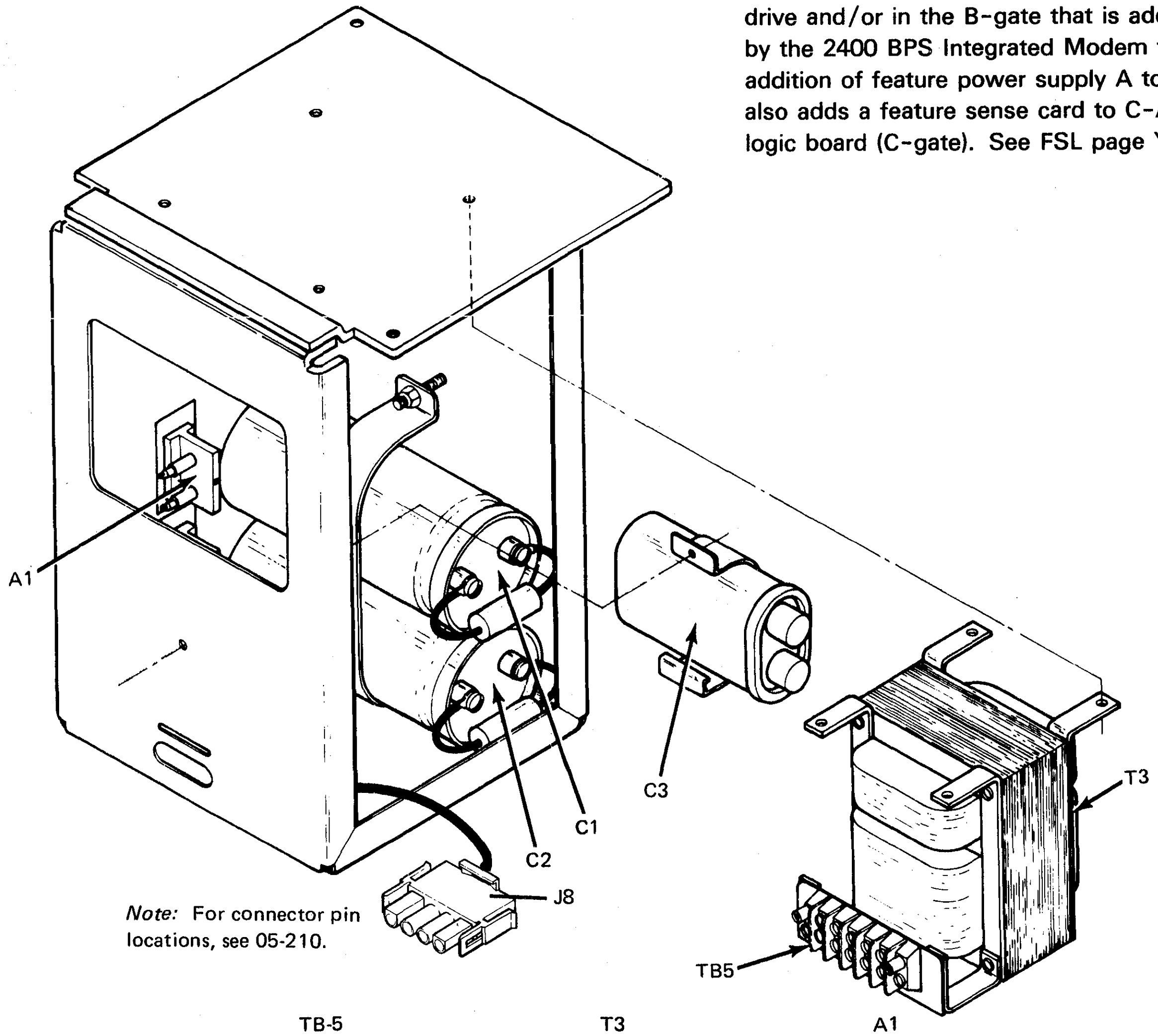
05-600 POWER SUPPLIES FOR OPTIONAL FEATURES

Some optional features that are added to the System/34 need additional power supplies or voltages that are not supplied by the base power supply. The following chart indicates which features need the extra power:

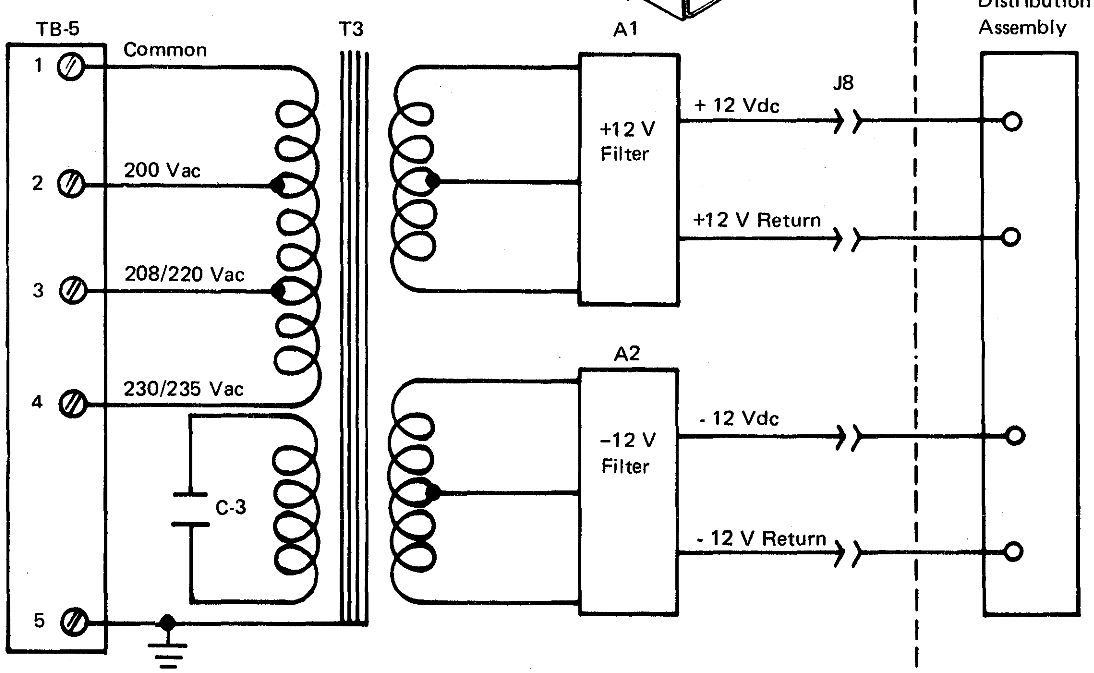
Optional Feature	Power Changes
2400 BPS Integrated Modem or 62PC Disk Drives, A or B	Add feature power supply A
1200 BPS Integrated Modem or Electronic Industries Association (EIA) (not MLCA)	Add feature regulator card if feature power supply A is not installed
1255 MICR Reader/Sorter and either the 72MD or 62PC	Add feature power supply B
MLCA A-B3 Board	Add feature power supply C
Expanded Memory 256K bytes	Add feature power supply D
62PC Disk Drives, C or D	Add feature power supply G

05-610 Feature Power Supply A

Feature power supply A is a +12 Vdc and -12 Vdc power supply. Its outputs are used by the 62PC disk drive and/or in the B-gate that is added to the system by the 2400 BPS Integrated Modem feature. The addition of feature power supply A to the System/34 also adds a feature sense card to C-A1C4 in the power logic board (C-gate). See FSL page YA100.



Note: For connector pin locations, see 05-210.

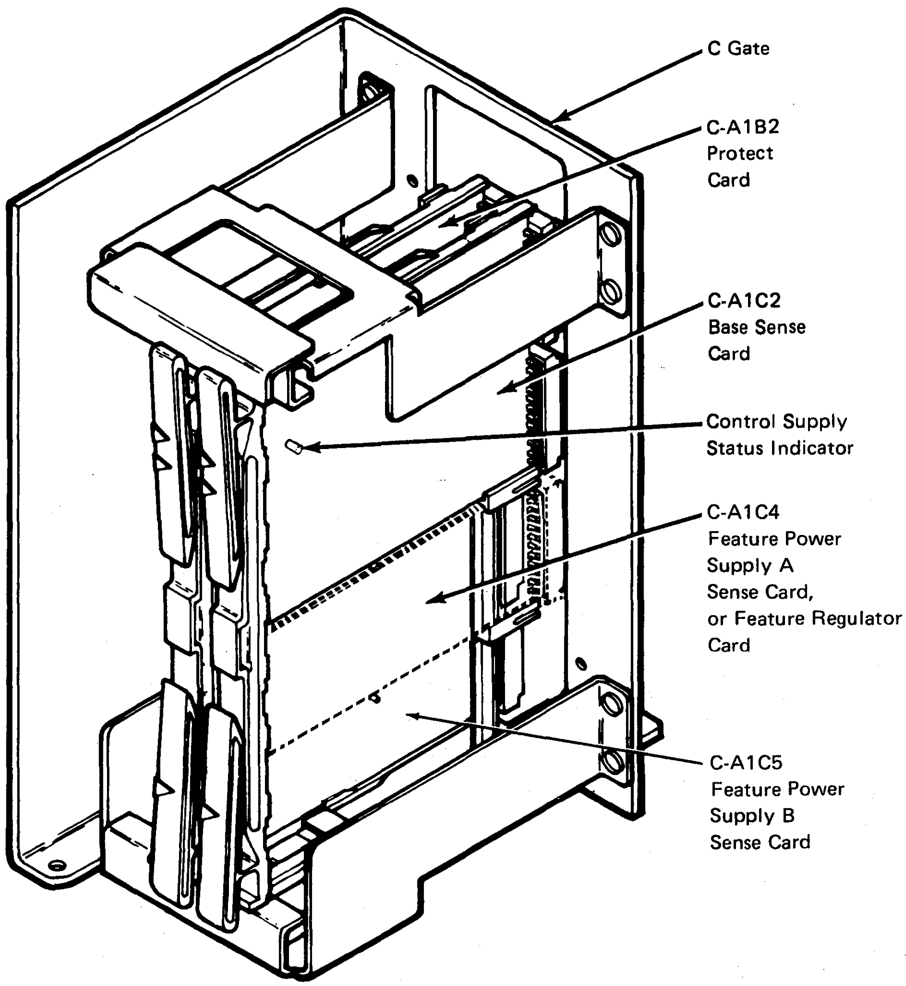


Feature Power Supply A (second level)

05-615 Feature Regulator Card

The feature regulator card is added to C-A1C4 and generates a -12 Vdc by using the -24 Vdc from the base power supply. When the first or second communications adapter is installed, the -12 Vdc is used by the card added to the System/34 by the 1200-bps or EIA modems.

