IBM Maintenance Library

VOLUME 01 MAINTENANCE ANALYSIS PROCEDURE	VOLUME 02 MAINTENANCE ANALYSIS PROCEDURE	VOLUME 03 MAINTENANCE ANALYSIS PROCEDURE	VOLUME 13/16 SUPPLEMENT MAINTENANCE INFORMATION	VOLUME 17 GENERAL INFORMATION	VOLUME 18 GENERAL INFORMATION
START EXIT UU = 00 02	UU = 1X	UU = 4X 5X EX FX	LOCATIONS TOOLS REMOVAL/ REPLACEMENT ADJUSTMENTS SERVICE AIDS DISKETTE DRIVE PROCESSOR POWER	GENERAL DESCRIPTION FUNCTIONAL UNITS DIAGNOSTIC INFORMATION PROCESSOR LOGS SYSTEM TESTS FEATURES	CONSOLE FUNCTIONS INDEX INSTALLATION

4341 Maintenance Analysis Procedures

EC 376695 16Aug79 EC 379585 14Sep79	PN 5666447 1 of 1	SEQ3AA

Power Entry Map.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
F600	B	5	018
0000	A	3	001
1003	E	4	006
1003	I	10	039
1012	B	5	018
1012	R	8	025
11FF	B	5	018
11FF	I	10	039
11FF	R	8	025
1101	B	5	018
1101	I	10	039
1101	R	8	025
1102	B	5	018
1102	I	10	039
1102	R	8	025
1103	B	5	018
1103	I	10	039
1103	R	8	025
1110	B	5	018
1110	I	10	039
1110	R	8	025
1118	B	5	018
1118	I	10	039
1118	R	8	025
1120	B	5	018
1120	I	10	039
1120	R	8	025
1126	B	5	018
1126	I	10	039
1126	R	8	025
1131	B	5	018
1131	I	10	039
1131	R	8	025
1132	B	5	018
1132	I	10	039
1132	R	8	025
1134	B	5	018
1134	I	10	039
1134	R	8	025

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1138	B	5	018
1138	I	10	039
1138	R	8	025
1140	B	5	018
1140	I	10	039
1140	R	8	025
1143	B	5	018
1143	I	10	039
1143	R	8	025
1144	B	5	018
1144	I	10	039
1144	R	8	025
1146	B	5	018
1146	I	10	039
1146	R	8	025
1152	B	5	018
1152	I	10	039
1152	R	8	025
1161	B	5	018
1161	I	10	039
1161	R	8	025
1165	B	5	018
1165	I	10	039
1165	R	8	025
1170	B	5	018
1170	I	10	039
1170	R	8	025
1171	B	5	018
1171	I	10	039
1171	R	8	025
1172	B	5	018
1172	I	10	039
1172	R	8	025
1173	B	5	018
1173	I	10	039
1173	R	8	025
1174	B	5	018
1174	I	10	039
1174	R	8	025

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1175	R	8	025
1182	B	5	018
1182	I	10	039
1182	R	8	025
1183	B	5	018
1183	I	10	039
1183	R	8	025
1400	B	5	018
1401	R	8	025
1410	R	8	025
1418	R	8	025
1420	R	8	025
1438	R	8	025
1446	R	8	025
1452	R	8	025
1470	R	8	025
1474	R	8	025
1701	B	5	018
1701	R	8	025

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
4	010	F600	A
4	009	0000	A
8	027	0000	A
10	042	0001	A
11	047	0001	A
11	048	0001	A
9	033	0001	A
9	034	0001	A
4	017	1E01	A
4	013	1003	B
8	021	1400	A

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

WHEN EXCHANGING ANY PS OR TR, FOLLOW THE INSTRUCTIONS IN VOL 13, SECTION 12, OF THE MAINTENANCE MANUAL, 'REMOVAL/REPLACEMENTS'. ENSURE THAT ALL NECESSARY ADJUSTMENTS, INCLUDING TRANSFORMER TAP SETTINGS, ARE MADE CORRECTLY.

The REFERENCE CODE (ref code) is in the following form.

```
**********
*  UURRRRIS  *
**********
```

Is the UU field of the ref code 1E ?

Y N

002

Perform the following.

1. Press POWER OFF key on the operator control panel (OCP).
2. Open 01A gate.
3. Switch the CE switch on the CE panel to CE mode.
4. Wait until the blowers stop.
5. Press POWER ON key on the CE panel. Only hard-wire sequence power will be on.

Do you want to verify the ref code ?

Y N

003

Go to Step 005, Entry Point H.

4
A B

B

004

Get the EXPANDED POWER ERROR INFORMATION using the following procedure.

1. Wait until the PARTIAL POWER UP/DOWN screen is displayed.
2. Press MODE SELECT key.
3. Key in EL
4. Press ENTER key.

The EXPANDED POWER ERROR INFORMATION display should display on the screen.

If you do not know or are not sure if the machine was running when the failure occurred follow the no leg of the following question only.

Did the fault occur while the machine was running ?

Y N

005

(Entry Point C)

Use the first (left) ref code in the 'REFERENCE CODES' line at the bottom of the screen in the EXPANDED POWER ERROR INFORMATION display.

(Entry Point H)

The ref code is in the following form:

```
**********
*  UURRRRIS  *
**********
```

(Entry Point F)

Is the S field of the ref code C ?

Y N

4 4 4
C D E

006

Make a note of the ref code.

(Entry Point E)

To check if the sense cards are operational, run the diagnostic program using the following steps.

1. Press MODE SELECT key.
2. Key in MP
3. Press ENTER key.

Is 'END OF DIAGNOSTIC' displayed ?

Y N

007

Is the UU field of the displayed ref code 1X ?

Y N

008

Is the UU field of the displayed ref code F6 ?

Y N

009

This is not a power problem.

Go To Map 0000, Entry Point A.

010

The problem is associated with the sense card(s).

The first fault is caused by the fault indicated by this displayed ref code. To determine and fix, use the displayed ref code.

Go To Map F600, Entry Point A.

011

The fault is in EMC latch.

The first fault is caused by the fault indicated by this displayed ref code. To determine and fix, use the displayed ref code.

Go to Page 3, Step 001, Entry Point A.

012

(Entry Point D)

1. Press MODE SELECT key.
2. Key in MW
3. Press ENTER key.

Go to Page 5, Step 018, Entry Point B.

013

One of the voltages needs adjustment.

Go To Map 1003, Entry Point B.

014

In the EXPANDED POWER ERROR INFORMATION display, find the first ref code (reading left to right) in the 'REFERENCE CODES' line at the bottom of the screen with a '0' in the last position of the RRRR field (RRRR of XXX0).

The ref code is in the following form:

```
**********************
*      UURRRR I S      *
**********************
```

Did you find such a ref code ?

Y N

015

The machine was not operating when the fault occurred.

Go to Page 3, Step 005, Entry Point C.

016

Use this ref code for all questions in this MAP.

Go to Page 3, Step 005, Entry Point F.

017

The ref code indicates Electro-Magnetic Compatibility (EMC) fault.

Go To Map 1E01, Entry Point A.

018

(Entry Point B)

Is the UU field of the ref code 14 ?
Y N

019

(Entry Point G)

Find the ref code in this chart to get MAP number and entry point, and then go to the indicated MAP.

NOTE: If you cannot find the ref code in the chart, GO TO MAP 11FF, ENTRY POINT B.

```
##############
# Ref Code   #
# UU RRRR IS #
#########################################
# 10 0012 0E go to MAP 1012 entry point A #
# 10 0022 0E go to MAP 1012 entry point A #
# 10 0032 0E go to MAP 1012 entry point A #
# 10 0FF2 0E go to MAP 11FF entry point A #
# 10 A012 0E go to MAP 1012 entry point A #
# 10 A022 0E go to MAP 1012 entry point A #
# 10 A042 0E go to MAP 1012 entry point A #
# 10 A052 0E go to MAP 1012 entry point A #
# 10 A072 0E go to MAP 1012 entry point A #
# 10 A082 0E go to MAP 1012 entry point A #
# 10 A132 0E go to MAP 1012 entry point A #
# 10 A142 0E go to MAP 1012 entry point A #
# 10 A152 0E go to MAP 1012 entry point A #
# 10 A262 0E go to MAP 1012 entry point A #
# 10 A502 0E go to MAP 1012 entry point A #
# 10 A532 0E go to MAP 1012 entry point A #
# 10 A542 0E go to MAP 1012 entry point A #
# 10 A552 0E go to MAP 1012 entry point A #
# 11 1010 0E go to MAP 1132 entry point A #
# 11 1020 0E go to MAP 1103 entry point A #
# 11 1030 0E go to MAP 1103 entry point A #
# 11 1032 0E go to MAP 1103 entry point B #
# 11 1040 0E go to MAP 1103 entry point A #
# 11 1050 0E go to MAP 1103 entry point A #
# 11 1052 0E go to MAP 1103 entry point B #
```

(Step 019 continues)

(Step 019 continued)

```
##############
# Ref Code   #
# UU RRRR IS #
#########################################
# 11 1060 0E go to MAP 1103 entry point A #
# 11 1062 0E go to MAP 1103 entry point B #
# 11 1070 0E go to MAP 1103 entry point A #
# 11 1072 0E go to MAP 1103 entry point B #
# 11 1082 0E go to MAP 1103 entry point B #
# 11 1090 0E go to MAP 1140 entry point A #
# 11 1102 0E go to MAP 1110 entry point B #
# 11 1122 0E go to MAP 1110 entry point B #
# 11 1132 0E go to MAP 1110 entry point B #
# 11 1140 0E go to MAP 1110 entry point A #
# 11 1150 0E go to MAP 1110 entry point A #
# 11 1152 0E go to MAP 1110 entry point B #
# 11 1160 0E go to MAP 1110 entry point A #
# 11 1182 0E go to MAP 1118 entry point B #
# 11 1190 0E go to MAP 1120 entry point A #
# 11 1200 0E go to MAP 1120 entry point A #
# 11 1210 0E go to MAP 1120 entry point A #
# 11 1220 0E go to MAP 1120 entry point A #
# 11 1230 0E go to MAP 1120 entry point A #
# 11 1240 0E go to MAP 1126 entry point A #
# 11 1242 0E go to MAP 1126 entry point A #
# 11 1250 0E go to MAP 1126 entry point A #
# 11 1252 0E go to MAP 1126 entry point A #
# 11 1260 0E go to MAP 1126 entry point A #
# 11 1270 0E go to MAP 1126 entry point A #
# 11 1280 0E go to MAP 1126 entry point A #
# 11 1290 0E go to MAP 1131 entry point A #
# 11 1300 0E go to MAP 1131 entry point A #
# 11 1310 0E go to MAP 1131 entry point A #
# 11 1320 0E go to MAP 1131 entry point A #
# 11 1330 0E go to MAP 1131 entry point A #
# 11 1340 0E go to MAP 1131 entry point A #
# 11 1350 0E go to MAP 1132 entry point A #
# 11 1360 0E go to MAP 1138 entry point A #
# 11 1370 0E go to MAP 1138 entry point A #
# 11 1372 0E go to MAP 1138 entry point B #
# 11 1380 0E go to MAP 1138 entry point A #
# 11 1382 0E go to MAP 1138 entry point B #
# 11 1390 0E go to MAP 1138 entry point A #
# 11 1402 0E go to MAP 1140 entry point B #
# 11 1422 0E go to MAP 1146 entry point F #
# 11 1432 0E go to MAP 1143 entry point A #
```

(Step 019 continues)

(Step 019 continued)
```
##############
# Ref Code   #
# UU RRRR IS #
##########################################
# 11 1442 0E go to MAP 1143 entry point A #
# 11 1452 0E go to MAP 1143 entry point A #
# 11 1460 0E go to MAP 1146 entry point A #
# 11 1470 0E go to MAP 1146 entry point A #
# 11 1480 0E go to MAP 1146 entry point A #
# 11 1490 0E go to MAP 1146 entry point A #
# 11 1492 0E go to MAP 1146 entry point A #
# 11 1500 0E go to MAP 1146 entry point A #
# 11 1502 0E go to MAP 1146 entry point A #
# 11 1512 0E go to MAP 1152 entry point B #
# 11 1520 0E go to MAP 1152 entry point A #
# 11 1522 0E go to MAP 1152 entry point B #
# 11 1530 0E go to MAP 1152 entry point A #
# 11 1532 0E go to MAP 1152 entry point B #
# 11 1540 0E go to MAP 1152 entry point A #
# 11 1542 0E go to MAP 1152 entry point B #
# 11 1550 0E go to MAP 1146 entry point A #
# 11 1560 0E go to MAP 1152 entry point A #
# 11 1572 0E go to MAP 1146 entry point A #
# 11 1590 0E go to MAP 1146 entry point A #
# 11 1600 0E go to MAP 1146 entry point A #
# 11 1602 0E go to MAP 1146 entry point A #
# 11 1612 0E go to MAP 1161 entry point A #
# 11 1620 0E go to MAP 1161 entry point B #
# 11 1622 0E go to MAP 1161 entry point B #
# 11 1640 0E go to MAP 1132 entry point A #
# 11 1712 0E go to MAP 1171 entry point A #
# 11 1722 0E go to MAP 1172 entry point A #
# 11 1730 0E go to MAP 1173 entry point A #
# 11 1732 0E go to MAP 1173 entry point B #
# 11 1740 0E go to MAP 1174 entry point A #
# 11 1752 0E go to MAP 1174 entry point B #
# 11 1762 0E go to MAP 1175 entry point A #
# 11 1802 0E go to MAP 1182 entry point A #
# 11 1840 0E go to MAP 1146 entry point A #
# 11 1852 0E go to MAP 1126 entry point B #
# 11 1870 0E go to MAP 1132 entry point A #
# 11 1880 0E go to MAP 1132 entry point A #
# 11 1892 0E go to MAP 1146 entry point A #
# 11 A030 0E go to MAP 1140 entry point A #
# 11 A032 0E go to MAP 1140 entry point B #
# 11 A060 0E go to MAP 1174 entry point A #
```
(Step 019 continues)

(Step 019 continued)
```
##############
# Ref Code   #
# UU RRRR IS #
##########################################
# 11 A062 0E go to MAP 1174 entry point A #
# 11 A090 0E go to MAP 1165 entry point A #
# 11 A092 0E go to MAP 1165 entry point B #
# 11 A100 0E go to MAP 1165 entry point A #
# 11 A102 0E go to MAP 1165 entry point B #
# 11 A110 0E go to MAP 1165 entry point A #
# 11 A112 0E go to MAP 1165 entry point B #
# 11 A120 0E go to MAP 1165 entry point A #
# 11 A122 0E go to MAP 1165 entry point B #
# 11 A160 0E go to MAP 1126 entry point A #
# 11 A162 0E go to MAP 1146 entry point A #
# 11 A170 0E go to MAP 1110 entry point A #
# 11 A172 0E go to MAP 1110 entry point B #
# 11 A180 0E go to MAP 1110 entry point A #
# 11 A182 0E go to MAP 1110 entry point B #
# 11 A190 0E go to MAP 1140 entry point A #
# 11 A192 0E go to MAP 1140 entry point A #
# 11 A200 0E go to MAP 1140 entry point A #
# 11 A202 0E go to MAP 1140 entry point B #
# 11 A210 0E go to MAP 1110 entry point A #
# 11 A212 0E go to MAP 1110 entry point B #
# 11 A220 0E go to MAP 1110 entry point A #
# 11 A222 0E go to MAP 1110 entry point B #
# 11 A230 0E go to MAP 1110 entry point A #
# 11 A232 0E go to MAP 1110 entry point B #
# 11 A240 0E go to MAP 1110 entry point A #
# 11 A242 0E go to MAP 1110 entry point B #
# 11 A250 0E go to MAP 1110 entry point A #
# 11 A252 0E go to MAP 1110 entry point B #
# 11 A270 0E go to MAP 1110 entry point A #
# 11 A272 0E go to MAP 1110 entry point B #
# 11 A280 0E go to MAP 1174 entry point A #
# 11 A282 0E go to MAP 1174 entry point B #
# 11 A290 0E go to MAP 1134 entry point A #
# 11 A292 0E go to MAP 1134 entry point B #
# 11 A330 0E go to MAP 1126 entry point A #
# 11 A332 0E go to MAP 1126 entry point A #
# 11 A340 0E go to MAP 1126 entry point A #
# 11 A342 0E go to MAP 1126 entry point A #
# 11 A350 0E go to MAP 1126 entry point A #
# 11 A352 0E go to MAP 1126 entry point A #
# 11 A360 0E go to MAP 1138 entry point A #
```
(Step 019 continues)

(Step 019 continued)

```
##############
# Ref Code   #
# UU RRRR IS #
##########################################
# 11 A362 0E go to MAP 1138 entry point A #
# 11 A370 0E go to MAP 1138 entry point A #
# 11 A372 0E go to MAP 1138 entry point B #
# 11 A380 0E go to MAP 1140 entry point A #
# 11 A382 0E go to MAP 1140 entry point A #
# 11 A390 0E go to MAP 1183 entry point A #
# 11 A392 0E go to MAP 1183 entry point B #
# 11 A400 0E go to MAP 1138 entry point A #
# 11 A402 0E go to MAP 1138 entry point B #
# 11 A420 0E go to MAP 1174 entry point A #
# 11 A422 0E go to MAP 1174 entry point B #
# 11 A460 0E go to MAP 1174 entry point A #
# 11 A462 0E go to MAP 1143 entry point A #
# 11 A470 0E go to MAP 1174 entry point A #
# 11 A472 0E go to MAP 1174 entry point B #
# 11 A480 0E go to MAP 1126 entry point A #
# 11 A482 0E go to MAP 1146 entry point A #
# 11 A520 0E go to MAP 1110 entry point A #
# 11 A522 0E go to MAP 1110 entry point B #
# 11 A610 0E go to MAP 1183 entry point A #
# 11 A612 0E go to MAP 1183 entry point B #
# 11 D080 0E go to MAP 1182 entry point A #
# 11 D082 0E go to MAP 1146 entry point A #
# 11 D090 0E go to MAP 1182 entry point A #
# 11 D160 0E go to MAP 1170 entry point A #
# 11 D162 0E go to MAP 1170 entry point B #
# 11 D180 0E go to MAP 1131 entry point A #
# 11 D182 0E go to MAP 1131 entry point B #
# 11 D190 0E go to MAP 1101 entry point A #
# 11 D192 0E go to MAP 1101 entry point B #
# 11 D200 0E go to MAP 1170 entry point A #
# 11 D202 0E go to MAP 1170 entry point B #
# 11 D220 0E go to MAP 1103 entry point A #
# 11 D222 0E go to MAP 1103 entry point B #
# 11 D230 0E go to MAP 1182 entry point A #
# 11 D232 0E go to MAP 1146 entry point A #
# 11 D240 0E go to MAP 1182 entry point A #
# 11 D242 0E go to MAP 1146 entry point A #
# 11 D250 0E go to MAP 1182 entry point A #
# 11 D252 0E go to MAP 1146 entry point A #
# 11 D260 0E go to MAP 1182 entry point A #
# 11 D262 0E go to MAP 1152 entry point B #
```

(Step 019 continues)

(Step 019 continued)

```
##############
# Ref Code   #
# UU RRRR IS #
##########################################
# 11 D270 0E go to MAP 1182 entry point A #
# 11 D272 0E go to MAP 1146 entry point A #
# 11 D280 0E go to MAP 1182 entry point A #
# 11 D282 0E go to MAP 1146 entry point A #
# 11 D290 0E go to MAP 1182 entry point A #
# 11 D292 0E go to MAP 1146 entry point A #
# 11 D312 0E go to MAP 1146 entry point A #
# 11 D320 0E go to MAP 1101 entry point A #
# 11 D322 0E go to MAP 1101 entry point B #
# 11 D370 0E go to MAP 1102 entry point A #
# 11 D372 0E go to MAP 1102 entry point B #
# 11 D380 0E go to MAP 1132 entry point A #
# 11 D382 0E go to MAP 1132 entry point A #
# 11 D470 0E go to MAP 1102 entry point A #
# 11 D472 0E go to MAP 1102 entry point B #
# 11 D480 0E go to MAP 1132 entry point A #
# 11 D482 0E go to MAP 1132 entry point B #
# 11 D500 0E go to MAP 1120 entry point A #
# 11 D502 0E go to MAP 1120 entry point B #
# 11 D510 0E go to MAP 1182 entry point A #
# 11 D520 0E go to MAP 1182 entry point A #
# 11 D540 0E go to MAP 1170 entry point A #
# 11 D542 0E go to MAP 1170 entry point B #
# 11 D550 0E go to MAP 1170 entry point A #
# 11 D552 0E go to MAP 1170 entry point B #
# 11 D560 0E go to MAP 1170 entry point A #
# 11 D562 0E go to MAP 1170 entry point B #
# 11 D570 0E go to MAP 1170 entry point A #
# 11 D572 0E go to MAP 1170 entry point B #
# 11 D580 0E go to MAP 1146 entry point A #
# 11 D582 0E go to MAP 1103 entry point B #
# 11 D592 0E go to MAP 1152 entry point A #
# 11 D600 0E go to MAP 1146 entry point A #
# 11 D602 0E go to MAP 1146 entry point A #
# 11 D630 0E go to MAP 1182 entry point A #
# 11 D632 0E go to MAP 1146 entry point A #
# 11 D640 0E go to MAP 1182 entry point A #
# 11 1FF0 0E go to MAP 11FF entry point A #
# 11 1FF2 0E go to MAP 11FF entry point A #
# 17 7012 0E go to MAP 1701 entry point A #
# 1F FFF0 0E go to MAP 11FF entry point A #
##########################################
```

020

Is the ref code 14FEAC0E ?

Y N

021

The fault is in the channel to channel feature (CTCA).

Go To Map 1400, Entry Point A.

022

Check if the system has the CTCA feature (hardware). The hardware is in the 03 frame. If the 03 frame is in the system then the system has the CTCA hardware.

Does the system have the CTCA feature (hardware)?

Y N

023

Does PART 4 of the PARTIAL POWER UP/DOWN screen indicate CTCA ?

Y N

024

Check the tie downs of the CTCA in the B2 board A4 socket. Use ALD page YF101 to YF131 to find the signal pins of the sensors listed below.

Digital - D04, D05, D06, D07, D39, D40, D41.

Analog -- A40, A41, A43, A44, A45, A51, A59, A60.

Digitals should be tied to +5Vdc (any D03 pin) and the analog should be tied to ground (any D08 pin).

Repair or exchange the B2 board.

Go to Step 025, Entry Point R.

9 9
H J

025

The system does not have the CTCA feature hardware but the disk is configured to handle this feature. To correct configuration, use the following steps.

1. Press MODE SELECT key.
2. Key in FS
3. Press ENTER key.
4. Key in __ (underscore) next to the CTCA space.
5. Press ENTER key.
6. Press POWER ON key on the operator control panel (OCP).

(Entry Point R)

This is a check out procedure to the fix you made.

(Entry Point R1)

Ensure that all CP's and CB's are set on.

If you have changed anything like PS , TR , cables, and etc. Ensure that connectors are connected and neighboring cards are plugged properly.

1. Switch the CE switch to normal mode.
2. Press POWER OFF on the operator control panel (OCP) and wait for the blowers to stop.
3. Press POWER ON switch on the OCP.

Is power up complete ?

Y N

026

Is ref code displayed ?

Y N

027

(Entry Point S)

There might be another fault. To locate and fix start from the system entry MAP as if you just started a new call.

Go To Map 0000, Entry Point A.

9 9
K L

028

Is the UU code of the displayed ref code 1X ?
Y N

029
This is not a power problem.
Go to Page 8, Step 027, Entry Point S.

030
1. Switch the CE switch to CE mode.
2. Press MODE SELECT key.
3. Key in MW
4. Press ENTER key.

Go to Page 5, Step 018, Entry Point B.

031

Did you exchange an IPS control card to fix the fault ?
Y N

032

(Entry Point T)

Was the failure an intermittent failure ?
Y N

033
Problem is resolved.
Go To Map 0001, Entry Point A.

034
Go To Map 0001, Entry Point A.

035

Have you checked the voltage for adjustment ?
Y N

M N

036
Voltage adjustment might be needed.
Switch the CE switch to CE mode.
For voltage adjustment go to MAP 1003, entry point D, and then
Go to Page 8, Step 025, Entry Point R.

037
Go to Step 032, Entry Point T.

038
The system has the CTCA feature hardware but the disk is not configured to handle this feature. To correct configuration, use the following steps.
1. Press MODE SELECT key.
2. Key in FS
3. Press ENTER key.
4. Key in X next to the CTCA space.
5. Press ENTER key.
6. Press POWER ON key on the operator control panel (OCP).

Go to Page 8, Step 025, Entry Point R.

039

(Entry Point I)

For intermittent faults the failure could be a voltage out of its CE call limit.

To check the voltage perform the following procedure:

1. Press MODE SELECT key.
2. Key in MA
3. Press ENTER key.

Is any voltage over the CE call limit ?

Y N

040

Chart 1

MAP
1003
1171
1182
11FF

Is the MAP that sent you to this MAP listed in Chart 1 ?

Y N

041

Check the CE Log Function screen for any entries relating to power problems. To get the CE Log Function screen do the following:

1. Press MODE SELECT key
2. Key in EWT
3. Press ENTER key

The titles of any entries in the CE Log Function screen should be displayed. If you did not get the correct screen or for more information see the service aids for a detailed description of the CE Log Function.

Check to see if this failure has occurred before. (Step 041 continues)

1 1
1 1
P Q

(Step 041 continued)

Check the entries in the CE Log Function screen for any intermittent failures that are the same or similar to this failure (same or similar ref code or indicated FRU's).

Has this failure occurred before ?

Y N

042

DO NOT EXCHANGE ANY FRU'S.

Make an entry in the CE Log Function screen of this failure (include the ref code and indicated FRU's).

The failure is an intermittent failure.

Problem is not corrected.

Go To Map 0001, Entry Point A.

043

Check the entries to see if any of the indicated FRU's you made a note of have been exchanged.

Have any of the indicated FRU's been exchanged ?

Y N

044

Exchange the first FRU in the list of indicated FRU's.

WHEN EXCHANGING ANY PS OR TR, FOLLOW THE INSTRUCTIONS IN VOL 13, SECTION 12, OF THE MAINTENANCE MANUAL, 'REMOVAL/REPLACEMENTS'. ENSURE THAT ALL NECESSARY ADJUSTMENTS, INCLUDING TRANSFORMER TAP SETTINGS, ARE MADE CORRECTLY.

Go to Page 8, Step 025, Entry Point R.

045

Have ALL of the indicated FRU's been exchanged?

Y N

1 1
1 1
R S

046

Exchange the first FRU in the list of indicated FRU's (reading left to right in Chart A in the MAP you came from) that has not been exchanged before.

WHEN EXCHANGING ANY PS OR TR, FOLLOW THE INSTRUCTIONS IN VOL 13, SECTION 12, OF THE MAINTENANCE MANUAL, 'REMOVAL/REPLACEMENTS'. ENSURE THAT ALL NECESSARY ADJUSTMENTS, INCLUDING TRANSFORMER TAP SETTINGS, ARE MADE CORRECTLY.

Go to Page 8, Step 025, Entry Point R.

047

The failure is an intermittent failure.
Problem is not resolved.
Go To Map 0001, Entry Point A.

048

The failure was an intermittent failure.
Problem is not resolved.
Go To Map 0001, Entry Point A.

049

Write on a paper all of the sensor numbers that are over the CE call limit. Add an 'A' in front of the sensor number and a zero ('0') at the end of the number to make an RRRR field of a ref code. For example if sensor 18 is out of the CE call limit the RRRR field is A180.

Use these RRRR field to answer any ref code question in MAP 1003.

To adjust voltage or repair GO TO MAP 1003 ENTRY POINT B After you reach the statement 'return to the MAP you came from' return here.

The problem is corrected.

Go to Page 8, Step 025, Entry Point R.

MAP CODE 1003CXXX FIX 0005

Voltage Adjustment Map.

PAGE 1 OF 10

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	B	5	010
1000	D	1	001
5040	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
8	029	0001	A
7	015	1000	E
10	037	1000	I
9	035	1000	R
10	038	1000	R
8	024	1000	R
8	027	1000	R
9	032	1000	R
9	034	1000	R
9	033	1000	R
8	020	1000	R
8	021	1000	R

001

(Entry Point A)

This is a procedure to check and adjust voltage levels of logic and main storage boards.

Perform the following if necessary.

1 Open 01A gate.
2 Set the CE switch on the CE panel to CE mode.
3 Press POWER ON switch at the CE panel.
4 Power up the processing unit by entering 00 00 in the PARTIAL POWER UP/DOWN screen if not powered on.

(Entry Point D)

Display the analog screen using the following steps:

1. Press Mode Select key
2. Key in MA
3. Press ENTER key.

Are you installing this processing unit ?

Y N

3 2
A B

MODEL GROUP 2,
FERRO POWER

002

Locate Chart 1, Chart 1-A, and Chart 1-B in step 005, page 3 in this MAP. Check if a voltage profile is recorded in these charts.

Is there a voltage profile recorded in Charts 1, 1-A, and 1-B ?

Y N

003

Go to Page 3, Step 005, Entry Point F.

004

Compare Chart 1, Chart 1-A, and Chart 1-B in step 005, page 3 in this MAP with the analog display displayed on the screen. If the display and the charts differ by more than one plus or one minus character, that voltage needs adjustment. If not, adjustment is not needed. Adjust the voltage to the charts.

Use the charts to locate the cards where the potentiometer is located.

Turn the potentiometer clockwise to increase voltage.

Return to the MAP or procedure you came from.

005

(Entry Point F)

Chart 1

Voltage Level	Analog Sensor	Profile Indication	Card IPS201
-4.336	A18	0	02AA1-D2
+6.000	A38	0	02AA1-B2
-1.524	A17	+1	02AA2-D4
+4.250	A27	-1	02AA2-C2
-2.200	A52	+1	02AA2-C4

Chart 1-A

Voltage Level	Analog Sensor	Profile Indication	Card IPS101
-4.250	A21	+1	01C-A1D2

Chart 1-B

CTCA Volt Level	Analog Sensor	Profile Indication	Card IPS301
-3.000	A51		03AA2-C4
+1.250	A59		03AA2-C2

The voltage profile (a copy of the analog screen) of this system is shipped with the processor.

Do you have the voltage profile of this system ?

Y N

4 4
C D

006

Check on the display screen if the following analog sensors indicate more than two plus + characters or two minus - characters. This is the voltage range.

Analog sensors list: A17, A18, A21, A27, A38, A51, A52, A59.

Are any of the above analog sensors indicating above the voltage range ?

Y N

007

Record in the Profile column of Charts 1 and 1-A of this MAP the indication of each sensor listed above.

Using the Analog Voltage Display record in the Profile column of Charts 1 and 1-A the voltage indication (For example, if sensor A18 indicates one plus (1 +) in the Analog Voltage Display then write in the profile indication column line 1 of Chart 1 '1 +').

If the channel to channel feature (CTCA) is installed record the indication in Chart 1-B.

Adjustment of the voltages is not needed.

Return to the MAP or procedure you came from.

008

Adjust the voltages, the characters outside the voltage range, from more than 2 plus or 2 minus characters to no plus or minus characters.

After adjusting the voltages outside the range, record in the Profile column of Charts 1 and 1-A, of this MAP, the indication of each sensor listed above. (For example, if sensor A18 indicates one plus character in the Analog Voltage Display, then write in the profile indication column line 1 of Chart 1, '1 +').

If the channel to channel feature (CTCA) is installed, record the indication in Chart 1-B.

Return to the MAP or procedure you came from.

009

Using the Voltage Profile record in the Profile column of Charts 1 and 1-A the voltage indication (For example, if sensor A18 indicates two plus characters (2 +'s) in the Voltage Profile then write in line 1 of Chart 1 in the profile indication column '2 +'s').

If the channel to channel feature (CTCA) is installed record the indication in Chart 1-B

Compare Charts 1, 1-A and 1-B with the analog display displayed on the screen. If the display and the charts differ by more than one plus or one minus character, that voltage needs adjustment. If not, adjustment is not needed. Adjust the voltage to the charts.

Use the charts to locate the card where the potentiometer is located, for adjustment.

Turn the potentiometer clockwise to increase voltage.

Return to the MAP or procedure you came from.

010

(Entry Point B)

Display the PARTIAL POWER UP/DOWN screen using the following steps:

1. Press Mode Select key
2. Key in MW
3. Press ENTER key.

Power up the processing unit by entering 00 00 in the PARTIAL POWER UP/DOWN screen.

Is the RRRR field of the ref code that you entered this MAP with 1FF0 ?

Y N

011

Chart 2

RRRR	Level	Supply
A170	-1.5	IPS201
A180	-4.25	IPS201
A190	-4.25	IPS201
A200	-1.5	IPS201
A210	-4.25	IPS101
A220	-1.5	IPS201
A230	-4.25	IPS201
A240	-1.5	IPS201
A250	-4.25	IPS201
A270	+4.25	IPS201
A380	+6.0	IPS201
A510	-3.0	IPS301
A520	-6.45	IPS201
A590	+1.25	IPS301
1520	-1.5	IPS201
1860	-4.25	IPS201

Is the RRRR field of the ref code that you entered this MAP with listed in Chart 2 ?

Y N

1
0 9 6
E F G

Chart 3

RRRR	Supply	ALD Page	Connector Card	Voltage Range	Sense 01A-B2
A012	PS104	YA603	01AB2B4	+7.65 to +9.35	D2 B07
A022	PS104	YA603	01AB2B4	+4.50 to +5.50	D2 B10
A030	PS201	YA607	01AB2B2	+4.50 to +5.50	D2 B02
A042	PS101	YA601	01AB2B4	+21.6 to +26.4	D2 B03
A052	PS104	YA603	01AB2B4	+4.50 to +5.50	D2 D02
A060	PS201	YA607	02AA2B4	+9.27 to +11.3	D2 B04
A072	PS101	YA601	01AB2B3	+4.50 to +5.50	D2 B06
A082	PS101	YA601	01AB2B3	+21.6 to +26.4	D2 B05
A132	PS104	YA603	01AB2B3	+10.8 to +13.2	D2 B09
A142	PS104	YA603	01AB2B3	+4.50 to +5.50	D2 D07
A152	PS104	YA603	01AB2B3	+7.65 to +9.35	D2 D06
A262	PS104	YA603	01AB2B4	-4.50 to -5.50	D2 S05
A340	PS205	YA613	02AA1B4	+11.3 to +13.7	C2 B10
A350	PS205	YA613	02AA2B4	+11.3 to +13.7	C2 B02
A360	PS101	YA601	02AA1B4	+4.50 to +5.50	C2 B03
A370	PS101	YA601	02AA2B4	+4.50 to +5.50	C2 D02
A400	PS101	YA601	01CA1B4	+4.50 to +5.50	C2 B05
A420	PS201	YA607	02AA1B4	+10.4 to +12.6	C2 B11
A502	PS104	YA603	01AB2B4	-4.50 to -5.50	C2 U09
A532	PS104	YA603	01AB2B4	-4.50 to -5.50	C2 S08
A542	PS104	YA603	01AB2B4	-4.50 to -5.50	C2 S07
A552	PS104	YA603	01AB2B4	-10.8 to -13.2	C2 U10
A610	PS206	YA615	01CA1B4	+11.3 to +13.7	C2 S06
RRRR	Supply	ALD Page	Connector Card	Voltage Range	Sense 01A-B2

Is the RRRR field of the ref code that you entered this MAP with listed in Chart 3 ?

Y N

8 7
H J

013

Chart 4

RRRR	Name	Location 01A
A090	Air Inlet Sensor	Top 01A gate
A100	Air Outlet Sensor	A Column
A110	Air Outlet Sensor	B Column
A120	Air Outlet Sensor	C Column

Is the RRRR field of the ref code that you entered this MAP with listed in Chart 4 ?

Y N

014

Check if the S field (last digit) of the ref code is C.

Is the S field of the ref code C ?

Y N

015

You are in the wrong MAP.

Go To Map 1000, Entry Point E.

016

Go to Page 10, Step 036, Entry Point C.

017

Is the RRRR field of the ref code that you entered this this MAP with A090 ?

Y N

018

Use Chart 4 to find which column of the 01A gate is warm.

This can occur if the air moving device (AMD) above the indicated column is running slow or if some cables are preventing the air flow path, or if the thermistor is covered with dirt.

Did you find the cause ?

Y N

8 8 8
K L M

019
Go to Step 029, Entry Point E.

020
Correct the failure.
Go To Map 1000, Entry Point R.

021
The room temperature is out of the permissible temperature range.
Ensure the room temperature is correct.
Go To Map 1000, Entry Point R.

022
This supply is not adjustable.
Either the power supply (PS) is out of permissible voltage range or the dividing network resistor is changing values.
Use Chart 3 Supply ALD column to find where to measure the voltage on the indicated PS. Check if the voltage is inside the range given in Chart 3.

Is the voltage inside the given range ?
Y N

023

Have you just exchanged the indicated PS ?
Y N

024
Exchange the indicated power supply.
Go To Map 1000, Entry Point R.

025

Is the indicated power supply PS205 ?
Y N

N P Q

026
The power supplies are in two parts, a PS and a TR. (For example, PS101 and TR101.)

Have you just exchanged the TR of the indicated PS ?
Y N

027
Exchange the TR part of the indicated power supply.
Go To Map 1000, Entry Point R.

028
Go to Step 029, Entry Point E.

029

(Entry Point E)

Problem is not corrected.
Go To Map 0001, Entry Point A.

030
The sense cards (01A-B2C2 and 01A-B2D2 cards) may be bad.
Check the input to the sense cards on the 01A-B2 board as follows:
Set the CE meter to measure about 2.0Vdc.
Connect the positive meter lead (tool) to the point on the 01A-B2 board indicated by the ref code and the 'Sense 01A-B2' column of Chart 3. Connect the negative meter lead (tool) to ground (any D08 pin) on the 01A-B2 board.
A positive voltage (as indicated in the 'Voltage Range' column of Chart 3) should indicate between +1.35Vdc and +1.65Vdc. A negative voltage should indicate between -1.35Vdc and -1.65Vdc.

Is the voltage between 1.35Vdc and 1.65Vdc ?
Y N

9 9
R S

031

Check where the indicated voltage gets out of range, starting from the PS to the connector card listed in Chart 3.

Power down and reset the connector card.

Switch the CE switch in the CE panel to normal mode and power up.

Did you get the same ref code ?

Y N

032

Make a note of this incident and if this occurs again exchange the connector card.

Go To Map 1000, Entry Point R.

033

Exchange the indicated connector card.

Go To Map 1000, Entry Point R.

034

The sense card is bad.

Using the ref code and the 'Sense 01A-B2' column in Chart 3, determine which sense card (01A-B2C2 or 01A-B2D2) is indicated.

Power down and exchange the indicated failing sense card.

Go To Map 1000, Entry Point R.

035

The voltage levels of the logic and main storage boards needs adjustment.

Use Chart 5 to determine the voltage level and supply that needs adjustment.

Chart 5

RRRR	Level	Supply
A170	-1.5	IPS201
A180	-4.25	IPS201
A190	-4.25	IPS201
A200	-1.5	IPS201
A210	-4.25	IPS101
A220	-1.5	IPS201
A230	-4.25	IPS201
A240	-1.5	IPS201
A250	-4.25	IPS201
A270	+4.25	IPS201
A380	+6.0	IPS201
A510	-3.0	IPS301
A520	-6.45	IPS201
A590	+1.25	IPS301
1520	-1.5	IPS201
1860	-4.25	IPS201

Make a note of the MAP, page, and step number of this step.

To adjust the voltage, GO TO PAGE 1, STEP 001, ENTRY POINT A. When you reach the statement 'Return to the MAP or procedure you came from', return here and then

Go To Map 1000, Entry Point R.

036

(Entry Point C)

Get the analog display screen using the following steps:

1. Press MODE SELECT key.
2. Key in MA
3. Press ENTER key.

The analog display should be displayed on the screen.

Is there an analog sensor on or above the CE call limit ?

Y N

037

The failure must have been an intermittent failure.
Go To Map 1000, Entry Point I.

038

Use the ALD to determine if that sensor is sensing an IPS output voltage. If it is, use Chart 1, 1-A or 1-B to adjust that voltage; but if it is not an adjustable voltage, check the output of the power supply (PS) of that level. If necessary exchange the PS.
Go To Map 1000, Entry Point R.

Test Station Usage.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1110	A	2	001
1120	A	2	001
1126	A	2	001
1131	A	2	001
1132	A	2	001
1134	A	2	001
1140	A	2	001
1144	A	2	001
1146	A	2	001
1152	A	2	001
1183	A	2	001
1410	A	2	001
1418	A	2	001
1420	A	2	001
1446	A	2	001
1452	A	2	001
1474	A	2	001

001

(Entry Point A)

This MAP gives steps to test the regulator control cards and power modules using the test station located in the IPS201 (02A gate), in the 02 frame.

NOTE: The -4.25 AO (add on) level is located in IPS101 (01C gate), in the 01 frame. The -4.25 level is located in IPS201 (02A gate), in the 02 frame. If the indicated level is the -4.25 AO (add on), use Chart 2 for power module locations. If the indicated level is the -4.25, use Chart 1 for power module locations. If the indicated level is in the CTCA, use Chart 3 for power module locations. Use Chart 1 for all other levels. Use Chart 4 for control card locations.

Perform the following.

1. Using Chart 1, 2, 3, or 4, remove from the IPS the indicated fault level's control card and one of the power module(s).
2. Turn the test station power switch (S1) and the test station regulator test switch (S2) to the off position. (See the layout of the test station in the MIM VOL 13/16 page 20-385c).
3. Ensure that PCC-CB1 is in the on position.
4. Install the regulator control card into test station socket 'A2' (See the layout of the test station. Location diagram of the regulator card is at the right side of the next page).
5. Install the power module into test station socket 'A3', (Location diagram of the power modules is at the right).
6. Check cards to ensure firm connection.

NOTE: At this time, you have only installed a control card and a power module in the test station. YOU DID NOT CHANGE THE CONTROL CARD OR THE POWER MODULE.

(Step 001 continues)

Chart 1

Power Module Locations				
IPS201 02A-A1 board card side				
control	-4.25 E5	-4.25 F5	-4.25 G5	-4.25 H5
control	-4.25 E4	-4.25 F4	-4.25 G4	-4.25 H4
card	+6 E3	-4.25 F3	-4.25 G3	-4.25 H3
IPS201 02A-A2 board card side				
control	-1.5 E5	-1.5 F5	-1.5 G5	-1.5 H5
control	+4.25 E4	+4.25 F4	-2.2/ -6.45 G4	-2.2/ -6.45 H4
card	-1.5 E3	-1.5 F3	-1.5 G3	-1.5 H3

For control card locations see the next page.

(Step 001 continues)

(Step 001 continued)

Chart 2

Power Module Locations				
IPS101 01C-A1 board card side				
(add on) -4.25 A0 H3		(add on) -4.25 A0 F3		control
	(add on) -4.25 A0 G5		(add on) -4.25 A0 E5	card

Chart 3

Power Module Locations				
(CTCA) IPS301 03A-A2 board card side				
				control
-3.0 H4			+1.25 E4	
				card

(Step 001 continues)

(Step 001 continued)

Chart 4

Control Card Locations	
Level	Location
-4.25	02A-A1-D2
-1.5	02A-A2-D4
+4.25	02A-A2-C2
-2.2(-6.45)	02A-A2-C4
+6	02A-A1-B2
+1.25	03A-A2-C2
-3	03A-A2-C4
-4.25 A0 (add on)	01C-A1-D2

(Step 001 continued)

(Entry Point B)

7. Turn the test station 'POWER ON switch' (S1) to the on position.
Only the power on and UV indicators should light up.

Are only POWER ON and UV indicators lit ?
Y N

002

Is the POWER ON indicator lit ?
Y N

003
The connector to the test station is not connected or the test station is faulty.
Ensure the connector in the test station is connected. If it is connected check the voltages at the connector using ALD page YA640.
Are the voltages at the connector good ?
Y N

004
Using the ALD find and fix the cable from PS101 to the test station. To test the IPS regulator card and power module
Go to Page 2, Step 001, Entry Point A.