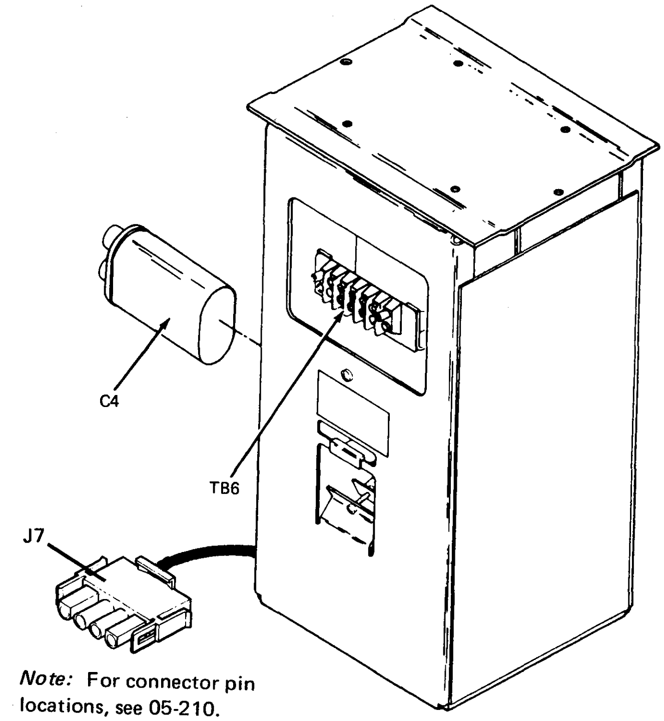
Only one of the following features (the 2400 BPS Integrated Modem feature, the 1200 BPS Integrated Modem feature or the EIA feature) can be installed.



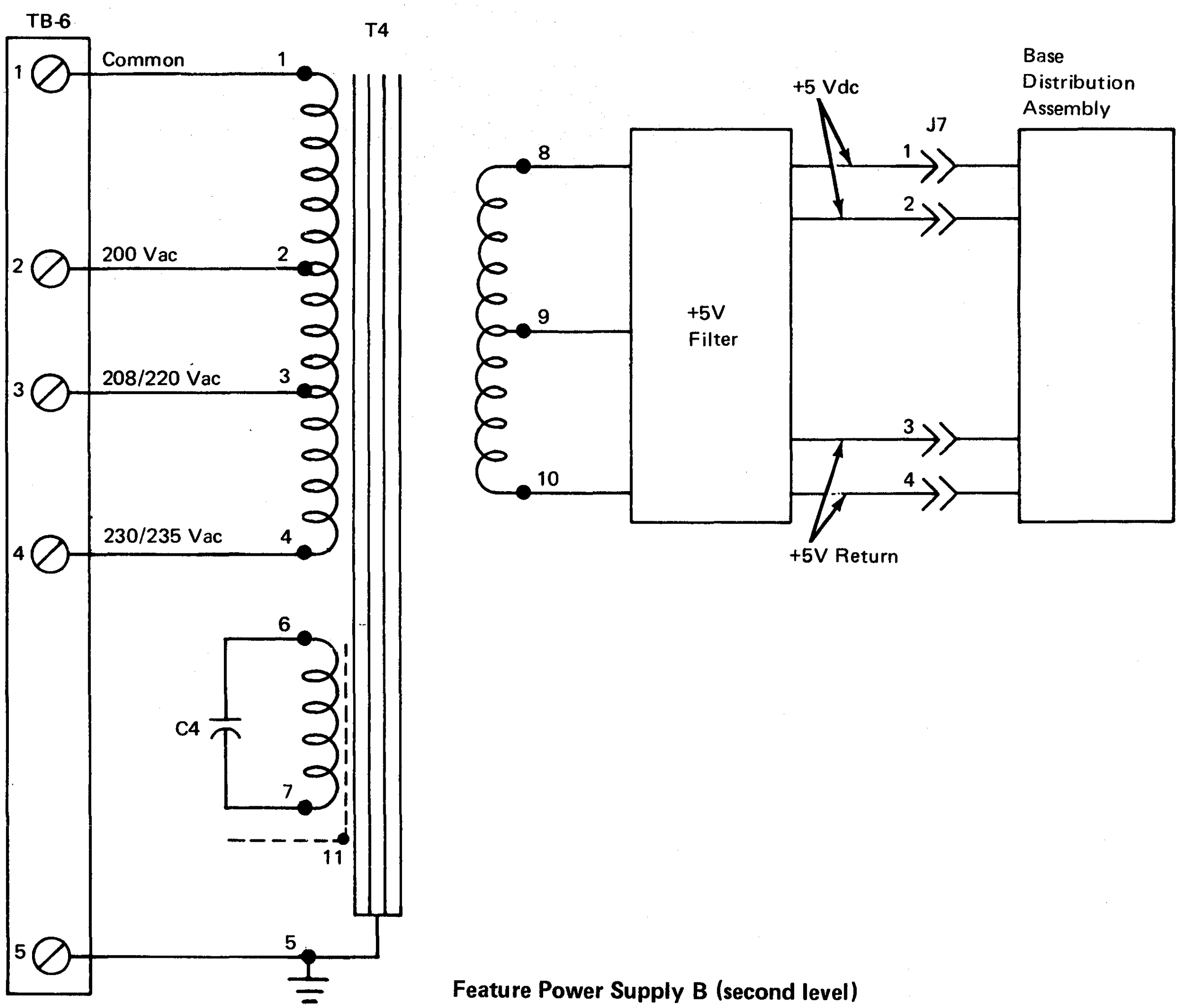
Power Logic Board C-A1 Locations
(card side)