005
The test station is faulty. Exchange the test station.
To test the IPS regulator card and power module
Go to Page 2, Step 001, Entry Point A.

006

Did you just change the power module in the test station ?
Y N

5
A B C

007
Turn the test station POWER ON switch (S1) to the off position.
The power module or the control card is bad.
Change the power module of the test station. Use another power module from the IPS.
Turn the test station POWER ON switch (S1) to the on position.
Only the POWER ON and UV indicators should light up.

Are only POWER ON and UV indicators lit ?
Y N

008
The control card in the test station is bad.
Turn the test station POWER ON switch (S1) to the off position.
Reinstall the GOOD power module back in the IPS.
Return to the MAP you came from.

009
The power module you took out of the test station is bad.
Turn the test station POWER ON switch (S1) to the off position.
Reinstall the GOOD control card and module back in the IPS.
Return to the MAP you came from.

010
(Entry Point D)

The power module is bad.
Turn the test station POWER ON switch (S1) to the off position.
Reinstall the GOOD control card and the modules back in the IPS.
Return to the MAP you came from.

011

Did you just change the control card of the test station ?

Y N

012

Turn the test station regulator power switch (S2) to the on position.

Only the POWER ON indicator should light up.

Is only POWER ON indicator lit ?

Y N

013

Turn the test station regulator power switch (S2) to the off position.

Turn the test station POWER ON switch (S1) to the off position.

Did you just exchange the power module in the test station ?

Y N

014

Exchange control card with another one from IPS.

Go to Page 4, Step 001, Entry Point B.

015

Go to Page 4, Step 010, Entry Point D.

016

Both the power module and the control card are good.

Turn the test station regulator power switch (S2) to the off position.

Turn the test station POWER ON switch (S1) to the off position.

Did you check all of the power modules for that voltage level which indicated a fault ?

Y N

D E F

017

Take one of the remaining modules and exchange with the power module in the test station.

Go to Page 4, Step 001, Entry Point B.

018

There is no bad module or card in the suspected voltage level.

Reinstall the control card and the module(s) back in the IPS.

Return to the MAP you came from.

019

Turn the test station regulator power switch (S2) to the on position.

Only the POWER ON indicator should light up.

Is only POWER ON indicator lit ?

Y N

020

The power module in the test station is bad.

Turn the test station regulator power switch (S2) to the off position.

Turn the test station POWER ON switch (S1) to the off position.

Reinstall the GOOD control card and module back in the IPS.

Return to the MAP you came from.

021

The control card you took out is bad.

Turn the test station regulator power switch (S2) to the off position.

Turn the test station POWER ON switch (S1) to the off position.

Reinstall the GOOD control card and module back in the IPS.

Return to the MAP you came from.

Hardwire Sequence w/Ref.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	2	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
3	003	1000	B
3	008	1000	R
3	010	1000	R
4	011	1000	R
4	013	1000	R
4	014	1000	R
4	015	1000	R
3	004	1000	R

001

(Entry Point A)

The failure indicated by this ref code is that the hardwired sequence voltage is out of specification.

Chart 1

Ref Code RRRR	Sense B2 Board	Voltage Level Min.	Voltage Level Max.	Location	ALD Page
A012	D2 B07	+7.65	+9.35	A2	YA667
A022	D2 B10	+4.5	+5.5	A2	YA667
A042	D2 B03	+21.6	+26.4	file	YA951
A052	D2 D02	+4.5	+5.5	file	YA951
A072	D2 B06	+4.5	+5.5	D2	YA717
A082	D2 B05	+21.6	+26.4	B2	YA665
A132	D2 B09	+10.8	+13.2	B2	YA665
A142	D2 D07	+4.5	+5.5	B2	YA665
A152	D2 D06	+7.65	+9.35	B2	YA665
A262	D2 S04	-4.5	-5.5	B2	YA665
A502	C2 U09	-4.5	-5.5	A2	YA663
A532	C2 S08	-4.5	-5.5	B2	YA665
A542	C2 S07	-4.5	-5.5	file	YA951
A552	C2 U10	-10.8	-13.2	B2	YA665
Ref Code RRRR	Sense B2 Board	Min. Voltage Level	Max. Voltage Level	Location	ALD Page

NOTE: The voltage at the sense card is normalized to 1.5Vdc of the correct polarity. A voltage between 1.35Vdc and 1.65Vdc is acceptable.

Chart 2

Ref Code RRRR	Connector Card Socket in 01A Gate
0012	B2B3
0022	B2B4
0032	A2V2 and B2B4

(Step 001 continues)

(Step 001 continued)

Is the ref code listed in Chart 1 ?
Y N

002

Is the ref code listed in Chart 2 ?
Y N

003
You are in the wrong MAP.
Go To Map 1000, Entry Point B.

004
The connector card(s) indicated by the ref code in Chart 2 is loose.

CAUTION
BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Reseat the indicated connector card(s).

Go To Map 1000, Entry Point R.

005
The second column in Chart 1 labeled 'Sense' lists the sense point on the B2 board (ALD YF171).

(Entry Point B)

Set the CE meter to measure 2Vdc.
Connect the positive lead of the CE meter to the sense point indicated by the ref code in Chart 1, and the other lead to ground (any D08 pin) on B2 board.
A positive voltage should indicate positive and a negative should indicate negative. The voltage should be between 1.35Vdc and 1.65Vdc.
(Step 005 continues)

(Step 005 continued)

Is the voltage from 0Vdc to 1Vdc ?
Y N

006

Is the voltage from 1Vdc to 1.35Vdc ?
Y N

007

Is the voltage above 1.65Vdc ?
Y N

008
The sense card in either 01A-B2C2 or 01A-B2D2 may be bad. Using the ref code and the 'Sense B2 Board' column in Chart 1, determine which sense card is indicated (C2 or D2).
Exchange the indicated sense card. If that does not fix the failure, you may not be measuring on the correct location on the 01A-B2 board. Ensure that the CE meter is connected correctly and also ensure that the meter is functioning correctly.
Go To Map 1000, Entry Point R.

009
Use the indicated ALD page and measure the voltage of the indicated board in Chart 1.

Is the voltage above the maximum voltage ?
Y N

010
The voltage dividing resistor is failing.
Repair or exchange the connector card in the B2 board that the sense line uses.
Go To Map 1000, Entry Point R.

4 4 4
A B C

011

DANGER

The connectors of the TR have a high voltage, be careful when you measure not to short circuit or touch the metal part of the meter lead (tool), and power down, CB1 off, before exchanging.

Check the output of the TR (TR101 or 104) that supplies the PS (PS101 or 104) of that level. If the output is high, exchange the TR; but if the output is inside specification, exchange the PS of that level.
Go To Map 1000, Entry Point R.

012

Use the indicated ALD page and measure the voltage of the indicated board in Chart 1.

Is the voltage below the minimum voltage ?
Y N

013

The voltage dividing resistor is failing.

Repair or exchange the connector card in the B2 board that the sense line uses.
Go To Map 1000, Entry Point R.

014

DANGER

The connectors of the TR have a high voltage, be careful when you measure not to short circuit or touch the metal part of the meter lead (tool), and power down, CB1 off, before exchanging.

Check the output of the TR (TR101 or 104) that supplies the PS (PS101 or 104) of that level. If the output is low, exchange the TR; but if the output is inside specification, exchange the PS of that level.
Go To Map 1000, Entry Point R.

015

The sense line from the indicated board to B2 sense point is open. Using the ALD find and repair or exchange the cable.
Go To Map 1000, Entry Point R.

Thermal.

PAGE 1 OF 8

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	B	2	006

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
4	012	0001	A
6	029	0001	A
7	033	0001	A
5	019	0001	A
5	022	0001	A
2	005	1000	B
7	036	1000	I
4	011	1000	R
4	013	1000	R
8	039	1000	R
8	040	1000	R
5	024	1000	R
6	026	1000	R
6	030	1000	R
7	032	1000	R
4	015	1000	R
5	018	1000	R
5	021	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Power on the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen. Wait for about three to five minutes after it is powered up.
(Step 001 continues)

(Step 001 continued)

Is PROC UNIT power ON and stays ON (ACTION DONE on screen) ?
Y N

002

Is the UU field of the ref code displayed on the screen 1X ?
Y N

003
This is not a power problem.
Go To Map 0000, Entry Point A.

004

Is the RRRR field of the ref code displayed on the screen D19X or D32X ?
Y N

005
You either came to the wrong MAP or the failure is an intermittent. Use the ref code on the screen to determine and repair the failure.
Go To Map 1000, Entry Point B.

006

(Entry Point B)

The indicated failure is a thermal failure in either TR201 or TR202 (ref code RRRR field of D32X), or PS205 (ref code RRRR field of D19X).

TR201 is a matched set of three TRs (TR201 A, B, and C) and is located in the rear of frame 02. TR202 and PS205 are located behind the 02A gate in the front of frame 02.

The cause of the failure may be one of the following:
1) Failing TR201 A, B, or C
2) Failing TR202
3) Failing PS205
3) Failing PS201
(Step 006 continues)

(Step 006 continued)

4) Failing +24Vdc supply for thermal sensors
5) Failing thermal sense line
6) Obstruction in the air flow path
6) Failing 01A-B2 board

Chart 1 gives a list of possible failing FRUs, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

Chart 1

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
TR/PS201	D32X	YA605 YA607	10-055c, 20-250c
TR202	D32X	YA607	10-055c, 20-250c
PS205	D19X	YA613	10-055c, 20-250c
01A-B2 board	D19X D32X		10-035c, 050c 14-105c 20-211c, 230c
PS101	D19X D32X	YA601	10-045c, 20-160c
TB206	D19X D32X	YA651	10-055c
CON 241	D19X D32X	YA659	10-055c

See page 20-250c in the MIM for second level diagrams of all thermal sensors and thermal sense lines for aid in resolving thermal failures.

For aid in using ALDs, see the MIM, VOL 13/16, page 14-405. Also see page 20-230c for usage of ALD page YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

7 4
B C

007

Is the displayed RRRR field D322 ?
Y N

008

Is the displayed RRRR field D192 ?
Y N

009
Check the air flow around the indicated supply.

Is the air flow obstructed ?
Y N

010

Have you just exchanged the indicated supply ?
Y N

011
If the RRRR field of the ref code is D190 exchange PS205. If the RRRR field of the ref code is D320 exchange TR202 first. If the problem is not corrected, exchange all three TR201s. (Note: TR201 is a matched set).
Go To Map 1000, Entry Point R.

012
Problem is not corrected.
Go To Map 0001, Entry Point A.

013
Correct the obstruction.
Go To Map 1000, Entry Point R.

014
To check the +24Vdc supply to the thermal sensor in PS205:

1. Set the CE meter scale to measure +24Vdc.
2. Connect the CE meter to PS205 as follows:

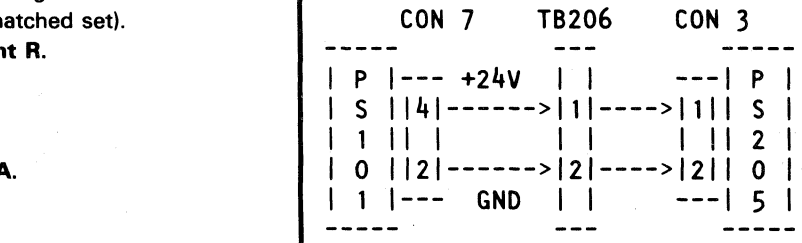
Connector 3 pin 1 ----- positive meter lead
Connector 3 pin 2 ----- negative meter lead

The meter should indicate between +21Vdc and +27Vdc.

Does the meter indicate between +21Vdc and +27Vdc ?
Y N

015
The +24Vdc to PS205 is failing.
The +24Vdc starts at PS101 Connector 7 Pins 4 a 2 (ALD YA601) and goes through TB206 Pins 1 and TB206 (ALD YA651) to PS205 Connector 3 Pins 1 and 2 (ALD YA607).

See the following figure for these lines and connectors.



Using this diagram and list and the ALDs, find and fix the failure. Repair or exchange any failing part(s)
Go To Map 1000, Entry Point R.

016

To check the thermal sense line output of PS205:

1. Set the CE meter scale to measure 5Vdc.
2. Connect the CE meter in PS205 as follows:

Connector 4 pin 9 ----- positive meter lead
Connector 4 pin 6 ----- negative meter lead

The meter should indicate between +2.8Vdc and +5.5Vdc.

Does the meter indicate between +2.8Vdc and +5.5Vdc ?
Y N

017

Have you just exchanged PS205 ?
Y N

018
Exchange PS205.
Go To Map 1000, Entry Point R.

019
Problem is not corrected.
Go To Map 0001, Entry Point A.

020

To check the PS205 thermal sense line input to the MSS (01A-B2) board:

1. Set the CE meter scale to measure 5Vdc.
2. Connect the CE meter to the 01A-B2 board as follows:

01A-B2D2P05----- positive meter lead
01A-B2D2D08----- negative meter lead

The meter should indicate between +2.8Vdc and +5.5Vdc.
(Step 020 continues)

(Step 020 continued)

Does the meter indicate between +2.8Vdc and +5.5Vdc ?
Y N

021
The PS205 thermal sense line is open.
The line starts at PS205 Connector 4 Pin 9 (ALD YA613) and goes through CON 241 Pin 10 (ALD YA659) to the 01A-B2 board connector card 01A-B2A2D05 and then to the sense card 01A-B2D2P05 (ALD YF121 and YF171). See page 20-250c in the MIM for second level diagrams of all thermal sensors and sense lines.
Using ALDs and page 20-250c in the MIM, find and fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

022
Problem is not resolved.
Go To Map 0001, Entry Point A.

023

Ensure that the following connectors are connected tightly:

1. PS201 Connector 5
2. PS201 Connector 6
3. TR202 Connector 2
4. TR201A Connector 4
5. TR201B Connector 4
6. TR201C Connector 4
7. Connector 241
8. Connector card 01A-B2A3

Are the above connectors connected tightly ?
Y N

024
Connect the loose connector(s).
Go To Map 1000, Entry Point R.

025

To check the +24Vdc supply to PS201 for the thermal sensors in TR201 and TR202:

1. Set the CE meter scale to measure +24Vdc.
2. Connect the CE meter in PS201 as follows:

Connector 5 pin 1 ----- positive meter lead
Connector 5 pin 2 ----- negative meter lead

The meter should indicate between +21Vdc and +27Vdc.

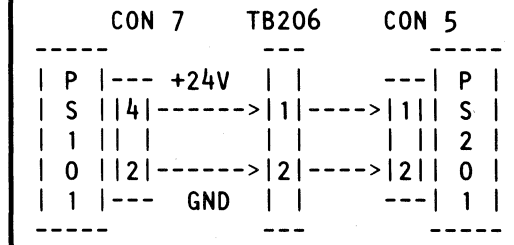
Does the meter indicate between +21Vdc and +27Vdc ?
Y N

026

The +24Vdc to PS201 is failing.

The +24Vdc starts at PS101 Connector 7 Pins 4 and 2 (ALD YA601) and goes through TB206 Pins 1 and 2 (ALD YA651) to PS201 Connector 5 Pins 1 and 2 (ALD YA607).

See the following figure for these lines and connectors.



Using this diagram and list and the ALDs, find and fix the failure. Repair or exchange any failing part(s).
Go To Map 1000, Entry Point R.

027

To check the TR201/TR202 thermal sense line output on PS201:

1. Set the CE meter to measure +5Vdc.
2. Connect the CE meter in PS201 as follows:

Connector 6 pin 1 ----- positive meter lead
Connector 6 pin 2 ----- negative meter lead

The meter should indicate between +2.8Vdc and +5.5Vdc.

Does the meter indicate between +2.8Vdc and +5.5Vdc ?
Y N

028

The +24Vdc for the thermal sensors in TR201 and TR202 is failing in either TR201, TR202, PS201, or the cables between the TRs and PS201.

The +24Vdc goes from PS201 through TR202 and then through TR201 A, B, and C and returns to PS201 (ALD YA605 and YA607). In PS201 the +24Vdc is converted to +5Vdc by a resistor divider network to make the +5Vdc for the digital thermal sense line that goes to the MSS (01A-B2) board.

See page 20-250c in the MIM for second level diagrams of all thermal sensors and thermal sense lines for aid in resolving thermal failures.

Use page 20-250c and ALD YA605 and YA607 to find where the +24Vdc is failing.

Did you find the failure ?
Y N

029

Problem is not resolved.
Go To Map 0001, Entry Point A.

030

Fix the failure. Repair or exchange any failing parts.

NOTE: If TR201 A, B, or C is failing exchange all three TRs because TR201 A, B, and C are a matched set and are exchanged as a set.
Go To Map 1000, Entry Point R.

031

To check the TR201/TR202 thermal sense line input to the MSS (01A-B2) board:

1. Set the CE meter scale to measure +5Vdc.
2. Connect the CE meter to the 01A-B2 board as follows:

01A-B2D2M11----- positive meter lead
01A-B2D2D08----- negative meter lead

The meter should indicate between +2.8Vdc and +5.5Vdc.

Does the meter indicate between +2.8Vdc and +5.5Vdc ?
Y N

032

The TR201/TR202 thermal sense line is open.

The line starts at PS201 Connector 6 Pin 9 (ALD YA607) and goes through CON 241 Pin 3 (ALD YA659) to the 01A-B2 board connector card (01A-B2A3B12) and then to the sense card (01A-B2D2M11) (ALD YF121 and YF171). See page 20-250c in the MIM for second level diagrams of all thermal sensors and sense lines.

Using ALDs and page 20-250c in the MIM, find and fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

033

Problem is not resolved.

Go To Map 0001, Entry Point A.

034

Check the air flow around the indicated supply.

Is the air flow obstructed ?
Y N

035

The indicated failure is a failing PS201 (ref code RRRR of D32X) or a thermal failure in either TR201 or TR202 (ref code RRRR field of D32X), or PS205 (ref code RRRR field of D19X).

Check for a loose connection in the thermal sense lines and +24Vdc supply of the indicated failing PS or TRs. For diagrams and pin listings of the +24Vdc supply, see step 015 in this MAP for PS205 and step 026 in this MAP for PS201. See page 20-250c in the MIM for second level diagrams of all thermal sensors and thermal sense lines for TR201, TR202, and PS205.

Try to generate the fault again by hitting lightly in the area of the machine indicated by the ref code. Also follow the thermal sense and +24Vdc supply lines, lightly hitting and moving the cables and connectors.

Did the failure occur again ?
Y N

036

(Entry Point Y)

The failure was an intermittent failure.

Chart A at the right gives a FRU list for each ref code.

TR201 is a matched set of three TRs (TR201 A, B, and C) and is exchanged as a set.

Make a note of the indicated FRUs using the ref code and the following Chart A:

Chart A

Ref Code	Indicated FRUs			
RRRR	(1)	(2)	(3)	(4)
D19X	PS205	PS101		
D32X	TR202	TR201	PS201	PS101

Go To Map 1000, Entry Point I.

037

If the UU field of the ref code displayed on the screen is not 1X, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1X, check if the RRRR field is either D19X or D32X. If the RRRR field is not D19X or D32X, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is D19X or D32X, check for an open in the thermal sense and +24Vdc supply lines.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

Check connectors for bent or loose pins, or an open where the cable is fastened to the pin. For diagrams and pin listings of the +24Vdc supply, see Chart 2 in step 015 in this MAP for PS205 and Chart 3 in step 026 in this MAP for PS201. See page 20-250c in the MIM for second level diagrams of all thermal sensors and thermal sense lines for TR201, TR202, and PS205.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Repeat the action you performed to make the machine fail. Move and lightly hit along the indicated line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?

Y N

038

Go to Page 7, Step 036, Entry Point Y.

039

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

040

Correct the obstruction.

Go To Map 1000, Entry Point R.

041

The failure is an intermittent failure.

Go to Page 2, Step 006, Entry Point B.

204/206 Thermal

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	B	2	006

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
6	016	0001	A
6	020	0001	A
2	005	1000	B
7	026	1000	I
4	010	1000	R
4	011	1000	R
5	013	1000	R
6	017	1000	R
6	019	1000	R
8	029	1000	R
8	030	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Power on the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen. If the unit powers on, wait for about three to five minutes.

Is PROC UNIT power ON and stays ON (ACTION DONE on screen) ?

Y N

002

Is the UU field of the displayed ref code 1x ?

Y N

8 2 2
A B C

MODEL GROUP 2,

FERRO POWER

003

This is not a power problem.

Go To Map 0000, Entry Point A.

004

Is the RRRR field of the ref code displayed on the screen D37x or D47x ?

Y N

005

You either came to the wrong MAP or the failure was an intermittent. Use the displayed ref code to determine and repair the failure.

Go To Map 1000, Entry Point B.

006

(Entry Point B)

The indicated failure is a thermal failure in either TR/PS206 (ref code RRRR of D37x or TR/PS204 (ref code RRRR of D47x).

TR204, PS204, TR206, and PS206 are all located in the 02 frame, behind the 02A gate.

The cause of the failure may be one of the following:

1) Failing TR/PS204
2) Failing TR/PS206
3) Failing +24Vdc supply for thermal sensors
4) Failing thermal sense line
5) Obstruction in the air flow path
6) Failing 01A-B2 board

Chart 1 gives a list of possible failing FRUs, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

See Chart 1 on the next page.

(Step 006 continues)

(Step 006 continued)

Chart 1

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
TR/PS204	D47x	YA611	10-055c, 20-250c
TR/PS206	D37x	YA615	10-055c, 20-250c
01A-B2 board	D19x D32x		10-035c, 050c 14-105c 20-211c, 230c
PS101	D19x D32x	YA601	10-045c, 20-160c
TB206	D19x D32x	YA651	10-055c

See page 20-250c in the MIM for second levels of all thermal sensors and thermal sense lines for aid in resolving thermal failures.

For aid in using ALDs, see the MIM, VOL 13/16, page 14-405. Also see page 20-230c for usage of ALD page YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

007

Is the RRRR field of the displayed ref code D372 ?

Y N

008

Is the RRRR field of the displayed ref code D472 ?

Y N

7 7 4 4
D E F G

009

Check the air flow around the indicated supply.

Is the air flow obstructed ?

Y N

010

If the RRRR field of the ref code is D370 exchange TR206. If the RRRR field is D470 exchange TR204.

Go To Map 1000, Entry Point R.

011

Correct the obstruction.

Go To Map 1000, Entry Point R.

012

To check the +24Vdc supply to PS204:

Set the CE meter to measure +30Vdc maximum.

Locate and disconnect connector 2 in PS204.

Connect the CE meter leads (tool) to PS204 Connector 2 on the cable as follows:

1. positive meter lead-----Connector 2 pin 1
2. negative meter lead-----Connector 2 pin 2

The meter should indicate between +21Vdc and +27Vdc.

Does the meter indicate between +21Vdc and +27Vdc ?

Y N

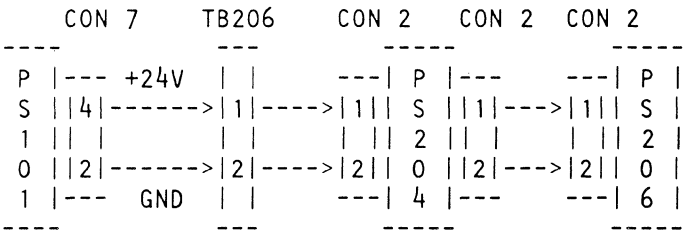
013

(Entry Point G)

The +24Vdc to PS204 and PS206 is failing.

The +24Vdc starts at PS101 Connector 7 Pins 4 and 2 (ALD YA601) and goes through TB206 Pins 1 and 2 (ALD YA651) to PS204 Connector 2 Pins 1 and 2 (ALD YA611) and then to PS206 Connector 2 Pins 1 and 2 (ALD YA615).

See the following figure for these lines and connectors:



Using this figure and list and the ALDs, find and fix the failure. Repair or exchange any failing part(s).
Go To Map 1000, Entry Point R.

014

(Entry Point F)

Reconnect connector 2 that you just disconnected.

To check the thermal sense line output of the indicated PS:

Set the CE meter to measure +5Vdc.

If the RRRR field of the ref code is D37x the indicated PS is PS206. If the RRRR field is D47x the indicated PS is PS204.

Locate and disconnect connector 4 on the indicated PS.

Connect the meter leads as follows on the indicated PS:

1. positive meter lead-----connector 4 pin 3
2. negative meter lead-----connector 4 pin 4

(Step 014 continues)

(Step 014 continued)
The meter should indicate between +2.8Vdc and +5.5Vdc.

Does the meter indicate between +2.8Vdc and +5.5Vdc ?
Y N

015
The +24Vdc for the thermal sensors in the indicated TR is failing, either in the indicated TR or PS or the cables between the TR and PS.

The +24Vdc goes from the indicated PS through the thermal sensor in the indicated TR and back to the indicated PS. In the indicated PS the +24Vdc is converted to +5Vdc by a resistor divider network to make the +5Vdc for the digital thermal sense line that goes to the MSS (01A-B2) board.

See page 20-250c in the MIM for second levels of all thermal sensors and thermal sense lines for aid in resolving thermal failures.

Use page 20-250c and ALD YA611 or YA615 to find where the +24Vdc is failing.

Did you find the failure ?
Y N

016
Problem is not resolved.
Go To Map 0001, Entry Point A.

017
Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

K

018
To check the thermal sense line input to the MSS (01A-B2) board of the indicated TR/PS:
Set the meter to measure +5Vdc.
Connect the negative meter lead to 01A-B2C2D08.
Connect the positive meter lead to the 01A-B2 board using the RRRR field of the ref code and the following Chart 3:

Chart 3

Ref Code RRRR	Positive Meter Lead Connection Point on 01A-B2 Board
D37x	01A-B2C2J04
D47x	01A-B2C2J09

The meter should indicate between +2.8Vdc and +5.5Vdc.

Does the meter indicate between +2.8Vdc and +5.5Vdc ?
Y N

019
The thermal sense line of the indicated TR/PS is failing.

The line goes from Connector 4 of the indicated PS (ALD YA611 or YA615) to the 01A-B2 board connector card and then to the sense card on the 01A-B2 board (ALD YF131 and YF171). See page 20-250c in the MIM for second levels of all thermal sensors and thermal sense lines.

Using the ALDs and page 20-250c in the MIM, find and fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

020
Problem is not resolved.
Go To Map 0001, Entry Point A.

021

To check the +24Vdc supply to PS206:
Set the CE meter to measure +30Vdc maximum.
Locate and disconnect connector 2 in PS206.
Connect the CE meter leads (tool) to PS206 Connector 2 on the cable as follows:

1. positive meter lead-----Connector 2 pin 1
2. negative meter lead-----Connector 2 pin 2

The meter should indicate between +21Vdc and +27Vdc.

Does the meter indicate between +21Vdc and +27Vdc ?
Y N

022
Go to Page 5, Step 013, Entry Point G.

023
Go to Page 5, Step 014, Entry Point F.

024

Check the air flow around the indicated supply.

Is the air flow obstructed ?
Y N

025

The indicated failure is a thermal failure in either TR/PS204 (ref code RRRR field of D47x), or TR/PS206 (ref code RRRR field of D37x).

Check for a loose connection in the thermal sense lines and +24Vdc supply of the indicated failing TR/PS. For figures and pin listings of the +24Vdc supply, see step 013, page 5 in this MAP. See page 20-250c in the MIM for second levels of all thermal sensors and thermal sense lines for TR/PS204 and TR/PS206.

Try to generate the fault again by hitting lightly in the area of the machine indicated by the ref code. Also follow the thermal sense and +24Vdc supply lines, lightly hitting and moving the cables and connectors.
(Step 025 continues)

(Step 025 continued)

Did the failure occur again ?
Y N

026

(Entry Point Y)

The failure was an intermittent failure.
Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRUs (1)	(2)	(3)
D37x	TR206	PS206	PS101
D47x	TR204	PS204	PS101

Make a note of the indicated FRUs using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

027

If the UU field of the ref code displayed on the screen is not 1x, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1x, check if the RRRR field is either D37x or D47x. If the RRRR field is not D37x or D47x, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is D37x or D47x, check for an open in the thermal sense and +24Vdc supply lines.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Check connectors for bent or loose pins, or an open
(Step 027 continues)

(Step 027 continued)
where the cable is fastened to the pin. For figures and pin listings of the +24Vdc supply, see step 013 , page 5 in this MAP. See page 20-250c in the MIM for second levels of all thermal sensors and thermal sense lines for TR/PS204 and TR/PS206.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Repeat the action you performed to make the machine fail. Move and lightly hit along the indicated line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?
Y N

028
Go to Page 7, Step 026, Entry Point Y.

029
Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

030
Correct the obstruction.
Go To Map 1000, Entry Point R.

031
The failure is an intermittent failure.
Go to Page 2, Step 006, Entry Point B.

Remote Sense

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	B	2	006
1110	K	6	018
1146	Z	7	020

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
16	048	0001	A
16	041	0001	A
12	034	0001	A
2	005	1000	B
5	017	1000	I
4	010	1000	R
8	021	1000	R
10	025	1000	R
14	037	1000	R
16	040	1000	R
16	045	1000	R
16	047	1000	R
4	015	1000	R
4	014	1000	R
12	028	1000	R
12	031	1000	R
12	033	1000	R
12	035	1140	K

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Power on the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen) ?

Y N

6 2
A B

MODEL GROUP 2,

FERRO POWER

002

Is the UU field of the ref code displayed on the screen 1x ?

Y N

003

This is not a power problem.

Go To Map 0000, Entry Point A.

004

Check if the RRRR field of the ref code displayed on the screen is listed in the following Chart 1.

Chart 1

Ref Code RRRR	Voltage Level
1030 or 1032	+6
1040	+4.25 & -4.25
1050 or 1052	-1.5
1060 or 1062	-4.25
1070 or 1072	-2.2(-6.45)
D220 or D222	+4.25
1082	all (above)
D582 or 1020	-4.25 AO

Is the displayed RRRR field listed in Chart 1 ?

Y N

005

The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.

Go To Map 1000, Entry Point B.

C

006

(Entry Point B)

The indicated failure is a remote sense indication.

To determine which voltage level is failing use the ref code and Chart 1 in step 004.

NOTE: The -4.25Vdc add on (-4.25 AO) level is located in IPS101 in the 01C gate. All other levels are located in IPS 201 in the 02A gate.

NOTE: The -2.2(-6.45)V level starts at 02A-A2J5 (IPS201) as -2.2V, and is added to the -4.25V level at TBB1 to make the -6.45V level that goes to the 01A-C1 board.

The cause of the failure may be one of the following:

1) Open remote sense line
2) Open overvoltage (OV) digital sense line
3) Failing IPS control card, board, or power module
4) Failing bulk voltage supply
5) Failing 01A-D2B2 or 01A-B2S4 card
6) Failing 01A-B2 or 01A-D2 board
7) Open +6V Start (ON/OFF) line
8) Open +6V voltage supply line to the 01A-A2 board

Chart 7 gives a list of possible failing FRUs, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

See Chart 7 on the next page.

(Step 006 continues)

(Step 006 continued)

Chart 7

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
IPS control card, board or power module	all ref codes	See NOTE1 after this chart	10-035c, 040c, 060c 20-185c, 190c, 191c, 200c, and 385c
TR/PS201	103x 104x 105x 106x 107x D22x	YA605 YA607	10-055c 20-155c, 165c
TR/PS204	1050 1052	YA611	10-055c, 20-155c
TR/PS206	102x D58x	YA615	10-055c, 20-155c
01A-D2B2 card	107x D22x	YA731	10-050c 14-105f 20-335c
01A-B2S4 card	103x		10-050c 14-105f, 310
01A-D2 board	107x D22x		10-050c 20-205c, 285
01A-B2 board	all ref codes		10-050c 20-211c, 230c
CON 244	1082	YA659	10-055c
TBB1	all ref codes	YA653 YA654	10-050c 20-200c

NOTE1: See MAP 1004, Entry Point A, Charts 1, 2, 3, and 4 in step 001 for IPS control card and power module location. For ALD pages, see ALD YA012, 'FRU LOCATION'.

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

4 4
D E

007

Is the RRRR field 1082 ?

Y N

008

Use the test station to test the power module(s) and the control card of the failing level. The procedure of how to use the test station is in MAP 1004 ENTRY POINT A. After you have reached 'return to the MAP you came from', return here.

Did you find a failing module or control card ?

Y N

009

Go to Page 7, Step 020, Entry Point Z.

010

Exchange the failing control card or power module(s)

Go To Map 1000, Entry Point R.

011

The failure is that more than one of the IPS201 levels remote sense lines are disconnected.

The most probable place is connector 244. Ensure that connector 244 is fastened.

Did you find it loose ?

Y N

012

Ensure the following are seated correctly:

1. 02A-A1B5 connector card (ALD YA626)
2. 02A-A2B5 connector card (ALD YA636)
3. Connector 240 (ALD YA659)
4. 01A-B2A2 connector card
5. 01A-B2A3 connector card
6. 01A-B2Y1 connector card
7. 01A-D2A3 connector card
8. 01A-D2B2 card
9. 01A-B2S4 card

Power on the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

(Step 012 continues)

F

(Step 012 continued)

Is PROC UNIT power ON (ACTION DONE on screen) ?

Y N

013

If the UU field of the ref code displayed on the screen is not 1x, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1x, check if the RRRR field is listed in Chart 1 in step 004. If the RRRR field is not listed in Chart 1, GO TO MAP 1000, ENTRY POINT B.

If the UU field of the displayed ref code is 1082, the indicated failure is that more than one of the IPS201 levels is indicating a remote sense failure. For the remaining steps in this MAP, use an RRRR field of 105x instead of 1082.

Go to Page 7, Step 020, Entry Point Z.

014

One or more of the above connector cards were loose.

Go To Map 1000, Entry Point R.

015

Connect connector 244 tightly.

Go To Map 1000, Entry Point R.

016

Determine the indicated failing voltage level using Chart 1 in step 004 in this MAP.

Check for a loose connection in the cables of the failing level's remote sense and overvoltage (OV) sense lines.

See Entry Point Z, Page 7, Step Number 020, for figures and pin listings of the remote sense lines. See Entry Point C, Page 9, Step Number 024; Entry Point D, Page 14, Step Number 037; and Entry Point G, Page 11, Step Number 027, for figures and pin listings of the indicated level's OV sense lines.

Try to generate the fault again by lightly hitting and moving the cables of the indicated level's remote sense and OV sense lines.

(Step 016 continues)

(Step 016 continued)

Did the failure occur again ?

Y N

017

(Entry Point Y)

The failure is an intermittent failure.
Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRUs (1)	(2)	(3)	(4)	(5)	(6)	(7)
102x	01C-A1D2	PS206	TR206	01A-B2			
103x	02A-A1B2	01A-B2S4	PS201	TR201	01A-B2		
104x	02A-A2C2	02A-A1D2	PS201	TR201	01A-B2		
105x	02A-A2D4	PS201	TR201	PS204	TR204	01A-B2	
106x	02A-A1D2	PS201	TR201	01A-B2			
107x	02A-A2C4	01A-D2B2	PS201	TR201	01A-D2	01A-B2	
D22x	02A-A2C2	02A-A1D2	01A-D2B2	PS201	TR201	01A-D2	01A-B2
D58x	01C-A1D2	PS206	TR206	01A-B2			

NOTE: TR201 is a matched set (TR201 A, B, and C) and is exchanged as a set.

Make a note of the indicated FRUs using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

018

If the UU field of the ref code displayed on the screen is not 1x, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1x, check if the RRRR field is listed in Chart 1 in step 004 in this MAP. If the RRRR field is not listed in Chart 1, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is listed in Chart 1, follow this MAP using the displayed ref code to check for an open in the indicated level's remote sense and OV sense lines. Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a sense line that may be failing intermittently, try to make the open occur again. Repeat the action you performed to make the machine fail again. Move and lightly hit along the indicated sense line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

NOTE: If you cannot find any failure in the sense lines, then GO TO STEP 017, ENTRY POINT Y in this MAP.

Go to Page 7, Step 020, Entry Point Z.

(Entry Point K)

You came to this MAP from MAP 1110 to check the bulk voltage input to the indicated IPS. To determine the correct ref code to use when answering questions in this MAP, use the indicated failing voltage level you made a note of in MAP 1110 and Chart 1 in step 004 in this MAP. Determine the correct ref code and then
Go to Page 15, Step 038, Entry Point P.

019

The failure is an intermittent failure.
Go to Page 2, Step 006, Entry Point B.

020

(Entry Point Z)

Press POWER OFF on the Operator Control Panel (OCP) and set PCC CB1 and CB2 off.

Set the CE meter to measure ohms.

Check for an open in the indicated remote sense line from the indicated IPS gate (ALD YA625, YA635, or YA644) to TBB1 (ALD YA653 and YA654) as follows:

Disconnect the connector in the IPS gate as indicated in Chart 2 below.

Connect the CE meter leads (tool) to the points on the IPS connector and TBB1 indicated by the RRRR field of the ref code and Chart 2 and check for continuity.

See figure at the right for these lines and connectors.

The points for each remote sense and return line are as follows:

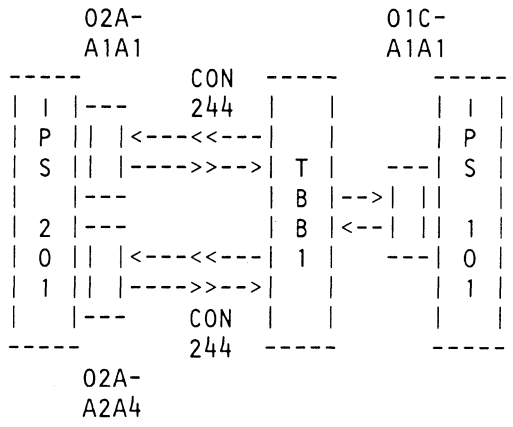


Chart 2

Ref Code RRRR	Sense/ Return	IPS Gate Connector (disconnect)	CON 244 pin	Point on TBB1
1020 or D582	Return	01C-A1A1-5	-	B25
	Sense	01C-A1A1-6	-	D26
103x	Sense	02A-A1A1-1	10	D20
	Return	02A-A1A1-2	11	B19
105x	Return	02A-A2A4-5	2	B22
	Sense	02A-A2A4-6	1	A21
106x	Return	02A-A1A1-5	4	B15
	Sense	02A-A1A1-6	3	C16
107x	Return	02A-A2A4-3	8	C11
	Sense	02A-A2A4-4	7	D12
1040 or D22x	Sense	02A-A2A1-3	5	C03
	Return	02A-A2A1-4	6	B02

(Step 020 continues)

(Step 020 continued)

Did both lines show continuity ?

Y N

021

The remote sense line is open.

Using the figure and list in the previous step and the ALDs find and fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

022

Is the RRRR field of the ref code 107x or D22x ?

Y N

023

Is the RRRR field 103x ?

Y N

1 1
3 1 9
H J K

(Entry Point C)

Reconnect the connector that you just disconnected from the indicated IPS.

Ensure PCC CB1 and CB2 are set off.

An open overvoltage (OV) sense line can give a remote sense indication.

Check for an open in the indicated overvoltage (OV) sense line from the indicated IPS gate connector card (ALD page YA626, YA636, or YA645) to the sense card on the MSS (01A-B2 board) as follows:

Set the CE meter to measure ohms.

Disconnect the connector card in the IPS gate as indicated in the following Chart 3. Connect the CE meter leads (tool) to the points indicated by the RRRR field and Chart 3 and check for continuity from the connector card in the IPS gate to the sense card in the 01A-B2 board.

NOTE: Connect the meter lead to the IPS connector card on the end of the cable. Do not connect the meter lead to the IPS board.

See figure at the right for these lines and connectors.

The pins for each OV sense line are as follows:

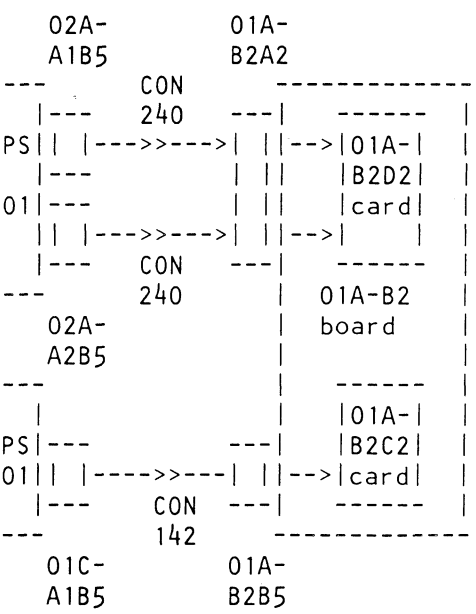


Chart 3

Ref Code RRRR	IPS Connector Card (out)	Connector Pin	01A-B2 Paddle Card (in)	01A-B2 Sense Card (in)
1020 or D582	01C-A1B5B09	CON 142 PIN 27	B5-D12	C2-M08
105x	02A-A2B5B10	CON 240 PIN 51	A3-D09	D2-M10
106x	02A-A1B5B09	CON 240 PIN 47	A3-D06	D2-P09

Did both lines show continuity ?

Y N

025

The overvoltage (OV) sense line is open.

Using the figure and list in the previous step and the ALDs find and fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

026

Go to Page 15, Step 038, Entry Point F.

(Entry Point G)

Reconnect the connector that you just disconnected from the indicated IPS.

Ensure PCC CB1 and CB2 are set off.

An open +6V overvoltage (OV) sense line can give a remote sense indication.

The +6V overvoltage (OV) sense line goes through the serial read (01A-B2S4) card before going to the sense card.

Check for an open in the +6V OV sense line from IPS201 (ALD YA626) to the sense card on the 01A-B2 board as follows:

Unseat the 01A-B2S4 card.

Set the CE meter to measure ohms.

Disconnect the connector in the IPS gate as indicated in the following Chart 6. Connect the CE meter leads (tool) to the points indicated by the RRRR field and Chart 6 below. Check for continuity from the IPS connector card to the input to the 01A-B2S4 card and from the output of the 01A-B2S4 card to the input to the sense (01A-B2D2) card. NOTE: Connect the meter lead to the 02A-A1B5 connector card on the end of the cable. Do not connect the meter lead to the IPS201 (02A-A1) board.

See figure at the right for these lines and connectors.

The pins for the +6V OV sense line are as follows:

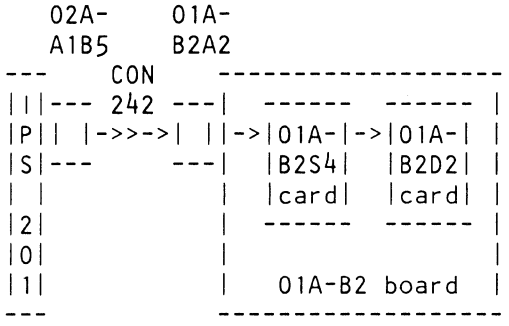


Chart 6

Ref Code RRRR	IPS Connector Card (out)	Connector Pin	01A-B2 Paddle Card (in)	01A-B2S4 Card (in)	01A-B2S4 Card (out)	01A-B2 Sense Card (in)
103x	02A-A1B5B13	CON 242 PIN 15	A2-B04	B09	J09	D2-G05

Did both lines show continuity ?

Y N

1 1
2 2
N P

028

The +6V overvoltage sense line is open.

Using the figure and list in the previous step and the ALDs find and fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

029

The bulk voltage for the +6Vdc level may be bad.

1. Reconnect the connectors that you disconnected.
2. Set PCC CB1 and CB2 on.
3. Press POWER ON on the CE Panel.

Set the CE meter to measure +15Vdc.

Connect the meter leads (tool) to IPS201 as follows:

02A-A1F2 ---------- positive meter lead
02A-A1G1 ---------- negative meter lead

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the meter.

Did the meter indicate above 8Vdc for a short time ?
Y N

030

Did you just exchange the 01A-B2S4 card ?
Y N

031

Exchange the 01A-B2S4 card.

Go To Map 1000, Entry Point R.

032

Did you just exchange PS201 ?
Y N

033

Exchange PS201.

Go To Map 1000, Entry Point R.

034

Problem is not corrected.

Go To Map 0001, Entry Point A.

035

The +6V remote and OV sense lines, IPS control card and power module, and PS201 are good. To check the IPS (02A-A1) board, the +6V start (ON/OFF) line to the IPS, and the voltage supply line to the 01A-A2 board

Go To Map 1140, Entry Point K.

036

Reconnect the connector that you just disconnected from IPS201.

Ensure that PCC CB1 and CB2 are set off.

An open overvoltage (OV) sense line can give a remote sense indication.

Check for an open in the indicated voltage level's OV sense line as follows:

Set the CE meter to measure ohms.

Unseat the 01A-D2B2 card and the 02A-A2B5 connector card.

Connect the CE meter leads (tool) to the points indicated by the RRRR field of the ref code and Chart 4 below and check for continuity.

NOTE: Connect the meter lead to the 02A-A2B5 connector card on the end of the cable. Do not connect the meter lead to the IPS201 (02A-A2) board.

NOTE: If the failure is an intermittent failure, see the next page for a figure and pin list of these lines and connectors.

Chart 4

Ref Code RRRR	Points to check for open in the OV sense line
107x	02A-A2B5B08 to 01A-D2B2D10 and 01A-D2B2D09 to 01A-B2D2M07
D22x	02A-A2B5B07 to 01A-D2B2D05 and 01A-D2B2D07 to 01A-B2D2M04

Did both lines show continuity ?

Y N

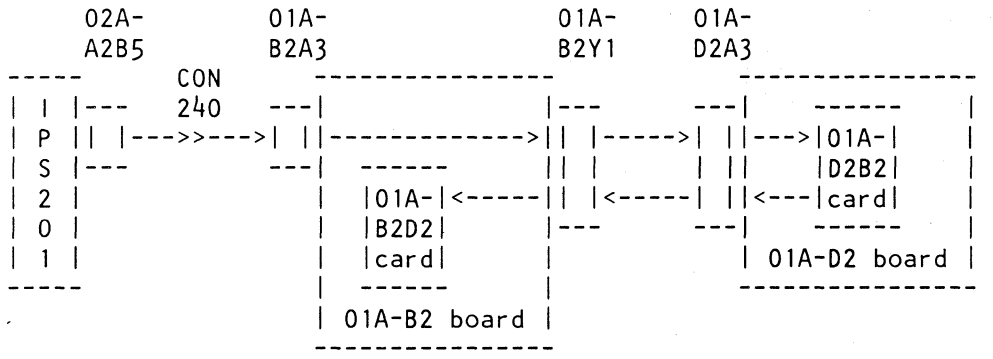
1 1
5 4
S T

(Entry Point D)

The OV sense line is open.

The sense line goes from IPS201 connector card 02A-A2B5 (ALD YA636) through connector 240 (ALD YA659) into 01A-B2 board connector card 01A-B2A3, through the 01A-B2 board to the 01A-B2Y1 connector card (ALD YF121 and YF171), then into 01A-D2 board connector card 01A-D2A3, through the 01A-D2B2 card, back to the 01A-D2A3 connector card (ALD YA 701 and YA731), and back to 01A-B2 board connector card 01A-B2Y1 (ALD YF161 and YF171) to the sense card on the 01A-B2 board (ALD YF171).

The following figure shows these lines and connectors:



The pins for each OV sense line are as follows:

| Chart 8 |

Ref Code RRRR	02A-A2B5 (out)	CON 240 pin	01A-B2A3 (in)	01A-B2Y1 (out)	01A-D2A3 (in)	01A-D2B2 card (in)	01A-D2B2 card (out)	01A-D2A3 (out)	01A-B2Y1 (in)	01A-B2D2 card (in)
107x	B08	41	D02	B08	B08	D10	D09	D09	D09	M07
D22x	B07	37	D13	B07	B07	D05	D07	D07	D07	M04

Using this figure and list and the ALDs, find and fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

(Entry Point F)

1. Reconnect the connectors that you disconnected.
2. Set PCC CB1 and CB2 on.
3. Press POWER ON on the CE Panel.

(Entry Point P)

The bulk voltage of the indicated voltage level may be bad.

Set the CE meter to measure the voltage indicated by the ref code and the 'Measure Voltage' column in the following Chart 5.

Connect the CE meter leads (tool) to PS201, PS204, or PS206 as indicated by the ref code and the following Chart 5. NOTE: To measure the output of PS204 or PS206 it is necessary to disconnect Connectors 5 and 6 on the indicated PS.

Chart 5

Ref Code RRRR	Measure Voltage (Vdc)	Voltage Limit (Vdc)	Probing Point on PS	Pins (+)	Pins (-)
105x	+6.8	+4.0	PS201 TB2 and PS204	7 CON 6	4 CON 5
106x	+10.0	+7.0	PS201 TB1	7	5
107x	+7.0	+4.0	PS201 TB1	11	9
108x	+6.8	+4.0	PS201 TB2	7	4
1040 or D22x	+10.3	+7.0	PS201 TB2	11	9
1020 or D582	+10.0	+7.0	PS206	CON 6	CON 5

NOTE: If the RRRR field is 105x (-1.5V failure), ensure that PS204 Connectors 5 and 6 are connected correctly and are not reversed.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the meter.

The meter should indicate a voltage higher than the

(Step 038 continues)

(Step 038 continued)
voltage in the 'Voltage Limit' column in Chart 5.

Was the voltage higher than the limit ?
Y N

039

Did you just exchange the indicated PS ?
Y N

040
Exchange the indicated PS.
Go To Map 1000, Entry Point R.

041
Problem is not corrected.
Go To Map 0001, Entry Point A.

042

Is the RRRR field 107x or D22x ?
Y N

043
Go to Step 046, Entry Point J.

044

Did you just exchange the 01A-D2B2 card ?
Y N

045
Exchange the 01A-D2B2 card.
Go To Map 1000, Entry Point R.

046

(Entry Point J)

Did you just exchange the indicated IPS board ?
Y N

U V

U V

047
Exchange the indicated IPS board.
Go To Map 1000, Entry Point R.

048
Problem is not corrected.
Go To Map 0001, Entry Point A.

Analog

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	B	2	008

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	005	0000	A
10	028	0001	A
2	007	1000	B
11	035	1000	I
9	025	1000	R
10	027	1000	R
10	032	1000	R
8	021	1000	R
8	023	1000	R
12	044	1000	R
12	041	1000	R
12	038	1000	R
8	022	1103	K
10	031	1143	B
6	017	1152	K

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Is the RRRR field of the ref code 1160 ?

Y N

002

Is the RRRR field of the ref code 1150 or 1152 ?

Y N

1 1 2
2 2 2
A B C

MODEL GROUP 2,
FERRO POWER

C
1

MAP CODE 1110CXXX

PAGE 2 OF 13

003

(Entry Point C)

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen)?

Y N

004

Is the UU field of the ref code displayed on the screen 1x ?

Y N

005

This is not a power problem.

Go To Map 0000, Entry Point A.

006

Chart 1

Ref Code RRRR Field	Voltage Level	Board On 01A Gate
1102 or A270	+4.25	01A-C1
1122 or A230	-4.25	01A-B1
1132 or A520	-2.2(-6.45)	01A-C1
1150 or 1152	-1.5 & -4.25	01A-B1
1160	-1.5 & +4.25	01A-C1
A170 or A172	-1.5	01A-A1
A180 or A182	-4.25	01A-A1
A210 or A212	-4.25 A0 (add on)	01A-B1
A220 or A222	-1.5	01A-B1
A240 or A242	-1.5	01A-C1
A250 or A252	-4.25	01A-C1

Is the RRRR field of the displayed ref code listed in Chart 1 ?

Y N

1
2
D E F

E F

007

The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.

Go To Map 1000, Entry Point B.

008

(Entry Point B)

The indicated failure is that a voltage level on a board in the 01A gate is out of tolerance.

To determine which voltage level is failing use the ref code and Chart 1 in step 006.

NOTE: The -4.25Vdc add on (-4.25 AO) level is located in IPS101 in the 01C gate. All other levels are located in IPS 201 in the 02A gate.

NOTE: The -2.2(-6.45)V level starts at 02A-A2J5 (IPS201) as -2.2V, and is added to the -4.25V level at TBB1 to make the -6.45V level that goes to the 01A-C1 board.

NOTE: The +4.25V level has two levels, the +4.25 Initial (+4.25 I) and the +4.25 Final (+4.25 F). The initial level is 10% to 30% (+0.4 to +1.3 Vdc) of the final value (+4.25Vdc).

The cause of the failure may be one of the following:

1) Failing IPS control card, board, or power module
2) Failing 01A gate analog sense line
2) Failing voltage supply line to the 01A gate
3) Failing IPS control line
4) Failing 01A-D2B2 card
5) Failing 01A-A1, 01A-A2, 01A-B1, 01A-B2, 01A-C1, or 01A-D2 board

Chart 2 gives a list of possible failing FRUs, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

See Chart 2 on the next page.

(Step 008 continues)

(Step 008 continued)

Chart 2

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
IPS control card, board or power module	all ref codes	See NOTE1 after this chart	10-035c, 040c, 060c 20-185c, 190c, 191c, 200c, and 385c
01A-D2B2 card	all ref codes	YA731	10-035c, 050c 14-105c 20-335c
01A-A1 board	See Chart 1 in step 006	YA663	10-035c, 050c 20-165c, 200c, 241c
01A-B1 board	See Chart 1 in step 006	YA665	10-035c, 050c 20-165c, 200c, 241c
01A-C1 board	See Chart 1 in step 006	YA667	10-035c, 050c 20-165c, 200c, 242c
01A-B2 board	all ref codes		10-035c, 050c 20-211c, 230c
01A-D2 board	all ref codes		10-035c, 050c 20-205c, 285
TBB1	all ref codes	YA653 YA654	10-050c 20-200c

NOTE1: See MAP 1004, Entry Point A, Charts 1, 2, 3, and 4 in step 001 for IPS control card and power module location. For ALD pages, see ALD YA012, 'FRU LOCATION'.

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

1 0 G 4 H

009

Have you tested the control card and power module(s) of this level ?

Y N

010

Make a note of the MAP, page, and step number of this step.

Use the test station to test the power module(s) and the control card of the failing level. The procedure of how to use the test station is in MAP 1004 ENTRY POINT A. After you have reached 'return to the MAP you came from', return here.

Did you find the failing module(s) or control card ?

Y N

011

Is the RRRR field of the ref code 1102 ?

Y N

1 1 1
0 0 0 5
J K L M

(Entry Point D)

Set your CE meter to measure about the voltage indicated by the ref code and the 'Voltage Range' column in the following Chart 3.

Using the RRRR field of the ref code and the following Chart 3, connect the meter leads (tool) on the board on the 01A gate.

Chart 3

Ref Code RRRR	Sense Connector Probing Point (01A gate) (+)	(-)	Voltage Range (Vdc)
1102	C1-C4A01	C1-C4B01	+0.3 to +1.3
1122	B1-E4D01	B1-E4A01	+4.0 to +4.5
1132	C1-A4B01	C1-A4D01	+2.0 to +2.5
A172	A1-A1D13	A1-A1B13	+1.3 to +1.7
A182	A1-A4B01	A1-A4D01	+4.0 to +4.5
A212	B1-C1D13	B1-C1B13	+4.0 to +4.5
A222	B1-E4D01	B1-E4B01	+1.3 to +1.7
A242	C1-C4B01	C1-C4D01	+1.3 to +1.7
A252	C1-A1D13	C1-A1B13	+4.0 to +4.5
A270	C1-C4A01	C1-C4B01	+4.0 to +4.5

NOTE: See MIM VOL 13/16 Pages 20-241c and 20-242c for figures of the voltage sense points.

NOTE: There should be an analog sense connector connected to the pins listed in Chart 3. If there is no connector connected, either the analog sense connector is disconnected or missing. Find and fix the failure.

Check if the meter indicates a voltage inside the range listed in the 'Voltage Range' column in Chart 3 after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the CE meter.

(Step 012 continues)

(Step 012 continued)

Did the meter indicate a voltage inside the range listed in Chart 3 ?

Y N

013

To determine where to probe next on the indicated IPS, use the ref code and the following Chart 4.

Chart 4

Ref Code RRRR	Probing Point on indicated IPS (+)	(-)
1102	02AA2-C2G08	frame
1122	02AA1-D2G08	frame
1132	02AA2-C4G08	frame
A172	02AA2-D4G08	frame
A182	02AA1-D2G08	frame
A212	01CA1-D2G08	frame
A222	02AA2-D4G08	frame
A242	02AA2-D4G08	frame
A252	02AA1-D2G08	frame
A270	02AA2-C2G08	frame

Connect the CE meter leads (tool) as indicated in Chart 4.

The meter should indicate the following sequence:

Before powering up the processing unit the voltage should be floating above +2.0Vdc; after powering up the processing unit the voltage should go to approximately +3.0Vdc and then decrease to less than +0.5Vdc.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the meter.

Did the meter indicate the sequence as described?

Y N

8 7
N P Q

Q

SEQ318C MAP 1110-6

014

Is the RRRR field of the ref code A212 ?

Y N

015

Have you just exchanged the 01A-D2B2 card ?

Y N

016

Press POWER OFF on the Operator Control Panel (OCP).

Set the main line CBs (CB1 and CB2 in the PCC) to the OFF position.

Reseat the 01A-D2B2 card. If that does not fix the failure, exchange the 01A-D2B2 card.

Reset CB1 and CB2 in the PCC and press POWER ON on the CE Panel.

Go to Page 2, Step 003, Entry Point C.

017

(Entry Point J)

The control line of the indicated voltage is open.

To find and fix the failure,

Go To Map 1152, Entry Point K.

018

Go to Step 017, Entry Point J.

(Entry Point H)

To determine where to probe next on the indicated IPS, use the ref code and the following Chart 5.

Set your CE meter to measure about the voltage indicated by the ref code and the 'Voltage Range' column in the following Chart 5.

Using the RRRR field of the ref code and the following Chart 5, connect the meter leads (tool) to the indicated IPS board.

Chart 5

Ref Code RRRR	IPS Terminal Probing Point (02A or 01C gate) (+)	IPS Terminal Probing Point (02A or 01C gate) (-)	Voltage Range (Vdc)
1102	02A-A2J4D	02A-A2J4B	+0.3 to +1.3
1122	02A-A1J7	02A-A1J8	+4.0 to +4.5
1132	02A-A2J5D	02A-A2J5B	+2.0 to +2.5
A172	02A-A2J7	02A-A2J8	+1.3 to +1.7
A182	02A-A1J7	02A-A1J8	+4.0 to +4.5
A212	01C-A1J1	01C-A1J2	+4.0 to +4.5
A222	02A-A2J7	02A-A2J8	+1.3 to +1.7
A242	02A-A2J7	02A-A2J8	+1.3 to +1.7
A252	02A-A1J7	02A-A1J8	+4.0 to +4.5
A270	02A-A2J4D	02A-A2J4B	+4.0 to +4.5

Check if the meter indicates a voltage inside the range listed in the 'Voltage Range' column in Chart 5 after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the CE meter.

Did the meter indicate a voltage inside the range listed in Chart 5 ?

Y N

8 8
R S

020

Did you just exchange the indicated IPS board ?
Y N

021

The IPS board where you just measured may be failing. Exchange the indicated IPS board.
Go To Map 1000, Entry Point R.

022

The bulk voltage of the indicated failing voltage level may be bad. Make a note of the indicated failing voltage level for use in MAP 1103. To check the bulk voltage of the indicated failing voltage level,
Go To Map 1103, Entry Point K.

023

The cables between the indicated IPS board where you just measured aand the board on the 01A gate are failing.

The cables from IPS201 start at the IPS board terminals (ALD YA629 and YA639), go through the interframe connector (ALD YA653 and YA654) to TBB1 (ALD YA653, YA654, and YA655) and then to the 01A-A1, 01A-B1, and 01A-C1 boards (ALD YA663, ALD YA665, and ALD YA667). See MIM VOL 13/16 Pages 20-165c and 20-200c for figures and pin lists of these lines.

The cables from IPS101 start at the IPS board terminals (ALD YA646), go to TBB1 (ALD YA654 and YA655) and then to the 01A-B1 board (ALD YA665). See MIM VOL 13/16 Pages 20-165c and 20-200c for figures and pin lists of this line.

Using the ALDs and MIMs, find and fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

024

To check the input to the sense card, perform the following:

Set the CE meter lead to measure +2.0Vdc.

Locate the probing points on the sense card (01A-B2C2 or 01A-B2D2 card) using the ref code and the following Chart 6:

Chart 6

Ref Code RRRR	Sense Card Probing Point (01A-B2 Board) (+)	(-)	Voltage Range (Vdc)
1102	D2S05	D2U08	+0.2 to +0.5
1122	D2U08	D2U10	+1.3 to +1.7
1132	C2U08	C2S09	+0.4 to +0.6
A172	D2U08	D2U06	+1.3 to +1.7
A182	D2U08	D2U09	+1.3 to +1.7
A212	D2U08	D2S08	+1.3 to +1.7
A222	D2U08	D2S07	+1.3 to +1.7
A242	D2U08	D2S10	+1.3 to +1.7
A252	D2M08	D2P12	+1.3 to +1.7
A270	D2S05	D2D08	+1.3 to +1.7

Check if the meter indicates a voltage inside the range listed in the 'Voltage Range' column in Chart 6 after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the CE meter.

Did the meter indicate a voltage inside the range listed in Chart 6 ?
Y N

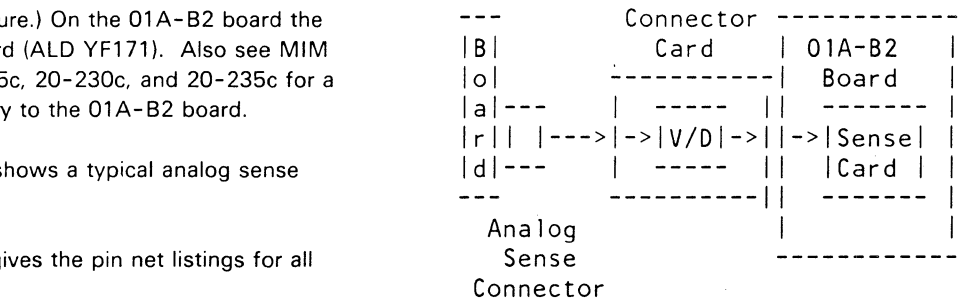
1
0 9
T U

(Entry Point F)

The 'ANALOG SENSE' line of the voltage in the indicated board is failing.

The line starts at the analog sense connector on the indicated board (ALD YA663, YA665, and YA667) and goes to the 01A-B2 board through a connector card (ALD YF101 and YF111). (NOTE: There is a voltage divider network on the connector card that reduces the board voltage level to a normal 1.5Vdc. This is shown as 'V/D' in the following figure.) On the 01A-B2 board the line goes to the sense card (ALD YF171). Also see MIM VOL 13/16 Pages 20-225c, 20-230c, and 20-235c for a description of sensor entry to the 01A-B2 board.

The figure at the right shows a typical analog sense line---->



The following Chart 7 gives the pin net listings for all the analog sense lines:

Chart 7

Ref Code RRRR	Analog Sensor Number	Board On 01A Gate Analog Sense Connector Pin	01A-B2 Board Connector Card Pin	01A-B2 Board Sense Card Pin
1102	A27	01A-C1C4A01	01A-B2A5B09	01A-B2D2S05
1122	A23	01A-B1E4A01	01A-B2B2B08	01A-B2D2U10
1132	A52	01A-C1A4D01	01A-B2A5B10	01A-B2C2S09
A172	A17	01A-A1A1B13	01A-B2B2B02	01A-B2D2U06
A182	A18	01A-A1A4D01	01A-B2B2B05	01A-B2D2U09
A212	A21	01A-B1C1B13	01A-B2A5B08	01A-B2D2S08
A222	A22	01A-B1E4B01	01A-B2B2B04	01A-B2D2S07
A242	A24	01A-C1C4D01	01A-B2A5B02	01A-B2D2S10
A252	A25	01A-C1A1B13	01A-B2A5B07	01A-B2D2P12
A270	A27	01A-C1C4A01	01A-B2A5B09	01A-B2D2S05

Using the figure, Chart 7, the ALDs, and the MIM, find where the indicated sense line is failing. Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

026

The indicated sense card (01A-B2C2 or 01A-B2D2) where you just measured may be failing.

Did you just exchange the indicated sense card ?

Y N

027

Exchange the indicated sense card (01A-B2C2 or 01A-B2D2).

Go To Map 1000, Entry Point R.

028

Problem is not corrected.

Go To Map 0001, Entry Point A.

029

The +4.25 Final control line may be shorted to ground.

To check the +4.25 Final control line, perform the following:

Press the MODE SELECT key
Key in MV
Press the ENTER key

The VOLTAGE TRACKING screen should be displayed. See MIM VOL 13/16 Pages 20-100c and 20-105c for information on the VOLTAGE TRACKING screen.

Display the turn on of the +4.25 Initial voltage using the following procedure:

Key in 10 next to 'TRACK NUMBER' and 1 next to 'VOLTAGE(S) V'
Press the ENTER key

Within approximately 5 seconds the screen should change to display the turn on of the +4.25 Initial voltage. A line of '1's should be displayed on the screen. If the +4.25 Final control line is shorted to ground, the line of '1's will start at '0% V1', stay at '0% V1' for approximately 50 milliseconds (10 positions on the display), and then increase to more than 70% of '100% V1' (The line of '1's will go over the seventh line on the display) and stay there all the way across the screen.
(Step 029 continues)

(Step 029 continued)

Did the line of '1's increase to more than 70% of '100% V1' ?

Y N

030

The +4.25 Final control line is good.

Go to Page 5, Step 012, Entry Point D.

031

The +4.25 Final control line is shorted to ground. To find and fix the failure,

Go To Map 1143, Entry Point B.

032

Exchange the failing control card or power module(s)

Go To Map 1000, Entry Point R.

033

Go to Page 5, Step 012, Entry Point D.

034

Check for poor connection of flexible distribution system (FDS) connectors on the rear of the indicated board, or poor sense cable connection. See MIM VOL 13/16 Pages 20-200c, 20-241c, and 20-242c for voltage and sense connectors.

Also check for poor or loose connection of the voltage supply cables from the indicated IPS to the board on the 01A gate, and the analog sense lines from the board on the 01A gate to the 01A-B2 board. See MIM VOL 13/16 Page 20-200c for net lists of the voltage supply lines. See step 025, page 9 in this MAP for net lists of the analog sense lines.

Try to generate the failure again by lightly hitting and moving the cables and connectors of the indicated voltage level's voltage supply and analog sense lines.

Did the failure occur again ?

Y N

(Entry Point Y)

The failure was an intermittent failure.
Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRUs (1)	(2)	(3)	(4)
115x	02A-A1D2	02A-A2D4	01A-D2B2	cables
1160	cables			
1102	02A-A2C2	01A-D2B2		
1122	02A-A1D2	01A-D2B2		
1132	02A-A2C4	01A-D2B2		
A17x	02A-A2D4	01A-D2B2		
A18x	02A-A1D2	01A-D2B2		
A21x	01C-A1D2	01A-D2B2		
A22x	02A-A2D4	01A-D2B2		
A23x	02A-A1D2	01A-D2B2		
A24x	02A-A2D4	01A-D2B2		
A25x	02A-A1D2	01A-D2B2		
A27x	02A-A2C2	01A-D2B2		
A52x	02A-A2C4	01A-D2B2		

NOTE: The 'cables' listed in Chart A for RRRR of 115x and 1160 are the indicated analog sense cables from the 01A-B1 and 01A-C1 boards to the 01A-B2 board. See step 025, page 9; step 043, page 12; and step 040, page 12 in this MAP.

Make a note of the indicated FRUs using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

MAP CODE 1110CXXX

036

If the UU field of the ref code displayed on the screen is not 1x, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1x, check if the RRRR field is listed in Chart 1 in step 006. If the RRRR field is not listed in Chart 1, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is listed in Chart 1, check for an open in the indicated level's voltage supply and analog sense lines.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a sense line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated sense line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?
Y N

037
Go to Page 11, Step 035, Entry Point Y.

038

Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

039

The failure is an intermittent.
Go to Page 2, Step 008, Entry Point B.

040

(Entry Point Q)

The sense line of the -4.25Vdc & -1.5Vdc voltage levels on the 01A-B1 board is failing. The most probable place for this to occur is the 01A-B1E4 analog sense connector. Ensure that analog sense connector 01A-B1E4 is tightly connected and that no pins in the connector are loose. See MIM VOL 13/16 Page 20-241c for a figure of the voltage sense points.

Was the analog sense connector tightly connected ?
Y N

041

Connect the connector tightly.
Go To Map 1000, Entry Point R.

042

The -1.5V (Analog Sensor Number A22) and -4.25V (Analog Sensor Number A23) analog sense lines between the 01A-B1 board and the 01A-B2 board are failing. To find and fix the failure,
Go to Page 9, Step 025, Entry Point F.

043

(Entry Point P)

The sense line of the +4.25Vdc & -1.5Vdc voltage levels on the 01A-C1 board is failing. The most probable place for this to occur is the 01A-C1C4 analog sense connector. Ensure that analog sense connector 01A-C1C4 is tightly connected and that no pins in the connector are loose. See MIM VOL 13/16 Page 20-242c for a figure of the voltage sense points.

Was the analog sense connector tightly connected ?
Y N

044

Connect the connector tightly.
Go To Map 1000, Entry Point R.

045

The -1.5V (Analog Sensor Number A25) and +4.25V (Analog Sensor Number A27) analog sense lines between the 01A-C1 board and the 01A-B2 board are failing. To find and fix the failure,

Go to Page 9, Step 025, Entry Point F.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	B	2	006

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
6	021	0001	A
2	005	1000	B
6	023	1000	I
4	009	1000	R
4	011	1000	R
4	012	1000	R
5	014	1000	R
5	016	1000	R
5	018	1000	R
5	020	1000	R
6	026	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Power on the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen) ?

Y N

6 2
A B

MODEL GROUP 2,
FERRO POWER

002

Is the UU field of the ref code displayed on the screen 1X ?
Y N

003
This is not a power problem.
Go To Map 0000, Entry Point A.

004

Is the displayed ref code RRRR field 1182 ?
Y N

005
The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.
Go To Map 1000, Entry Point B.

006

(Entry Point B)

The indicated failure is that either there is no ac voltage to PS205 or the fuse in PS205 is failing.

PS205 is located behind the 02A gate in the front of frame 02. PS205 supplies the +12.5Vdc bias to IPS201 (02A-A1 and 02A-A2).

The cause of the failure may be one of the following:

1) Failing ac line to PS205
2) Failing fuse in PS205
3) Failing PS205
4) Failing cable between PS205 and IPS201 (02A-A1 or 02A-A2) board
5) Failing IPS201 (02A-A1 or 02A-A2) board

Chart 1 gives a list of possible failing FRU's, ref codes that could indicate the FRU, and references to the ALD's and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

(Step 006 continues)

(Step 006 continued)

See Chart 1 on the next page.

Chart 1

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
IPS201 (02A-A1 or 02A-A2)	1182	See NOTE1 after this chart	10-035c, 060c 20-185c, 190c
PS205	1182	YA613	10-055c 20-160c, 165c
PCC K3	1182	YA411	10-035c, 045c 20-160c
PCC CON 24	1182	YA417	10-035c, 045c 20-160c

NOTE1: For IPS201 ALD pages, see ALD YA012, 'FRU LOCATION'.

For aid in using ALD's, see the MIM, VOL 13/16, page 14-405. Also see page 20-230c for usage of ALD page YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?
Y N

007
Check if PS205's fuse is good.

Is the fuse good ?
Y N

6 4 4
C D E

008

Have you just exchanged PS205's fuse ?
Y N

009
Exchange PS205's fuse.
Go To Map 1000, Entry Point R.

010
Exchange PS205's fuse.
Locate and disconnect Connector 2 on PS205.
After trying to power up, check the fuse in PS205.
Power on the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.
Check if PS205's fuse is good.

Is the fuse good ?
Y N

011
PS205 has an internal or connector terminal short circuit.
Exchange PS205.
Go To Map 1000, Entry Point R.

012
There is a short circuit, either in the cables between PS205 and IPS201 or in IPS201.
The +12.5Vdc bias from PS205 starts at PS205 Connector 2 (ALD YA613) and goes to the 02A-A1A3 (ALD YA625) and 02A-A2A3 (ALD YA635) connectors on IPS201. See page 20-165c in the MIM for a diagram of these lines.
Using the ALDs and page 20-165c, find and fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

013

DANGER
THIS CONNECTOR HAS A HIGH VOLTAGE. BE CAREFUL WHEN YOU MEASURE NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF THE METER LEAD (TOOL).
Locate PS205 connector 1 and disconnect it. The connector is located on the air barrier above PS204.
Set the CE meter to measure the ac line voltage.
Connect your CE meter to PS205 connector 1 at the cable end (PS205 CON 1 J), the connector that is on the frame.
Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for ac voltage indication.

Did the meter indicate the ac line voltage ?
Y N

014

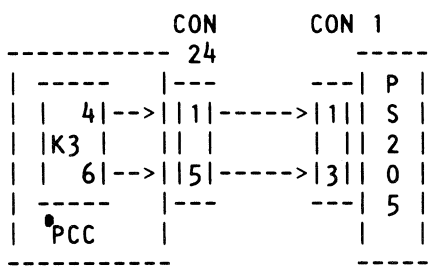
DANGER

THE PCC BOX HAS A HIGH VOLTAGE. BE CAREFUL WHEN YOU MEASURE NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF ANY CABLE IN THE PCC BOX.

The ac line goes from Primary Control Compartment (PCC) contactor K3 pins 4 and 6 (ALD YA411), through PCC Connector 24 pins 1 and 5 (ALD YA417), to PS205 Connector 1 Pins 1 and 3 (ALD YA613).

NOTE: Between PCC CON 24 and PS205 CON 1, the ac line branches out to AMD 201 and AMD202 (see ALD YA417).

The following figure shows these lines and connectors:



NOTE: The frame ground and shield lines are NOT shown in this figure.

Using this diagram and list and the ALD's, find where the ac voltage to PS205 is failing. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

015

Reconnect the connector you disconnected.

DANGER

THIS CONNECTOR HAS A HIGH VOLTAGE. BE CAREFUL WHEN YOU MEASURE NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF THE METER LEAD (TOOL).

Locate the pins in PS205 TB 1 where the ac line enters the PS. Use ALD page YA613.

Set the CE meter to measure the ac line voltage.

Connect your CE meter to the ac line input pins on PS205 TB 1.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for ac voltage indication.

Did the meter indicate the ac line voltage ?
Y N

016

The line from PS205 CON 1 P to PS205 TB 1 is open.

Repair or exchange the cable.

Go To Map 1000, Entry Point R.

017

Ensure PS205 Connector 2 is connected tightly.

Is PS205 Connector 2 connected tightly ?
Y N

018

Connect PS205 Connector 2 tightly.

Go To Map 1000, Entry Point R.

019

Have you just exchanged PS205 ?
Y N

020

Exchange PS205.

Go To Map 1000, Entry Point R.

021

Problem is not corrected.

Go To Map 0001, Entry Point A.

022

DANGER

THE PCC BOX HAS A HIGH VOLTAGE. BE CAREFUL WHEN YOU MEASURE NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF ANY CABLE IN THE PCC BOX.

Check the ac line from the PCC (ALD page YA417) to PS205 (ALD page YA613) for a loose connection.

See step 014 in this MAP for a diagram and pin listing of the ac line.

Try to generate the failure again by moving and lightly hitting the cables and connectors of the ac line.

Did the failure occur again ?

Y N

023

(Entry Point Y)

The failure was an intermittent failure.

Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRU's
118X	PS205

Make a note of the indicated FRU's using the ref code and Chart A and then

Go To Map 1000, Entry Point I.

024

If the UU field of the ref code displayed on the screen is not 1X, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1X, check if the RRRR field is 1182. If the RRRR field is not 1182, GO TO MAP 1000, ENTRY POINT B.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

If the RRRR field of the ref code is 1182, check for an open in the ac line to PS205. Check connectors for bent or loose pins, or an open where the cable is fastened to the pin. Use the diagram and pin listing and the ALDs given in step 014 in this MAP.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?

Y N

025

Go to Step 023, Entry Point Y.

026

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

027

The failure is an intermittent failure.

Go to Page 2, Step 006, Entry Point B.

Bias CP

PAGE 1 OF 8

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	B	2	006

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
5	016	0001	A
2	005	1000	B
7	030	1000	I
4	009	1000	R
4	012	1000	R
4	013	1000	R
5	015	1000	R
6	020	1000	R
6	022	1000	R
6	023	1000	R
6	024	1000	R
8	033	1000	R
8	038	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

PS205 is located in frame 02 behind the 02A gate (MIM page 10-055c).

Ensure that all PS205 CPs are set on.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen) ?

Y N

8 2
A B

MODEL GROUP 2,
FERRO POWER

002

Is the UU field of the ref code displayed on the screen 1X ?

Y N

003

This is not a power problem.

Go To Map 0000, Entry Point A.

004

Chart 1

Ref Code RRRR	Voltage Level
1190	+6
1200	+4.25
1210	-1.5
1220	-4.25
1230	-2.2(-6.45)
D500 or D502	any one

Is the displayed RRRR field listed in Chart 1 ?

Y N

005

The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.

Go To Map 1000, Entry Point B.

006

(Entry Point B)

The failure indicated by this ref code is that there is a short circuit on the load of PS205 or PS205's CP(s) is tripped. PS205 supplies the +12.5Vdc bias to IPS201.

To determine which level's bias is indicated use the ref code and Chart 1 in step 004 in this MAP.

NOTE: The -2.2(-6.45)V level starts at 02A-A2J5 (IPS201) as -2.2Vdc, and is referenced to the -4.25V level at TBB1 to make the -6.45V level that goes to the 01A-C1 board.

The cause of the failure may be one of the following:

1) Failing PS205
2) Failing cable between PS205 and IPS201
3) Failing IPS control card, board, or power module
4) Failing +24Vdc supply to PS205
5) Failing PS205 CP sense line
6) Failing 01A-B2 board

Chart 2 gives a list of possible failing FRU's, ref codes that could indicate the FRU, and references to the ALD's and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

See Chart 2 on the next page.

(Step 006 continues)

(Step 006 continued)

Chart 2

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
IPS control card, board or power module	all ref codes	See NOTE1 after this chart	10-035c, 060c 20-185c, 190c, and 385c
PS205	all ref codes	YA613	10-055c 20-160c, 165c
01A-B2 board	all ref codes		10-035c, 050c 20-211c, 230c

NOTE1: See MAP 1004, Entry Point A, Charts 1, 2, 3, and 4 in step 001 for IPS control card and power module location. For ALD pages, see ALD YA012, 'FRU LOCATION'.

For aid in using ALD's, see the MIM, VOL 13/16, page 14-405. Also see page 20-230c for usage of ALD page YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

007

Check if any PS205 CP is tripped.

Did any PS205 CP(s) trip ?

Y N

7 5 4
D E F

008

Check connectors 3 & 4 on PS205 for good connection.

Are the connectors connected tightly ?

Y N

009

Connect the connector tightly.

Go To Map 1000, Entry Point R.

010

To check the PS205 CP sense line output:

Set the CE meter to measure +5Vdc.

Locate PS205 connector 4.

Connect the positive meter lead to connector 4 pin 5 and the other meter lead to connector 4 pin 2 while the connector is plugged in.

The meter should indicate between +2.8Vdc and +5.5Vdc.

Does the meter indicate between +2.8Vdc and +5.5Vdc ?

Y N

011

To check the +24Vdc supply to PS205:

Set the CE meter to measure +24Vdc.

Locate PS205 connector 3.

Connect the positive meter lead to connector 3 pin 1 and the other meter lead to connector 3 pin 2 while the connector is plugged in.

The meter should indicate between +21Vdc and +27Vdc.

Does the meter indicate between +21Vdc and +27Vdc ?

Y N

G H J

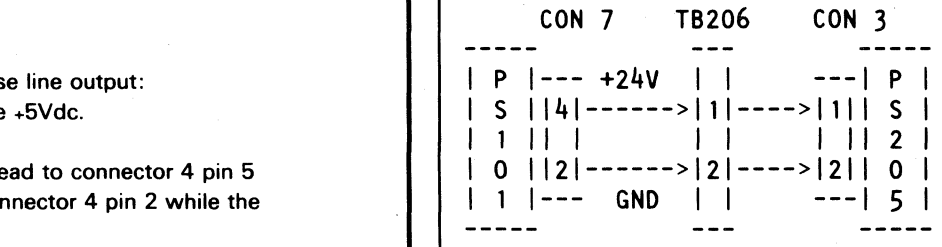
G H J

012

The +24Vdc to PS205 is failing.

The +24Vdc starts at PS101 Connector 7 Pins 4 and 2 (ALD YA601) and goes through TB206 Pins 1 and 2 (ALD YA651) to PS205 Connector 3 Pins 1 and 2 (ALD YA613).

See the following figure for these lines and connectors.



Using this diagram and pin list and the ALDs, find and fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

013

Exchange PS205.

Go To Map 1000, Entry Point R.

014

PS205 is good.

To check the PS205 CP sense line input to the MSS (01A-B2) board:

Set the CE meter to measure +5Vdc.

Connect the CE meter to the 01A-B2 board as follows:

01A-B2C2P04-------- positive meter lead
01A-B2C2P08-------- negative meter lead

The meter should indicate between +2.8Vdc and +5.5Vdc.

Does the meter indicate between +2.8Vdc and +5.5Vdc ?

Y N

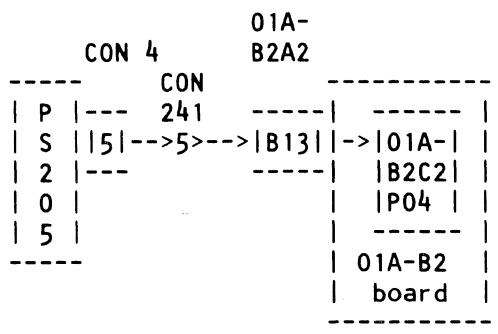
5 5
K L

015

The CP sense line is open.

The sense line goes from PS205 Connector 4 pin 5 (ALD YA659) through Connector 241 Pin 5 (ALD YA659) into 01A-B2 board connector card 01A-B2A2 Pin B13 to the sense card 01A-B2C2 Pin P04 (ALD YF131 and YF171).

The following figure shows these lines and connectors:



Using this diagram and pin list and the ALDs, find and fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

016

Problem is not resolved.

Go To Map 0001, Entry Point A.

017

Use Chart 2 and the number(s) of the PS205 CP(s) that tripped to determine which level's bias is failing.

Make a note of the number(s) of the CPs that tripped and set the tripped CPs to the on position.

Chart 2

PS205 CP Number	Voltage Level
CP1	-2.2(-6.45)
CP2	-4.25
CP3	+4.25
CP4	-1.5
CP5	+6

Have you tested the control card and the module of this level ?

Y N

018

(Entry Point F)

Make a note of the MAP, page, and step number of this step.

Use the test station to test the control card and the power module of the failing level. The procedure for using the test station is in MAP 1004 ENTRY POINT A. After reaching the statement 'return to the MAP you came from', return here.

Did you find the failing module or control card ?

Y N

019

(Entry Point D)

Use Chart 3 to locate connectors on IPS201 and disconnect the indicated connectors by the voltage level (ALD YA625 or YA635).

Chart 3

Voltage Level	Connector on IPS201
+6	02A-A1-A3
+4.25	02A-A2-A3
-1.5	02A-A2-A3
-4.25	02A-A1-A3
-2.2(-6.45)	02A-A2-A3

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did any PS205 CP(s) trip ?

Y N

020

There is a short circuit on the IPS201 board where the indicated voltage level is located.

Repair the failing IPS201 board or exchange it.

Connect all the connector terminals you disconnected.

Go To Map 1000, Entry Point R.

021

Connect all the connector terminals you disconnected on IPS201.

Set to the on position any PS205 CP that tripped.

Locate and disconnect Connector 2 on PS205.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did any PS205 CP(s) trip ?

Y N

Q R

N Q R 5

SEQ322C MAP 1120-6

022

The +12.5Vdc bias supply line for the indicated voltage level that goes from the PS205 Connector 2 (ALD YA613) to IPS201 (ALD YA625 or YA635) has a short circuit.

Chart 4 gives the pins for each bias supply line from PS205 to IPS201. Also see page 20-165c in the MIM for a diagram of these lines.

Chart 4

Voltage Level and CP Number	PS205 CON 2 (+)	PS205 CON 2 (-)	IPS201 (02A) Connector and Pins CON	IPS201 (02A) Connector and Pins (+)	IPS201 (02A) Connector and Pins (-)
+6 CP5	5	10	A1A3	5	4
-4.25 CP2	2	7	A1A3	3	2
-1.5 CP4	4	9	A2A3	3	2
+4.25 CP3	3	8	A2A3	7	6
-2.2 CP1 (-6.45)	1	6	A2A3	9	8

Using Chart 4, page 20-165c, and the ALDs, find and fix the failure. Repair or exchange any failing cable.

Go To Map 1000, Entry Point R.

023

PS205 has either an internal or connector terminal short circuit.

Repair or exchange PS205.

Connect all the connector terminals you disconnected.

Go To Map 1000, Entry Point R.

024

Exchange the failing control card or power module(s).

Go To Map 1000, Entry Point R.

025

Have you tested all of the power modules of that level ?

Y N

026

There could be two or more failing power modules.

Go to Page 5, Step 018, Entry Point F.

027

Go to Page 6, Step 019, Entry Point D.

028

Did you set any PS205 CP on ?

Y N

029

Check the PS205 CP sense and +24Vdc supply lines for a loose or poor connection.

See step 012 and step 015 in this MAP for diagrams and pin lists of the CP sense and +24Vdc supply lines for PS205.

Try to generate the failure again by lightly hitting and moving the cables and connectors of the CP sense and +24Vdc supply lines. Also check PS205, lightly hitting in the area of the indicated CP. Use Chart 4 in step 022 in this MAP to determine the CP number for the indicated level.

Did the failure occur again ?

Y N

8 S T U

030

(Entry Point Y)

The failure was an intermittent failure.

Chart A gives a FRU list for each ref code.

Chart A

Ref Code	Indicated FRUs		
RRRR	(1)	(2)	(3)
1190	02A-A1B2	PS205	02A-A1
1200	02A-A2C2	PS205	02A-A2
1210	02A-A2D4	PS205	02A-A2
1220	02A-A1D2	PS205	02A-A1
1230	02A-A2C4	PS205	02A-A2
D50X	PS205		

Make a note of the indicated FRUs using the ref code and Chart A and then

Go To Map 1000, Entry Point I.

031

If the UU field of the ref code displayed on the screen is not 1X, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1X, check if the RRRR field is listed in Chart 1 in step 004 in this MAP. If the RRRR field is not listed in Chart 1, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is listed in Chart 1, check for an open in the PS205 CP sense and +24Vdc supply lines.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

Check connectors for bent or loose pins, or an open

(Step 031 continues)

(Step 031 continued)
where the cable is fastened to the pin.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?
Y N

032
Go to Page 7, Step 030, Entry Point Y.

033
Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

034
Check for an intermittent short circuit in the +12.5Vdc bias supply lines from PS205 to IPS201 (02A gate).

Chart 4 in step 022 in this MAP gives the pins for each bias supply line. Also see page 20-165c in the MIM for a diagram of these lines.

Try to generate the fault again by moving and lightly hitting the cables and connectors of the indicated level starting from PS205 Connector 2 (ALD YA613) to IPS201 Connectors 02A-A1A3 or 02A-A2A3 (ALD YA625 and YA635). Also hit lightly in the area of the indicated IPS board.

Did the failure occur again ?
Y N

035
Go to Page 7, Step 030, Entry Point Y.

036
There is a short in the cables.

Using Chart 4, page 20-165c, and the ALDs, find the failure.