05-620 Feature Power Supply B

Feature power supply B is a +5 Vdc power supply. Its output is used in the A-A3 board when the 1255 MICR Reader/Sorter attachment is added to the System/34. Its output is also used by either the 72MD diskette magazine drive or the 62PC disk drive. The addition of feature power supply B also adds a sense card to C-A1C5. See FSL page YA120.



Feature Power Supply B

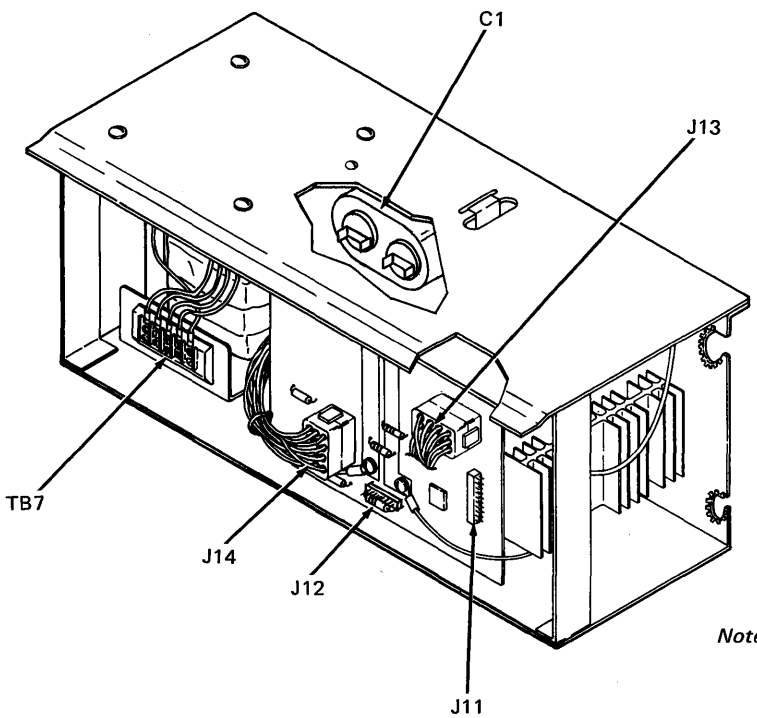


Feature Power Supply B (second level)