Did you find the failure ?
Y N

V W

037
Go to Page 7, Step 030, Entry Point Y.

038
Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

039
The failure is an intermittent.
Go to Page 2, Step 006, Entry Point B.

PS205 Bias

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	B	12	058

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
7	031	0001	A
6	027	0001	A
9	038	0001	A
10	041	0001	A
10	045	0001	A
2	005	1000	B
12	059	1000	B
11	053	1000	I
5	022	1000	R
6	026	1000	R
6	028	1000	R
7	034	1000	R
7	032	1000	R
10	044	1000	R
10	051	1000	R
10	047	1000	R
5	021	1000	R
12	060	1000	R
12	056	1000	R
4	015	1143	B
4	017	1143	B

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

(Step 001 continues)

(Step 001 continued)

Power on the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen)?

Y N

002

Is the UU field of the ref code displayed on the screen 1x ?

Y N

003

This is not a power problem.

Go To Map 0000, Entry Point A.

004

Check if the RRRR field of the displayed ref code is listed in the following Chart 1:

Chart 1

Ref Code RRRR	Voltage Level
1240 or 1242	+6
1250 or 1252	+4.25
1260	-1.5
1270	-4.25
1280	-2.2(-6.45)
A160 or 1512	+6
A330 or A332	-2.2(-6.45)
A340 or A342	-4.25
A350 or A352	-1.5
A480	+4.25

Is the RRRR field of the displayed ref code listed in Chart 1 ?

Y N

1 2

A B C

B C

SEQ324C MAP 1126-2

005

The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.

Go To Map 1000, Entry Point B.

006

(Entry Point C)

The ref code indicates an IPS201 bias failure.

PS205 supplies the +12.5Vdc bias voltage to IPS201 (02A-A1 and 02A-A2). PS205 is located behind the 02A gate in frame 02.

Determine and make a note of which voltage level is failing using the ref code and Chart 1 in step 004 in this MAP.

NOTE: The -2.2(-6.45)V level starts at 02A-A2J5 (IPS201) as -2.2Vdc, and is referenced to the -4.25V level at TBB1 to make the -6.45V level that goes to the 01A-C1 board.

The cause of the failure may be one of the following:

1) Failing IPS control card, board, or power module
2) Failing PS205
3) Failing bias sense line
4) Failing bias voltage supply line
5) Failing 01A-B2 board

Chart 2 gives a list of possible failing FRUs, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

See Chart 2 on the next page.

(Step 006 continues)

(Step 006 continued)

Chart 2

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
IPS control card, board or power module	all ref codes	See NOTE1 after this chart	10-035c, 060c 20-185c, 190c, 385c
PS205	all ref codes	YA613	10-055c 20-155c, 165c
01A-B2 board	all ref codes		10-035c, 050c 14-105c 20-211c, 230c
CON 240	125x 1260 1270 1280 A33x A34x A35x A480	YA659	10-060c
CON 242	124x 1512 A160	YA661	10-060c

NOTE1: See MAP 1004, Entry Point A, Charts 1, 2, 3, and 4 in step 001 for IPS control card and power module location. For ALD pages, see ALD YA012, 'FRU LOCATION'.

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

007

Is the RRRR field of the ref code 1242 ?

Y N

1 1
1 0 4
D E F

008

Is the RRRR field of the ref code 1280 ?
Y N

009

(Entry Point E)

Have you just tested the control card and power module of the indicated failing level ?
Y N

010
Use the test station to test the control card and the power module of the failing level. The procedure for using the test station is in MAP 1004 ENTRY POINT A. After reaching the statement 'return to the MAP you came from', return here.

Did you find the failing module or control card ?
Y N

011

Is the fault indication on the +4.25V level ?
Y N

012

Is the RRRR field of the ref code A332 ?
Y N

013
Go to Page 5, Step 023, Entry Point D.

014
The -4.25V control line may be shorted to ground.
To check the -4.25V control line input to the 01A-D2B2 card, perform the following:
Set the CE meter to measure +5Vdc.
Connect the meter leads (tool) as follows:

Positive meter lead-------01A-D2B2B09
Negative meter lead-------01A-D2B2D08

The meter should indicate above +2.0Vdc.

Does the meter indicate above +2.0Vdc ?
Y N

015
The -4.25V control line is failing.
To find and fix the failure,
Go To Map 1143, Entry Point B.

016
To check the -4.25V control line output from the 01A-D2B2 card, perform the following:
Set the CE meter to measure +5Vdc.
Connect the meter leads (tool) as follows:

Positive meter lead-------01A-D2B2B08
Negative meter lead-------01A-D2B2D08

The meter should indicate above +2.0Vdc.

Does the meter indicate above +2.0Vdc ?
Y N

017
The -4.25V control line is failing.
To find and fix the failure,
Go To Map 1143, Entry Point B.

018
The -4.25V control line is good.
Go to Page 5, Step 023, Entry Point D.

019

Swap the +4.25V control card with the one in the -1.5V level.

Power on the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen) ?

Y N

020

Return the control cards to the original places.

Go to Step 023, Entry Point D.

021

The control card you swapped from the +4.25V level is BAD. Exchange the control card.

Return the GOOD -1.5V level control card to the original location.

Go To Map 1000, Entry Point R.

022

Exchange the failing part(s).

Go To Map 1000, Entry Point R.

023

(Entry Point D)

To check the bias voltage output from PS205, perform the following:

Set the CE meter to measure +12.5Vdc.

Locate and disconnect PS205 Connector 2.

Locate the probing point on PS205 Connector 2 using the indicated voltage level and the following Chart 3.

Chart 3

Indicated Voltage Level (Vdc)	Measure Volts (Vdc)	Probing Point on PS205 CON 2 Pins (+)	(-)
+6	+12.5	5	10
-2.2(-6.45)	+12.5	1	6
-4.25	+12.5	2	7
-1.5	+12.5	4	9
+4.25	+12.5	3	8

Connect your CE meter's leads (tool) as indicated in Chart 3.

The meter should indicate between +10Vdc and +14Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the meter.

Did the meter indicate between +10Vdc and +14Vdc?

Y N

6 6
M N

024

Switch the CP of that level of PS205 to off position and then to on. If there are two CPs, do both.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for a voltage indication.

Did the meter indicate between +10Vdc and +14Vdc ?

Y N

025

Did you just exchange PS205 ?

Y N

026

Exchange PS205.

Go To Map 1000, Entry Point R.

027

Problem is not corrected.

Go To Map 0001, Entry Point A.

028

The CP(s) that you switched off and on are failing. Exchange PS205.

Go To Map 1000, Entry Point R.

029

(Entry Point G)

Reconnect PS205 Connector 2.

To check the bias voltage input to IPS201, perform the following:

Set the CE meter to measure +12.5Vdc.

Locate the probing point on IPS201 using the indicated voltage level and the following Chart 4.

Chart 4

Indicated Voltage Level (Vdc)	Measure Volts (Vdc)	Probing Point on IPS201 Connector	Pins (+)	Pins (-)
+6	+12.5	02A-A1A3	3	2
-2.2(-6.45)	+12.5	02A-A2A3	9	8
-4.25	+12.5	02A-A1A3	5	4
-1.5	+12.5	02A-A2A3	3	2
+4.25	+12.5	02A-A2A3	7	6

Disconnect the connector (02A-A1A3 or 02A-A2A3) on IPS201 indicated in Chart 4.

Connect your CE meter's leads (tool) to the connector on the cable end as indicated in Chart 4.

Check if the meter shows between +10Vdc and +14Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for voltage indication.

Did the meter indicate between +10Vdc and +14Vdc?

Y N

7 7
P Q

030

The 'IPS BIAS' voltage supply line between PS205 and IPS201 is failing.

See MIM VOL 13/16 page 20-165c for a figure of this line.

Use the MIM and ALD page YA613 to find the failure.

Did you find the failure ?

Y N

031

Problem is not corrected.

Go To Map 0001, Entry Point A.

032

(Entry Point F)

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

033

Reconnect the connector you just disconnected.

To check the bias sense line output from IPS201, perform the following:

Set the CE meter to measure +12.5Vdc.

Locate the probing point on IPS201 using the indicated voltage level and the following Chart 5.

Chart 5

Indicated Voltage Level (Vdc)	Measure Volts (Vdc)	Probing Point on IPS201 pins (+)	(-)
+6	+12.5	02A-A1B4	D10 D08
-2.2(-6.45)	+12.5	02A-A2B4	D02 D08
-4.25	+12.5	02A-A1B4	D07 D08
-1.5	+12.5	02A-A2B4	D12 D08
+4.25	+12.5	02A-A2B4	D05 D08

Connect your CE meter's leads(tool) as indicated in Chart 5.

The meter should indicate between +10Vdc and +14Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the meter.

Did the meter indicate between +10Vdc and +14Vdc?

Y N

034

The IPS board is failing. Repair or exchange it.

Go To Map 1000, Entry Point R.

035

The IPS201 board is good.

To check the bias sense line input to the sense card on the MSS (01A-B2 board), perform the following:

Set the CE meter to measure +1.5Vdc.

Locate the probing point on the sense card (01A-B2C2 or 01A-B2D2 card) using the indicated voltage level and the following Chart 6.

Chart 6

Indicated Voltage Level (Vdc)	Measure Volts (Vdc)	Probing Point on the 01A-B2 Board (+)	(-)
+6	+1.5	D2D05	D2D08
-2.2(-6.45)	+1.5	C2B07	C2D08
-4.25	+1.5	C2B10	C2D08
-1.5	+1.5	C2B02	C2D08
+4.25	+1.5	C2D05	C2D08

Connect your CE meter's leads(tool) as indicated in Chart 6.

The meter should indicate between +1.3Vdc and +1.7Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the meter.

Did the meter indicate between +1.3Vdc and +1.7Vdc?

Y N

036

The failure is in the sense line.

Is the indicated failing level the +6V level ?

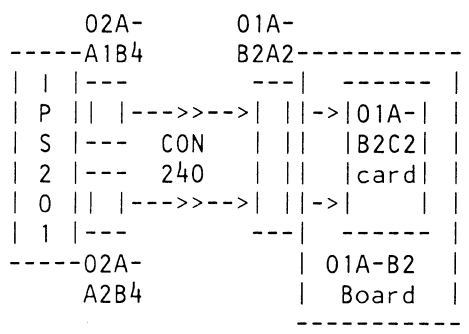
Y N

1 1
0 0 9
S T U

(Entry Point H)

The +12.5Vdc bias sense line from the indicated IPS board to the MSS (01A-B2) board is failing.

The IPS201 +12.5V bias sense lines go from connector card 02A-A1B4 (ALD YA626) or connector card 02A-A2B4 (ALD YA636), through Connector 240 (ALD YA659), enter the 01A-B2 board through connector card 01A-B2A2, and go to the 01A-B2C2 sense card (ALD YF101, YF111, and YF171).



The figure at the right shows these lines-->

See the following Chart 7 for a pin list of these lines:

Chart 7

Indicated Voltage Level (Vdc)	02A Gate Connector Card Pin	CON 240 Pin	01A-B2A2 Connector Card Pin	01A-B2C2 Sense Card Pin
-2.2(-6.45)	A2B4D02	21	B07	B07
-4.25	A1B4D07	25	B08	B10
-1.5	A2B4D12	29	B09	B02
+4.25	A2B4D05	17	B05	D05

NOTE: The +12.5Vdc bias sense voltage is reduced to a nominal +1.5Vdc by a resistor divider network on the 02A-A1B4 and 02A-A2B4 connector cards. A voltage between +1.35Vdc and +1.65Vdc is within tolerance for the sense line from the output of the 02A-A1B4 or 02A-A2B4 connector card to the 01A-B2C2 sense card.

Using this figure and pin list and the ALDs, find the failure.

Did you find the failure ?

Y N

038

Problem is not corrected.

Go To Map 0001, Entry Point A.

039
Go to Page 7, Step 032, Entry Point F.

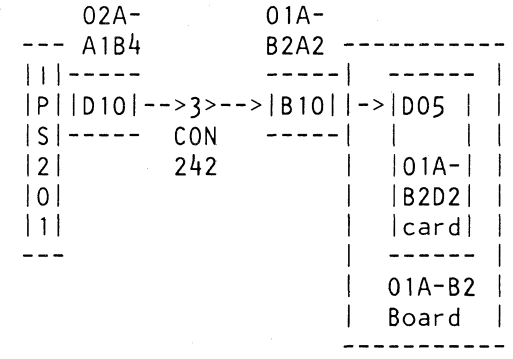
040

(Entry Point J)

The +12.5Vdc bias sense line for the +6V level from the 02A-A1 IPS board to the MSS (01A-B2) board is failing.

The sense line goes from connector card 02A-A1B4 Pin D10 (ALD YA626) through Connector 242 Pin 3 (ALD YA659), enters the 01A-B2 board through connector card 01A-B2A2 Pin B10, and goes to Pin D05 on the 01A-B2D2 sense card (ALD YF101 and YF171).

The following figure shows this line:



NOTE: The +12.5Vdc bias sense voltage is reduced to a nominal +1.5Vdc by a resistor divider network on the 02A-A1B4 connector card. A voltage between +1.35Vdc and +1.65Vdc is within tolerance for the sense line from the output of the 02A-A1B4 card to the 01A-B2D2 sense card.

Using this figure and the ALDs, find the failure.

Did you find the failure ?
Y N

041
Problem is not corrected.
Go To Map 0001, Entry Point A.

042
Go to Page 7, Step 032, Entry Point F.

043
The sense card (01A-B2C2 or 01A-B2D2) may be failing.

Did you just exchange the indicated sense card?
Y N

044
Exchange the indicated sense card (01A-B2C2 or 01A-B2D2).
Go To Map 1000, Entry Point R.

045
Problem is not corrected.
Go To Map 0001, Entry Point A.

046
A failing +4.25V control card can cause this ref code to be displayed.

Did you just exchange the control card of the +4.25V level ?
Y N

047
Exchange the control card of the +4.25V level.
Go To Map 1000, Entry Point R.

048
Go to Page 4, Step 009, Entry Point E.

049
Connector 242 may be disconnected or unseated.
Check Connector 242 for good connection.

Is Connector 242 disconnected or unseated ?
Y N

050
Go to Page 4, Step 009, Entry Point E.

051
Connect Connector 242 tightly.
Go To Map 1000, Entry Point R.

052

Check for loose or poor connection of the indicated +12.5Vdc bias voltage supply lines from PS205 to IPS201 (02A gate). Also check the +12.5Vdc bias voltage sense lines from IPS201 to the MSS (01A-B2 board).

See Entry Point D, Page 5, Step Number 023 and Entry Point G, Page 6, Step Number 029, for pin lists of the starting and ending points of the indicated +12.5Vdc bias voltage supply lines. Also see ALD YA613. See MIM VOL13/16 page 20-165c for a figure of these lines.

See Entry Point H, Page 9, Step Number 037 and Entry Point J, Page 10, Step Number 040, for figures and pin lists of the +12.5Vdc bias voltage sense lines.

Try to generate the fault again by moving and lightly hitting the cable and connectors of the indicated +12.5Vdc bias voltage supply and sense lines.

Did the failure occur again ?

Y N

W X

053

(Entry Point Y)

The failure was an intermittent failure.
Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated (1)	FRU'S (2)
124x	02A-A1B2	PS205
125x	02A-A2C2	PS205
126x	02A-A2D4	PS205
127x	02A-A1D2	PS205
128x	02A-A2C4	PS205
1512	02A-A1B2	PS205
A160	02A-A1B2	PS205
A33x	02A-A2C4	PS205
A34x	02A-A1D2	PS205
A35x	02A-A2D4	PS205
A480	02A-A2C2	PS205

Make a note of the indicated FRU's using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

054

If the UU field of the ref code displayed on the screen is not 1x, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1x, check if the RRRR field is listed in Chart 1 in step 004. If the RRRR field is not listed in Chart 1, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is listed in Chart 1, check for an open in the indicated level's +12.5Vdc bias voltage supply and sense lines.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF'

(Step 054 continues)

(Step 054 continued)
ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated sense line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?
Y N

055
Go to Page 11, Step 053, Entry Point Y.

056
Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

057
The failure is an intermittent.
Go to Page 2, Step 006, Entry Point C.

058

(Entry Point B)

The ref code indicates an IPS bias failure.

Is the RRRR field of the ref code 1852 ?
Y N

059
You are in the wrong MAP or wrong entry point.
Go To Map 1000, Entry Point B.

060
One of the FDS is disconnected at the interframe connector. Ensure that the connector is tightly connected (check both sides of the connector).

If that did not repair it, check the connection of the output FDS from the IPS201 to TBB1.
Go To Map 1000, Entry Point R.

Bulk CP

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	B	2	006

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
5	019	0001	A
2	005	1000	B
9	050	1000	I
4	009	1000	R
4	013	1000	R
4	014	1000	R
5	018	1000	R
5	020	1000	R
4	015	1000	R
6	025	1000	R
6	027	1000	R
6	028	1000	R
7	029	1000	R
8	045	1000	R
7	039	1000	R
8	041	1000	R
8	042	1000	R
8	046	1000	R
8	047	1000	R
9	053	1000	R
10	058	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

PS201 is located in the rear of frame 02 (See MIM VOL 13/16 Page 10-055c).
(Step 001 continues)

(Step 001 continued)
Ensure that all PS201 CPs are set on.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen) ?

Y N

002

Is the UU field of the ref code displayed on the screen 1x ?

Y N

003

This is not a power problem.

Go To Map 0000, Entry Point A.

004

Chart 1

Ref Code RRRR	Voltage Level
1290	+5
1300	+6
1310	+4.25
1320	-1.5
1330	-4.25
1340	-2.2(-6.45)
D180 or D182	any one

Is the displayed RRRR listed in Chart 1 ?

Y N

005

The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.

Go To Map 1000, Entry Point B.

10 A B

B

006

(Entry Point B)

The failure indicated by this ref code is that there is a short circuit on the load of PS201 or PS201's CP(s) is tripped. PS201 supplies bulk voltage to IPS201 and +5Vdc to the 01A-A2 board.

NOTE: The -2.2(-6.45)V level starts at 02A-A2J5 (IPS201) as -2.2Vdc, and is referenced to the -4.25V level at TBB1 to make the -6.45V level that goes to the 01A-C1 board.

The cause of the failure may be one of the following:

1) Failing PS201
2) Failing IPS201 (02A-A1 or 02A-A2) board, control card, or power module
3) Failing cable between PS201 and IPS201
4) Failing 01A-A2 board or card on 01A-A2 board
5) Failing cable between PS201 and the 01A-A2 board
6) Failing PS201 CP sense line
7) Failing +24Vdc to PS201
8) Failing 01A-B2 board

Chart 5 gives a list of possible failing FRU's, ref codes that could indicate the FRU, and references to the ALD's and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

See Chart 5 on the next page.

(Step 006 continues)

(Step 006 continued)

Chart 5

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
IPS201 control card, board or power module	1300 1310 1320 1330 1340 D180 D182	See NOTE1 after this chart	10-035c, 060c 20-185c, 190c, 200c, and 385c
PS201	all ref codes	YA605 YA607	10-055c 20-155c, 165c
PS101	all ref codes	YA601	10-045c 20-160c, 165c, 175c
01A-A2 board	1290 D180 D182	YA663	10-035c, 050c 20-165c, 175c, 210c
01A-B2 board	D180 D182		10-035c, 050c 20-211c, 230c
TB206	all ref codes	YA651	10-055c

NOTE1: See MAP 1004, Entry Point A, Charts 1, 2, 3, and 4 in step 001 for IPS control card and power module location. For ALD pages, see ALD YA012, 'FRU LOCATION'.

For aid in using ALDs, see the MIM, VOL 13/16, page 14-405. Also see page 20-230c for usage of ALD page YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

007

Check if any PS201 CP is tripped.

Did any PS201 CP(s) trip ?

Y N

8 5 4
C D E

008

Check connectors 5 & 6 on PS201 for good connections.

Are the connectors connected tightly ?
Y N

009

Connect the connector tightly.
Go To Map 1000, Entry Point R.

010

To check the output of the PS201 CP sense line:
Set the CE meter to measure +5Vdc.
Locate PS201 connector 6.
Connect the positive meter lead to connector 6 pin 3 and the other meter lead to connector 6 pin 4 while the connector is plugged in.
The meter should indicate between +2.8Vdc and +5.5Vdc.

Does the meter indicate between +2.8Vdc and +5.5Vdc ?
Y N

011

With the meter still connected to PS201 Connector 6, set all of PS201 CPs off and on (one at a time).

Does the meter indicate between +2.8Vdc and +5.5Vdc ?
Y N

012

To check the +24Vdc supply to PS201 for the CP sense:

1. Set the CE meter scale to measure +24Vdc.
2. Connect the CE meter in PS201 as follows:

Connector 5 pin 1 ----- positive meter lead
Connector 5 pin 2 ----- negative meter lead

The meter should indicate between +21Vdc and +27Vdc.
(Step 012 continues)

(Step 012 continued)

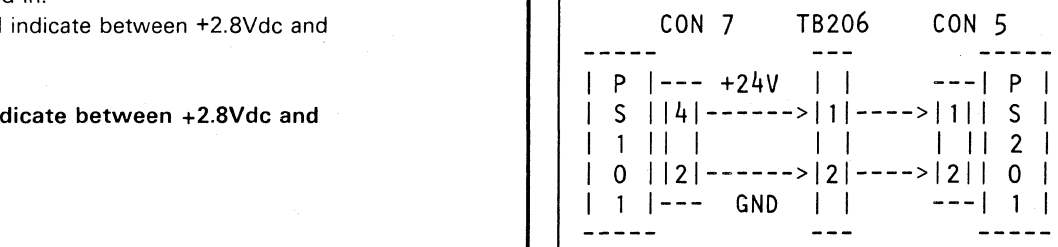
Does the meter indicate between +21Vdc and +27Vdc ?
Y N

013

(Entry Point C)

The +24Vdc to PS201 is failing.
The +24Vdc starts at PS101 Connector 7 Pins 4 and 2 (ALD YA601) and goes through TB206 Pins 1 and 2 (ALD YA651) to PS201 Connector 5 Pins 1 and 2 (ALD YA607).

See the following figure for these lines and connectors.



Using this figure and list and the ALDs, find and fix the failure. Repair or exchange any failing part(s).
Go To Map 1000, Entry Point R.

014

PS201 CP auxiliary contact is failing.
Exchange PS201.
Go To Map 1000, Entry Point R.

015

PS201 CP auxiliary contact is failing. Make a note of this case, and if it occurs again exchange PS201.
Go To Map 1000, Entry Point R.

016

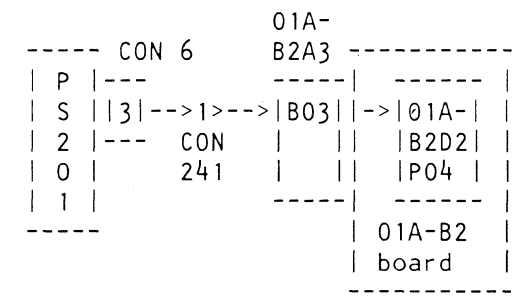
(Entry Point L)

PS201 is good.

The PS201 CP sense line to the MSS (01A-B2) board may be failing.

The sense line goes from Connector 6 Pin 3 on PS201 (ALD YA607) through Connector 241 Pin 1 to 01A-B2 board connector card 01A-B2A3 Pin B03 to the sense card 01A-B2D2 Pin P04 (ALD YF121 and YF171).

The following figure shows these pins and connectors:



Using this figure and pin list and the ALDs, check the PS201 CP sense line for failure.

Did you find any failure ?

Y N

017

Did you just exchange the 01A-B2D2 sense card ?

Y N

018

Exchange the 01A-B2D2 sense card.

Go To Map 1000, Entry Point R.

019

Problem is not corrected.

Go To Map 0001, Entry Point A.

020

Fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

021

Make a note of the number of any tripped PS201 CP(s) and set to the ON position any tripped PS201 CP(s).

Use Chart 2 to determine which voltage level is failing:

Chart 2

PS201 CP Number	Voltage Level
CP1 or CP2	-4.25
CP3	-2.2(-6.45)
CP4	+5
CP5	+6
CP7	-1.5
CP8	+4.25

Did PS201 CP4 trip ?

Y N

022

Have you tested the control card and the module of this level ?

Y N

023

(Entry Point F)

Make a note of the MAP, page, and step number of this step.

Use the test station to test the power module(s) and the control card of the failing level. The procedure of how to use the test station is in MAP 1004 ENTRY POINT A. After you have reached 'return to the MAP you came from', return here.

Did you find a failing module or control card ?

Y N

7 7 7 6
H J K L

024

(Entry Point D)

Use the indicated voltage and Chart 3 to locate the input connector terminal(s) on IPS201 and disconnect the indicated terminal(s) (ALD page YA620 or YA630).

Chart 3

Voltage Level	Terminal on IPS201 (02A)
+6	A1F2 A1G1
+4.25	A2E2 A2F1
-1.5	A2G7 A2H6
-4.25	A1G2 A1G7 A1H1 A1H6
-2.2(-6.45)	A2E7 A2F6

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did any PS201 CP(s) trip ?
Y N

025

There is a short circuit on the IPS201 board where the indicated voltage level is located.

Repair the failing IPS201 board or exchange it.

Reconnect all the connector terminals you disconnected.

Go To Map 1000, Entry Point R.

M

026

(Entry Point M)

Reconnect all the connector terminals you disconnected.

Set to the ON position any CP that tripped.

Use Chart 4 to locate connector terminal(s) on PS201 and disconnect the indicated terminal(s) by the voltage level. (ALD page YA605 or YA607)

Chart 4

Voltage Level	Terminal on PS201
+6	CON 1
+4.25	TB2-9 to 12
-1.5	TB2-3,4,7 & 8
-4.25	TB1-1 to 8
-2.2(-6.45)	TB1-9 to 12

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did any PS201 CP(s) trip ?
Y N

027

The line that goes from PS201 (where you disconnected using Chart 4, ALD YA605 or YA607) to IPS201 (where you disconnected using Chart 3, ALD YA620 or YA630) has a short circuit. See MIM VOL 13/16 Page 165c for a figure of this line.

Repair that line or exchange it.

Go To Map 1000, Entry Point R.

028

PS201 has either an internal or a connector terminal short circuit.

Repair or exchange PS201.

Reconnect all the connector terminals you disconnected and set all PS201 CPs on.

Go To Map 1000, Entry Point R.

029
Exchange the failing control card or power module(s).
Go To Map 1000, Entry Point R.

030

Have you tested all of the power modules of that level ?
Y N

031
There could be two or more failing power modules.
Go to Page 5, Step 023, Entry Point F.

032
Go to Page 6, Step 024, Entry Point D.

033
Disconnect PS201 connector 2 & 3 (ALD page YA607).
Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did PS201 CP4 trip ?
Y N

034
Reconnect the connectors you disconnected.
Disconnect connector Y4,Y6,Z4 & Z6 from 01A-A2 board (ALD page YA663).
Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did PS201 CP4 trip ?
Y N

035
Reconnect the connectors you disconnected from 01A-A2 board.
There is a short circuit in the 01A-A2 board (+5Vdc to ground) or in one or more of the cards in the 01A-A2 board. The cards that use this 5Vdc in the 01A-A2 board are cards OTHER THAN those in sockets D,E,F,Q,R and S.
1. Power off at the OCP.
2. Remove A2G2 through A2K2 socket cards.
3. Power on now at CE panel.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did PS201 CP4 trip ?
Y N

036
The short circuit is in one of the cards you removed from socket G through K.

(Entry Point G)

1. Power off at OCP.
2. If you have more than two cards, reinstall two of the cards. If not, reinstall only one card.
3. Power on now at CE panel.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did PS201 CP4 trip ?
Y N

037
Go to Step 036, Entry Point G.

038
Set PS201 CP4 on.

Did you just reinstall two cards ?
Y N

039
The last card you just installed is short circuited. Exchange it.
Go To Map 1000, Entry Point R.

040

One of the last two cards you just reinstalled is short circuited.

1. Power off at the OCP.
2. Remove one of the last two cards you reinstalled.
3. Power on now at the CE panel.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did PS201 CP4 trip ?

Y N

041

The card you just removed is short circuited. Exchange it.

Go To Map 1000, Entry Point R.

042

The last card you installed is short circuited. Exchange it.

Set PS201 CP4 on.

Go To Map 1000, Entry Point R.

043

Set PS201 CP4 on.

1. Power off at the OCP.
2. Remove A2L2 through A2P2 and A2B4 socket cards.
3. Power on now at CE panel.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did PS201 CP4 trip ?

Y N

044

The short circuit is in one of the cards you removed from sockets L through P or B4.

To find which card from L through P or B4 is short circuited

Go to Page 7, Step 036, Entry Point G.

T

045

Set PS201 CP4 on.

The short circuit is in the 01A-A2 board (5Vdc to ground).

Repair or exchange the 01A-A2 board.

Go To Map 1000, Entry Point R.

046

The '+5.1V PS201 TO 01A-A2 BD' line from PS201 Connectors 2 and 3 to 01A-A2 board Connectors Y4, Y6, Z4, and Z6 has a short circuit. See MIM VOL 13/16 Page 20-165c for a figure of this line and Pages 10-050c and 10-055c for the connectors on each end of the line. The line is a Flexible Distribution System (FDS) cable.

Repair or exchange the failing FDS cable(s).

Set PS201 CP4 on.

Go To Map 1000, Entry Point R.

047

PS201 has either an internal or connector terminal short circuit.

Repair or exchange PS201.

Reconnect all the connector terminals you disconnected and set all PS201 CPs on.

Go To Map 1000, Entry Point R.

048

Did you set any PS201 CP on ?

Y N

049

Check the PS201 CP sense line and the +24Vdc to PS201 for a loose or poor connection.

See Entry Point L, Page 5, Step Number 016, for a figure and pin list of the PS201 CP sense line.

See Entry Point C, Page 4, Step Number 013, for a figure and pin list of the +24Vdc supply line to PS201.

Starting at PS201 (ALD page YA607) follow the sense line to the MSS (01A-B2) board. Try to generate the failure again by lightly hitting and moving the cables and connectors.

(Step 049 continues)

9 U

(Step 049 continued)

Did the failure occur again ?
Y N

050

(Entry Point Y)

The failure was an intermittent failure.
Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated (1)	FRUs (2)
1290	PS201	01A-A2
1300	02A-A1B2	
1310	02A-A2C2	PS201
1320	02A-A2D4	PS201
1330	02A-A1D2	PS201
1340	02A-A2C4	PS201
D18x	PS201	01A-B2

Make a note of the indicated FRU's using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

051

If the UU field of the ref code displayed on the screen is not 1x, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1x, check if the RRRR field is listed in Chart 1 in step 004. If the RRRR field is not listed in Chart 1, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is listed in Chart 1, check for an open in the PS201 CP sense line.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET
(Step 051 continues)

(Step 051 continued)
POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a sense line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated sense line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?
Y N

052
Go to Step 050, Entry Point Y.

053

Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

054

Check for an intermittent short circuit in the cables of the indicated level. Use the ref code and Chart 1 in step 004 in this MAP to determine the indicated failing level. NOTE: If the RRRR field is D18x, check all levels.

If the +5V level is indicated check the cables from PS201 (ALD YA607) to the 01A-A2 board (ALD YA663). See MIM VOL 13/16 Page 20-165c for a figure of this line.

The cables of all other levels go from PS201 to IPS201 (02A gate). See Entry Point D, Page 6, Step Number 024, and Entry Point M, Page 6, Step Number 026, for pin lists of these levels. Also see MIM VOL 13/16 Page 20-165c for a figure of these lines.

Try to generate the fault again by moving and lightly hitting the cables starting from PS201 output connectors (ALD YA607) to IPS201 or the 01A-A2 board. Also hit lightly in the area of the the indicated IPS board or 01A-A2 board.

Did the failure occur again ?
Y N

055
Go to Page 9, Step 050, Entry Point Y.

056
There is a short in either the cables, PS201, IPS201, or the 01A-A2 board.
Find the failure.

Did you find the failure ?
Y N

057
Go to Page 9, Step 050, Entry Point Y.

058
Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

059
The failure is an intermittent.
Go to Page 2, Step 006, Entry Point B.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	2	001
1000	B	2	008
1175	W	6	022

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	005	0000	A
2	007	1000	B
10	054	1000	I
4	012	1000	R
5	015	1000	R
5	016	1000	R
6	017	1000	R
7	023	1000	R
7	025	1000	R
7	026	1000	R
8	032	1000	R
8	037	1000	R
8	038	1000	R
7	028	1000	R
8	030	1000	R
8	031	1000	R
9	044	1000	R
9	046	1000	R
9	047	1000	R
9	048	1000	R
12	073	1000	R
11	066	1000	R
11	067	1000	R
10	057	1000	R
11	062	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Is the RRRR field of the ref code 1640 or 1010 ?
Y N

002

Is the RRRR field of the ref code 1350 ?
Y N

003

(Entry Point L)

PS201, PS204, and PS206 are located in the 02 frame (MIM page 10-055c).

Ensure that all PS201, PS204 and PS206 CPs are set on.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen)?
Y N

004

Is the UU field of the ref code displayed on the screen 1X ?
Y N

005

This is not a power problem.

Go To Map 0000, Entry Point A.

1 1 1
2 1 1
A B C D

D

006

| Chart 1 |

Ref Code RRRR List				
1010	1350	1640	1870	1880
D380	D382	D480	D482	

Is the RRRR field of the ref code listed in Chart 1 ?
Y N

007

The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.

Go To Map 1000, Entry Point B.

008

(Entry Point B)

The indicated failure is that one or more CPs on PS204 or PS206 is tripped, or that both CP1 on PS204 and CP7 on PS201 are tripped. PS204 supplies the -1.5Vdc bulk add on level to IPS201 (02A-A2 board), and PS206 supplies the bulk voltage and +12.5Vdc bias for the -4.25Vdc add on (-4.25 AO) in IPS101 (01C gate).

The cause of the failure may be one of the following:

1) Failing PS201, PS204, or PS206
2) Failing IPS201 (02A-A2) control card or board
3) Failing IPS101 (01C-A1) control card or board
4) Failing +24Vdc supply to PS204 or PS206
5) Failing PS204 or PS206 CP sense line
5) Failing cable between PS204 and IPS201 (02A-A2) board
5) Failing cable between PS206 and IPS101 (01C-A1) board
6) Failing 01A-B2 board

Chart 2 gives a list of possible failing FRU's, ref codes that could indicate the FRU, and references to the ALD's and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL

(Step 008 continues)

(Step 008 continued)
13/16 unless it is noted that a different VOL is specified.

Chart 2

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
PS204	1010 1640 D480 D482	YA611	10-035c, 055c 20-155c, 165c
PS206	1010 1640 1870 1880 D380 D382	YA615	10-035c, 055c 20-155c, 165c
IPS101 control card or board (01C-A1)	1870 1880 D380 D382	See NOTE1 after this chart	10-035c, 040c 20-155c, 191c
IPS201 control card or board (02A-A2)	D480 D482	See NOTE1 after this chart	10-035c, 060c 20-185c, 190c
PS201	1350	YA605 YA607	10-055c 20-155c,165c
01A-B2 board	all ref codes		10-035c, 050c 20-211c, 230c

NOTE1: See MAP 1004, Entry Point A, Charts 1, 2, 3, and 4 in step 001 for IPS control card and power module location. For ALD pages, see ALD YA012, 'FRU LOCATION'.

For aid in using ALDs, see the MIM, VOL 13/16, page 14-405. Also see page 20-230c for usage of ALD page YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

9 4
E F

009

Is the RRRR field of the displayed ref code 1350, D480, or D482 ?
Y N

010
PS206 is the indicated PS.
Check if any PS206 CP is tripped.

Did any PS206 CP trip ?
Y N

011

(Entry Point X)

Check connectors 2 and 4 on the indicated PS for good connection.

Are the connectors connected tightly ?
Y N

012
Connect the connectors tightly.
Go To Map 1000, Entry Point R.

013
To check the CP sense output of the indicated PS:
Set the CE meter to measure +5Vdc.
Locate connector 4 on the indicated PS.
With Connector 4 connected, connect the CE meter to Connector 4 on the indicated PS as follows:

positive meter lead (tool)-------pin 1
negative meter lead (tool)-------pin 2

The meter should indicate between +2.8Vdc and +5.5Vdc.

Does the meter indicate between +2.8Vdc and +5.5Vdc ?
Y N

014

To check the +24Vdc supply to the indicated PS:
Set the CE meter to measure +24Vdc.
Locate Connector 2 on the indicated PS.
With Connector 2 connected, connect the CE meter to Connector 2 on the indicated PS as follows:

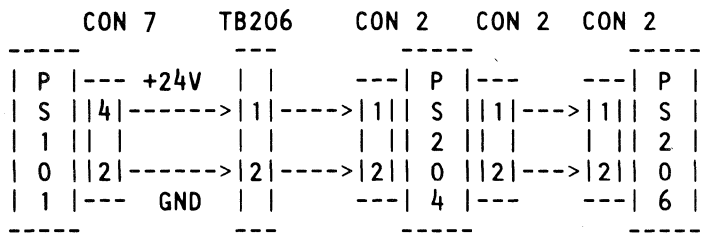
positive meter lead (tool)-------pin 1
negative meter lead (tool)-------pin 2

The meter should indicate between +21Vdc and +27Vdc.

Does the meter indicate between +21Vdc and +27Vdc ?
Y N

015

The indicated PS is good.
The +24Vdc to PS204 and PS206 is failing.
The +24Vdc starts at PS101 Connector 7 Pins 4 and 2 (ALD YA601) and goes through TB206 Pins 1 and 2 (ALD YA651) to PS204 Connector 2 Pins 1 and 2 (ALD YA611) and then to PS206 Connector 2 Pins 1 and 2 (ALD YA615).
See the following figure for these lines and connectors.



Using this diagram and list and the ALDs, find and fix the failure. Repair or exchange any failing part(s).
Go To Map 1000, Entry Point R.

016

Exchange the indicated PS.
Go To Map 1000, Entry Point R.

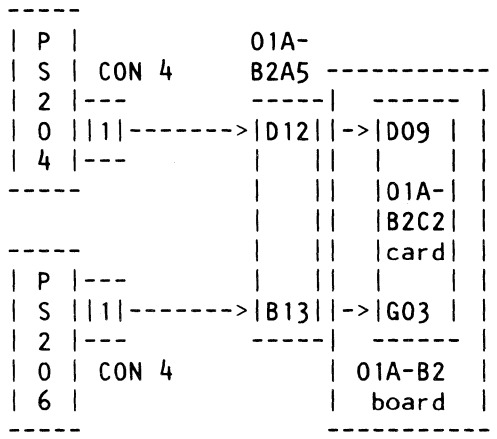
017

The indicated PS is good.

The CP sense line to the MSS (01A-B2) board is open.

The sense line goes from Connector 4 Pin 1 on the indicated PS (ALD YA611 or YA615) into 01A-B2 board connector card 01A-B2A5 to the sense card 01A-B2C2 (ALD YF131 and YF171).

The following figure shows these pins and connectors:



Using this diagram and pin list and the ALDs, find and fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

018

Did both CP1 and CP2 on PS206 trip ?

Y N

019

Make a note of which CP on PS206 is tripped.

Set the tripped CP on.

Have you tested the control card and power modules of IPS101 (-4.25 AO level) ?

Y N

020

(Entry Point P)

Make a note of the MAP, page, and step number of this step.

Use the test station to test the control card and power modules of IPS101 (-4.25 AO level). The procedure for using the test station is in MAP 1004 ENTRY POINT A. After you have reached 'return to the MAP you came from', return here.

Did you find a failing module or control card ?

Y N

021

(Entry Point N)

Was it CP2 on PS206 that tripped ?

Y N

022

(Entry Point W)

Set your CE meter to measure +15Vdc.

Disconnect the following FDS input connector terminals on IPS101 (01C-A1 gate): G2, G7, H1 and H6 (ALD page YA642).

Connect your CE meter leads (tool) as follows to the ends of the input FDS cables you just disconnected:

1. positive meter lead---------01C-A1G2
2. negative meter lead---------01C-A1H1

After powering up, check for either of the following:

1) The meter indicates less than +2.0Vdc or

2) PS206 CP1 trips.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, and observe the CE meter.

(Step 022 continues)

(Step 022 continued)

Did the meter indicate less than +2.0Vdc, or did PS206 CP1 trip ?

Y N

023

There is a short circuit on the IPS101 board.
Repair or exchange the IPS101 board.
Reconnect all the connector terminals you disconnected.
Go To Map 1000, Entry Point R.

024

Reconnect all the connector terminals you disconnected.
Set your CE meter to measure +15Vdc.
Disconnect connectors 5 and 6 on PS206 (ALD page YA615).
Set PS206 CP1 to the on position.
Connect your CE meter leads (tool) to the connector on PS206 as follows:

1. positive meter lead---------connector 6, any pin
2. negative meter lead---------connector 5, any pin

After powering up, check for either of the following:
1) The meter indicates less than +2.0Vdc or
2) PS206 CP1 trips.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, and observe the CE meter.

Did the meter indicate less than +2.0Vdc, or did PS206 CP1 trip ?

Y N

R S

Q R S
6

SEQ331C MAP 1132-7

025

Either the '10V TO IPS101' line from PS206 Connector 6 (ALD YA615) to IPS101 (01C-A1G2 and 01C-A1G7, ALD YA642) or the '10V RTN TO IPS101' line from PS206 Connector 5 (ALD YA615) to IPS101 (01C-A1H1 and 01C-A1H6, ALD YA642) has a short circuit.
See page 20-165c in the MIM for a diagram of these lines.
Repair or exchange the failing cable.
Go To Map 1000, Entry Point R.

026

PS206 has either an internal or connector terminal short circuit.
Repair or exchange PS206.
Reconnect all the connector terminals you disconnected and set all PS206 CPs on.
Go To Map 1000, Entry Point R.

027

Disconnect connector 01C-A1A3 on IPS101.
Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did PS206 CP2 trip ?

Y N

028

There is a short circuit on the IPS101 board.
Repair or exchange the IPS101 board.
Reconnect all the connector terminals you disconnected.
Go To Map 1000, Entry Point R.

029

Reconnect connector 01C-A1A3 on IPS101.
Disconnect connector 3 on PS206 (ALD page YA615).
Set PS206 CP2 on.
Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did PS206 CP2 trip ?

Y N

8 8
T U

030

The 'PS206 BIAS TO IPS101' line from PS206 Connector 3 Pins 1 and 2 (ALD YA615) to IPS101 (01C-A1A3 Pins 5 and 4, ALD YA644) has a short circuit.

See page 20-165c in the MIM for a diagram of this line.

Repair or exchange the failing cable.

Go To Map 1000, Entry Point R.

031

PS206 has either an internal or connector terminal short circuit.

Repair or exchange PS206.

Reconnect all the connector terminals you disconnected and set all PS206 CPs on.

Go To Map 1000, Entry Point R.

032

Exchange the failing control card or power module(s).

Go To Map 1000, Entry Point R.

033

Have you tested all of the power modules in IPS101 ?

Y N

034

There could be two or more failing power modules.

Go to Page 6, Step 020, Entry Point P.

035

Go to Page 6, Step 021, Entry Point N.

036

Set the tripped PS206 CPs on.

Disconnect connector 3 on PS206.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did both CP1 and CP2 on PS206 trip ?

Y N

V W

037

There is a short circuit on the IPS101 board.

Repair or exchange the IPS101 board.

Reconnect all the connector terminals you disconnected.

Go To Map 1000, Entry Point R.

038

There is a short circuit on PS206.

Repair or exchange PS206.

Reconnect all the connector terminals you disconnected.

Go To Map 1000, Entry Point R.

039

PS204 is the indicated PS.

Check if PS204s' CP1 is tripped.

Did CP1 on PS204 trip ?

Y N

040

Go to Page 4, Step 011, Entry Point X.

041

Set CP1 on PS204 on.

Have you tested the control card and power modules of the -1.5Vdc level of IPS201 ?

Y N

042

(Entry Point F)

Make a note of the MAP, page, and step number of this step.

Use the test station to test the control card and power modules of the -1.5Vdc level. The procedure of how to use the test station is in MAP 1004 ENTRY POINT A. After you have reached 'return to the MAP you came from', return here.

(Step 042 continues)

(Step 042 continued)

Did you find a failing power module or control card ?
Y N

043

(Entry Point D)

On the A2 board of IPS201 (02A gate), locate and disconnect input connector terminals G2 and H1 (ALD page YA630).

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did CP1 on PS204 trip ?
Y N

044

There is a short circuit on the IPS201 board where the -1.5Vdc level is located.

Repair or exchange the failing IPS201 board.

Reconnect the connector terminals you disconnected.

Go To Map 1000, Entry Point R.

045

Reconnect the connector terminals you disconnected.

Locate and disconnect connectors 5 and 6 on PS204 (ALD page YA611).

Set CP1 on PS204 on.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did CP1 on PS204 trip ?
Y N

Y Z AA

E X Y Z AA 38

046

The '6.8V TO IPS201-A2' line that goes from PS204 Connector 6 (ALD YA611) to IPS201 (02A-A2G2, ALD YA630) and PS204 Connector 5 (ALD YA611) to IPS201 (02A-A2H1, ALD YA630) has a short circuit.

See page 20-165c in the MIM for a diagram of this line.

Repair or exchange the failing cable.

Go To Map 1000, Entry Point R.

047

PS204 has either an internal or a connector terminal short circuit.

Repair or exchange PS204.

Reconnect all the connector terminals you disconnected and set CP1 on PS204 on.

Go To Map 1000, Entry Point R.

048

Exchange the failing control card or power module(s).

Go To Map 1000, Entry Point R.

049

Have you tested all the power modules of the -1.5Vdc level ?
Y N

050

There could be two or more failing power modules.

Go to Page 11, Step 065, Entry Point H.

051

Go to Page 11, Step 066, Entry Point J.

052

Did you set any CP(s) on ?
Y N

11 10 AA BC

053

The failure was in in either the PS204 or PS206 CP sense line or the +24Vdc supply to PS204 and PS206.

An RRRR field in the ref code of 1880, D380, or D382 indicates a PS206 CP sense (ALD page YA615). An RRRR of 1350, D480, or D482 indicates a PS204 CP sense (ALD page YA611). An RRRR field in the ref code of 1010 or 1640 indicates a +24Vdc failure.

If a CP sense failure is indicated, follow the CP sense line starting from the indicated PS to the MSS (01A-B2) board. See step 017 in this MAP for a diagram and pin list of the CP sense lines. Try to generate the failure again by moving and lightly hitting the cable and connectors of the indicated CP sense line. Also lightly hit in the area of the CP(s) on the indicated PS.

If a +24Vdc failure is indicated, follow the +24Vdc supply line starting from PS101 Connector 7 through TB206 to PS204 and PS206. See step 015 for a diagram and pin list of the +24Vdc supply line. Move and lightly hit the cable and connectors to try and generate the failure again.

Did the failure occur again ?

Y N

054

(Entry Point Y)

The failure was an intermittent failure.

Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	(1)	(2)	(3)
1010	PS101	PS204	PS206
1640	PS101	PS204	PS206
1870	01C-A1D2	PS206	PS101
1880	01C-A1D2	PS206	PS101
D38X	01C-A1D2	PS206	PS101
D48X	02A-A2D4	PS204	PS101

Make a note of the indicated FRU's using the ref

(Step 054 continues)

AD

(Step 054 continued)

code and Chart A and then

Go To Map 1000, Entry Point I.

055

If the UU field of the ref code displayed on the screen is not 1X, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1X, check if the RRRR field is listed in Chart 1 in step 006. If the RRRR field is not listed in Chart 1, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is listed in Chart 1, check for an open in the indicated PS's CP sense or +24Vdc supply lines.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?

Y N

056

Go to Step 054, Entry Point Y.

057

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

058

Check for an intermittent short circuit in the output cables of the indicated PS (the PS that had a tripped CP) as follows:

PS204 CP tripped: Check the '6.8V TO IPS201-A2' line that goes from PS204 Connector 6 (ALD YA611) to IPS201 (02A-A2G2, ALD YA630) and PS204 Connector 5 (ALD YA611) to IPS201 (02A-A2H1, ALD YA630).

PS206 CP2 tripped: Check the 'PS206 BIAS TO IPS101' line that goes from PS206 Connector 3 Pins 1 and 2 (ALD YA615) to IPS101 (01C-A1A3 Pins 5 and 4, ALD YA644).

PS206 CP1 tripped: Check the '10V TO IPS101' line that goes from PS206 Connector 6 (ALD YA615) to IPS101 (01C-A1G2 and 01C-A1G7, ALD YA642) and the '10V RTN TO IPS101' line goes from PS206 Connector 5 (ALD YA615) to IPS101 (01C-A1H1 and 01C-A1H6, ALD YA642).

See page 20-165c in the MIM for a diagram of these lines.

Follow the output cables of the indicated PS. Try to generate the failure again by moving and lightly hitting the cables and connectors of the indicated line. Also hit lightly in the area of the indicated IPS board.

Did the failure occur again ?

Y N

059

Go to Page 10, Step 054, Entry Point Y.

060

There is a short in either the cables or the indicated PS or IPS.

Using page 20-165c and the ALDs, find and fix the failure.

Did you find any failure ?

Y N

061

Go to Page 10, Step 054, Entry Point Y.

062

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

063

The failure is an intermittent.

Go to Page 2, Step 008, Entry Point B.

064

Have you tested the control card and power modules of the -1.5Vdc level ?

Y N

065

(Entry Point H)

Make a note of the MAP, page, and step number of this step.

Use the test station to test the control card and power modules of the -1.5Vdc level. The procedure of how to use the test station is in MAP 1004 ENTRY POINT A. After you have reached 'return to the MAP you came from', return here.

Did you find a failing power module or control card ?

Y N

066

(Entry Point J)

There is a short circuit on the IPS201 (02A gate) A2 board where the -1.5Vdc level is located.

Repair or exchange the failing IPS201 A2 board.

Go To Map 1000, Entry Point R.

067

Exchange the failing control card or power module(s).

Go To Map 1000, Entry Point R.

068

Have you tested all the power modules of the -1.5Vdc level ?

Y N

069

There could be two or more failing power modules.

Go to Page 11, Step 065, Entry Point H.

070

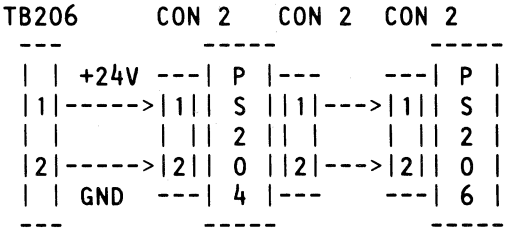
Go to Page 11, Step 066, Entry Point J.

071

The failure indicated by this ref code is that the +24Vdc supply is failing in PS204 or PS206.

The +24Vdc to PS204 and PS206 comes from TB206 Pins 1 and 2 (ALD YA651) and goes to PS204 Connector 2 Pins 1 and 2 (ALD YA611) and then to PS206 Connector 2 Pins 1 and 2 (ALD YA615).

See the following figure for these lines and connectors.



Using this diagram and list and the ALDs, find and fix the failure. Repair or exchange any failing part(s).

Did you find the failure ?

Y N

072

Go to Page 2, Step 003, Entry Point L.

073

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	B	2	006

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
4	016	0001	A
5	022	0001	A
6	028	0001	A
6	030	0001	A
7	036	0001	A
7	040	0001	A
2	005	1000	B
8	045	1000	I
4	009	1000	R
4	011	1000	R
4	013	1000	R
4	015	1000	R
5	023	1000	R
7	043	1000	R
6	025	1000	R
6	027	1000	R
6	031	1000	R
7	034	1000	R
7	037	1000	R
7	039	1000	R
8	048	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.
(Step 001 continues)

(Step 001 continued)

Is PROC UNIT power ON (ACTION DONE on screen) ?

Y N

002

Is the UU field of the ref code displayed on the screen 1X ?

Y N

003

This is not a power problem.

Go To Map 0000, Entry Point A.

004

Is the RRRR field of the displayed ref code A290 or A292 ?

Y N

005

The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.

Go To Map 1000, Entry Point B.

006

(Entry Point B)

The ref code indicates a PS204 bulk voltage line or bulk sense line failure, or that there is no AC voltage to TR204.

PS204 supplies add on bulk voltage to IPS201 (02A-A2 board) for the -1.5Vdc level.

TR204 and PS204 are located in the 02 frame, behind the 02A gate.

The cause of the failure may be one of the following:

1) Failing TR/PS204
2) Failing IPS201 (02A-A2, -1.5Vdc level) control card, power module, or board
3) Failing ac line to TR204
4) Failing fuse in TR204

(Step 006 continues)

(Step 006 continued)

5) Failing IPS201 -1.5Vdc add on bulk sense line
6) Failing cable between PS204 and IPS201 (02A-A2) board
7) Failing 01A-B2 board

Chart 1 gives a list of possible failing FRU's, ref codes that could indicate the FRU, and references to the ALD's and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

Chart 1

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
TR/PS204	A290 A292	YA611	10-035c, 055c 20-155c, 160c, 165c
IPS201 control card, board or power module (02A-A2 board, -1.5V level)	A290 A292	YA630 YA631 (Also see NOTE1 after this chart)	10-035c, 060c 20-185c
01A-B2 board	A290 A292		10-035c, 050c 20-211c, 230c
Connector 240	A290 A292	YA659	10-060c
TB205	A290 A292	YA419	10-055c

NOTE1: See MAP 1004, Entry Point A, Charts 1, 2, 3, and 4d 4 in step 001 for IPS control card and power module location. For ALD pages, see ALD YA012, 'FRU LOCATION'.

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD page YF171 when following sense and other lines into the 01A-B2 board. (Step 006 continues)

(Step 006 continued)

Is the failure an intermittent failure ?
Y N

007
Check if TR204's fuse is good.

Is the fuse good ?
Y N

008

Have you just exchanged TR204's fuse ?
Y N

009
Exchange TR204's fuse.
Go To Map 1000, Entry Point R.

010
Exchange TR204's fuse.
Locate and disconnect Connector 2 on TR202.
Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.
After the machine powers down (ref code is displayed on screen) check if TR204's fuse is good.

Is the fuse good ?
Y N

011
Exchange TR204.
Go To Map 1000, Entry Point R.

012

Did you just exchange PS204 ?
Y N

013
Exchange PS204.
Go To Map 1000, Entry Point R.

8
B C D

014

Did you just exchange TR204 ?
Y N

015
Exchange TR204.
Go To Map 1000, Entry Point R.

016
Problem is not resolved.
Go To Map 0001, Entry Point A.

017

(Entry Point D)

Make a note of the MAP, page, and step number of this step.
Use the test station to test the control card and power modules of the -1.5Vdc level. The procedure of how to use the test station is in MAP 1004 ENTRY POINT A. After you have reached 'return to the MAP you came from', return here.

Did you find the failing modules or control card ?
Y N

018
To check the -1.5Vdc level add on bulk voltage input to IPS201:
Set the CE meter to measure +7Vdc.
Connect the CE meter leads (tool) to the terminal on IPS201 (02A gate) as follows:

1. positive meter lead-----02A-A2G2
2. negative meter lead-----02A-A2H1

The meter should indicate between +6Vdc and +8Vdc after powering up the processing unit.
Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, and observe the meter for voltage indication.
(Step 018 continues)

7
E

(Step 018 continued)

Did the meter indicate between +6Vdc and +8Vdc ?
Y N

019

To check the bulk output of PS204:

Locate and disconnect connectors 5 and 6 on PS204.

Connect the CE meter leads (tool) to PS204 connectors 5 and 6 on the PS as follows:

1. positive meter lead-----connector 6, any pin
2. negative meter lead-----connector 5, any pin

The meter should indicate between +6Vdc and +8Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, and observe the meter for voltage indication.

Did the meter indicate between +6Vdc and +8Vdc ?
Y N

020

To check the ac input to TR204:

Locate TR204 Connector 1 (ALD page YA611) and disconnect it. Connector 1 is located on the frame.

DANGER

THE CONNECTORS OF THE TR HAVE A HIGH VOLTAGE. BE CAREFUL WHEN YOU MEASURE NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF THE METER LEAD (TOOL).

Connect your CE meter to TR204 Connector P1 (on the frame) Pins 1 and 2.

Set the CE meter to measure the ac line voltage.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for ac voltage indication.

Did the meter indicate the ac line voltage ?
Y N

6 6 6
F G H J

J

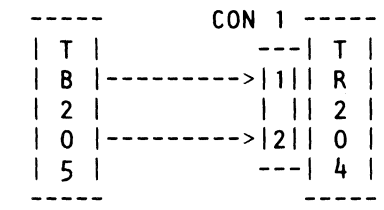
SEQ332C MAP 1134-5

021

The ac line from TB205 (ALD YA419) to TR204 Connector 1 Pins 1 and 2 (ALD YA611) is failing.

NOTE: The output pins of TB205 depend on ac line voltage and frequency. Use ALD YA419 to determine the output pins of TB205 that go to TR204.

The following figure shows these lines and connectors:



NOTE: The frame ground and shield lines are NOT shown in this figure.

Using this diagram and list and the ALDs, find where the ac voltage to PS204 is failing.

Did you find the failure ?
Y N

022

Problem is not resolved.

Go To Map 0001, Entry Point A.

023

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

024

To check the ac output of TR204:

Connect the connector you just disconnected.

Locate and disconnect connector 02 on TR204.

Set your CE meter to measure 7Vac.

The ac comes out of TR204 at Connector 2 Pins 1 and 2 and Connector 2 Pins 3 and 4 (ALD YA611). It is necessary to check the output at Pins 1 and 2 and at Pins 3 and 4.

To check the ac output of TR204, power up the machine first with the CE meter connected to TR204 Connector 2 Pins 1 and 2 and then with the CE meter connected to TR204 Connector 2 Pins 3 and 4. Each time you power up with the meter connected to TR204 the meter should indicate between 5Vac and 9Vac.

Connect the CE meter to Pins 1 and 2 and to Pins 3 and 4 and power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for ac voltage indication.

Did the meter indicate between 5Vac and 9Vac both for Pins 1 and 2 and for Pins 3 and 4 ?

Y N

025

Exchange TR204.

Go To Map 1000, Entry Point R.

026

Did you just exchange PS204 ?

Y N

027

Exchange PS204.

Go To Map 1000, Entry Point R.

028

Problem is not resolved.

Go To Map 0001, Entry Point A.

029

The '6.8V TO IPS201-A2' line between PS204 and IPS201 is failing.

The voltage supply line goes from PS204 Connector 6 (ALD YA611) to 02A-A2G2 (ALD YA630) and the return line goes from PS204 Connector 5 to 02A-A2H1. See MIM page 20-165c for a diagram of this line.

Use page 20-165c and tha ALDs to find the failure.

Did you find any failure ?

Y N

030

Problem is not resolved.

Go To Map 0001, Entry Point A.

031

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

032

Disconnect your CE meter's positive lead and connect it to the frame (GND). Leave the other lead where it is now connected.

This test is to check if there is a ground shift.

Set the CE meter to measure +1Vdc.

Check if the meter indicates more than +0.5Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, and observe your meter for voltage indication.

Did the meter indicate more than +0.5Vdc ?

Y N

7 7
K L

033

To check the -1.5V add on bulk sense line output of IPS201:

Set the CE meter to measure +6.8Vdc.

Connect the CE meter leads (tool) as follows:

positive meter lead----------02A-A2B4B03
negative meter lead----------02A-A2B4D08

The meter should indicate between +6.1Vdc and +7.5Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, and observe the meter for voltage indication.

Did the meter indicate between +6.1Vdc and +7.5Vdc ?

Y N

034

The IPS201 02A-A2 board is failing. Repair or exchange the 02A-A2 board.

Go To Map 1000, Entry Point R.

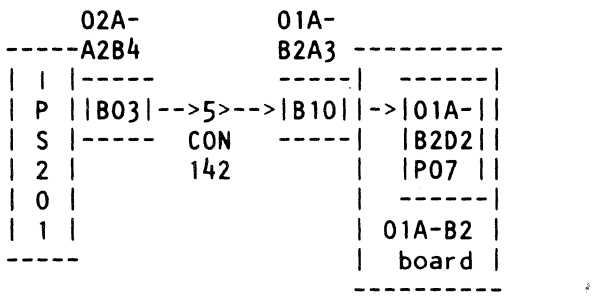
035

The -1.5V add on bulk voltage sense line is failing.

The bulk voltage is sensed at the IPS201 (02A gate).

The IPS201 -1.5V add on bulk sense line goes from connector card 02A-A2B4 Pin B03 (ALD YA636) through Connector 240 Pin 5 (ALD YA659) to 01A-B2 board connector card 01A-B2A3 Pin B10 to the sense card 01A-B2D2 Pin P07 (ALD YF101 and YF171).

The following figure shows these pins and connectors:



NOTE: The +6.8Vdc bulk sense voltage is reduced to a

(Step 035 continues)

(Step 035 continued)

nominal +1.5Vdc by a resistor divider network on the 02A-A2B4 connector card. A voltage between +1.35Vdc and +1.65Vdc is within tolerance for the sense line from the output of the 02A-A2B4 card to the 01A-B2D2 sense card.

Using this diagram and pin list and the ALDs, find the failure.

Did you find the failure ?

Y N

036

Problem is not resolved.

Go To Map 0001, Entry Point A.

037

Fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

038

Did you just exchange PS204 ?

Y N

039

Exchange PS204.

Go To Map 1000, Entry Point R.

040

Problem is not resolved.

Go To Map 0001, Entry Point A.

041

Did you test all the power modules of the -1.5Vdc level ?

Y N

042

There could be two or more failing power modules.

Go to Page 4, Step 017, Entry Point D.

043

Exchange the failing control card or power module(s).

Go To Map 1000, Entry Point R.

044

Check for a loose connection in the -1.5Vdc add on bulk supply from PS204 to IPS201 and the bulk sense line from IPS201 to the MSS (01A-B2) board. Also check the ac voltage supply line from TB205 to TR204. See step 029 in this MAP for pin listings of the -1.5Vdc add on bulk supply. See step 035 in this MAP for a diagram and pin listings for the bulk sense line. See step 021 in this MAP for a diagram and pin listings for the ac line.

Try to generate the failure again by moving and lightly hitting the cables and connectors of the indicated lines. Also hit lightly in the area of IPS201 A2 board and PS204.

Did the failure occur again ?
Y N

045

(Entry Point Y)

The failure was an intermittent failure.
Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRUs (1)	(2)	(3)
A29X	02A-A2D4	PS204	TR204

Make a note of the indicated FRU's using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

046

If the UU field of the ref code displayed on the screen is not 1X, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1X, check the RRRR field of the ref code. If the RRRR field is not A290 or A292, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is A290 or A292, check for an open in the indicated bulk supply, bulk sense and ac lines.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a sense line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated sense line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?
Y N

047
Go to Step 045, Entry Point Y.

048

Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

049

The failure is an intermittent.
Go to Page 2, Step 006, Entry Point B.

IPS 5V BIAS

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	B	2	006

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
6	019	0001	A
7	022	0001	A
2	005	1000	B
8	025	1000	I
4	010	1000	R
5	016	1000	R
4	013	1000	R
5	014	1000	R
6	020	1000	R
7	023	1000	R
9	028	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen) ?

Y N

9 2
A B

MODEL GROUP 2,
FERRO POWER

002

Is the UU field of the ref code displayed on the screen 1x ?

Y N

003

This is not a power problem.

Go To Map 0000, Entry Point A.

004

Chart 1

Ref Code RRRR	IPS Board 02A or 01C Gate
1360	01C-A1
1380 or 1382	02A-A1
1390	02A-A2
A360 or A362	02A-A1
A370 or A372	02A-A2
A400 or A402	01C-A1
1370 or 1372	02A-A1 and 02A-A2

Is the displayed RRRR field listed in Chart 1 ?

Y N

005

The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.

Go To Map 1000, Entry Point B.

C

006

(Entry Point B)

The failure indicated by this ref code is that the +5Vdc bias to IPS101 (01C gate) or IPS201 (02A gate) is missing. The +5Vdc bias comes from PS101 through TB206 to IPS101 and IPS201 (01C-A1, 02A-A1, and 02A-A2 boards).

Determine which IPS board(s) is missing the +5Vdc bias level using the ref code and Chart 1 in step 004.

The cause of the failure may be one of the following:

2) Failing 01C-A1, 02A-A1, or 02A-A2 board
3) Failing +5V bias voltage supply line between PS101, TB206, and IPS101 or IPS201
6) Failing IPS101 or IPS201 +5Vdc bias sense line
1) Failing PS101
6) Failing 01A-B2 board

Chart 2 gives a list of possible failing FRU's, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

See Chart 2 on the next page.

(Step 006 continues)

(Step 006 continued)

Chart 2

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
IPS101 (01C-A1 board)	1360 A400 A402	YA643 YA644 YA645	10-035, 040 20-191, 200, 385
IPS201 (02A-A1 board)	1370 1372 1380 1382 A360 A362	YA625 YA626	10-035, 060 20-185, 190, 200, 385
IPS201 (02A-A2 board)	1370 1372 1390 A370 A372	YA635 YA636	10-035, 060 20-185, 190, 200, 385
PS101	all ref codes	YA601	10-045 20-160, 165
01A-B2 board	all ref codes		10-050 20-211, 230
Connector 142	1360 A400 A402	YA648	10-040
Connector 240	137x 138x 1390 A36x A37x	YA659	10-060
Connector 243	1360 A400 A402	YA661	
TB206	all ref codes	YA651	10-055

See MIM page 14-405 for aid in using ALDs. Also see page 20-230 for usage of ALD page YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

7 4
D E

007

To check the +5Vdc bias input to the indicated IPS board:

Set the CE meter to measure +5Vdc.

Locate connector A2 on the indicated IPS board.

NOTE: If the indication is both of the IPS201 boards, follow the IPS201 (02A gate) A1 board.

Connect the positive meter lead to connector A2 pin 2 and the other meter lead to connector A2 pin 3 while the connector is plugged in.

The meter should indicate between +4.5Vdc and +5.5Vdc.

Does the meter indicate between +4.5Vdc and +5.5Vdc ?

Y N

008

To check the +5Vdc bias at TB206:

Locate TB206.

Connect the positive meter lead to TB206 pin 3 (ALD YA651) and the other meter lead to TB206 pin 4 while the connector is plugged in.

The meter should indicate between +4.5Vdc and +5.5Vdc.

Does the meter indicate between +4.5Vdc and +5.5Vdc ?

Y N

009

To check the +5Vdc bias output of PS101:

Locate PS101 connector 7 .

Connect the positive meter lead to PS101 (ALD page YA601) connector 7 pin 3 and the other meter lead to PS101 connector 7 pin 8 while the connector is plugged in.

The meter should indicate between +4.5Vdc and +5.5Vdc.

Does the meter indicate between +4.5Vdc and +5.5Vdc ?

Y N

010

Exchange PS101.

Go To Map 1000, Entry Point R.

011

The +5Vdc bias supply line from PS101 to TB206 is failing.

Go to Step 013, Entry Point X.

012

Is the indicated failure the +5Vdc bias to IPS101 ?

Y N

013

The +5Vdc bias supply line from TB206 to IPS201 is failing.

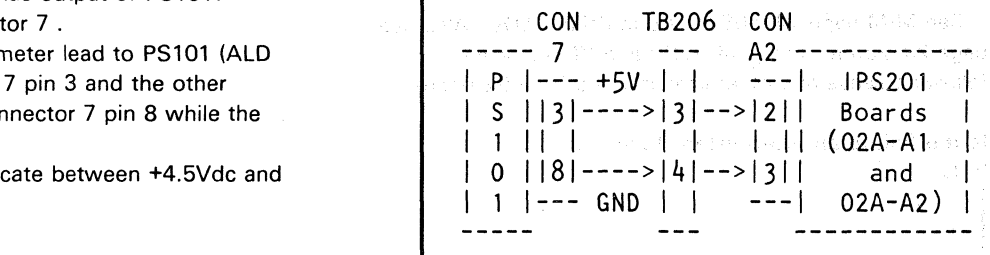
(Entry Point X)

The indicated IPS201 board is good.

The +5Vdc line starts at PS101 Connector 7 Pins 3 and 8 (ALD YA601) and goes to TB206 Pins 3 and 4 (ALD YA651).

The line to IPS201 goes to the 02A-A1 and 02A-A2 boards Connector A2 Pins 2 and 3 (ALD YA625 and YA635). NOTE: A seperate line goes to each IPS201 board (02A-A1, and 02A-A2 Connector A2) from TB206.

See the following figure for these lines and connectors.



Using this figure and list and the ALDs, find and fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

28JUN82 PN 2676029
EC 379837 PEC 379814
SEQ333C MAP 1138-4

014

(Entry Point C)

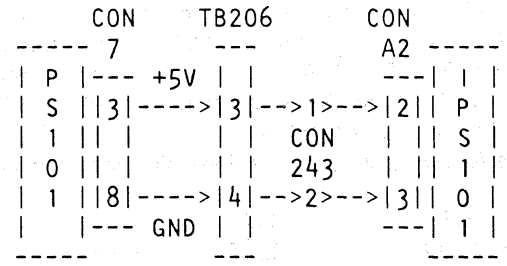
The +5Vdc bias supply line from TB206 to IPS101 is failing.

The IPS101 board is good.

The +5Vdc line starts at PS101 Connector 7 Pins 3 and 8 (ALD YA601) and goes to TB206 Pins 3 and 4 (ALD YA651).

The +5V line to IPS101 goes through Connector 243 Pins 1 and 2 to IPS101 (01C-A1 board) Connector A2 Pins 2 and 3 (ALD YA644).

See the following figure for these lines and connectors.



Using this figure and list and the ALDs, find and fix the failure. Repair or exchange any failing part(s).
Go To Map 1000, Entry Point R.

015

To check the +5V bias sense output of the IPS board:

On the same IPS board, connect the positive meter lead to B4-D03 pin and the other lead to B4-D08 pin.

The meter should indicate between +4.5Vdc and +5.5Vdc.

Does the meter indicate between +4.5Vdc and +5.5Vdc ?
Y N

016

The +5Vdc bias is failing on the IPS board.

Repair or exchange the IPS board.
Go To Map 1000, Entry Point R.

L

017

Is IPS101 (01C-A1 board) the indicated failing IPS board ?
Y N

018

(Entry Point D)

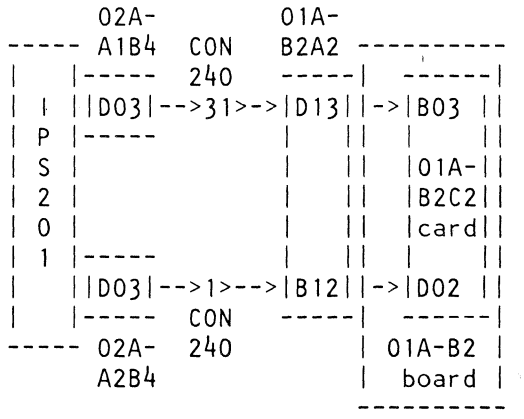
The IPS201 board is good.

The +5Vdc bias sense line from the indicated IPS201 board to the MSS (01A-B2) board is failing.

The IPS201 02A-A1 board +5V bias sense line goes from connector card 02A-A1B4 Pin D03 (ALD YA626) through Connector 240 Pin 31 (ALD YA659) to 01A-B2 board connector card 01A-B2A2 Pin D13 to the sense card 01A-B2C2 Pin B03 (ALD YF101 and YF171).

The IPS201 02A-A2 board +5V bias sense line goes from connector card 02A-A2B4 Pin D03 (ALD YA636) through Connector 240 Pin 1 (ALD YA659) to 01A-B2 board connector card 01A-B2A2 Pin B12 to the sense card 01A-B2C2 Pin D02 (ALD YF111 and YF171).

The following figure shows these pins and connectors:



NOTE: The +5Vdc bias sense voltage is reduced to a nominal +1.5Vdc by a resistor divider network on the 02A-A1B4 and 02A-A2B4 connector cards. A voltage between +1.35Vdc and +1.65Vdc is within tolerance for the sense line from the output of the 02A-AxB4 card to the 01A-B2C2 sense card.

Using this figure and pin list and the ALDs, find the failure.

Did you find the failure ?

Y N

P Q

M P Q 5

SEQ333C MAP 1138-6

019

Problem is not corrected.

Go To Map 0001, Entry Point A.

020

Fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

021

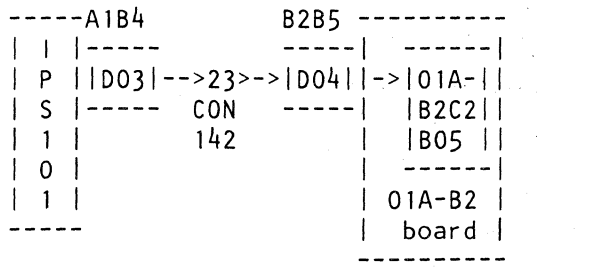
(Entry Point F)

IPS101 is good.

The +5Vdc bias sense line from IPS101 to the MSS (01A-B2) board is failing.

The IPS101 +5V bias sense line goes from connector card 01C-A1B4 Pin D03 (ALD YA645) through Connector 142 Pin 23 (ALD YA648) to 01A-B2 board connector card 01A-B2B5 Pin D04 to the sense card 01A-B2C2 Pin B05 (ALD YF111 and YF171).

The following figure shows these pins and connectors:



NOTE: The +5Vdc bias sense voltage is reduced to a nominal +1.5Vdc by a resistor divider network on the 01C-A1B4 connector card. A voltage between +1.35Vdc and +1.65Vdc is within tolerance for the sense line from the output of the 01C-A1B4 card to the 01A-B2C2 sense card.

Using this figure and pin list and the ALDs, find the failure.

Did you find the failure ?

Y N

7 7
R S

022

Problem is not corrected.

Go To Map 0001, Entry Point A.

023

Fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

024

Use Chart 1 in step 004 in this MAP and the ref code to determine the indicated failing IPS board (01C-A1, 02A-A1, or 02A-A2). If only one board is indicated, check for a loose connection in the +5Vdc bias supply to the indicated IPS board from PS101. Also check the +5Vdc bias sense line from the indicated IPS to the MSS (01A-B2) board. See Entry Point X, Page 4, Step Number 013; Entry Point C, Page 5, Step Number 014; Entry Point D, Page 6, Step Number 018; and Entry Point F, Page 6, Step Number 021, for figures and pin listings of these lines. Try to generate the fault again moving and lightly hitting the cable and connectors of the indicated lines.

If more than one IPS201 board is indicated (RRRR of 156x), check both IPS201 (02A-A1 and 02A-A2) boards.

Did the failure occur again ?

Y N

8 8
T U

025

(Entry Point Y)

The failure is an intermittent failure.
Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRUs (1)	(2)	(3)	(4)	(5)
1360	01C-A1D2	PS101	01C-A1		
137x	PS101				
138x	02A-A1B2	02A-A1D2	PS101	02A-A1	
A36x	02A-A1B2	02A-A1D2	PS101	02A-A1	
1390	02A-A2C2	02A-A2C4	02A-A2D4	PS101	02A-A2
A370	02A-A2C2	02A-A2C4	02A-A2D4	PS101	02A-A2
A40x	01C-A1D2	PS101	01C-A1		

Make a note of the indicated FRUs using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

026

If the UU field of the ref code displayed on the screen is not 1x, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1x, check if the RRRR field is listed in Chart 1 in step 004. If the RRRR field is not listed in Chart 1, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is listed in Chart 1, check for an open in the indicated IPS board's +5Vdc bias supply and sense lines.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

(Step 026 continues)

(Step 026 continued)
Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated sense line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?
Y N

027
Go to Page 8, Step 025, Entry Point Y.

028
Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

029
The failure is an intermittent.
Go to Page 2, Step 006, Entry Point B.

IPS 5V BIAS

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	B	2	007

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	004	0000	A
5	017	0001	A
2	006	1000	B
5	020	1000	I
4	011	1000	R
5	015	1000	R
4	013	1000	R
5	018	1000	R
6	023	1000	R
6	027	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Is the RRRR field of the ref code 1360 ?

Y N

002

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen) ?

Y N

6 6 2
A B C

MODEL GROUP 2,
FERRO POWER

003

(Entry Point D)

Is the UU field of the ref code displayed on the screen 1X ?

Y N

004

This is not a power problem.

Go To Map 0000, Entry Point A.

005

Is the displayed RRRR field 1360, A400, or A402 ?

Y N

006

The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.

Go To Map 1000, Entry Point B.

007

(Entry Point B)

The failure indicated by this ref code is that the +5Vdc bias to IPS101 (01C gate) is missing. The +5Vdc bias comes from PS101 through TB206 to IPS101 (01C-A1 board).

The cause of the failure may be one of the following:

1) Failing PS101
2) Failing IPS101 (01C-A1) board
3) Failing cable between PS101, TB206, and IPS101
6) Failing IPS101 +5Vdc bias sense line
6) Failing 01A-B2 board

Chart 1 gives a list of possible failing FRUs, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

(Step 007 continues)

(Step 007 continued)

Chart 1

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
IPS101 (01C-A1 board)	all ref codes	See NOTE1 after this chart	10-035c, 040c 20-191c, 200c, and 385c
PS101	all ref codes	YA601	10-045c 20-160c, 165c
01A-B2 board	all ref codes		10-035c, 050c 20-211c, 230c
Connector 142	all ref codes	YA659	10-040c
TB206	all ref codes	YA651	10-055c

NOTE1: See MAP 1004, Entry Point A, Charts 1, 2, 3, and 4 in step 001 for IPS control card and power module location. For ALD pages, see ALD YA012, 'FRU LOCATION'.

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD page YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

5 4
D E

008

To check the +5Vdc bias input to IPS101:

Set the CE meter to measure +5Vdc.

Locate connector A2 on IPS101 board.

Connect the positive meter lead to connector A2 pin 2 and the other meter lead to connector A2 pin 3 while the connector is plugged in.

The meter should indicate between +4.5Vdc and +5.5Vdc.

Does the meter indicate between +4.5Vdc and +5.5Vdc ?

Y N

009

To check the +5Vdc bias at TB206:

Locate TB206.

Connect the positive meter lead to TB206 pin 3 (ALD YA651) and the other meter lead to TB206 pin 4 while the connector is plugged in.

The meter should indicate between +4.5Vdc and +5.5Vdc.

Does the meter indicate between +4.5Vdc and +5.5Vdc ?

Y N

010

To check the +5Vdc bias output of PS101:

Locate PS101 connector 7 .

Connect the positive meter lead to PS101 (ALD page YA601) connector 7 pin 3 and the other meter lead to PS101 connector 7 pin 8 while the connector is plugged in.

The meter should indicate between +4.5Vdc and +5.5Vdc.

Does the meter indicate between +4.5Vdc and +5.5Vdc ?

Y N

011

Exchange PS101.

Go To Map 1000, Entry Point R.

F G H

F G H

012

The +5Vdc bias supply line from PS101 to TB206 is open.

Go to Step 013, Entry Point X.

013

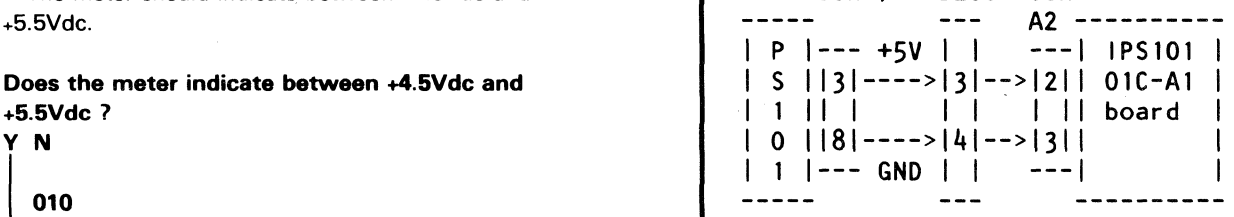
The +5Vdc bias supply line from TB206 to IPS101 is failing.

(Entry Point X)

IPS101 is good.

The +5Vdc starts at PS101 Connector 7 Pins 3 and 8 (ALD YA601) and goes through TB206 Pins 3 and 4 (ALD YA651) to IPS101 (01C-A1 board) Connector A2 Pins 2 and 3 (ALD YA644).

See the following figure for these lines and connectors. Also see pages 20-160c and 20-165c in the MIM for a diagram of these lines.



Using this diagram and list and the ALDs, find and fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

014

To check the +5V bias sense output of IPS201:

On the IPS101 board, connect the positive meter lead to 01C-A1B4D03 and the other lead to 01C-A1B4D08.

The meter should indicate between +4.5Vdc and +5.5Vdc.

Does the meter indicate between +4.5Vdc and +5.5Vdc ?

Y N

5 5
J K

015

The +5Vdc bias is failing on the IPS board.
Repair or exchange the IPS board.
Go To Map 1000, Entry Point R.

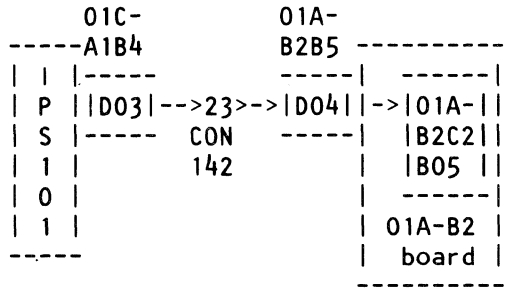
016

IPS101 is good.

The +5Vdc bias sense line from IPS101 to the MSS (01A-B2) board is failing.

The IPS101 +5V bias sense line goes from connector card 01C-A1B4 Pin D03 (ALD YA645) through Connector 142 Pin 23 (ALD YA648) to 01A-B2 board connector card 01A-B2B5 Pin D04 to the sense card 01A-B2C2 Pin B05 (ALD YF111 and YF171).

The following figure shows these pins and connectors:



NOTE: The +5Vdc bias sense voltage is reduced to a nominal +1.5Vdc by a resistor divider network on the 01C-A1B4 connector card. A voltage between +1.35Vdc and +1.65Vdc is within tolerance for the sense line from the output of the 01C-A1B4 card to the 01A-B2C2 sense card.

Using this diagram and pin list and the ALDs, find the failure.

Did you find the failure ?
Y N

017

Problem is not corrected.
Go To Map 0001, Entry Point A.

018

Fix the failure. Repair or exchange any failing part(s).
Go To Map 1000, Entry Point R.

019

Check for a loose connection in the +5Vdc bias supply to IPS101 from PS101. Also check the +5Vdc bias sense line from IPS101 to the MSS (01A-B2) board. See step 013 and step 016 in this MAP for diagrams and pin listings of these lines. Try to generate the fault again moving and lightly hitting the cable and connectors of the indicated lines.

Did the failure occur again ?
Y N

020

(Entry Point Y)

The failure is an intermittent failure.
Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRUs (1)	(2)
1360	PS101	01C-A1
A40X	PS101	01C-A1

Make a note of the indicated FRU's using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

021

If the UU field of the ref code displayed on the screen is not 1X, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1X, check the RRRR field of the ref code. If the RRRR field of the ref code is not 1360, A400, or A402 GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is 1360, A400, or A402 check for an open in the IPS101 +5Vdc bias supply and sense lines.

(Step 021 continues)

(Step 021 continued)

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated sense line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?

Y N

022

Go to Page 5, Step 020, Entry Point Y.

023

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

024

The failure is an intermittent.

Go to Page 2, Step 007, Entry Point B.

025

Reseat connector card 01A-B2B5.

Reseat connector 142.

Reseat connector cards 01C-A1B4 and 01C-A1B5.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC power ON (action done) ?

Y N

026

Go to Page 2, Step 003, Entry Point D.

L

L SEQ334C MAP 1139-6

027

One of the connectors you reseated was loose.

Go To Map 1000, Entry Point R.

Volts Chdr

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	B	2	007
1103	K	10	035

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	004	0000	A
6	018	0001	A
11	043	0001	A
9	025	0001	A
2	006	1000	B
11	048	1000	I
6	015	1000	R
6	017	1000	R
6	019	1000	R
6	020	1000	R
9	033	1000	R
10	038	1000	R
11	040	1000	R
11	042	1000	R
11	046	1000	R
8	022	1000	R
9	024	1000	R
12	051	1000	R
12	054	1000	R
9	030	1161	D

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION. THE 01A-A2 BOARD HAS POWER WITH ONLY HARDWIRED SEQUENCE POWER ON.

(Step 001 continues)

(Step 001 continued)

Is the RRRR field of the ref code 1090 ?
Y N

002

(Entry Point F)

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen) ?
Y N

003

Is the UU field of the ref code displayed on the screen 1X ?
Y N

004
This is not a power problem.
Go To Map 0000, Entry Point A.

005

Chart 1

Ref Code RRRR	Voltage Level
A030 or A032	+5
A190 or A192	-4.25
A200 or 1402	-1.5
or A202	-1.5
A380 or 1032	+6
or A382	+6
1090	all of the above

Is the RRRR field of the displayed ref code listed in Chart 1 ?
Y N

1 1
2 2
A B C D

C D

006
The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.
Go To Map 1000, Entry Point B.

007

(Entry Point B)

The ref code indicates that a voltage is missing from 01A-A2 board or a sense line is open.

Determine the indicated failing voltage level using the RRRR field of the ref code and Chart 1 in step 005.

The cause of the failure may be one of the following:

1) Failing IPS control card, board, or power module
2) Failing voltage supply line
3) Failing 01A-A2 board analog sense line
4) Failing 01A-A2 board
5) Failing 01A-A2V2 connector card
6) Failing PCC K4
7) Failing +6V control (ON/OFF) line

Chart 2 gives a list of possible failing FRUs, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

See Chart 2 on the next page.

(Step 007 continues)

(Step 007 continued)

Chart 2

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
IPS control card, board or power module	all ref codes	See NOTE1 after this chart	10-035c, 060c 20-185c, 190c, 200c, and 385c
TR/PS201	A030 A032	YA605 YA607	10-055c 20-155c, 165c
01A-A2V2 connector card	all ref codes	YA663	10-035c, 050c 14-105f
01A-A2 board	all ref codes	YA663	10-035c, 050c 14-105f
PCC K4	A030 A032	YA411 YA415	10-045c, 065
TBB1	all ref codes	YA653 YA654	10-050c 20-200c

NOTE1: See MAP 1004, Entry Point A, Charts 1, 2, 3, and 4 in step 001 for IPS control card and power module location. For ALD pages, see ALD YA012, 'FRU LOCATION'.

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

008

(Entry Point C)

Is the fault indicated level the +6V level ?

Y N

1 1 9 4
E F G

009

Is the fault indicated level the +5V level ?

Y N

010

Is the fault indicated level the -1.5V level ?

Y N

9 9
H J K

011

(Entry Point D)

Set the CE meter to measure a dc voltage as indicated in the 'Voltage Level' column in Chart 3.

Connect the CE meter's negative meter lead to 01A-A2V2D08.

Connect the CE meter's positive meter lead on the 01A-A2 board as indicated in the following Chart 3:

Chart 3

Voltage Level (Vdc)	Positive Meter Lead 01A-A2 Board	Voltage Range (Vdc)
+6	V2B02	+5.8 to +6.2
+5	V2B05	+4.5 to +5.5
-1.5	V2B08	-1.4 to -1.6
-4.25	V2B12	-4.1 to -4.4

Check if the meter indicates a voltage within the range shown in the 'Voltage Range' column in Chart 3 after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for a voltage indication.

Did the meter indicate a voltage within the range ?

Y N

012

Did the meter indicate any voltage ?

Y N

7 6 5
L M N

013

The voltage line of the indicated voltage level is failing.

Using ALD, check for an open in the voltage line between the points indicated in Chart 4 at the right and the points indicated in Chart 5 at the right------>

Ensure that the four voltage connectors are plugged in tightly on the 01A-A2 board.

If the indicated failing voltage level is the +5V level, ensure that PS201 connectors 2 & 3 are seated tightly.

NOTE: Also see MIM VOL 13/16 Pages 20-165c and 20-200c.

Chart 4

Voltage Level	Starting Point to Check for Open (+)	(-)	ALD page
+6	02A-A1	J3C J3D	J3A J3B	YA629
+5	PS201 CON 2	D04	B04	YA607
	PS201 CON 3	D04	B04	YA607
-1.5	TBB1	B21	A21	YA659
-4.25	TBB1	B21	C21	YA659

Chart 5

Voltage Level	Ending Point to Check for Open (ALD YA663) (+)	(-)
+6	01A-A2	Y1	Y3
+5	01A-A2	Y6	Y4
+5	01A-A2	Z6	Z4
-1.5	01A-A2	B2A14	B3A01
-1.5	01A-A2	B3A14	B4A01
-1.5	01A-A2	B4A14	B5A01
-4.25	01A-A2	U3E14	U4E01

Did you find the failure ?