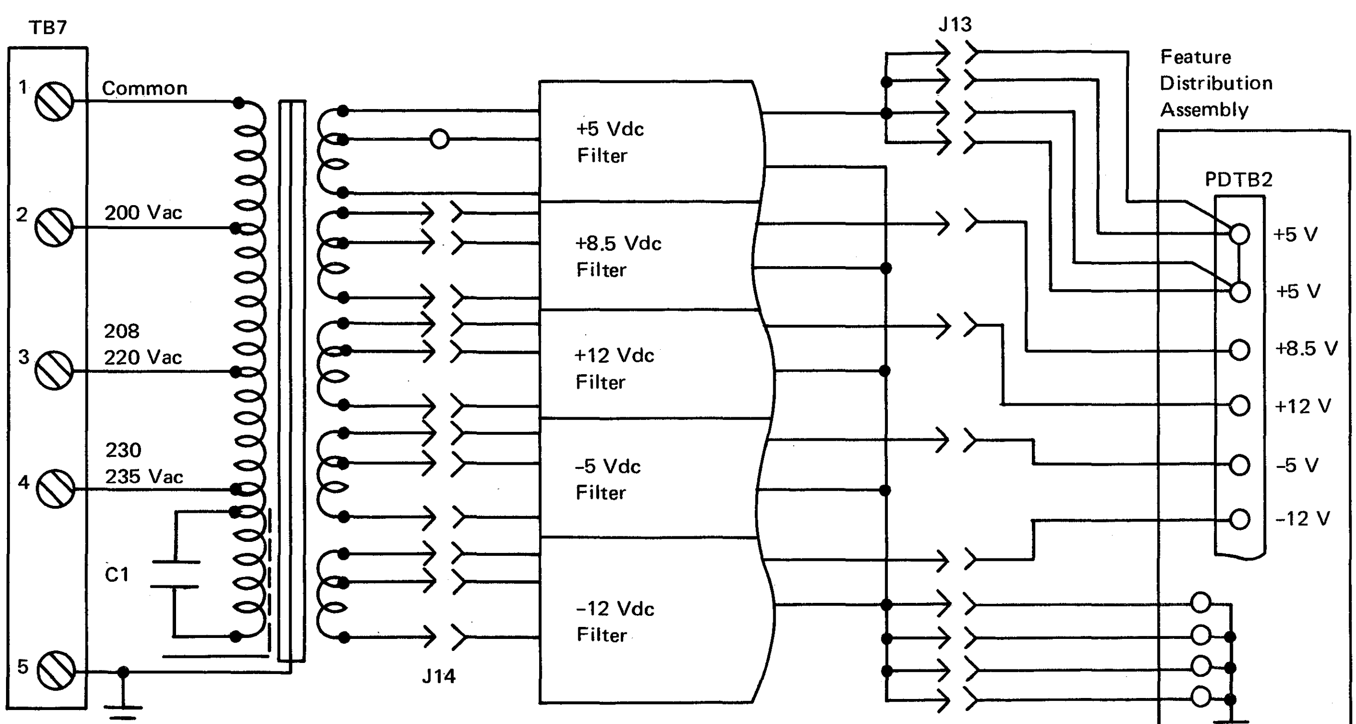
05-630 Feature Power Supply C

Feature power supply C is a +5 Vdc, +8.5 Vdc, +12 Vdc, -5 Vdc, and -12 Vdc power supply. Its output is used at the A-B3 board when added to the System/34. The addition of feature power supply C also needs the feature distribution assembly if not already installed. See FSL page YA130.

05



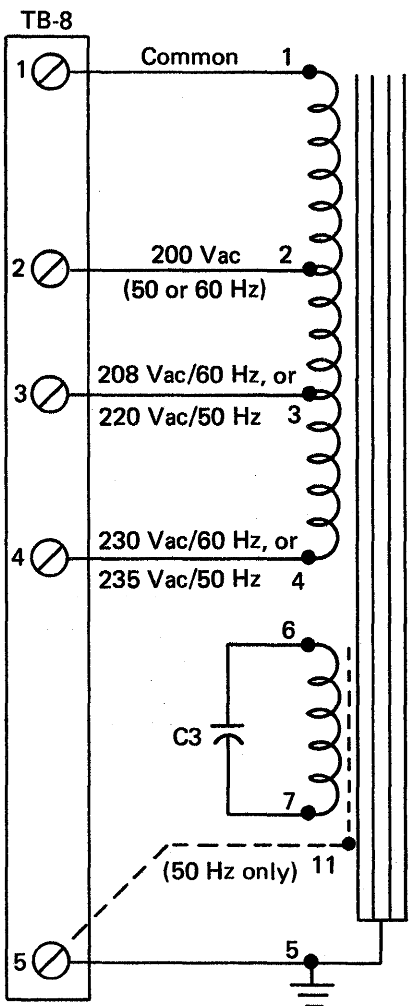
Note: For connector pin locations, see 05-210.

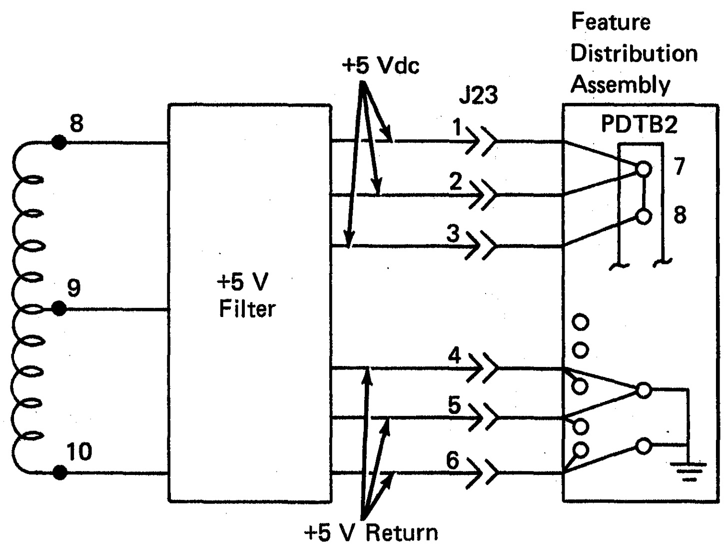


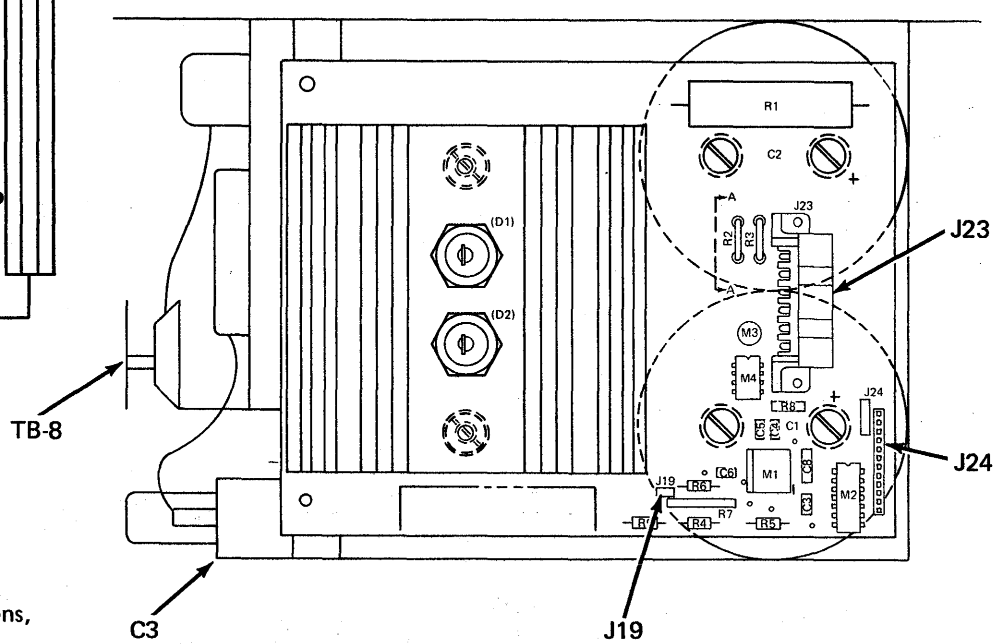
Feature Power Supply C (second level)