Y N

6 6
P Q

014

Is the indicated failing voltage level the +5Vdc level ?
Y N

015
Problem is not corrected.
Go To Map 1000, Entry Point R.

016

Did you just exchange PS201 ?
Y N

017
Exchange PS201.
Go To Map 1000, Entry Point R.

018
Problem is not corrected.
Go To Map 0001, Entry Point A.

019
Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

020

If the voltage you measured on the 01A-A2 board was TOO LOW:

Ensure the voltage supply cables and connectors of the failing voltage level are tightly connected and are in good condition (for example, no pinched cables or poor connection where cables are fastened to pins). Use Charts 4 and 5 in step 012 for starting and ending points of cables. Also see MIM VOL 13/16 Pages 20-165c and 20-200c. Repair or exchange any failing cable(s) or connectors.

If that does not fix the problem, exchange the FRU(s) listed in Chart 6 for the failing voltage level and then GO TO MAP 1000, ENTRY POINT R.

If the voltage you measured on the 01A-A2 board was TOO HIGH:

Exchange the FRU(s) listed in Chart 6 for the failing voltage level.

Chart 6

Voltage Level	Indicated FRUs
+6	02A-A1B2 02A-A1E3
+5	PS201
-1.5 or -4.25	Cables from TBB1 to 01A-A2

Go To Map 1000, Entry Point R.

021

Set the CE meter to measure a dc voltage as indicated in the 'Voltage Level' column in the following Chart 7.

Connect the CE meter's negative meter lead to 01A-B2D2D08.

Connect the CE meter's positive meter lead on the 01A-B2 board as indicated in the following Chart 7:

Chart 7

Voltage Level (Vdc)	Positive Meter Lead 01A-B2 Board	Voltage Range (Vdc)
+6	C2B04	+1.4 to +1.6
+5	D2B02	+1.4 to +1.6
-1.5	D2S09	-1.4 to -1.6
-4.25	D2U11	-1.4 to -1.6

Check if the meter indicates a voltage within the range shown in the 'Voltage Range' column in Chart 7 after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for a voltage indication.

Did the meter indicate a voltage within the range ?

Y N

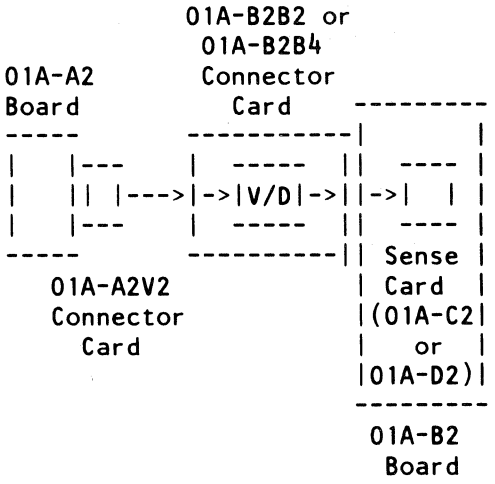
9 8
R S

022

The analog sense line of the voltage in the 01A-A2 board is failing.

(Entry Point W)

The line starts at the 01A-A2V2 connector card on the 01A-A2 board (ALD YA663) and goes to the 01A-B2 board through the 01A-B2B2 or 01A-B2B4 connector card (ALD YF101 and YF111). (NOTE: There is a voltage divider network on the connector card that reduces the board voltage level to a normal + or - 1.5Vdc. This is shown as 'V/D' in the following figure.) On the 01A-B2 board the line goes to the 01A-B2C2 or 01A-B2D2 sense card (ALD YF171). Also see MIM VOL 13/16 Pages 20-225c, 20-230c, and 20-235c for a description of sensor entry to the 01A-B2 board.



The figure at the right shows the analog sense lines---->

The following Chart 8 gives the pin net listings for the analog sense lines:

Chart 8

Voltage Level	Analog Sensor Number	01A-A2V2 Connector Card Pin	01A-B2 Board Connector Card Pin	01A-B2 Board Sense Card Pin
+6	A38	01A-A2V2B02	01A-B2B4D09	01A-B2C2B04
+5	A03	01A-A2V2B05	01A-B2B2B12	01A-B2D2B02
-1.5	A20	01A-A2V2B08	01A-B2B2B03	01A-B2D2S09
-4.25	A19	01A-A2V2B12	01A-B2B2B07	01A-B2D2U11

Using the figure, Chart 8, the ALDs, and the MIMs, find where the indicated sense line is failing. Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

023

The indicated sense card (01A-B2C2 or 01A-B2D2) where you just measured may be failing.

Did you just exchange the indicated sense card ?
Y N

024

Exchange the indicated sense card (01A-B2C2 or 01A-B2D2).
Go To Map 1000, Entry Point R.

025

Problem is not corrected.
Go To Map 0001, Entry Point A.

026

The -1.5V analog sense line from the 01A-A2 board to the sense card on the 01A-B2 board may be failing.

To check the -1.5V analog sense line, perform the following:

Press 'POWER OFF' on the OCP.

Set Primary Control Compartment (PCC) CB1 and CB2 OFF.

Set the CE meter to measure ohms.

Disconnect the 01A-A2V2 connector card.

Connect one meter lead (tool) to 01A-B2D2S09. Connect the other meter lead to 01A-A2V2B08 (on the 01A-A2V2 connector card). The meter should indicate continuity.

Did the meter indicate continuity ?
Y N

027

The -1.5V analog sense line is failing. Find and fix the failure. For a figure and pin list of this line,
Go to Page 8, Step 022, Entry Point W.

028

The -1.5V analog sense line is good.

Set PCC CB1 and CB2 ON and press 'POWER ON' on the CE Panel.
Go to Page 4, Step 011, Entry Point D.

029

To check if PCC K4 is good get the MD screen as follows:

1. Press MODE SELECT key.
2. Key in MD
3. Press ENTER key.
4. The DIGITAL DISPLAY should displayed on the screen.
5. Key in c (for continuous mode).
6. Press ENTER key.

In the DIGITAL DISPLAY check if there is an asterisk (*) under DIGITAL 52.

Is there an asterisk (*) under 52 ?
Y N

030

Press MODE SELECT key.
1. Key in MW
2. Press ENTER key.

To check PCC K4 use ref code 1116120E in all ref code questions for this fault.
Go To Map 1161, Entry Point D.

031

PCC K4 is good.
1. Press MODE SELECT key.
2. Key in MW
3. Press ENTER key.

Go to Page 4, Step 011, Entry Point D.

032

Ensure that the power module of the +6Vdc level is tightly plugged in. For module location see MAP 1004 ENTRY POINT A.

Is the power module plugged in tightly ?
Y N

033

Plug in the power module tightly.
Go To Map 1000, Entry Point R.

034

Make a note of the MAP, page, and step number of this step.

Use the test station to test the power module and the control card of the +6Vdc level. The procedure of how to use the test station is in MAP 1004 ENTRY POINT A.

After you have reached the statement 'return to the MAP you came from', return here.

Did you find a failing module or control card ?

Y N

035

(Entry Point K)

Connect your CE meter to the IPS201 A1 board across the J3 terminal (NOTE: It is a split wire).

Set the CE meter to measure 7Vdc maximum.

Check if the meter indicates between +5.8Vdc and +6.2Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for voltage indication.

Did the meter indicate between +5.8 and +6.2Vdc ?

Y N

036

Did the meter indicate any voltage ?

Y N

U V W X

037

Set the CE meter to measure +5Vdc.

Connect the meter leads(tool) as follows:

02A-A1B5D11 ---------- positive meter lead
Frame ground --------- negative meter lead

The meter should indicate the following sequence:

Before powering up the processing unit the voltage should be floating above +2.0Vdc; after powering up the processing unit the voltage should go to approximately +3.0Vdc and then decrease to less than +0.5Vdc.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did the meter indicate the sequence as described ?

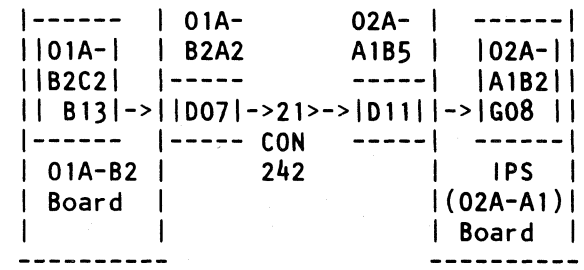
Y N

038

The +6V control line is failing.

The +6V control line goes from sense card 01A-B2C2 Pin B13, through connector card 01A-B2A2 Pin D07 (ALD YF141 and YF171), through Connector 242 Pin 21 (YA661), and then through IPS gate connector card 02A-A1B5 Pin D11 (ALD YA626) to the IPS regulator control card 02A-A1B2 Pin G08 (ALD YA623).

The following figure shows this line:



Using this figure and pin list and the ALDs find and fix the failure in the control line. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

039

(Entry Point G)

Did you just exchange the +6V IPS control card and power module ?
Y N

040
Exchange the +6V IPS control card and power module. See MAP 1004, ENTRY POINT A, for locations.
Go To Map 1000, Entry Point R.

041

Did you just exchange the IPS201 (02A) A1 board ?
Y N

042
Exchange the IPS201 (02A) A1 board.
Go To Map 1000, Entry Point R.

043
Problem is not corrected.
Go To Map 0001, Entry Point A.

044
Go to Step 039, Entry Point G.

045
IPS201 A1 board is good .
Go to Page 4, Step 011, Entry Point D.

046
Exchange the failing control card or power module
Go To Map 1000, Entry Point R.

047
Check the voltage supply lines of the indicated voltage to the 01A-A2 board for poor or loose connection. Also check the analog sense line from the 01A-A2 board to the 01A-B2 board.

See Chart 4 and Chart 5 in step 012 in this MAP for starting and ending points of the voltage supply lines. Also see MIM VOL 13/16 Pages 20-165c and 20-200c.

See step 021 in this MAP for a figure and pin net list of the analog sense line.

Move and lightly hit the cable and connectors to try to generate the fault again. Also check the voltage connectors on the 01A-A2 board for poor or loose connection.

Did the failure occur again ?
Y N

048

(Entry Point Y)

The failure was an intermittent failure.
Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRUs (1)	(2)
1402	02A-A2D4	01A-A2V2
A03X	PS201	01A-A2V2
A19X	02A-A1D2	01A-A2V2
A20X	02A-A2D4	01A-A2V2

Make a note of the indicated FRUs using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

049

If the UU field of the ref code displayed on the screen is not 1X, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1X, check if the RRRR field is listed in Chart 1 in step 005 in this MAP. If the RRRR field is not listed in Chart 1, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is listed in Chart 1, check for an open in the indicated level's voltage supply and analog sense lines.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a sense line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated sense line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?

Y N

050

Go to Page 11, Step 048, Entry Point Y.

051

Fix the failure, Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

052

Did you just reseat the 01A-A2V2 connector card ?

Y N

053

The failure is an intermittent.

Go to Page 2, Step 007, Entry Point B.

054

The 01A-A2V2 connector card you reseated was loose.

Go To Map 1000, Entry Point R.

055

Power down by pressing 'POWER OFF' on the Operator control Panel (OCP). Set Primary Control Compartment (PCC) mainline CBs (PCC CB1 and CB2) to the OFF position.

Reseat the 01A-A2V2 connector card. See MIM VOL 13/16 Pages 10-050c and 14-105f for location.

Reset PCC CB1 and CB2 and press 'POWER ON' on the CE Panel.

Wait until the 'PARTIAL POWER UP/DOWN' (QMW) screen is displayed and then

Go to Page 2, Step 002, Entry Point F.

START LINE

PAGE 1 OF 15

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1110	B	2	006
1126	B	2	006
1146	B	2	006
1174	K	15	066

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
10	035	0001	A
2	005	1000	B
9	027	1000	B
9	030	1000	B
14	061	1000	I
7	016	1000	R
7	017	1000	R
14	058	1000	R
9	031	1000	R
10	040	1000	R
11	042	1000	R
12	044	1000	R
8	020	1000	R
13	053	1000	R
12	048	1000	R
15	064	1000	R
9	034	1174	B

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

(Step 001 continues)

(Step 001 continued)

Power on the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen) ?

Y N

002

Is the UU field of the ref code displayed on the screen 1x ?

Y N

003

This is not a power problem.

Go To Map 0000, Entry Point A.

004

Check if the RRRR field of the ref code displayed on the screen is listed in the following Chart 1.

Chart 1

Ref Code RRRR	Voltage Level	ALD Page
1432	+4.25 I	YA634
1102	+4.25 F	YA634
1442	-1.5 or -2.2(-6.45)	YA631 YA633
1452 or A332	-4.25	YA621
A162	+6	YA623
A462	-1.5	YA631

Is the displayed RRRR field listed in Chart 1 ?

Y N

15

A B C

B C

SEQ339C MAP 1143-2

005

The first failure is caused by the failure indicated by this displayed ref code. To determine and repair, use the displayed ref code.

Go To Map 1000, Entry Point B.

006

(Entry Point B)

The failure indicated by this ref code is that an IPS201 control line is shorted to ground.

To determine which level's control line is failing use the ref code and Chart 1 in step 004 in this MAP.

NOTE: The +4.25 level has two control lines, the +4.25 Initial (+4.25 I) and the +4.25 Final (+4.25 F).

NOTE: The -2.2(-6.45)V level starts at 02A-A2J5 (IPS201) as -2.2Vdc, and is referenced to the -4.25V level at TBB1 to make the -6.45V level that goes to the 01A-C1 board.

The cause of the failure may be one of the following:

1) Failing IPS control card, board, or power module
2) IPS control (ON/OFF) line shorted to ground
3) Failing 01A-D2B2 card
4) Failing 01A-B2 or 01A-D2 board
5) Failing -1.5V analog sense line
6) Failing +4.25V remote sense line

Chart 7 gives a list of possible failing FRUs, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

See Chart 7 on the next page.

(Step 006 continues)

(Step 006 continued)

Chart 7

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
IPS control card, board or power module	all ref codes	See NOTE1 after this chart	10-035c, 060c 20-185c, 190c, 200c, 385c
01A-D2B2 card	1432 1442 1452 A332 A462	YA731	10-035c, 050c 14-105c 20-335c
01A-D2 board	1432 1442 1452 A332 A462		10-035c, 050c 14-105c 20-205c, 285
01A-B2 board	all ref codes		10-035c, 050c 14-105c 20-211c, 230c
CON 240	1102 1432 1442 1452 A332 A462	YA659	10-060c
CON 242	A162	YA661	10-060c
CON 244	1441	YA661	10-055c
01A-B2A5 and 01A-B2B2 paddle cards	1442	YF171	14-105c

NOTE1: See MAP 1004, Entry Point A, Charts 1, 2, 3, and 4 in step 001 for IPS control card and power module location. For ALD pages, see ALD YA012, 'FRU LOCATION'.

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

1
4 4
D E

007

Did you just test the regulator control card and the power module(s) of the indicated level(s) ?

Y N

008

Use the test station to test the power module(s) and the control card of the failing level. The procedure of how to use the test station is in MAP 1004 ENTRY POINT A. After you reached 'return to the MAP you came from', return here.

Note: If two voltage levels are indicated with one ref code (RRRR field) in Chart 1, ensure that you check both levels control card and power modules.

Did you find failing module or control card ?

Y N

009

(Entry Point C)

Is the RRRR field of the ref code A162 ?

Y N

010

Is the RRRR field of the ref code 1102 ?

Y N

011

Is the RRRR field of the ref code 1442 ?

Y N

1 1 1 1 1
4 4 3 2 0
F G H J K L

012

(Entry Point D)

Set the CE meter to measure +5Vdc.

Chart 2 shows the output pins of the 01A-D2B2 card as shown in the ALD page YA731.

Connect the meter leads (tool) as indicated by the ref code and and the following Chart 2.

Chart 2

Ref Code RRRR	Voltage Level	Meter on 01A-D2 Board (+)	(-)
1432	+4.25	B2B03	B2D08
1442	-1.5 or -2.2(-6.45)	B2B07 B2B12	B2D08
1452 or A332	-4.25	B2B08	B2D08
A462	-1.5	B2B07	B2D08

The voltage should be above +2.0Vdc.

Is the voltage above +2.0Vdc ?

Y N

013

Locate and disconnect Connector 240.

NOTE: For this measurement only, do not power down the machine before disconnecting Connector 240.

The meter leads should still be connected as indicated in Chart 2.

Does the meter indicate above +2.0Vdc with Connector 240 disconnected ?

Y N

8 8 5
M N P

014

The IPS control line (ON/OFF) from Connector 240 to IPS201 is good.

Have you just exchanged the 01A-D2B2 card ?

Y N

015

Press POWER OFF switch at the OCP.

Switch the main line CBs (CB1 and CB2) in the PCC to OFF position.

Exchange the 01A-D2B2 card.

Switch the main line CBs (CB1 and CB2) in the PCC to ON position and wait for a few seconds.

Press POWER ON switch at the CE panel and wait until the PARTIAL POWER UP/DOWN screen is displayed.

With the CE meter leads (tool) still connected as indicated by the ref code and Chart 2 the meter should indicate above +2.0Vdc.

Does the meter indicate above +2.0Vdc ?

Y N

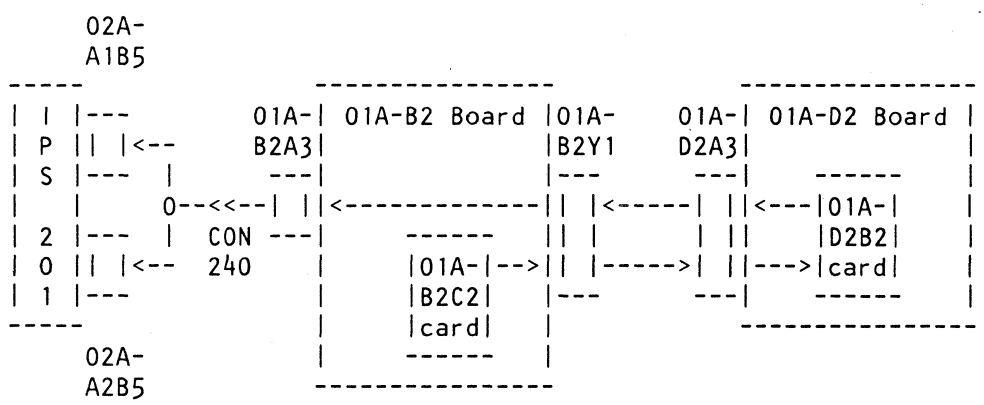
7 7 6
Q R S

(Entry Point F)

The control line is shorted to ground.

The line starts at the 01A-B2C2 sense card (ALD YF171), leaves the 01A-B2 board through connector card 01A-B2Y1 (ALD YF161 and YF171), and enters the 01A-D2 board through connector card 01A-D2A3. On the 01A-D2 board the line goes goes through the 01A-D2B2 card, leaves the 01A-D2 board through connector card 01A-D2A3, and enters the 01A-B2 board through the 01A-B2Y1 connector card. The line then leaves the 01A-B2 board through connector card 01A-B2A3, and goes through Connector 240 (ALD YA659) to either IPS201 connector card 02A-A1B5 (ALD YA626) or IPS201 connector card 02A-A2B5 (ALD YA636). On IPS201 the line goes to the control card.

The following figure shows these lines and connectors:



See the next page for a pin list of each control line.

(Step 016 continues)

PAGE 7 OF 15

(Step 016 continued)
The pins for each control line are as follows:

Chart 8

Voltage Level	01A-B2C2 card (out)	01A-B2Y1 (out)	01A-D2A3 (in)	01A-D2B2 card (in)	01A-D2B2 card (out)	01A-D2A3 (out)	01A-B2Y1 (in)	01A-B2A3 (out)	CON 240 pin	02A gate (in)
-1.5	J11	B02	B02	B04	B07	D02	D02	B02	63	A2B5 D13
-4.25	G10	B05	B05	B09	B08	D06	D06	B08	61	A1B5 D12
+4.25	D04	B04	B04	B02	B03	D05	D05	B04	55	A2B5 D09
-2.2 (-6.45)	J10	B03	B03	B13	B12	D04	D04	B07	59	A2B5 D11

Using this diagram and list and the ALD's, find and fix the failure. Repair or exchange any failing part(s).
Go To Map 1000, Entry Point R.

017
Reconnect Connector 240.
The card you took out from the 01A-D2B2 position is failing.
Go To Map 1000, Entry Point R.

018
Go to Page 6, Step 016, Entry Point F.

019

Reconnect Connector 240

Locate and disconnect the connector card indicated by the ref code and the following Chart 3.

NOTE: For this measurement only, do not power down the machine before disconnecting the indicated connector card.

Chart 3

Ref Code RRRR	Voltage Level	Connector Card
1432	+4.25	02A-A2B5
1442	-1.5 or -2.2(-6.45)	02A-A2B5
1452 or A332	-4.25	02A-A1B5
A162	+6	02A-A1B5
A462	-1.5	02A-A2B5

With the CE meter leads (tool) still connected as indicated in Chart 2, and the indicated connector card disconnected, the meter should indicate above +2.0Vdc.

Does the meter indicate above +2.0Vdc ?

Y N

020

The IPS board and the control card are good.

The short to ground is in the cable from Connector 240 to the connector card you disconnected.

Repair or exchange the cable.

Go To Map 1000, Entry Point R.

T

021

The cable from Connector 240 to the IPS201 connector card is good.

The short to ground is in the IPS board or the control card.

Find and repair the failure.

For a figure and pin list of the control line,

Go to Page 6, Step 016, Entry Point F.

022

Set the CE meter to measure +5Vdc.

Chart 4 shows the input pins of the 01A-D2 board as shown on ALD page YA731.

Connect the meter leads (tool) as indicated by the ref code and the following Chart 4.

Chart 4

Ref Code RRRR	Voltage Level	Meter on 01A-D2 Board (+)	(-)
1432	+4.25	A3B04	B2D08
1442	-1.5 or -2.2(-6.45)	A3B02 or A3B03	B2D08
1452 or A332	-4.25	A3B05	B2D08
A462	-1.5	A3B02	B2D08

The voltage should be above +2.0Vdc.

Is the voltage above +2.0Vdc ?

Y N

9 9
U V

023

The indicated control line is shorted to ground.
There is a short to ground in one of the following:

1. The cable located from 01A-B2Y1 to 01A-D2A3
2. The 01A-B2 board
3. The 01A-D2 board
4. The 01A-D2B2 card

For a figure and pin list of the control line,
Go to Page 6, Step 016, Entry Point F.

024

Is the RRRR field of the ref code 1442 ?
Y N

025

Is the RRRR field of the ref code A462 ?
Y N

026

(Entry Point G)

The meter leads should still be connected to either the input pins of the 01A-D2 board or the output pins of the 01A-B2C2 card.
The meter should indicate above +2.0Vdc. After powering on the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, first the voltage should go to approximately +3.0Vdc, then the voltage should go to less than +0.5Vdc for a short time (approximately one to five seconds).

Power on the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and check if the voltage indicated by the meter goes to less than +0.5Vdc.

Did the meter indicate less than +0.5Vdc ?
Y N

1
0
W X Y Z

027

Use the displayed ref code and MAP 1000 to find the right MAP number. You might be in the wrong MAP.
Go To Map 1000, Entry Point B.

028

Is PROC UNIT power ON (ACTION DONE on screen) ?
Y N

029

Is the displayed ref code the same as before ?
Y N

030

Use the displayed ref code to find the MAP number
Go To Map 1000, Entry Point B.

031

The control line is good up to IPS201.
Use the ALD pages given in Chart 1 in step 004 in this MAP to check the control line on the IPS board to find and repair the failure.
Go To Map 1000, Entry Point R.

032

The failure was an intermittent failure.
Go to Page 14, Step 061, Entry Point Y.

033

Take the no leg of the next question if you are not sure.

Did you come to this MAP from MAP 1174 ?
Y N

034

The control line is good.
Go To Map 1174, Entry Point B.

1
0
A
A

035

Problem is not resolved.

Go To Map 0001, Entry Point A.

036

Did you follow the -2.2(-6.45) ON/OFF control line ?

Y N

037

Follow the -2.2(-6.45) ON/OFF control line.

Go to Page 4, Step 012, Entry Point D.

038

Go to Page 9, Step 026, Entry Point G.

039

The '+4.25V REMOTE SENSE' sense or return line from TBB1 to IPS201 may be failing.

Check for an open in the lines as follows:

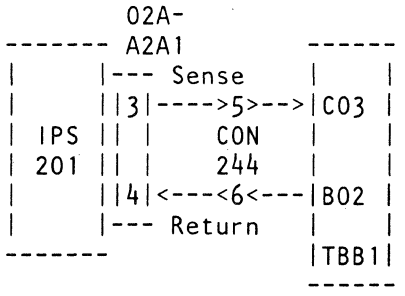
Press POWER OFF on the Operator Control Panel (OCP) and set PCC CB1 and CB2 off.

Set the CE meter to measure ohms.

Disconnect the 02A-A2A1 connector in IPS201.

The '+4.25V REMOTE SENSE' sense line starts at IPS201 Connector 02A-A2A1 Pin 3 (ALD YA635) and goes through Connector 244 Pin 5 (ALD YA661) to TBB1-C03 (ALD YA653). The '+4.25V REMOTE SENSE' return line starts at TBB1-B02 (ALD YA653) and goes through Connector 244 Pin 6 (ALD YA661) to IPS201 Connector 02A-A2A1 Pin 4 (ALD YA635).

The following figure shows the pins and connectors in this line:



Connect the CE meter leads (tool) to the points on the cable end of the 02A-A2A1 connector and TBB1 and check the sense and return lines for continuity.

Did both lines show continuity ?

Y N

040

The '+4.25V REMOTE SENSE' line is failing.

Using the figure and list in the previous step and the ALDs find and fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

041

A -1.5Vdc analog sense line from the 01A gate to the MSS (01A-B2) board may be failing (ALD YA663, YA665, and YA667).

Power down the machine by pressing 'POWER OFF' on the OCP.

Set PCC CB1 and CB2 to the OFF position.

Set the CE meter to measure ohms.

Disconnect the following:

01A-A1A1 analog sense connector
01A-B1E4 analog sense connector
01A-C1C4 analog sense connector
01A-A2V2 connector card

Check all four (4) sense lines as follows:

Connect one meter lead to the pin on the sense connector or connector card on the end of the cable and the other meter lead to the point on the 01A-B2 board as indicated in Chart 5 and check for continuity. The meter should indicate less than 5 ohms for each line.

Chart 5

Point On Analog Sense Connector or Connector Card	Point On 01A-B2 Board	Analog Sensor
01A-A1A1B13 to	01A-B2D2U06	A17
01A-B1E4B01 to	01A-B2D2S07	A22
01A-C1C4D01 to	01A-B2D2S10	A24
01A-A2V2B08 to	01A-B2D2S09	A20

Did all lines in Chart 5 indicate continuity ?

Y **N**

A C | A D

042

Repair or exchange the failing cable. Using ALD YA663, YA665, YA667, and ALD YF101 and the indicated 'Analog Sensor' from Chart 5, repair or exchange the failing sense line. Also see ALD YF171 for paddle card cable connections and entry of sense lines into the 01A-B2 board.

Go To Map 1000, Entry Point R.

043

A 150 ohm precision resistor in the resistor divider network on the paddle card in the 01A-B2 board for one of the -1.5Vdc analog sense lines may be failing.

Ensure PCC CB1 and CB2 are set to the OFF position.

Set the CE meter to measure ohms.

Ensure that the following are disconnected:

01A-A1A1 analog sense connector
01A-B1E4 analog sense connector
01A-C1C4 analog sense connector
01A-A2V2 connector card

To check the resistors perform the following:

Connect one meter lead to 01A-B2D2U08. Connect the other meter lead to the points on the 01A-B2 board as indicated in the 'Point on 01A-B2 Board' column in Chart 6.

Chart 6

Point On 01A-B2 Board	Analog Sensor
01A-B2D2U06	*A17*
01A-B2D2S07	*A22*
01A-B2D2S10	*A24*
01A-B2D2S09	*A20*

The meter should indicate between 145 ohms and 155 ohms for each point in Chart 6.

Did the meter indicate 150 ohms between each point in Chart 6 and 01A-B2D2U08 ?

Y **N**

1 2 A E | 1 2 A F

044

The resistor is failing. Using ALD YF101 and the indicated 'Analog Sensor' from Chart 6, repair or exchange the failing paddle card and cable assembly. Also see ALD YF171 for paddle card cable connections.

Go To Map 1000, Entry Point R.

045

The failure is in the -1.5 or -2.2(-6.45) ON/OFF control line.

Follow the -1.5 ON/OFF control line

Go to Page 4, Step 012, Entry Point D.

046

Set the CE meter to measure +5Vdc.

To check the output of the +4.25 Final control line from the 01A-B2C2 sense card:

Connect the meter leads (tool) as follows:

01A-B2C2D10 ---------- positive lead (tool)
01A-B2C2D08 ---------- negative lead (tool)

The voltage should be above +2.0Vdc.

Is the voltage above +2.0Vdc ?

Y N

047

Locate and disconnect Connector 240.

NOTE: For this measurement only, do not power down the machine before disconnecting Connector 240.

With the meter leads still connected to 01A-B2C2D10 and 01A-B2C2D08, the voltage should be above +2.0Vdc.

Does the meter indicate above +2.0Vdc with Connector 240 disconnected ?

Y N

A A A
G H J

048

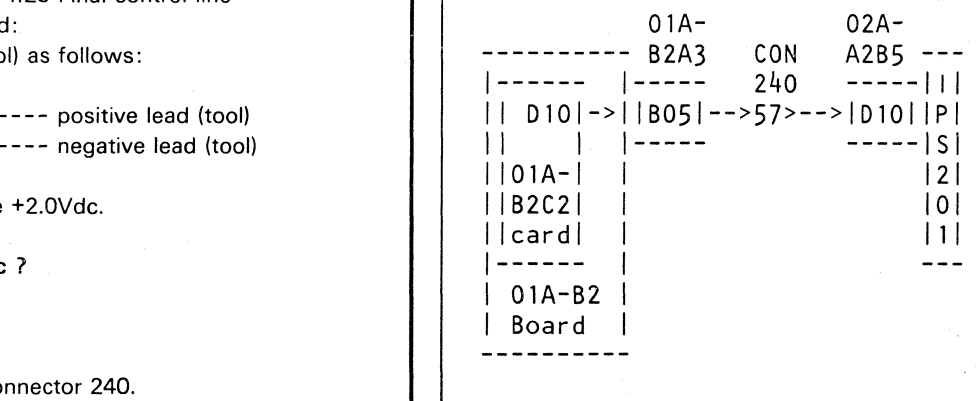
The +4.25 Final control line from Connector 240 to IPS201 A1 board is good.

The +4.25 Final control line from the 01A-B2 board to Connector 240 has a short to ground.

(Entry Point S)

The line starts at the 01A-B2C2 sense card (ALD YF171), leaves the 01A-B2 board through the 01A-B2A3 connector card (ALD YF141), and goes through Connector 240 (ALD YA659) to IPS201 through the 02A-A2B5 connector card (ALD YA636).

See the following figure for the pins and connectors in the +4.25 Final control line.



Using this figure and the ALDs, find the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

049

The +4.25 Final control line from the 01A-B2 board to Connector 240 is good.

The 02A-A2 board or the cable from Connector 240 to the 02A-A2B5 connector card has a short to ground.

For a figure and pin list of the control line,

Go to Step 048, Entry Point S.

050

Go to Page 9, Step 026, Entry Point G.

051

(Entry Point M)

Set the CE meter to measure +5Vdc.

To check the output of the +6V control line from the 01A-B2C2 sense card:

Connect the meter leads (tool) as follows:

01A-B2C2B13 ---------- positive lead (tool)
01A-B2C2D08 ---------- negative lead (tool)

The voltage should be above +2.0Vdc.

Is the voltage above +2.0Vdc ?

Y N

052

Locate and disconnect Connector 242.

NOTE: For this measurement only, do not power down the machine before disconnecting Connector 242.

With the meter leads still connected to 01A-B2C2B13 and 01A-B2C2D08, the voltage should be above +2.0Vdc.

Does the meter indicate above +2.0Vdc with Connector 242 disconnected ?

Y N

1 4
A A A
K L M

053

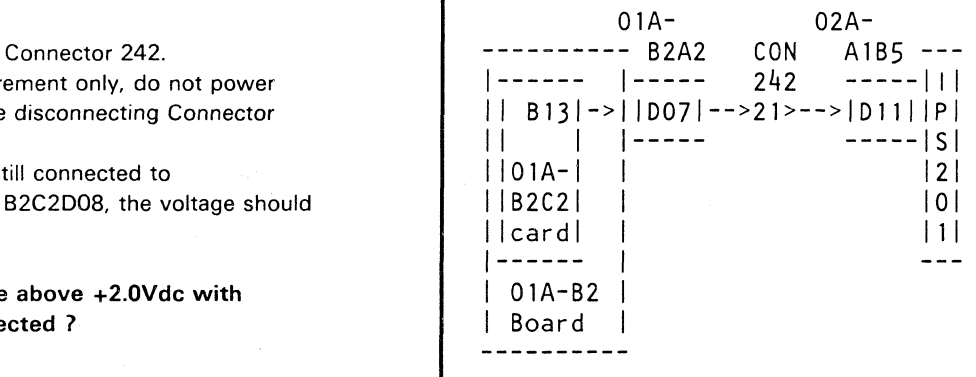
The +6V control line (+6V ON *C17*) from Connector 242 to IPS201 A1 board is good.

The +6V control line from the 01A-B2 board to Connector 242 has a short to ground.

(Entry Point T)

The line starts at the 01A-B2C2 sense card (ALD YF171), leaves the 01A-B2 board through the 01A-B2A2 connector card (ALD YF141), and goes through Connector 242 (ALD YA661) to IPS201 through the 02A-A1B5 connector card (ALD YA626).

See the following figure for the pins and connectors in the '+6V ON *C17*' line.



Using this figure and the ALDs, find the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

054

The +6V control line (+6V ON *C17*) from the 01A-B2 board to Connector 242 is good.

The 02A-A1 board or the cable from Connector 242 to the 02A-A1B5 connector card has a short to ground.

For a figure and pin list of the control line,

Go to Step 053, Entry Point T.

055

Did you get here from MAP 1146 ?

Y N

056

Go to Page 9, Step 026, Entry Point G.

057

The +6 volt control line is good.
Go back and check your steps in MAP 1146.

058

Exchange the failing control card or power module(s)
Go To Map 1000, Entry Point R.

059

Go to Page 4, Step 009, Entry Point C.

060

Check for a failure in the control line of the indicated failing voltage level. Follow the indicated control line from the MSS (01A-B2 board) to IPS201 (02A gate), moving and lightly hitting the cable and connectors to try to generate the fault again.

See Entry Point F, Page 6, Step Number 016; Entry Point S, Page 12, Step Number 048; and Entry Point T, Page 13, Step Number 053, for figures and pin lists of the control lines.

NOTE: If the fault is generated again, the ref code will probably be different, but the fault might be the same.

Did the failure occur again ?

Y N

A A
N P

061

The failure was an intermittent failure.

(Entry Point Y)

Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRUs (1)	(2)	(3)
1102	02A-A2C2	01A-D2B2	
1432	02A-A2C2	01A-D2B2	
1442	02A-A2D4	02A-A2C4	01A-D2B2
1452	02A-A1D2	01A-D2B2	
A162	02A-A1B2		
A332	02A-A1D2	01A-D2B2	
A462	02A-A2D4	01A-D2B2	

Make a note of the indicated FRU's using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

062

If the UU field of the ref code displayed on the screen is not 1x, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1x, check if the RRRR field is listed in Chart 1 in step 004 in this MAP. If the RRRR field is not listed in Chart 1, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is listed in Chart 1, check for a failure in the indicated level's control line. Check connectors for bent or loose pins, or any point where the insulation on the cable might be failing and the cable could be touching the frame (or other grounded object).

Did you find any failure ?

Y N

063
Go to Page 14, Step 061, Entry Point Y.

064
Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

065
The failure is an intermittent.
Go to Page 2, Step 006, Entry Point B.

066

(Entry Point K)

You came to this MAP from MAP 1174 to check the control line of the indicated failing voltage level.

Is the indicated failing level the +6V level ?
Y N

067
Go to Page 4, Step 012, Entry Point D.

068
Go to Page 13, Step 051, Entry Point M.

IPS101 Start Line

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1183	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	006	0001	A
3	014	1000	B
3	016	1000	B
2	007	1000	R
2	009	1000	R
2	010	1000	R
3	013	1000	R
3	017	1000	R
3	018	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES OR CABLES - POWER DOWN, PCC CB1 AND CB2 OFF.

You came to this MAP from MAP 1183.

The failure indicated is that the IPS101 (01C gate) '-4.25 ADD ON START' line is shorted to ground. The IPS101 supplies the -4.25Vdc add on level to the 01A-B1 board.

The start line goes from the MSS (01A-B2) board through connector 142 and connector card 01C-A1B5 to IPS101.

Did you just test the control card and power modules of the -4.25Vdc add on level ?

Y N

3 2
A B

MODEL GROUP 2,

FERRO POWER

002

Use the test station to test the control card and power modules of the -4.25Vdc add on level located in IPS101. The procedure of how to use the test station is in MAP 1004 Entry Point A. After you reach 'return to the MAP you came from', return here.

Did you find a failing control card or power module(s) ?

Y N

003

(Entry Point C)

Set the CE meter to measure 5Vdc maximum.

Connect the CE meter leads (tool) as follows on the MSS (01A-B2) board:

1. positive meter lead------01A-B2B5B9
2. negative meter lead------frame (GND)

The voltage should be above 2.0Vdc.

Is the voltage above 2.0Vdc ?

Y N

004

Locate and disconnect connector 142.

Does the meter now indicate above 2.0Vdc ?

Y N

005

Reconnect connector 142.

There is a short to ground in one of the following:

1. The 01A-B2 board (ALD page YF141)
2. The '-4.25 ADD ON START' line from 01A-B2B5B9 (ALD page YF141) to connector 142 (ALD page YA648)

Using the ALD find the short to ground in the 'START' line.

Did you find the failure ?

Y N

006

Problem is not corrected

Go To Map 0001, Entry Point A.

007

Repair the failure.

Go To Map 1000, Entry Point R.

008

Reconnect connector 142.

Locate and disconnect connector card 01C-A1B5 (ALD page YA645) on IPS101.

With the meter leads (tool) still connected as before, the meter should indicate above 2.0Vdc.

Does the meter indicate above 2.0Vdc ?

Y N

009

The IPS101 board and control card are good.

The short to ground is in the '-4.25V ADD ON START' line from connector 142 (ALD page YA648) to connector card 01C-A1B5 (ALD page YA645).

Repair or exchange the cable.

Go To Map 1000, Entry Point R.

010

The cable from connector 142 to connector card 01C-A1B5 is good.

The short to ground is in the IPS101 board or the control card.

Find and repair the failure.

Go To Map 1000, Entry Point R.

011

Power on the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen. With the meter leads still connected on the MSS (01A-B2) board, check to see if the voltage indicated by the meter goes to 0 volts.

Did the meter indicate 0 volts ?

Y N

06MAR81 PN 2676033
EC 379605 PEC 379811
SEQ340C MAP 1144-2

012

Did you just exchange PS206 ?
Y N

013
Exchange PS206.
Go To Map 1000, Entry Point R.

014
Use the displayed ref code and MAP 1000 to find the right MAP. You might be in the wrong MAP.
Go To Map 1000, Entry Point B.

015

Is PROC power ON (action done) ?
Y N

016

Use the displayed ref code to find the right MAP.
Go To Map 1000, Entry Point B.

017
The failure was an intermittent.
Record the failure (ref code) in case the problem occurs again.
Go To Map 1000, Entry Point R.

018
Exchange the failing control card or power module(s).
Go To Map 1000, Entry Point R.

019
Go to Page 2, Step 003, Entry Point C.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	2	001
1000	F	23	074

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	004	0000	A
13	036	0000	A
23	076	0000	A
9	023	0001	A
13	037	0001	A
21	064	0001	A
17	054	0001	A
2	006	1000	B
22	068	1000	I
8	020	1000	R
9	024	1000	R
17	057	1000	R
9	027	1000	R
10	029	1000	R
15	042	1000	R
14	039	1000	R
14	038	1000	R
15	044	1000	R
15	043	1000	R
20	059	1000	R
20	061	1000	R
21	065	1000	R
17	049	1000	R
17	052	1000	R
17	055	1000	R
23	078	1000	R
23	073	1000	R
22	071	1000	R
9	025	1103	C
17	056	1143	B

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Reset any CP's on PS201, PS204, or PS206 that may have tripped. See MIM VOL 13/16 Page 10-055c for locations.

Use the ref code and Chart 1 in step 005 in this MAP to determine the indicated failing voltage level.

Make a note of the MAP, page, and step number of this step.

Use the test station to test the control card and power module(s) of the indicated failing level. The procedure for using the test station is in MAP 1004 ENTRY POINT A. After reaching the statement 'return to the MAP you came from', return here.

Did you find any failing power module or control card ?

Y N

002

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen) ?

Y N

003

Is the UU field of the ref code displayed on the screen 1x ?

Y N

004

This is not a power problem.

Go To Map 0000, Entry Point A.

2 2
3 2
A B C

C

SEQ342C MAP 1146-2

005

Check if the RRRR field of the displayed ref code is in the following Chart 1.

Chart 1

Ref Code RRRR	Voltage Level	Case
1460 or A162	+6	OV
1470 or A482	+4.25	OV
1470 or D232	+4.25	CL
1480 or D312	-1.5	CL
1480 or 1572	-1.5	CL
1490 or 1492	-4.25	OV
1490 or D282	-4.25	CL
1500 or 1502	-6.45	OV
1550 or D632	+6	CL
1590 or D252	-2.2	CL
1600 or 1602	-6.45	CL
1840	-4.25	CL
D082	+6	OV
D242	-2.2(-6.45)	OV
D272	-4.25	OV
D292	-1.5	OV
D580	-4.25A0	OV
D600 or D602	-4.25A0	CL
1422 or 1892	-4.25A0	CL

Is the RRRR field listed in Chart 1 ?

Y N

006

The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.

Go To Map 1000, Entry Point B.

007

(Entry Point B)

The indicated failure is an overvoltage (OV) or current limit (CL) condition.

Use the ref code on the screen and Chart 1 in step 005 to determine which voltage level is failing and the case (overvoltage (OV) or current limit (CL)).

Make a note of the indicated voltage level and case.

NOTE: The -4.25Vdc add on (-4.25AO) level is located in IPS101 in the 01C gate. All other levels are located in IPS201 in the 02A gate.

NOTE: The -2.2(-6.45)V level starts at 02A-A2J5 (IPS201) as -2.2Vdc, and is referenced to the -4.25V level at TBB1 to make the -6.45V level that goes to the 01A-C1 board.

The cause of the failure may be one of the following:

1) Failing overvoltage (OV) digital sense line
2) Failing current limit (CL) digital sense line
3) Failing IPS control card, board, or power module
4) Failing voltage supply cables between IPS and 01A gate
5) Failing 01A-D2B2 or 01A-B2S4 card
6) Failing 01A-A1, 01A-A2, 01A-B1, 01A-B2, 01A-C1, or 01A-D2 board.
7) Failing card on the 01A-A1, 01A-A2, 01A-B1, or 01A-C1 board.

NOTE: The most probable failure for OV is the IPS control card or a short circuited pass device on the power module.

Chart 2 gives a list of possible failing FRUs, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

SEE CHART 2 ON THE NEXT PAGE.

(Step 007 continues)

(Step 007 continued)

Chart 2

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
IPS control card, board or power module	all ref codes	See NOTE1 after this chart	10-035c, 040c, 060c 20-185c, 190c, 191c, 200c, and 385c
01A-D2B2 card	1470 1480 1490 150x 1572 1840 A482 D242 D282 D312		10-035c, 050c 14-105f 20-335c
01A-B2S4 card	1460 A162 D082		10-035c, 050c 14-105f, 310
01A-A1 board	1480 1490 1572 1840 D282 D312	YA663	10-035c, 050c 14-105f 20-200c, 205c
01A-A2 board	1480 1490 1550 1572 1840 D282 D312 D632	YA663	10-035c, 050c 14-105f 20-200c, 205c
01A-B1 board	1422 1480 1490 1572 1840 1892 D282 D312 D60x	YA665	10-035c, 050c 14-105f 20-200c, 205c
01A-C1 board	1470 1480 1490 1572 1590 160x D232 D252 D28x D312	YA667	10-035c, 050c 14-105f 20-200c, 205c

CHART 2 CONTINUES ON NEXT PAGE.

(Step 007 continues)

(Step 007 continued)

Chart 2 (CONTINUED)

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
01A-D2 board	1470 1480 1490 150x 1572 1840 A482 D242 D282 D312		10-035c, 050c 20-205c, 285
01A-B2 board	all ref codes		10-035c, 050c 20-211c, 230c
Connector 142	1422 1892 D580 D60x	YA648 YA648	10-040c 10-040c
Connector 240	See NOTE2	YA659	10-060c
Connector 242	1460 1550 A162 D082 D632	YA661	10-060c
TBB1	all ref codes	YA653 YA654	10-050c 20-200c

NOTE1: See MAP 1004, Entry Point A, Charts 1, 2, 3, and 4 in step 001 for IPS control card and power module location. For ALD pages, see ALD YA012, 'FRU LOCATION'.

NOTE2: The ref codes associated with CON 240 are all ref codes NOT associated with CON 142 or CON 242.

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

2 1 E 6 F

008

Have you just tested the control card and power modules of this level ?

Y N

009

Make a note of the MAP, page, and step number of this step.

Use the test station to test the control card and power module(s) of the indicated failing level. The procedure for using the test station is in MAP 1004 ENTRY POINT A. After reaching the statement 'return to the MAP you came from', return here.

Did you find any failing power module or control card ?

Y N

010

Go to Step 012, Entry Point Q.

011

Go to Page 23, Step 073, Entry Point D.

012

(Entry Point Q)

If you get a ref code that indicates the same level,there could be two modules failing at that voltage level.

Have you tested all of the power modules of this level ?

Y N

G H

013

Make a note of the MAP, page, and step number of this step.

Use the test station to test the control card and power module(s) of the indicated failing level. The procedure for using the test station is in MAP 1004 ENTRY POINT A. After reaching the statement 'return to the MAP you came from', return here.

Did you find any failing power module or control card ?

Y N

014

Go to Step 016, Entry Point R.

015

Go to Page 23, Step 073, Entry Point D.

016

(Entry Point R)

Is the indication +4.25 OV, -6.45 OV, -1.5 CL or -4.25 CL ?

Y N

017

Does the ref code indicate a failure on the +6V level ?

Y N

018

(Entry Point G)

Does the ref code indicate a voltage level being in a current limit (CL) condition ?

Y N

1 1
8 5 9 7
J K L M

019

Press POWER OFF on the OCP and set PCC CB1 and CB2 off.

Check for an open in the indicated voltage OV sense line from the indicated IPS gate to the MSS (01A-B2 board) as follows:

Disconnect the connector in the IPS gate as indicated in Chart 3 below.

Set the CE meter to measure ohms.

Connect the CE meter leads (tool) to the points indicated by the RRRR field of the ref code and Chart 3 below and check for continuity.

NOTE: Connect the meter lead to the 02A-A2B5, 02A-A1B5, or 01C-A1B5 connector card on the end of the cable. Do not connect the meter lead to the IPS (02A-A1, 02A-A2, or 01C-A1) board.

Chart 3

Voltage Level	Points to check for open in the OV sense line	
	Connector and point in IPS gate	Point on 01A gate
-4.25 A0 (add on)	01C-A1B5B09	to 01A-B2C2M08
-1.5	02A-A2B5B10	to 01A-B2D2M10
-4.25	02A-A1B5B09	to 01A-B2D2P09

Did the line show continuity ?

Y N

9 8
N P

020

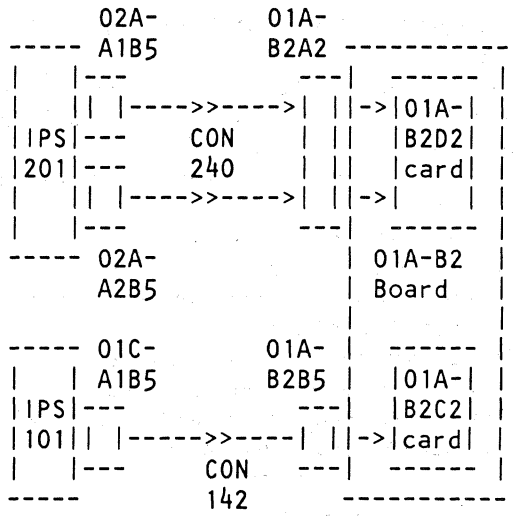
(Entry Point C)

The overvoltage (OV) sense line is open.

The -4.25AO (add on) OV sense line starts at the 01C-A1B5 connector card on IPS101 (ALD YA645), goes through Connector 142 (ALD YA648), and then through the 01A-B2B5 connector card to the 01A-B2C2 sense card (ALD YF131 and YF171).

The -4.25 and -1.5 OV sense lines start at the 02A-A1B5 or 02A-A2B5 connector card on IPS201 (ALD YA626 and YA636), go through Connector 240 (ALD YA659), and then through the 01A-B2A2 connector card to the 01A-B2D2 sense card (ALD YF121 and YF171).

See figure at the right for these lines and connectors.



The pins for each OV sense line are as follows:

Chart 4

Voltage Level	IPS Connector Card (out)	Connector Pin	01A-B2 Connector Card (in)	01A-B2 Sense Card (in)
-4.25 AO (add on)	01C-A1B5B09	CON 142 PIN 27	B5-D12	C2-M08
-1.5	02A-A2B5B10	CON 240 PIN 51	A3-D09	D2-M10
-4.25	02A-A1B5B09	CON 240 PIN 47	A3-D06	D2-P09

Using the figure and list in the previous step and the ALDs find and fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

021

Is the RRRR field of the ref code D580 ?

Y N

022

Check the connections of the FDS cables of the indicated voltage level at the following points:

1. Output of the IPS board (ALD YA629 and YA639)
2. Interframe connector (YA653)
3. TBB1 (ALD YA653 and YA655)
4. Voltage connectors on the 01A gate (ALD YA663, YA665, and YA667)

Also see MIM VOL 13/16 Pages 20-200c for pin listings of the voltage supply lines.

Ensure that all connectors are correctly seated and that all screws are tightened correctly.

Did you find any failure ?

Y N

023

Problem is not corrected.

Go To Map 0001, Entry Point A.

024

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

025

The failure could be in the -4.25 add on level remote sense line. To check the remote sense line, use MAP 1103.

Go To Map 1103, Entry Point C.

026

Check if the necessary number of power modules are in the IPS for the indicated level.

Is the number of power modules correct ?

Y N

Q R

027

Add power module(s), up to the correct number.

Go To Map 1000, Entry Point R.

028

(Entry Point P)

Press POWER OFF on the OCP.

Ensure PCC CB1 and CB2 are set off.

Check the indicated current limit (CL) sense line from the indicated IPS gate (02A or 01C) to the MSS (01A-B2 board) as follows:

Set the CE meter to measure ohms.

Disconnect the connector in the IPS gate as indicated in the following Chart 5. Connect the CE meter leads (tool) to the points indicated by the voltage level and Chart 5 below and check for continuity.

NOTE: Connect the meter lead to the 02A-A2B5, 02A-A1B5, or 01C-A1B5 connector card on the end of the cable. Do not connect the meter lead to the IPS (02A-A1, 02A-A2, or 01C-A1) board.

Chart 5

Voltage Level	Points to check for open in the CL sense line	
	Connector/Point in IPS gate	Point on 01A gate
+6	02A-A1B5B12	to 01A-B2C2P10
-2.2 (-6.45)	02A-A2B5B03	to 01A-B2D2P07
+4.25	02A-A2B5B02	to 01A-B2D2M05
-4.25 A0 (add on)	01C-A1B5B04	to 01A-B2C2M09

Did the line show continuity ?

Y N

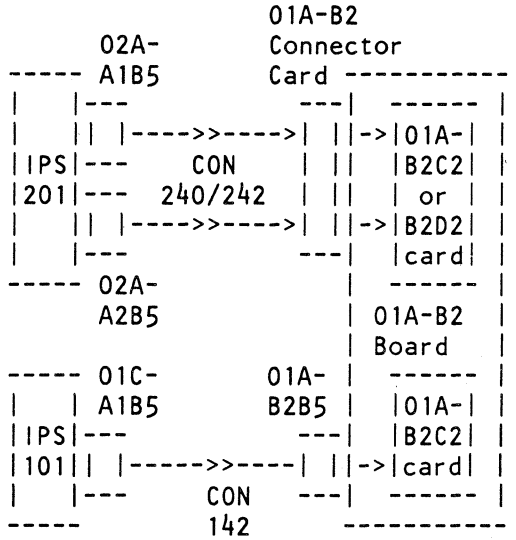
(Entry Point N)

The current limit (CL) sense line is open.

The -4.25AO (add on) CL sense line starts at the 01C-A1B5 connector card on IPS101 (ALD YA645), goes through Connector 142 (ALD YA648), and then through the 01A-B2B5 connector card to the 01A-B2C2 sense card (ALD YF131 and YF171).

The -2.2(-6.45), +6, and +4.25 CL sense lines start at the 02A-A1B5 or 02A-A2B5 connector card on IPS201 (ALD YA626 and YA636), go through Connector 240 (ALD YA659) or Connector 242 (ALD YA661), and then through the 01A-B2A2 or 01A-B2A3 connector card to the 01A-B2C2 or 01A-B2D2 sense card (ALD YF121, YF131, and YF171).

See figure at the right for these lines and connectors.



The pins for each CL sense line are as follows:

Chart 6

Voltage Level	IPS Connector Card (out)	Connector Pin	01A-B2 Connector Card (in)	01A-B2 Sense Card (in)
+6	02A-A1B5B12	CON 242 PIN 5	A2-B06	C2-P10
-2.2 (-6.45)	02A-A2B5B03	CON 240 PIN 43	A3-D04	D2-P07
+4.25	02A-A2B5B02	CON 240 PIN 39	A3-B13	D2-M05
-4.25 AO (add on)	01C-A1B5B04	CON 142 PIN 9	B5-B07	C2-M09

Using the figure and list in the previous step and the ALDs find and fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

030

(Entry Point H)

A loose sense capacitor will give a current limit indication on the same or on another voltage level.

Inspect on TBB1 for any loose sense capacitors.

Did you find any loose capacitors ?

Y N

031

Inspect the flatwire distribution system (FDS) of the failing level for insulation break-down (If any it will be at the folds where a level and ground FDS run together). Also check for pinched cables. See MIM VOL 13/16 Page 20-200c.

Did you find FDS or cable failures ?

Y N

032

If the indication is on the -4.25 add on (-4.25 AO) voltage level follow the no leg of the following question only.

Is the indication on the -1.5 or -4.25 voltage level ?

Y N

15U 15V 14W 12X

033

There may be a short circuit in either the 01A-A2, 01A-B1, or 01A-C1 board.

NOTE: The +6V level only goes to the 01A-A2 board. The +4.25V and -2.2(-6.45)V levels only go to the 01A-C1 board. The -4.25 AO (add on) level only goes to the 01A-B1 board.

****

To find the short circuit disconnect the indicated voltage level from the board on the 01A gate as follows:

IF THE INDICATED VOLTAGE LEVEL IS +6 OR -4.25 AO (ADD ON):

Disconnect the voltage connectors on the back of the indicated board for the indicated voltage level. See Chart 7 at the right for board voltage connectors. Also see ALD YA663 and YA665 and MIM VOL 13/16 Page 20-200c.

IF THE INDICATED VOLTAGE LEVEL IS +4.25 OR -2.2(-6.45):

Disconnect the FDS voltage supply cables on TBB1 for the indicated voltage level. See Chart 7 at the right for FDS cables on TBB1. Also see ALD YA655 and MIM VOL 13/16 Page 20-200c.

****

Power up after disconnecting the indicated voltage level from the board.

If the ref code changes, the short circuit is in the disconnected board.

NOTE: If the indicated voltage level is +4.25 or -2.2(-6.45), the FDS cables from TBB1 to the 01A-C1 board may also be failing.

If the ref code does not change after the indicated board is disconnected, then the short circuit is on either the indicated IPS board; TBB1; or the FDS between the IPS board, TBB1, and the indicated board on the 01A gate.

Reconnect the board.

(Step 033 continues)

Chart 7

Voltage Level	Voltage Connectors to Disconnect on 01A gate
+6	01A-A2Y1 and 01A-A2Y3
-4.25 AO (add on)	01A-B1C1 and 01A-B1C4
+4.25	TBB1-C01 to TBB1-C08 (all)
-2.2 (-6.45)	TBB1-D01 to TBB1-D13 (all)

(Step 033 continued)

To determine the short circuit on the indicated board, POWER DOWN and remove the board capacitors on the card side in positions A1, C1, E1, A4, C4, and E4 of the indicated board. NOTE: The 01A-A2 board does not have any capacitors.

NOTE: LABEL EACH CAPACITOR with its position as you remove it; some capacitors have different part numbers.

Power up. If the CL ref code is not displayed one of the board capacitors you removed is failing or was touching the frame. Also check for pins pushed back on the capacitors. Find and fix the failure. Exchange any failing capacitors.

If the CL ref code is still displayed, POWER DOWN and remove half of the board's cards that use the indicated voltage level.

The Channels 0 through 5 Adapter cards on the 01A-A2 board use the +6Vdc level.

The Main Storage cards on the 01A-C1 board use the +4.25Vdc and -2.2(-6.45)Vdc levels.

The cards in positions 01A-B1L2 through 01A-B1U2 use the -4.25AO (add on) level.

See MIM, VOL 13/16, Section 14, '01A Gate Card Layout' for card location.

Power up. If the CL ref code is not displayed the short circuit is in one of the cards you took out. Reinstall the cards one at a time until you get the short circuited card. But if the CL ref code is displayed, continue removing cards until you find the short circuited card. If all of the cards are removed except one, and the CL ref code is still displayed, reinstall one of cards you removed before. Now remove the last card (NOTE: the power supply will not power up without at least one card installed). If the CL ref code is still displayed after powering up, the short circuit is in the board.

Did you find the failure ?

Y N

Y → 14 Y Z

N → Z

034

(Entry Point J)

An overvoltage protection SCR may be bad. Each IPS board (01C-A1, 02A-A1, and 02A-A2) has a card that the SCR's are mounted on, located on the back of the board next to the power modules. On the 02A-A1 board, the card the SCR's are mounted on is behind the test station.

The -4.25 and +6 levels are located in the 02A-A1 board. The -1.5, +4.25, and -2.2(-6.45) levels are located in the 02A-A2 board. The -4.25 add on level is located in the 01C-A1 board.

See MIM VOL 13/16 Pages 20-185c, 20-190c, and 20-191c.

On the indicated IPS board, remove the card the SCR's are mounted on. If necessary, remove the test station. Reconnect any connectors you disconnected. Replace any cards you removed.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC power ON (action done) ?

Y N

Y

035

Using Chart 1 in step 005 in this MAP, check the displayed ref code.

Does it indicate the same failure (current limit condition on the same voltage level) ?

Y N

Y

036

An SCR on the card you removed is bad. Exchange or repair the card. If you removed the test station, replace the test station.

There is still another failure. To find and repair the problem,

Go To Map 0000, Entry Point A.

N

037

Problem is not resolved.

Go To Map 0001, Entry Point A.

14 A A → 14 A A

038

An SCR on the card you removed is bad. Exchange or repair the card. If you removed the test station, replace the test station.

Go To Map 1000, Entry Point R.

039

Fix the failure.

Exchange any bad card(s). Repair or exchange any short circuited board or FDS cable.

Reinstall any good cards you took out.

Go To Map 1000, Entry Point R.

040

There may be a short circuit in either the 01A-A1, 01A-A2, 01A-B1, or 01A-C1 board.

To find the short circuit disconnect the indicated level, one board at a time, from the 01A-A1, 01A-A2, 01A-B1, and 01A-C1 boards.

NOTE1: When disconnecting the 01A-A2 board, disconnect the voltage supply cables on TBB1. Disconnecting the connectors on the back of the 01A-A2 board will power the machine down completely and you will not be able to power up. The pins for the A2 board output voltage supply cables on TBB1 are given in Chart 8 at the right---------->

NOTE2: If the indicated voltage level is the -4.25 level, do not disconnect the voltage connectors on the back of the 01A-C1 board because of voltage sequence. Instead, disconnect the output FDS voltage supply cables on TBB1 as indicated in Chart 8.

See ALD YA655, YA663, YA665, and YA667. Also see MIM VOL 13/16 Page 20-200c.

After disconnecting each board, attempt to power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen. Wait until the machine completes the power up sequence and a ref code is displayed.

If the ref code indicates the same failure (CL on the indicated voltage level), then the disconnected board is

(Step 040 continues)

Chart 8

Volt. Level	Board (01A gate)	Voltage Connectors On Board Or TBB1 (Disconnect)
-1.5	A1	A1,A4,E1,E4
-1.5	A2	TBB1 A21 (See NOTE1)
-1.5	B1	A1,A4,E1,E4
-1.5	C1	A4,E1
-4.25	A1	A4,E1
-4.25	A2	TBB1 C21 (See NOTE1)
-4.25	B1	A4,E1
-4.25	C1	TBB1 C25 and C26 (See NOTE2)

MAP CODE 1146CXXX

(Step 040 continued)
GOOD. Reconnect the GOOD board and continue disconnecting boards.

If the ref code does NOT indicate the same failure (CL on the indicated voltage level), then the disconnected board or a card on that board is failing.

If the ref code does not change after disconnecting each of the indicated boards, then the short circuit is on one of the following: the indicated IPS; TBB1; or the FDS between the IPS and TBB1 and between TBB1 and the indicated board on the 01A gate.

To determine the short circuit on the indicated board, POWER DOWN and remove the board capacitors on the card side in positions A1, C1, E1, A4, C4, and E4 of the indicated board. NOTE: The 01A-A2 board does not have any capacitors.

NOTE: LABEL EACH CAPACITOR with its position as you remove it; some capacitors have different part numbers.

Power up. If the CL ref code is not displayed one of the board capacitors you removed is failing or was touching the frame. Also check for pins pushed back on the capacitors. Find and fix the failure. Exchange any failing capacitors.

If the CL ref code is still displayed, POWER DOWN and remove half of the board's cards that use the indicated voltage level.

NOTE: All cards in the 01A-A1, 01A-B1, and 01A-C1 boards use the -1.5Vdc and -4.25Vdc levels. On the 01A-A2 board, only the Channel Adapter cards use the -1.5Vdc and -4.25Vdc levels. (See MIM, VOL 13/16, Section 14, 01A Gate Card Layout for card location.)

Power up. If the CL ref code is not displayed the short circuit is in one of the cards you took out. Reinstall the cards one at a time until you get the short circuited card. But if the CL ref code is displayed, continue removing cards until you find the short circuited card. If all of the cards are removed except one, and the CL ref code is still displayed, reinstall one of cards you removed before. Now remove the last card (NOTE: the power supply will not power up without at least one card installed). If the CL ref code is still displayed after powering up, the short circuit is in the board.
(Step 040 continues)

(Step 040 continued)

Did you find the failure ?
Y N

041
Go to Page 13, Step 034, Entry Point J.

042
Fix the failure.
Exchange any bad card(s). Repair or exchange any short circuited board or FDS cable.
Reinstall any good cards you took out.
Go To Map 1000, Entry Point R.

043
Exchange the failing FDS or cable(s).
Go To Map 1000, Entry Point R.

044
Ensure that all capacitors are well connected.
Go To Map 1000, Entry Point R.

045
Swap the +6V control card with the -4.25V control card.

After trying to power up, check if the displayed ref code changes to indicate a fault on the -4.25V level. If the ref code changes, the +6V control card is bad.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did the ref code change ?
Y N

046
The +6V control card is good. Swap the +6V and -4.25V control cards back to their original positions.

Does the ref code indicate a +6V OV case ?
Y N

047
Go to Page 9, Step 028, Entry Point P.

(Entry Point L)

Press POWER OFF on the OCP.

Set PCC CB1 and CB2 to the OFF position.

The +6V overvoltage (OV) sense line goes through the serial read (01A-B2S4) card before going to the sense card.

Check for an open in the +6V OV sense line from IPS201 (ALD YA626) to the sense card on the 01A-B2 board as follows:

Set the CE meter to measure ohms.

Disconnect the 02A-A1B5 connector card in IPS201.

Unseat the 01A-B2S4 card.

Connect the CE meter leads (tool) to the points indicated by the RRRR field of the ref code and Chart 9 below. Check for continuity from the IPS connector card to the input to the 01A-B2S4 card and from the output of the 01A-B2S4 card to the input to the sense (01A-B2D2) card.

NOTE: Connect the meter lead to the 02A-A1B5 connector card on the end of the cable. Do not connect the meter lead to the IPS201 (02A-A1) board.

See figure at the right for these lines and connectors.

The pins for the +6V OV sense line are as follows:

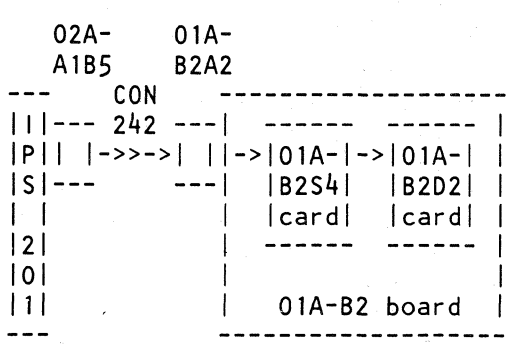


Chart 9

Voltage Level	IPS Connector Card (out)	Connector 242 Pin	01A-B2 Paddle Card (in)	01A-B2S4 Card (in)	01A-B2S4 Card (out)	01A-B2 Sense Card (in)
+6	02A-A1B5B13	CON 242 PIN 15	A2-B04	B09	J09	D2-G05

Did the meter indicate continuity ?

Y N

049

The +6V overvoltage sense line is open.

Using the figure and list in the previous step and the ALD's find and fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

050

Is the RRRR field of the ref code A162 ?

Y N

051

Did you just exchange the 01A-B2S4 card ?

Y N

052

Exchange the 01A-B2S4 card.

Go To Map 1000, Entry Point R.

053

Check the connections of the FDS cables of the +6V level at the following points:

1. Output of the IPS board (ALD YA629)
2. Interframe connector (YA653)
3. TBB1 (ALD YA653 and YA655)
4. Voltage connectors on the 01A gate (ALD YA663)

Also see MIM VOL 13/16 Pages 20-200c for pin listings of the voltage supply lines.

Ensure that all connectors are correctly seated and that all screws are tightened correctly.

Did you find any failure ?

Y N

054

Problem is not corrected.

Go To Map 0001, Entry Point A.

055

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

AF

056

The failure could be a short circuit to ground in the control line of the +6Vdc level (C17).

To check the +6V control line,

Go To Map 1143, Entry Point B.

057

The +6V control card that you swapped with the -4.25V control card is bad. Return the GOOD -4.25V control card to its original position and exchange the BAD +6V control card.

Go To Map 1000, Entry Point R.

058

Press POWER OFF at the OCP.

Set PCC CB1 and CB2 to the OFF position.

Check for an open in the indicated CL or OV sense line as follows:

Set the CE meter to measure ohms.

Unseat the 01A-D2B2 card.

If the indicated failure is -4.25 CL, then unseat the 02A-A1B5 connector card. If the indicated failure is NOT -4.25 CL, then unseat the 02A-A2B5 connector card.

Connect the CE meter leads (tool) to the points indicated in the following Chart 10 and check for continuity.

NOTE: Connect the meter lead to the 02A-A2B5 or 02A-A1B5 connector card on the end of the cable. Do not connect the meter lead to the IPS201 (02A-A1 or 02A-A2) board.

Chart 10

Voltage Level	Points to check for open in the OV or CL sense line
-2.2 (-6.45) OV	02A-A2B5B08 to 01A-D2B2D10 and 01A-D2B2D09 to 01A-B2D2M07
+4.25 OV	02A-A2B5B07 to 01A-D2B2D05 and 01A-D2B2D07 to 01A-B2D2M04
-1.5 CL	02A-A2B5B05 to 01A-D2B2B05 and 01A-D2B2D06 to 01A-B2D2P10
-4.25 CL	02A-A1B5B04 to 01A-D2B2B10 and 01A-D2B2D04 to 01A-B2D2M09

Did the meter indicate continuity ?

Y N

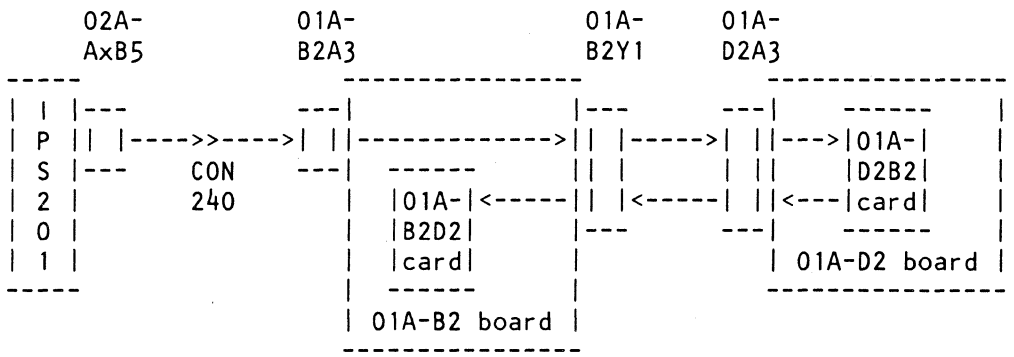
2 1
0 9
A A
G H

(Entry Point M)

The OV or CL sense line is open.

The sense line goes from IPS201 connector card 02A-A1B5 (ALD YA626) or connector card 02A-A2B5 (ALD YA636) through connector 240 (ALD YA659) into 01A-B2 board connector card 01A-B2A3, through the 01A-B2 board to the 01A-B2Y1 connector card, then into 01A-D2 board connector card 01A-D2A3, through the 01A-D2B2 card, back to the 01A-D2A3 connector card, and back to 01A-B2 board connector card 01A-B2Y1 to the sense card on the 01A-B2 board.

The following figure shows these lines and connectors:



NOTE: SEE THE NEXT PAGE FOR A PIN LIST OF THESE LINES.

(Step 059 continues)

(Step 059 continued)

The pins for each sense line are as follows:

Chart 11

Voltage Level	02A-AxB5 (out)	CON 240 pin	01A-B2A3 (in)	01A-B2Y1 (out)	01A-D2A3 (in)	01A-D2B2 card (in)	01A-D2B2 card (out)	01A-D2A3 (out)	01A-B2Y1 (in)	01A-B2D2 card (in)
-2.2 (-6.45) OV	A2B5-B08	41	D02	B08	B08	D10	D09	D09	D09	M07
+4.25 OV	A2B5-B07	37	D13	B07	B07	D05	D07	D07	D07	M04
-1.5 CL	A2B5-B05	53	D10	B12	B12	B05	D06	D10	D10	P10
-4.25 CL	A1B5-B04	49	D07	B13	B13	B10	D04	D11	D11	M09

Using this figure and list and the ALDs, find and fix the failure. Repair or exchange any failing part(s).
Go To Map 1000, Entry Point R.

060

Reconnect the connector in IPS201 that you disconnected.

Did you just exchange the 01A-D2B2 card ?
Y N

061
Ensure PCC CB1 and CB2 are set to the OFF position.
Exchange the 01A-D2B2 card.
Go To Map 1000, Entry Point R.

062

Reseat the 01A-D2B2 card you unseated.

Is the indicated failure -1.5 CL or -4.25 CL ?

Y N

063

Check the connections of the FDS cables of the indicated voltage level at the following points:

1. Output of the IPS board (ALD YA639)
2. Interframe connector (YA653)
3. TBB1 (ALD YA653 and YA655)
4. Voltage connectors on the 01A gate (ALD YA667)

Also see MIM VOL 13/16 Pages 20-200c for pin listings of the voltage supply lines.

Ensure that all connectors are correctly seated and that all screws are tightened correctly.

Did you find any failure ?

Y N

064

Problem is not corrected.

Go To Map 0001, Entry Point A.

065

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

066

Go to Page 11, Step 030, Entry Point H.

067

If the failure was an OV indication, check for loose or poor connection of the indicated OV sense line.

See Entry Point C, Page 8, Step Number 020; Entry Point L, Page 16, Step Number 048; and Entry Point M, Page 19, Step Number 059, for figures and pin lists of the OV sense lines.

If the failure was a CL indication, check for loose or poor connection of the indicated CL sense line. Also check for failing voltage supply lines.

See Entry Point M, Page 19, Step Number 059; and Entry Point N, Page 10, Step Number 029, for figures and pin lists of the CL sense lines. See MIM VOL 13/16 Pages 20-165c and 20-200c for figures and pin lists of the voltage supply cables.

Move and lightly hit cables and connectors to try and generate the failure again.

Did the failure occur again ?

Y N

068

(Entry Point Y)

The failure was an intermittent failure.

This failure could have been caused by a brief short circuit of the decoupling capacitor on a card of the indicated voltage level.

The Channels 0 through 5 Adapter cards use +6Vdc level.

The Main Storage cards use +4.25Vdc and -2.2(-6.45)Vdc levels.

All cards in the 01A-A1, 01A-B1, and 01A-C1 boards and the Channel Adapter cards on the 01A-A2 board use the -1.5Vdc and -4.25Vdc levels.

See MIM, VOL 13/16, Section 14, '01A Gate Card Layout' for card location.

Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRUs (1)	(2)
1422	01C-A1D2	cards
1460	02A-A1B2	
1470	02A-A2C2	cards
1480	02A-A2D4	cards
149x	02A-A1D2	
150x	02A-A2C4	
1550	02A-A1B2	cards
1572	02A-A2D4	cards
1590	02A-A2C4	cards
1840	02A-A1D2	cards
1892	01C-A1D2	cards
A162	02A-A1B2	
A482	02A-A2C2	
D23x	02A-A2C2	cards
D25x	02A-A2C4	cards
D28x	02A-A1D2	cards
D31x	02A-A2D4	cards
D58x	01C-A1D2	
D60x	01C-A1D2	cards
D63x	02A-A1B2	cards

(Step 068 continues)

(Step 068 continued)

NOTE: The 'cards' listed in Chart A are the cards in the 01A gate that use the voltage level indicated by the ref code. Determine which cards use the indicated failing voltage level using the description at the beginning of this step.

Make a note of the indicated FRUs using the ref code and Chart A and then

Go To Map 1000, Entry Point I.

069

If the UU field of the ref code displayed on the screen is not 1x, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1x, check if the RRRR field is listed in Chart 1 in step 005. If the RRRR field is not listed in Chart 1, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is listed in Chart 1, check for an open in the indicated level's CL and OV sense lines. For CL indications also check the voltage supply lines. Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated sense line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?

Y N

070

Go to Step 068, Entry Point Y.

071

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

072

The failure is an intermittent.

Go to Page 3, Step 007, Entry Point B.

073

(Entry Point D)

Exchange the failing part(s).
Go To Map 1000, Entry Point R.

074

(Entry Point F)

Reseat connector card 01C-A1B5.
Reseat -4.25 AO (add on) control card 01C-A1D2.
Reseat connector 142 (located on side of 01C gate).
Reseat connector card 01A-B2B5.
NOTE: See MIM VOL 13/16 Pages 10-040c and 10-050c for locations.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen)?
Y N

075

Is the UU field of the ref code displayed on the screen 1x ?
Y N

076
This is not a power problem.
Go To Map 0000, Entry Point A.

077
Go to Page 3, Step 007, Entry Point B.

078
One of the connectors or cards you reseated was loose.
Go To Map 1000, Entry Point R.

IPS UV

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	B	2	006
1110	K	5	016
1126	B	2	006

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
11	027	0001	A
2	005	1000	B
13	041	1000	I
4	013	1000	R
4	014	1000	R
6	017	1000	R
8	018	1000	R
10	022	1000	R
12	030	1000	R
13	032	1000	R
11	024	1000	R
11	026	1000	R
13	035	1000	R
13	039	1000	R
14	044	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen)?

Y N

1 4 2 A B

MODEL GROUP 2,

FERRO POWER

002

Is the UU field of the ref code displayed on the screen 1x ?

Y N

003

This is not a power problem.

Go To Map 0000, Entry Point A.

004

Chart 1

Ref Code RRRR	Voltage Level	Board on 01A Gate
1070	-2.2(-6.45)	C1
1102	+4.25 I.	C1
1240	+6	A2
1250	+4.25 I or F	C1
1512	+6	A2
1520	-1.5	A1,A2,B1,C1
1522	-1.5	A1,A2,B1,C1
1540	-4.25 AO	B1
1542	-4.25 AO	B1
1530	-4.25	A1,A2,B1,C1
1532	-4.25	A1,A2,B1,C1
1560	-1.5	A1,A2,B1
D262	-2.2(-6.45)	C1
D590	-4.25 AO	B1
D592	-4.25 AO	B1

Is the displayed RRRR field listed in Chart 1 ?

Y N

005

The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.

Go To Map 1000, Entry Point B.

006

(Entry Point B)

The ref code indicates an under voltage condition of one of the IPS voltage levels.

To determine which level is failing, use the ref code and Chart 1 in step 004.

NOTE: The -4.25Vdc add on (-4.25 AO) level is located in IPS101 (01C gate). All other levels are located in IPS201 (02A gate).

NOTE: The -2.2(-6.45)V level starts at 02A-A2J5 (IPS201) as -2.2Vdc, and is referenced to the -4.25V level at TBB1 to make the -6.45V level that goes to the 01A-C1 board.

NOTE: The +4.25V level has two levels, the +4.25 Initial (+4.25 I) and the +4.25 Final (+4.25 F). The initial level is 10% to 30% (+0.4 to +1.3 Vdc) of the final level (+4.25Vdc).

The cause of the failure may be one of the following:

1) Failing IPS control card, board, or power module
2) Failing undervoltage (UV) digital sense line
3) Failing 01A-D2B2 card
4) Failing 01A-B2 or 01A-D2 board
5) Failing IPS control line

6) Failing TR201 A, B, or C
7) Failing TR202
8) Failing PS201

Chart 2 gives a list of possible failing FRUs, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

See Chart 2 on the next page.

(Step 006 continues)

(Step 006 continued)

Chart 2

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
IPS control card, board or power module	all ref codes	See NOTE1 after this chart	10-035c, 040c, 060c 20-185c, 190c, 191c, 200c, and 385c
01A-D2B2 card	1070 1102 1250 152x 153x 1560 D262	YA731	10-035c, 050c 14-105f 20-335c
01A-D2 board	1070 1102 1250 152x 153x 1560 D262		10-035c, 050c 20-205c, 285
TR/PS201	all ref codes	YA605 YA607	10-055c, 20-165c
TR202	all ref codes	YA607	10-055c, 20-165c
01A-B2 board	all ref codes		10-035c, 050c 20-211c, 230c
CON 142	154x D59x	YA648	10-040c
CON 240	1240 1512	YA659	10-060c
CON 242	1070 1102 1250 152x 153x 1560 D262	YA661	10-060c

NOTE1: See MAP 1004, Entry Point A, Charts 1, 2, 3, and 4 in step 001 for IPS control card and power module location. For ALD pages, see ALD YA012, 'FRU LOCATION'.

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

1 3 4
D E

007

Is the displayed RRRR field 1250 or 1102 ?
Y N

008

(Entry Point E)

Have you tested the control card and power module of this level ?
Y N

009
Use the test station to test the control card and the power module of the failing level. The procedure for using the test station is in MAP 1004 ENTRY POINT A. After reaching the statement 'return to the MAP you came from', return here.

Did you find a failing card or module(s) ?
Y N

010

(Entry Point D)

Is the indicated failing level the -4.25 AO (add on) ?
Y N

011
Check all the fuses in TR201 and TR202.

Are ALL the fuses GOOD ?
Y N

1 1 1 1
3 3 3 3 5
F G H J K L

012

Did you just exchange the failing fuse(s) ?
Y N

013
Exchange the failing fuse(s).
Go To Map 1000, Entry Point R.

014
There is a short circuit in one of the following:

1. IPS201
2. Cables from PS201 to IPS201
3. PS201
4. TR201 A, B, or C
5. TR202

To find the failure, perform the following:
One at a time, disconnect the output connectors of PS201. See ALD YA605 and YA607 and MIM VOL 13/16 Pages 10-055c and 20-165c. After disconnecting each output connector, try to power up and then check the fuse(s). When the fuse(s) does not fail during power up, the short circuit is in the voltage level you just disconnected. Find and fix the failure.

If you disconnect all the output connectors of PS201 and the fuse(s) still fail while powering up, disconnect the output connectors of the TR(s) with the failing fuse(s). Power up. If the fuse(s) still fails, exchange the TR(s) with the failing fuse (NOTE: TR201 is a matched set and MUST be exchanged as a set of three TRs). If the fuse does not fail, exchange PS201.
Go To Map 1000, Entry Point R.

015

(Entry Point L)

Set the CE meter to measure +5Vdc.

Chart 3 shows the input pins of the control lines of the indicated IPS regulator control card (ALD page YA626, YA636, and YA645).

Connect the meter leads (tool) as indicated by the indicated voltage and the following Chart 3:

Chart 3

Voltage Level	Probing Point On IPS Gate (+)	(-)
+4.25 I	02A-A2C2G08	frame
+4.25 F	02A-A2C2B11	frame
-1.5	02A-A2D4G08	frame
-2.2(-6.45)	02A-A2C4G08	frame
-4.25	02A-A1D2G08	frame
+6.0	02A-A1B2G08	frame
-4.25 A0	01C-A1D2G08	frame

The meter should indicate the following sequence:

Before powering up the processing unit the voltage should be floating above +2.0Vdc, then after powering up the processing unit the voltage should go to approximately +3.0Vdc, and then the voltage should decrease to less than +0.5Vdc.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did the meter indicate the sequence as described ?

Y N

016

(Entry Point K)

Is the indicated voltage level the -1.5, -2.2(-6.45), -4.25, or +4.25 Initial voltage level ?

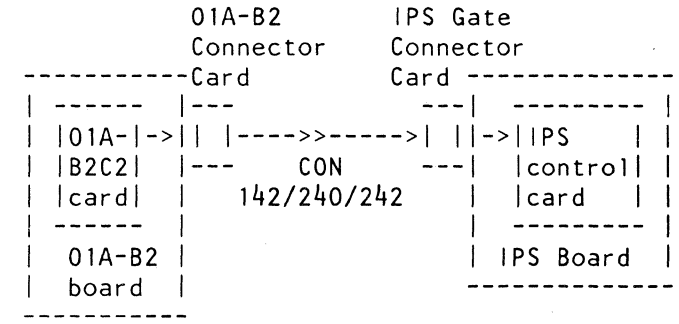
Y N

8 7 6
M N P

(Entry Point G)

The indicated control line goes from the 01A-B2C2 sense card through the 01A-B2 board connector card (ALD YF141 and YF171), then through Connector 142 (YA648), Connector 240 (YA659), or Connector 242 (YA661), and then through the IPS gate connector card (ALD YA626, YA636, and YA645) to the IPS regulator control card (ALD YA623, YA634, and YA643).

The following figure shows these lines and connectors:



The pins for each control line are as follows:

Chart 4

Voltage Level	01A-B2C2 Card (out)	01A-B2 Connector Card (out)	Connector 142/240/242 Pin	IPS Gate Connector Card (in)
+6	B13	A2D07	CON 242 Pin 21	02A-A1B5D11
-4.25A0	J07	B5B09	CON 142 Pin 13	01C-A1B5D11
+4.25 F	D10	A3D05	CON 240 Pin 57	02A-A2B5D10

Using this figure and pin list and the ALDs find and fix the failure in the control line. Repair or exchange any failing parts.

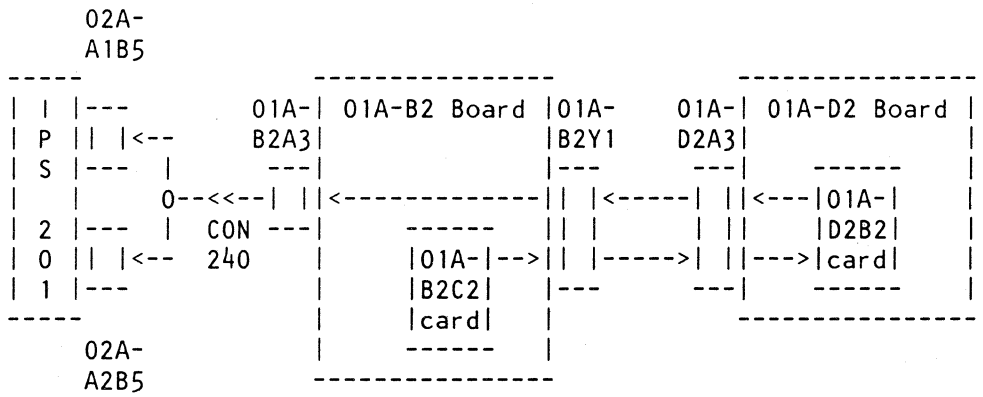
Go To Map 1000, Entry Point R.

(Entry Point H)

There is an open in the failing level's control line.

The line starts at the 01A-B2C2 sense card (ALD YF171), leaves the 01A-B2 board through connector card 01A-B2Y1 (ALD YF161 and YF171), and enters the 01A-D2 board through connector card 01A-D2A3. On the 01A-D2 board the line goes goes through the 01A-D2B2 card, leaves the 01A-D2 board through connector card 01A-D2A3, and enters the 01A-B2 board through the 01A-B2Y1 connector card. The line then leaves the 01A-B2 board through connector card 01A-B2A3, and goes through Connector 240 (ALD YA659) to either IPS201 connector card 02A-A1B5 (ALD YA626) or IPS201 connector card 02A-A2B5 (ALD YA636). On IPS201 the line goes to the IPS regulator control card.

The following figure shows these lines and connectors:



SEE THE NEXT PAGE FOR A PIN LIST OF EACH CONTROL LINE.

(Step 018 continues)

(Step 018 continued)

The pins for each control line are as follows:

Chart 5

Voltage Level	01A-B2C2 card (out)	01A-B2Y1 (out)	01A-D2A3 (in)	01A-D2B2 card (in)	01A-D2B2 card (out)	01A-D2A3 (out)	01A-B2Y1 (in)	01A-B2A3 (out)	CON 240 pin	02A gate (in)
-1.5	J11	B02	B02	B04	B07	D02	D02	B02	63	A2B5 D13
-4.25	G10	B05	B05	B09	B08	D06	D06	B08	61	A1B5 D12
+4.25	D04	B04	B04	B02	B03	D05	D05	B04	55	A2B5 D09
-2.2 (-6.45)	J10	B03	B03	B13	B12	D04	D04	B07	59	A2B5 D11

Using this figure and list and the ALDs, find and fix the failure. Repair or exchange any failing part(s).
Go To Map 1000, Entry Point R.

019

Is the failing voltage level the +4.25 Initial, +4.25 Final, or -2.2(-6.45) level ?

Y N

020

Is the failing voltage level the -1.5V level ?

Y N

021

Check for an open in the failing level's 'UV' sense line as follows:

Press 'POWER OFF' on the Operator Control Panel (OCP).

Set PCC CB1 and CB2 to the OFF position.

Set the CE meter to measure ohms.