05-640 Feature Power Supply D

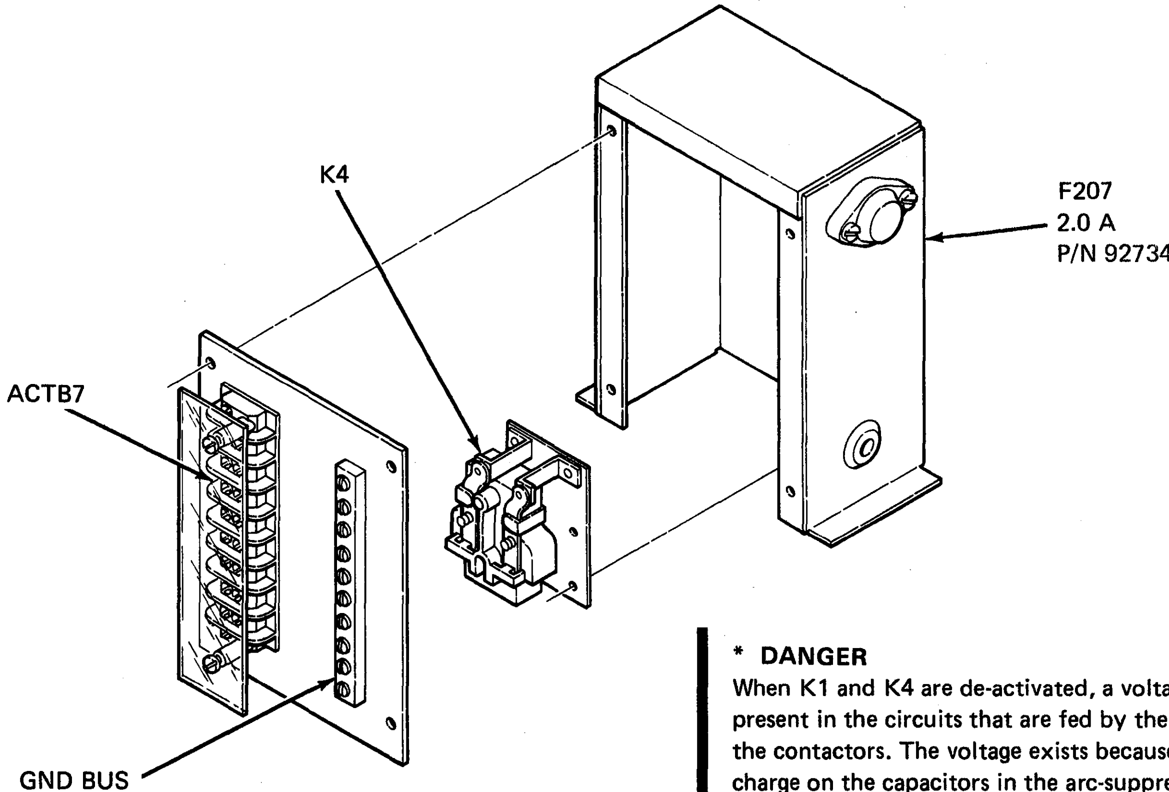
Feature power supply D is a +5 Vdc power supply. Its output is used on the A-A1 board when memory is expanded to be greater than 128K bytes. Feature power supply D also requires adding the feature distribution assembly if it is not already installed. See FSL page YA140. The circuit board of feature power supply D contains circuits for sensing undervoltage, overvoltage, and overcurrent conditions.



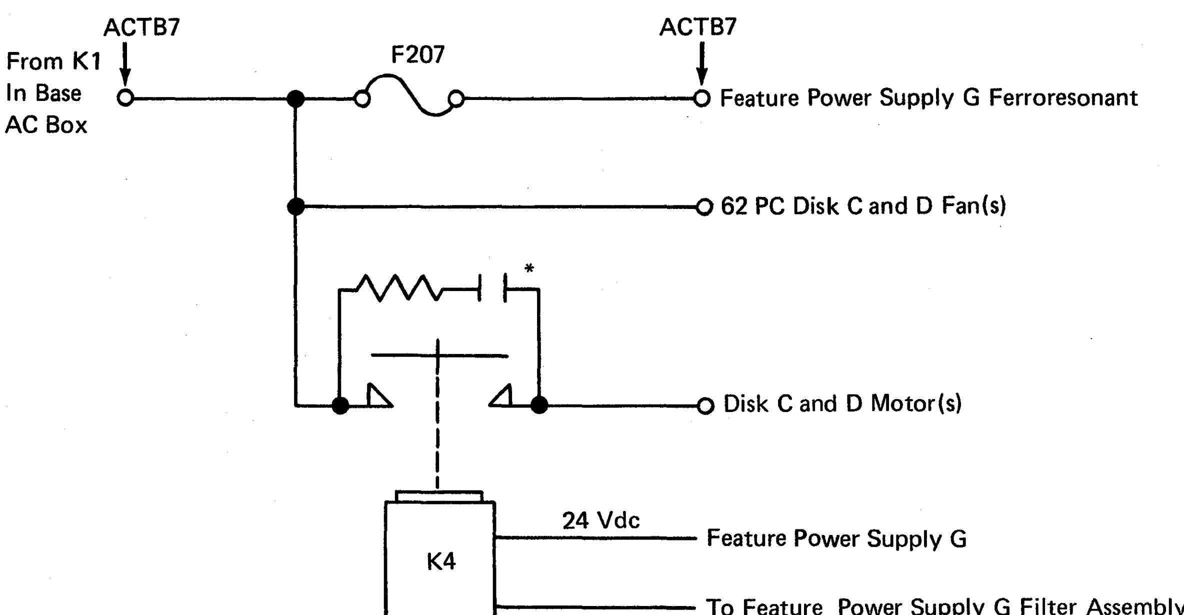




Note: For connector pin locations, see 05-210.



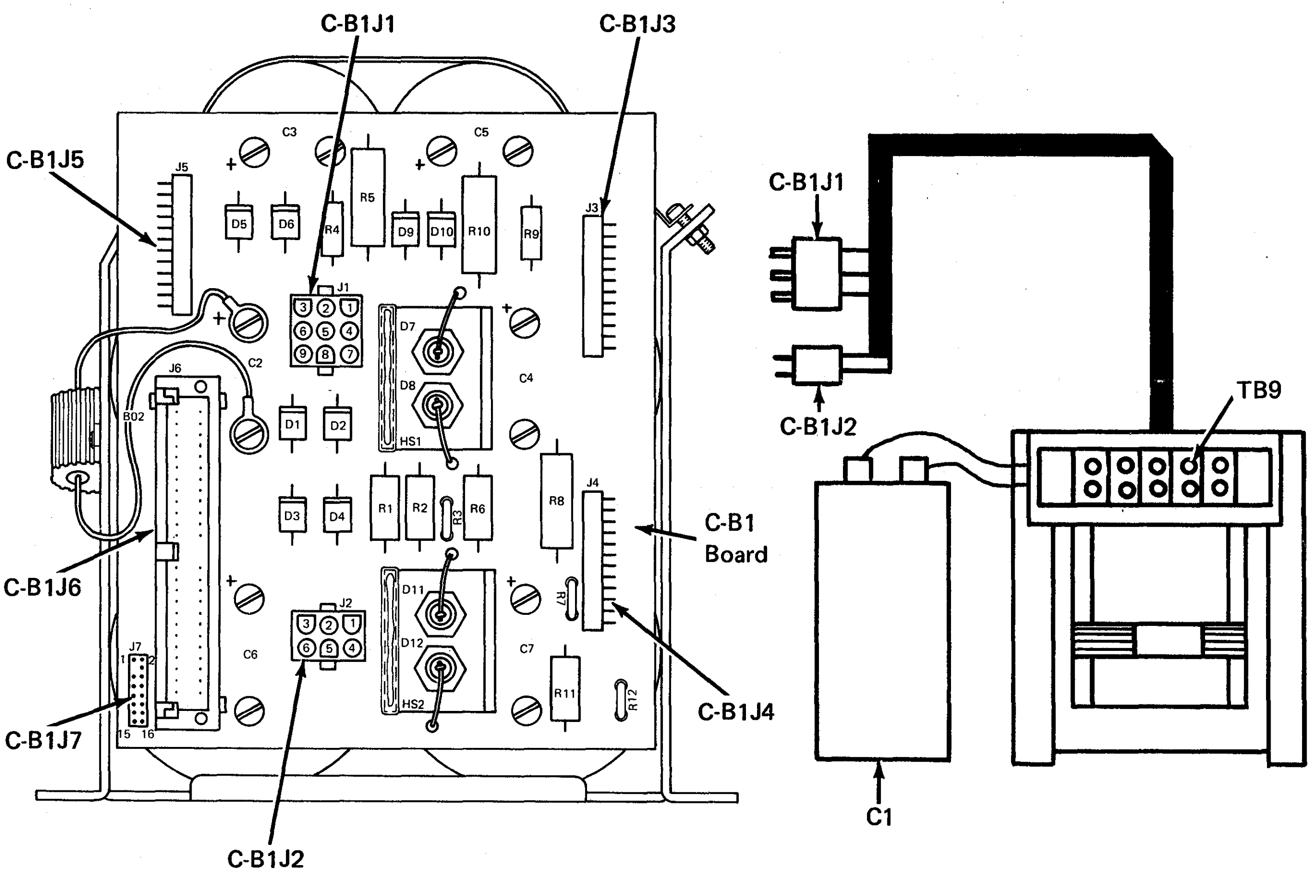
*** DANGER**
When K1 and K4 are de-activated, a voltage is still present in the circuits that are fed by the points of the contactors. The voltage exists because of the charge on the capacitors in the arc-suppression networks across the points of the contactors.



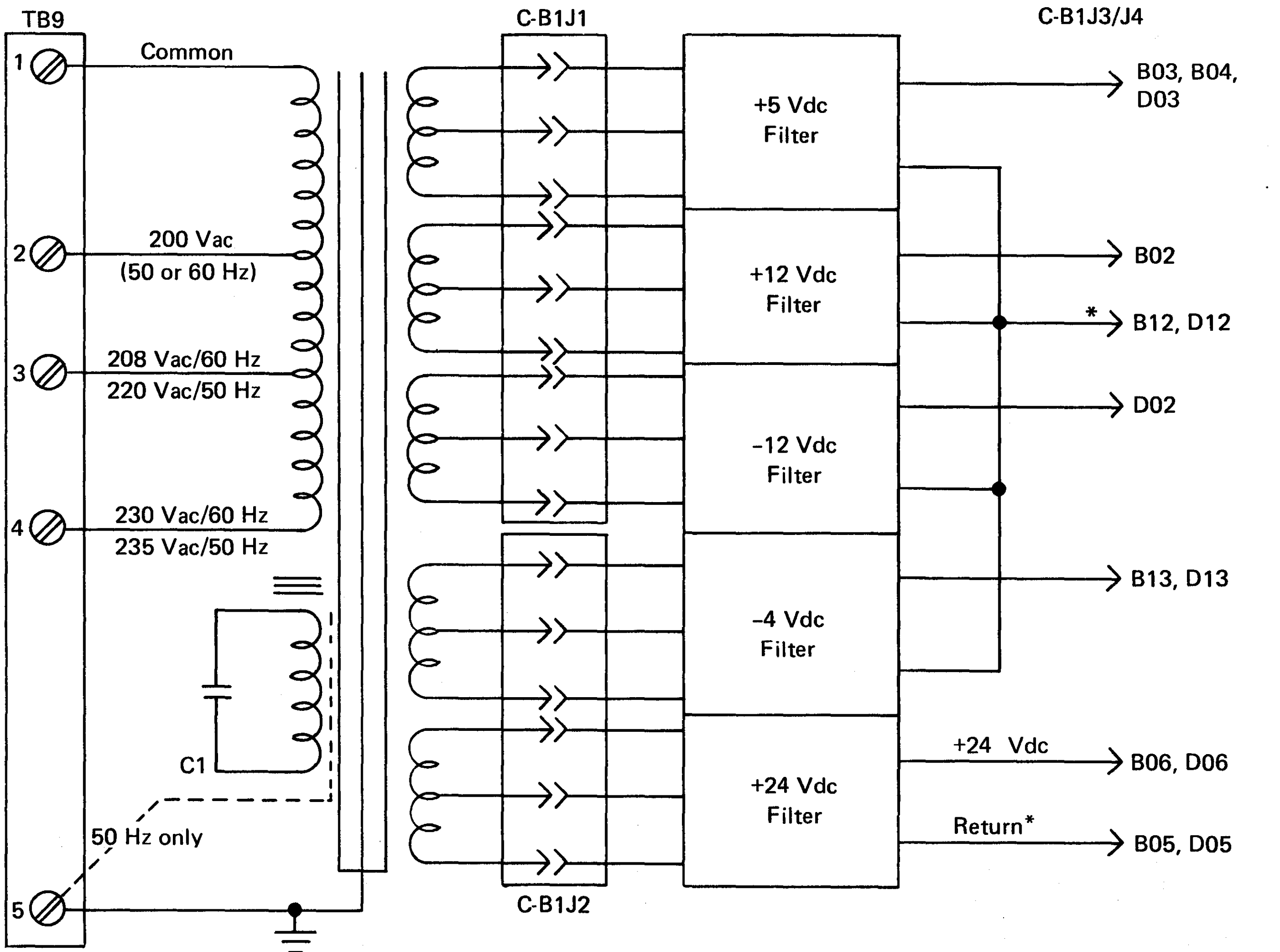
See FSL YA010

05-680 Feature Power Supply G

Feature power supply G produces +5 Vdc, +12 Vdc, +24 Vdc, -4 Vdc, and -12 Vdc from the filter assembly. These voltages are used by the third and fourth 62PC disk drives when installed. See FSL YA180. Feature power supply G requires a sense card in J6. See FSL YA182 and YA184.



Note: For connector pin locations, see 05-210.



*Return line (B05, D05) for +24 Vdc is connected to other return line (B12, D12) within J4 connector.

05-700 SYSTEM VOLTAGE DISTRIBUTION

System voltage distribution is shown on FSL pages AFxxx.

05-710 Power Supply Voltage Tolerance Chart

Power Supply Voltage Tolerance Chart[1]

Voltage	Voltage Tolerance Ranges						
	Base	Reg	Feature A	Feature B	Feature C	Feature D	Feature G
-4 Vdc	-3.92 -4.16						-3.74 -4.42
+5 Vdc	4.69 5.52			4.65 5.52	4.65 5.50	4.70 5.52	4.68 5.52
-5 Vdc	-4.70 -5.50				-4.625 -5.50		
+6 Vdc	5.64 6.60						
+8.5 Vdc	7.86 9.35				7.86 9.35		
+12 Vdc			11.10 13.20		11.10 13.20		11.04 13.20
-12 Vdc		-11.04 -13.20	-11.04 -13.20		-11.04 -13.20		-11.04 -13.20
+24 Vdc	22.08 26.40						22.56 26.40
-24 Vdc	-22.08 -26.40						
Ground							

Note: Over voltage is that voltage farthest from 0 V; under voltage is that voltage nearest to 0 V.

[1]Measure at the DC distribution assemblies (base or feature)