Disconnect the connector in the IPS gate as indicated in the following Chart 6:

Chart 6

Voltage Level	IPS Connector Card/Pin (disconnect)	01A-B2 Sense Card/Pin
-4.25A0	01C-A1B5 *to* B09	01A-B2C2 M08
-4.25	02A-A1B5 *to* B10	01A-B2D2 M10
+6	02A-A1B5 *to* B09	01A-B2D2 P09

Connect the CE meter leads (tool) to the points indicated by the voltage level and Chart 6 and check for continuity from the connector card in the IPS gate to the sense card in the 01A-B2 board. NOTE: Connect the meter lead to the IPS connector card on the end of the cable. Do not connect the meter lead to the IPS board.

Did the indicated line show continuity ?

Y N

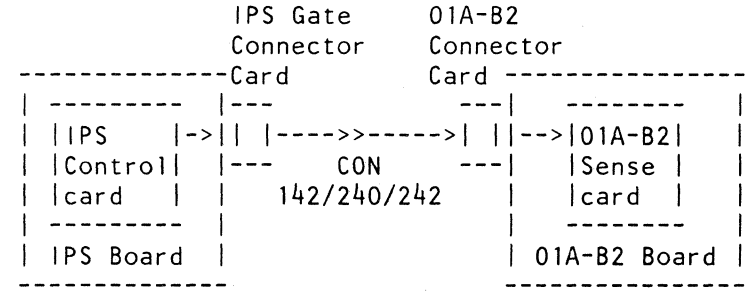
1 1
1 0
T U

(Entry Point J)

The indicated undervoltage (UV) sense line is open.

The indicated UV sense line goes from the IPS regulator control card (ALD YA623, YA634, and YA643) through the IPS gate connector card (ALD YA626, YA636, and YA645), through Connector 142 (YA648), Connector 240 (YA659), or Connector 242 (YA661), and then through the 01A-B2 board connector card to the 01A-B2 board sense card (ALD YF121, YF131, and YF171).

The following figure shows these lines and connectors:



The pins for each UV sense line are as follows:

Chart 7

Voltage Level	IPS Board Control Card (out)	IPS Gate Connector Card (out)	Connector 142/240/242 Pin	01A-B2 Board Connector Card (in)	01A-B2 Sense Card (in)
-4.25A0	01C-A1D2 G13	01C-A1B5 D05	CON 142 Pin 7	01A-B2B5 B05	01A-B2C2 P09
-4.25	02A-A1D2 G13	02A-A1B5 D05	CON 240 Pin 35	01A-B2A3 D11	01A-B2C2 P05
+6	02A-A1B2 G13	02A-A1B5 D07	CON 242 Pin 7	01A-B2A2 B03	01A-B2D2 G02

Using this figure and list and the ALDs find and fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

023

(Entry Point F)

The indicated sense card (01A-B2C2 or 01A-B2D2) may be failing.

Did you just exchange the indicated sense card ?

Y N

024

Exchange the indicated sense card.

Go To Map 1000, Entry Point R.

025

(Entry Point T)

Did you just exchange the indicated IPS board ?

Y N

026

Exchange the indicated IPS board.

Go To Map 1000, Entry Point R.

027

Problem is not corrected.

Go To Map 0001, Entry Point A.

028

Go to Step 025, Entry Point T.

029

Check for an open in the failing level's 'UV' sense line as follows:

Press 'POWER OFF' on the Operator Control Panel (OCP).

Set PCC CB1 and CB2 to the OFF position.

Set the CE meter to measure ohms.

Disconnect the 02A-A2B5 connector card in IPS201.

Unseat the 01A-D2B2 card.

Connect the CE meter leads (tool) to the points indicated by the voltage level and Chart 8 and check for continuity from the 02A-A2B5 connector card in IPS201 (02A gate) to the 01A-B2D2 sense card and from the sense card to the 01A-D2B2 card. NOTE: Connect the meter lead to the IPS connector card on the end of the cable. Do not connect the meter lead to the IPS board.

Chart 8

Voltage Level	Points to Check For Continuity
+4.25 I or F	02A-A2B5D02 to 01A-B2D2S06 and 01A-B2D2S06 to 01A-D2B2D11
-2.2 (-6.45)	02A-A2B5D04 to 01A-B2D2M08 and 01A-B2D2M08 to 01A-D2B2D12

Did both lines show continuity ?

Y N

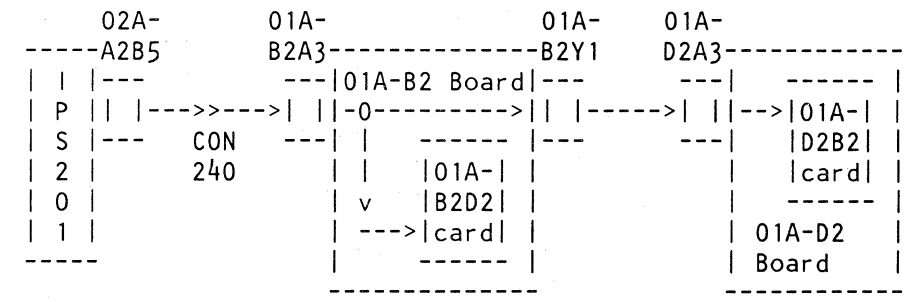
(Entry Point M)

The indicated undervoltage (UV) sense line is open.

The indicated UV sense line goes from the IPS regulator control card (ALD YA632 and YA633) through the IPS gate connector card 02A-A2B5 (ALD YA636), through Connector 240 (YA659), and then through the 01A-B2A3 connector card to the 01A-B2 board.

On the 01A-B2 board the line seperates into two lines. One line goes to the 01A-B2D2 sense card (ALD YF121, YF131, and YF171). The other line leaves the 01A-B2 board through the 01A-B2Y1 connector card (ALD YF151 and YF171), and enters the 01A-D2 board through the 01A-D2A3 connector card (ALD YA701). On the 01A-D2 board the line goes to the 01A-D2B2 card (YA731).

The following figure shows these lines and connectors:



The pins for each UV sense line are as follows:

Chart 9

Voltage Level	02A-A2B5 (out)	CON 240 Pin	01A-B2A3 (in)	01A-B2D2 (in)	01A-B2Y1 (out)	01A-D2A3 (in)	01A-D2B2 (in)
-2.2(-6.45)	D04	45	D05	M08	B09	B09	D12
+4.25 or F	D02	33	B09	S06	B10	B10	D11

Using this figure and list and the ALDs, find and fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

031

Did you just exchange the 01A-D2B2 card ?

Y N

032
Exchange the 01A-D2B2 card.
Go To Map 1000, Entry Point R.

033
Go to Page 11, Step 023, Entry Point F.

034
Go to Page 5, Step 015, Entry Point L.

035
Exchange the failing part(s).
Go To Map 1000, Entry Point R.

036
Go to Page 4, Step 010, Entry Point D.

037

Swap the control card of the +4.25Vdc level with one of the other control cards.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is power ON (action done) ?

Y N

038
Swap back the control cards.
Go to Page 4, Step 008, Entry Point E.

039

The control card you took out from the +4.25Vdc level is failing. (The +4.25Vdc level uses more circuits than the other levels).

Exchange the failing control card.
Go To Map 1000, Entry Point R.

040

Check the undervoltage (UV) sense line and the control line of the indicated voltage level for poor or loose connection. See Entry Point J, Page 10, Step Number 022, and Entry Point M, Page 12, Step Number 030, for figures and pin lists of the UV sense lines. See Entry Point G, Page 6, Step Number 017, and Entry Point H, Page 7, Step Number 018, for figures and pin lists of the control lines.

Starting from the indicated IPS (ALD page YA626, YA636, and YA645) follow both lines to the MSS (01A-B2) board, moving and lightly hitting the cable and connectors to try to generate the fault again.

Did the failure occur again ?

Y N

041

(Entry Point Y)

The failure was an intermittent failure.
Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRUs (1)	(2)	(3)
1070	02A-A2C4	PS201	TR202
1102	02A-A2B2	PS201	TR202
1240	02A-A1B2	PS201	TR202
1512	02A-A1B2	PS201	TR202
152x	02A-A2D4	PS201	TR201
153x	02A-A1D2	PS201	TR201
154x	01C-A1D2		
1560	02A-A2D4	PS201	TR201
D262	02A-A2C4	PS201	TR202
D59x	01C-A1D2		

Make a note of the indicated FRU's using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

042

If the UU field of the ref code displayed on the screen is not 1x, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1x, check if the RRRR field is listed in Chart 1 in step 004. If the RRRR field is not listed in Chart 1, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is listed in Chart 1, check for an open in the indicated level's control and OV sense lines.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated sense line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?

Y N

043

Go to Page 13, Step 041, Entry Point Y.

044

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

045

The failure is an intermittent.

Go to Page 2, Step 006, Entry Point B.

No AC to 2ND Frame

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	2	001
1140	D	2	002
1171	K	18	066

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
6	017	0001	A
7	022	0001	A
9	026	0001	A
13	047	0001	A
14	052	0001	A
14	057	0001	A
16	061	0001	A
2	005	1000	B
17	063	1000	I
18	069	1000	R
4	009	1000	R
5	013	1000	R
6	016	1000	R
7	021	1000	R
8	023	1000	R
9	025	1000	R
9	029	1000	R
10	032	1000	R
11	034	1000	R
11	035	1000	R
9	030	1000	R
12	042	1000	R
13	046	1000	R
12	044	1000	R
13	048	1000	R
14	051	1000	R
14	056	1000	R
15	058	1000	R
16	060	1000	R
18	066	1000	R

MAP CODE 1161CXXX

PAGE 2 OF 18

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Ensure that Primary Control Compartment (PCC) CB2 and PS101 CP4 are set to the ON position (See MIM VOL 13/16 Page 10-045c). Also ensure PS101 Connector 6 is plugged in.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen)?

Y N

002

(Entry Point D)

Is the UU field of the ref code displayed on the screen 1x ?

Y N

003

This is not a power problem.

Go To Map 0000, Entry Point A.

004

Is the RRRR field of the displayed ref code 1612, 1620, or 1622 ?

Y N

18

A B C

005

The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.

Go To Map 1000, Entry Point B.

006

(Entry Point B)

An RRRR field of 1612 indicates that there is no AC voltage to TB205.

An RRRR field of 1620 or 1622 indicates that Primary Control Compartment (PCC) K3 is failing.

The cause of the failure may be one of the following:

If the RRRR field is 1612:
1) Failing PCC K4
2) Failing 01A-D2D2 or 01A-D2E4 card
3) Failing +24V to PCC K4
4) Failing PCC K4 pick signal
5) Failing PCC K4 pick sense line
6) Failing 01A-B2 or 01A-D2 board
7) Failing AC line from PCC CB2 to TB205

If the RRRR field is 1620 or 1622:
1) Failing PCC K3
2) Failing 01A-D2D2, 01A-D2E2 or 01A-D2E4 card
3) Failing PS101
4) Failing +24V to PCC K3
5) Failing PCC K3 pick signal
6) Failing 01A-B2 or 01A-D2 board

Chart 1 gives a list of possible failing FRUs, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

See Chart 1 on the next page.

(Step 006 continues)

(Step 006 continued)

Chart 1

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
PCC K4	1612	YA411 YA415	10-045c, 065
PCC K3	1620 1622	YA411 YA415	10-045c, 065
PS101	1620 1622	YA601	10-045c 20-160c, 165c, 175c
01A-D2D2 card	all ref codes	YA721 YA723 YA725 YA727	14-105f 20-285, 310
01A-D2E2 card	1620 1622	YA741 YA745 YA747	14-105f 20-285, 320
01A-D2E4 card	all ref codes	YA771 YA775	14-105f 20-285
01A-D2 board	all ref codes		10-035c, 050c 14-105f 20-175c, 285
01A-B2 board	all ref codes		10-035c, 050c 14-105f 20-211c, 230c
PCC CON 10	all ref codes	YA415	10-035c, 045c
PCC CON 57	1612	YA411	10-035c, 045c
PCC CB2	1612	YA411	10-045c
TB205	1612	YA419	10-055c

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD YF171 when following sense and other lines into the 01A-B2 board.
(Step 006 continues)

(Step 006 continued)

Is the failure an intermittent failure ?
Y N

007

Is the RRRR field of the ref code 1620 or 1622 ?
Y N

008
Ensure that PCC Connector 10 Pins 12, 13, and 14 are connected tightly.

Were the above pins seated tightly ?
Y N

009
Ensure that all pins in PCC Connector 10 are connected.
Go To Map 1000, Entry Point R.

010
Open the cover of the PCC. See the label on the cover for the location of PCC K4.

After powering up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, observe and listen to PCC K4 to see if it picks for a very short time (less than one second) and then drops.

If PCC K4 picks for a very short time you will be able to hear it picking and dropping.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did PCC K4 pick for less than one second and then drop ?
Y N

011

Did PCC K4 pick and hold for more than one second ?
Y N

1 1 1
6 1 1 9 5
D E F G H

012

DANGER

THE PCC BOX HAS HIGH VOLTAGES PRESENT. WHEN MEASURING VOLTAGES IN THE PCC BOX, BE CAREFUL NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF THE METER LEAD OR ANY WIRE.

The +24Vdc might not be reaching the coil on PCC K4.
Set the CE meter to measure 24Vdc.
Connect the CE meter as follows: (Check ALD page YA415 for the following location)

PCC K4 coil point A ------ positive lead (tool).
frame ---------- negative lead (tool).

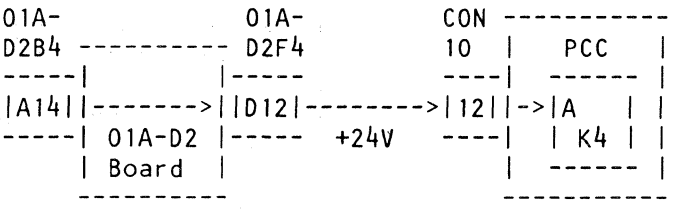
The meter should indicate between +21Vdc and +27Vdc.

Does the meter indicate between +21Vdc and +27Vdc ?
Y N

013

(Entry Point F)

The +24V line to PCC K4 is failing. The line starts at PS101 (ALD YA601) and goes through the 01A-D2 board to PCC K4 coil point A (ALD YA415). The following figure shows the pins and connectors in the line.



Using this figure, find where the +24V is failing. Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

014

Next check if the coil of PCC K4 is good.

Set your CE meter to measure +24Vdc. Connect the meter leads to the following points (ALD YA415):

PCC K4 coil point B ------ positive lead (tool).
frame ---------- negative lead (tool).

The meter should indicate between +21Vdc and +27Vdc.

Does the meter indicate between +21Vdc and +27Vdc ?

Y N

015

Did you just exchange PCC K4 ?

Y N

016

Exchange PCC K4 and the resistor/diode assembly connected between PCC K4 coil points A and B.

NOTE: Label the wires connected to PCC K4 before removing PCC K4. The new K4 may be wired differently from the K4 you are exchanging. See MIM VOL 13/16 Page 10-065 for a figure of the wiring of all PCC K4s.

Go To Map 1000, Entry Point R.

017

Problem is not corrected.

Go To Map 0001, Entry Point A.

018

To check the PICK PCC K4 line:

Set the CE meter to measure +24Vdc. Connect the meter leads on the following points (ALD YA415):

PCC K4 coil point B ------ positive lead (tool).
frame ---------- negative lead (tool).

The meter should indicate between +21Vdc and +27Vdc now and should go to less than +0.5Vdc when you power up the processing unit.

NOTE: This sequence is quick (approximately 25 milliseconds); if an oscilloscope is available, use it. If a standard CE meter is used, the meter will only start to go to less than +0.5Vdc.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did the meter follow the above sequence ?

Y N

019

To check the PICK PCC K4 line output from the 01A-B2C2 sense card:

Set your CE meter to measure +5Vdc. Connect the meter leads to the following points:

01A-B2C2G11 ---------- positive lead (tool).
01A-B2C2J08 ---------- negative lead (tool).

Your meter should indicate over +2.5Vdc now and should go to less than +0.5Vdc when you power up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did the meter follow the above sequence ?

Y N

020

Did you just exchange the 01A-B2C2 sense card?

Y N

021

Exchange the 01A-B2C2 sense card.

Go To Map 1000, Entry Point R.

022

Problem is not corrected.

Go To Map 0001, Entry Point A.

023

(Entry Point W)

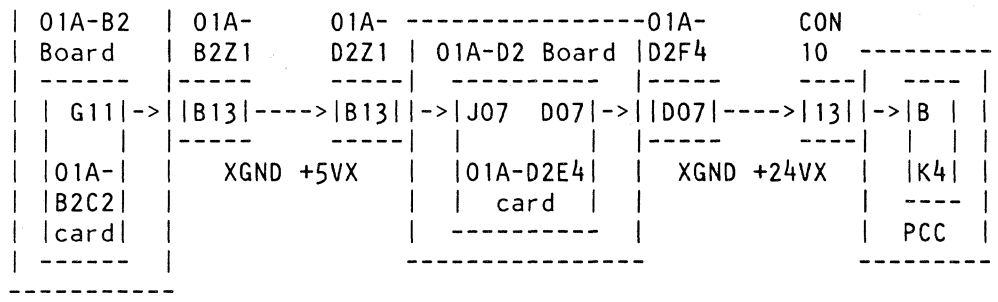
The PCC K4 PICK signal line (C22) is failing.

The line starts from 01A-B2C2G11 (ALD YF141), leaves the 01A-B2 board through the 01A-B2Z1 connector card, and enters the 01A-D2 board through the 01A-D2Z1 connector card. The line then goes through the 01A-D2E4 card (ALD YA771), leaves the 01A-D2 board through connector card 01A-D2F4 (ALD YA713) and goes through PCC Connector 10 to PCC K4 coil point B (ALD YA415).

The most probable failure is an open line or a failing 01A-D2E4 card.

NOTE: The active signal level for the pick line is ground (GND). The inactive signal level from the output of the 01A-B2C2 sense card to the input to the 01A-D2E4 card is +5Vdc (A voltage over +2.8Vdc is good). In the 01A-D2E4 card the signal goes through a relay driver; from the output of the 01A-D2E4 card to PCC K4 the inactive signal level is +24Vdc. These levels are shown on the following figure as XGND +24VX and XGND +5VX.

The following figure shows this line:



Using this figure, determine where the pick signal is failing. Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

024

Did you just exchange PCC K4 ?

Y N

9 9
Q R

025

Exchange PCC K4 and the resistor/diode assembly connected between PCC K4 coil points A and B.

NOTE: Label the wires connected to PCC K4 before removing PCC K4. The new K4 may be wired differently from the K4 you are exchanging. See MIM VOL 13/16 Page 10-065 for a figure of the wiring of all PCC K4s.

Go To Map 1000, Entry Point R.

026

Problem is not corrected.

Go To Map 0001, Entry Point A.

027

Locate TB205.

DANGER

TB205 HAS HIGH VOLTAGE PRESENT. WHEN MEASURING VOLTAGE ON TB205, BE CAREFUL NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF THE METER LEAD OR ANY WIRE.

Set the CE meter to measure the AC line voltage.

Use ALD page YA419 for pin locations and check if all three phases of the AC voltage are present at TB205 after powering up the processing unit. Connect the CE meter leads (tool) to the TB205 pins to measure the AC voltage. Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Answer the next question after you check all three phases.

Does the meter indicate the AC voltage on all three phases ?

Y N

028

Check if PCC Connector 57 is connected tightly.

Is Connector 57 connected tightly ?

Y N

S T U

029

Connect Connector 57 tightly.

Go To Map 1000, Entry Point R.

030

DANGER

THE PCC BOX HAS HIGH VOLTAGES PRESENT. WHEN MEASURING VOLTAGES IN THE PCC BOX, BE CAREFUL NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF THE METER LEAD OR ANY WIRE.

Starting with ALD page YA411 find and repair where the AC voltage is lost from PCC CB2, through connector 57 in the PCC, to TB205.

Go To Map 1000, Entry Point R.

031

To check the PCC K4 pick sense line input to the sense card:

Set your CE meter to measure 5Vdc.

Connect the CE meter leads (tool) as follows:

01A-B2C2M03 ------ positive lead (tool).
01A-B2C2D08 ------ negative lead (tool).

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the meter. It should indicate 0Vdc at first and then go above +3Vdc.

Did the meter indicate the above sequence ?

Y N

032

The 'K4 PICK SENSE' line is failing.

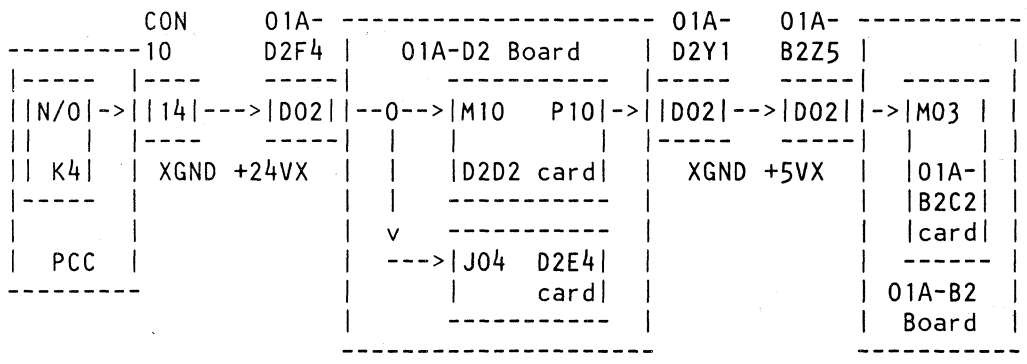
(Entry Point G)

The sense line starts at PCC K4 Auxiliary Contact Normally Open (N/O) pin (ALD YA415). The line goes through PCC Connector 10 to the 01A-D2 board through the 01A-D2F4 connector card. On the 01A-D2 board, the line divides into two lines: one to the 01A-D2E4 card (ALD YA771), and the other to the 01A-D2D2 card (ALD YA723). The line to the 01A-D2D2 card goes through the card, leaves the 01A-D2 board through the 01A-D2Y1 connector card, enters the 01A-B2 board through the 01A-B2Z5 connector card, and goes to the 01A-B2C2 sense card (ALD YF131).

NOTE: The active level for the sense line is ground (GND). The inactive level from PCC K4 to the 01A-D2D2 and 01A-D2E4 cards is +24Vdc. In the 01A-D2D2 card the line goes through a voltage divider; from the output of the 01A-D2D2 card to the sense card the inactive level is +5Vdc. These levels are shown on the following figure as XGND +24VX and XGND +5VX.

NOTE: If PCC K4 is picked, the INACTIVE level should be present.

The following figure shows this line:



Using the figure, determine where the pick sense signal is failing starting from the PCC K4 N/O pin. Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

033

Did you just exchange the 01A-B2C2 sense card?
Y N

034
Exchange the 01A-B2C2 sense card.
Go To Map 1000, Entry Point R.

035
Power is good up to TB205.
Starting with ALD page YA419, find and repair where the AC voltage is lost from TB205 to the TR's indicated on ALD YA419.
Go To Map 1000, Entry Point R.

036
The PCC K4 pick sense signal is failing.
The most probable failure is in one of the following:
01A-D2D2 card (ALD YA721)
01A-D2E4 card (ALD YA771)
PCC K4
The 'K4 PICK SENSE' line (ALD YA415)
For a figure of the pick sense line,
Go to Page 10, Step 032, Entry Point G.

037

DANGER

THE PCC BOX HAS HIGH VOLTAGES PRESENT. WHEN MEASURING VOLTAGES IN THE PCC BOX, BE CAREFUL NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF THE METER LEAD OR ANY WIRE.

The +24Vdc might not be reaching the coil on PCC K3.
Set the CE meter to measure 24Vdc. Connect the CE meter as follows (Check ALD page YA415 and the label on the front of the PCC box for the following location):

PCC K3 coil point A ------ positive lead (tool)
frame ---------- negative lead (tool)

The meter should indicate between +21Vdc and +27Vdc.
(Step 037 continues)

(Step 037 continued)

Does the meter indicate between +21Vdc and +27Vdc ?
Y N

038
To check if the +24Vdc from PS101 is good.
Set your CE meter to measure +24Vdc. Connect your meter leads on the following points (ALD YA601):

PS101 connector 6 pin 2 ------ positive lead (tool).
PS101 connector 6 pin 3 ------ negative lead (tool).

The meter should indicate between +21Vdc and +27Vdc.

Does the meter indicate between +21Vdc and +27Vdc ?
Y N

039
Set the CE meter to measure +5Vdc. Connect your meter leads to the following points (ALD YA601):

PS101 connector 8 pin 4 ------ positive lead (tool).
frame ---------- negative lead (tool).

Your meter should indicate below +0.5Vdc.

Does the meter indicate below +0.5Vdc ?
Y N

040

Set your CE meter to measure +5Vdc. Connect your meter leads on the following points (ALD YA741):

01A-D2E2D05 ---------- positive lead (tool).
frame ---------- negative lead (tool).

Your meter should indicate below +0.5Vdc.

Does the meter indicate below +0.5Vdc ?
Y N

041

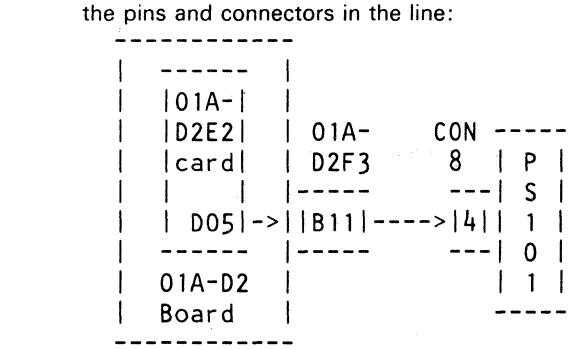
Did you just exchange 01A-D2E2 card ?
Y N

042
Exchange the 01A-D2E2 card.
Go To Map 1000, Entry Point R.

043
Go to Page 13, Step 047, Entry Point E.

044

The line from 01A-D2E2D05 (YA741) to PS101 connector 8 pin 4 is open. The following figure shows the pins and connectors in the line:



Using the figure, determine where the line to PS101 is failing. Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

045

Did you just exchange PS101 ?
Y N

046
Exchange PS101.
Go To Map 1000, Entry Point R.

047

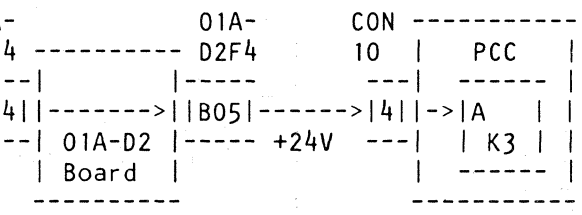
(Entry Point E)

Problem is not corrected.
Go To Map 0001, Entry Point A.

048

(Entry Point C)

The +24V line to PCC K3 is failing. The line starts at PS101 (ALD YA601) and goes through the 01A-D2 board to PCC K3 coil point A (ALD YA415). The following figure shows the pins and connectors in the line.



Using this figure, find where the +24V is failing. Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

049

Next check if the coil of PCC K3 is good.

Set the CE meter to measure +24Vdc. Connect the meter leads to the following points (ALD YA415):

PCC K3 coil point B ------ positive lead (tool).
frame ---------- negative lead (tool).

The meter should indicate between +21Vdc and +27Vdc.

Does the meter indicate between +21Vdc and +27Vdc ?

Y N

050

Did you just exchange PCC K3 ?

Y N

051

Exchange PCC K3.

Go To Map 1000, Entry Point R.

052

Problem is not corrected.

Go To Map 0001, Entry Point A.

053

Next check the PICK PCC K3 line as follows.

Set the CE meter to measure +24Vdc. Connect the meter leads to the following points (ALD YA415):

PCC K3 coil point B ------ positive lead (tool).
frame ---------- negative lead (tool).

The meter should indicate between +21Vdc and +27Vdc now and should go to less than +0.5Vdc when you power up the processing unit. Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did the meter follow the above sequence ?

Y N

1
6
A A
B C

054

To check the PICK PCC K3 line output from the 01A-B2D2 sense card:

Set your CE meter to measure +5Vdc. Connect the meter leads to the following points:

01A-B2D2M02 ---------- positive lead (tool).
01A-B2D2P08 ---------- negative lead (tool).

Your meter should indicate over +2.5Vdc now and should go to less than +0.5Vdc when you power up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Did the meter follow the above sequence ?

Y N

055

Did you just exchange the 01A-B2D2 sense card?

Y N

056

Exchange the 01A-B2D2 sense card.

Go To Map 1000, Entry Point R.

057

Problem is not corrected.

Go To Map 0001, Entry Point A.

1
5
A
D

(Entry Point S)

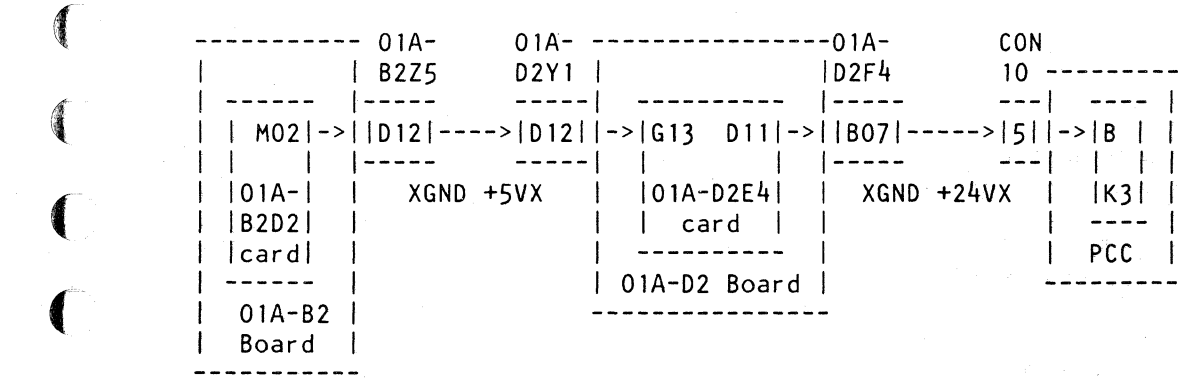
Either PCC K3 or the PCC K3 PICK signal line (C16) is failing.

The line starts from 01A-B2D2M02 (ALD YF141), leaves the 01A-B2 board through the 01A-B2Z5 connector card, and enters the 01A-D2 board through the Y1 connector card. The line then goes through the 01A-D2E4 card (ALD YA771), leaves the 01A-D2 board through connector 01A-D2F4 (ALD YA713) and goes through PCC Connector 10 to PCC K3 coil point B (ALD YA415).

The most probable failure is an open line or a failing 01A-D2E4 card.

NOTE: The active signal level for the pick line is ground (GND). The inactive signal level from the output of the 01A-B2D2 sense card to the input to the 01A-D2E4 card is +5Vdc (A voltage over +2.8Vdc is good). In the 01A-D2E4 card the signal goes through a relay driver; from the output of the 01A-D2E4 card to PCC K3 the inactive signal level is +24Vdc. These levels are shown on the following figure as XGND +24VX and XGND +5VX.

The following figure shows the pins and connectors in the pick PCC K3 line:



Using this figure, determine where the pick signal to PCC K3 is failing from the 01A-B2D2 sense card to PCC K3. Fix the failure. Repair or exchange any failing parts. **Go To Map 1000, Entry Point R.**

059

Did you just exchange PCC K3 ?
Y N

060
Exchange PCC K3.
Go To Map 1000, Entry Point R.

061
Problem is not corrected.
Go To Map 0001, Entry Point A.

062
If the RRRR field was 1620 or 1622, check for a loose or poor connection of the following:

1. +24Vdc supply to PCC K3 (See Entry Point C, Page 13, Step Number 048, for the pins and connectors in this line)
2. Pick PCC K3 line (See Entry Point S, Page 15, Step Number 058, for the pins and connectors in this line)

Move and lightly hit the cables and connectors to try to generate the fault again. Also hit lightly around PCC K3 (ALD YA415).

If the RRRR field was 1612, check for a loose or poor connection of the following:

1. PCC K4 Pick Sense line (See Entry Point G, Page 10, Step Number 032, for the pins and connectors in this line)
2. Pick PCC K4 line (See Entry Point W, Page 8, Step Number 023, for the pins and connectors in this line)
3. +24Vdc supply to PCC K4 (See Entry Point F, Page 5, Step Number 013, for the pins and connectors in this line)

Move and lightly hit the cables and connectors to try to generate the fault again. Also hit lightly around PCC K4 (ALD YA415).
(Step 062 continues)

(Step 062 continued)

Did the failure occur again ?
Y N

063

(Entry Point Y)

The failure was an intermittent failure.
Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRUs (1)	(2)	(3)	(4)	(5)
1612	PCC K4	01A-D2E4	01A-D2D2	PS101	
162x	PCC K3	01A-D2E4	01A-D2E2	01A-D2D2	PS101

Make a note of the indicated FRU's using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

064

If the UU field of the ref code displayed on the screen is not 1x, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1x, check the RRRR field. If the RRRR field IS NOT 1612, 1620, or 1622, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code IS 1612, 1620, or 1622, check for an open in the indicated pick, pick sense, or +24V lines. Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

(Step 064 continues)

(Step 064 continued)

Did you find any failure ?
Y N

065
Go to Page 17, Step 063, Entry Point Y.

066
Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

(Entry Point K)

You came to this MAP from MAP 1171. The indicated failure is that either PCC K3 or the pick line to PCC K3 is failing.
Go to Page 15, Step 058, Entry Point S.

067

Was either PCC CB2 or PS101 CP4 in the OFF position, or was PS101 Connector 6 not connected ?
Y N

068
The failure is an intermittent.
Go to Page 2, Step 006, Entry Point B.

069
Go To Map 1000, Entry Point R.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
4	005	0000	A
6	013	0001	A
7	023	0001	A
7	025	0001	A
7	029	0001	A
8	032	0001	A
8	036	0001	A
2	002	1000	B
4	007	1000	B
9	040	1000	I
6	012	1000	R
6	016	1000	R
6	017	1000	R
7	022	1000	R
7	026	1000	R
7	028	1000	R
8	033	1000	R
8	035	1000	R
9	043	1000	R
10	046	1000	R
10	048	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

(Step 001 continues)

(Step 001 continued)

Chart 1

Ref Code RRRR	Sensor Location On 01A Gate	Sensor Name
A090 or A092	Top B1	AIS101
A100 or A102	Bottom A2	AOS101
A110 or A112	Bottom B2	AOS102
A120 or A122	Bottom C2	AOS103

Is the RRRR field of the ref code listed in Chart 1 ?
Y N

002
You are in the wrong MAP for this RRRR field.
Go To Map 1000, Entry Point B.

003
The failure indicated by this ref code is that the inlet or outlet temperature is out of tolerance.

To determine the failing sensor, use the ref code and Chart 1 in step 001.

NOTE: AIS101 is Air Inlet Sensor 101, located between AMD102 and AMD103 on top of the 01A gate. AOS10X is Air Outlet Sensor 10X, located below the board in the 01A gate listed in the 'Sensor Location' column in Chart 1.

The cause of the failure may be one of the following:

1) Failing Air Outlet Sensor (AOS) 101, 102, or 103
2) Failing Air Inlet Sensor (AIS) 101
3) Failing AIS or AOS sense line
4) Failing 01A-B2C2 or 01A-B2D2 card
5) Failing +3Vdc supply to Sensors

Chart 2 gives a list of possible failing FRUs, ref codes
(Step 003 continues)

(Step 003 continued)
that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

Chart 2

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
Air Inlet Sensor 101	A090 A092	YA418	10-035c, 050c 14-105c, 310
Air Outlet Sensor 101	A100 A102	YA418	10-035c, 050c 14-105c, 310
Air Outlet Sensor 102	A110 A112	YA418	10-035c, 050c 14-105c, 310
Air Outlet Sensor 103	A120 A122	YA418	10-035c, 050c 14-105c, 310
01A-B2C2 or 01A-B2D2 card	all ref codes		10-035c, 050c 14-105f 20-225c, 230c, 235c
01A-B2 board	all ref codes		10-035c, 050c 20-211c, 230c

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD YF171 when following sense and other lines into the 01A-B2 board.

(Entry Point C)

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen)?

Y N

8 4
A B

004

Is the UU field of the ref code displayed on the screen 1X ?
Y N

005
This is not a power problem.
Go To Map 0000, Entry Point A.

006,

Is the RRRR field of the ref code A09X, A10X, A11X, or A12X ?
Y N

007
The first failure must have been caused by the failure indicated by this ref code. Use this displayed ref code to determine and repair the failure.
Go To Map 1000, Entry Point B.

008

(Entry Point D)

To determine the failing sensor, use the ref code and Chart 1 in step 001.

Get the Temperature display using the following steps.

1. Press MODE SELECT key
2. Key in MT
3. Press ENTER key

The Temperature display should be displayed on the screen.

4. Key in C (for continuous mode)
5. Press ENTER key

In the Temperature display the sensor number is as follows:

Chart 3

Thermal Number	Sensor	Sensor Number	Location in 01A Gate
1	AIS101	A09	Top of B1 board
2	A0S101	A10	Bottom of A2 board
3	A0S102	A11	Bottom of B2 board
4	A0S103	A12	Bottom of C2 board

In the Temperature display, check if any of the temperatures indicate 10 degrees.

Do any of the temperatures indicate 10 degrees ?

Y N

009

Check if any of the following cases is occurring:

1. Any sensor indicates 50 degrees.
2. The difference between the inlet temperature (THERMAL 1) and any one of the outlet temperatures (THERMAL 2, 3, or 4) is more than 14 degrees.

Is either of these cases occurring ?

Y N

6 6 6
D E F

010

Make a note for future reference that you came to this step.

Is this the FIRST time you came to this step ?
Y N

011

Did you just exchange the 01A-B2D2 card ?
Y N

012

Exchange the 01A-B2D2 card.
Go To Map 1000, Entry Point R.

013

Problem is not resolved.
Go To Map 0001, Entry Point A.

014

Get the PARTIAL POWER UP/DOWN screen using the following steps:

1. Press MODE SELECT key
2. Key in MW
3. Press ENTER key

Go to Page 3, Step 003, Entry Point C.

015

Check if the room temperature is inside the specification.

Is the room temperature inside specification ?
Y N

016

Ensure that the room temperature is inside the specification.
Go To Map 1000, Entry Point R.

017

There is a heat source by the indicated sensor. Find and correct it. See MIM VOL 13/16 Page 10-050c for location.
Go To Map 1000, Entry Point R.

018

There are two pins on each Air Inlet/Outlet Sensor. One pin is the +3Vdc input to the sensor; the other pin is the analog sense output that goes to the sense card.

To check the +3Vdc input to the indicated sensor, perform the following:

Set the CE meter to measure +5Vdc.
Connect the negative meter lead to the frame (GND).
Connect the positive meter lead to both pins on the indicated sensor and observe the CE meter.

The meter should indicate between +2.7Vdc and +3.3Vdc when connected to one pin and shoud indicate between +0.4Vdc and +1.4Vdc when connected to the other pin.

Did the meter indicate the correct voltages ?
Y N

019

Did the meter indicate between +2.7Vdc and +3.3Vdc on either pin on the sensor ?
Y N

020

Check the output of the 01A-B2C2 sense card as follows:

Set the CE meter to measure +5Vdc.
Connect the positive meter lead to 01A-B2C2S11.
Connect the negative meter lead to 01A-B2C2U08.

The meter should indicate between +2.7Vdc and +3.3Vdc.

Did the meter indicate between +2.7Vdc and +3.3Vdc ?
Y N

7 7 7 7
G H J K

021

Did you just exchange the 01A-B2C2 card ?
Y N

022
Exchange the 01A-B2C2 sense card.
Go To Map 1000, Entry Point R.

023
Problem is not corrected.
Go To Map 0001, Entry Point A.

024
The +3Vdc line from 01A-B2C2S11 to the indicated sensor is failing.
See MIM VOL 13/16 Page 20-245c and ALD YA418 and YF151.
Using ALD's and the MIM, find the failure.

Did you find the failure ?
Y N

025
Problem is not corrected.
Go To Map 0001, Entry Point A.

026
Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

027

Did you just exchange the indicated sensor ?
Y N

028
Exchange the indicated sensor.
Go To Map 1000, Entry Point R.

029
Problem is not corrected.
Go To Map 0001, Entry Point A.

030
Check the input to the 01A-B2D2 sense card as follows:

Set the CE meter to measure +5Vdc.
Connect the negative meter lead to 01A-B2C2U08.
Connect the positive meter lead to the pin on the 01A-B2D2 sense card as indicated by the ref code and the following Chart 4:

Chart 4

Ref Code RRRR	Sense Card Input Pin
A09X	01A-B2D2B08
A10X	01A-B2D2B11
A11X	01A-B2D2D11
A12X	01A-B2D2D12

The meter should indicate between +0.4Vdc and +1.4Vdc.

Did the meter indicate between +0.4Vdc and +1.4Vdc ?
Y N

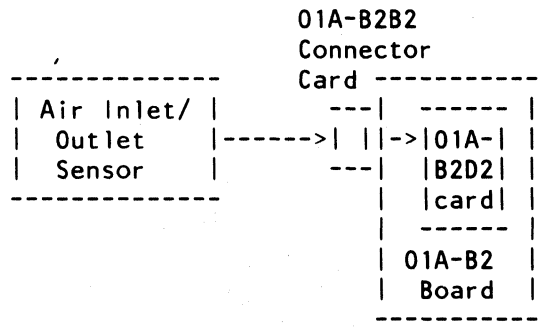
031

The sense line from the indicated sensor to the 01A-B2D2 sense card is failing.

The line goes from the indicated sensor (ALD YA418) through the 01A-B2B2 connector card to the 01A-B2D2 sense card (ALD YF101 and YF171).

Also see MIM VOL 13/16 Page 20-245c.

The following figure shows these lines and connectors:



The pins for each sense line are as follows:

Chart 5

Ref Code RRRR	Sensor	01A-B2B2 Connector Card (in)	01A-B2D2 Sense Card (in)
A09X	AIS101	D07	B08
A10X	AOS101	D09	B11
A11X	AOS102	D10	D11
A12X	AOS103	D11	D12

Using this figure and chart, the ALDs, and the MIM, find the failure.

Did you find the failure ?

Y N

032

Problem is not corrected.

Go To Map 0001, Entry Point A.

N

033

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

034

Did you just exchange the 01A-B2D2 card ?

Y N

035

Exchange the 01A-B2D2 sense card.

Go To Map 1000, Entry Point R.

036

Problem is not corrected.

Go To Map 0001, Entry Point A.

037

To check if temperature is inside the specification, get the Temperature display using the following steps:

1. Press MODE SELECT key.
2. Key in MT
3. Press ENTER key.
4. Key in C (for continuous mode).
5. Press ENTER key.

The Temperature display should be displayed on the screen.

NOTE: If the machine powers down before the MT (Temperature) screen is displayed, use this procedure to display the MT screen.

Did the machine power off before the MT screen was displayed ?

Y N

038

Observe the Temperature display to see if any temperature is increasing.

Is any temperature on the Temperature display increasing ?

Y N

1 1 0 0 9 P Q R

039

Check the sense line of the indicated sensor for poor or loose connection. See step 031 in this MAP for a figure and pin list of the sense lines. Try to generate the failure again by lightly hitting and moving the cables of the sensor indicated by the ref code and Chart 1 in step 001 in this MAP.

Did the failure occur again ?
Y N

040

(Entry Point Y)

The failure was an intermittent failure.
Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRUs (1)	(2)	(3)
A09X	AIS101	01A-B2D2	01A-B2C2
A10X	AOS101	01A-B2D2	01A-B2C2
A11X	AOS102	01A-B2D2	01A-B2C2
A12X	AOS103	01A-B2D2	01A-B2C2

NOTE: AIS101 is Air Inlet Sensor 101, located between AMD102 and AMD103 on top of the 01A gate. AOS10X is Air Outlet Sensor 10X, located below the board in the 01A gate listed in the 'Sensor Location' column in Chart 1 in step 001.

Make a note of the indicated FRUs using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

041

If the UU field of the ref code displayed on the screen is not 1X, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1X, check if the RRRR field is listed in Chart 1 in step 001. If the RRRR field is not listed in Chart 1, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is listed in Chart 1, check for an open in the indicated Air Inlet/Outlet Sensor sense line.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a sense line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated sense line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?
Y N

042
Go to Step 040, Entry Point Y.

043

Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

044

Check if the cover(s) of the 01A-gate boards are fastened. If not, fasten the cover(s) tightly.

Were all the covers on tightly ?
Y N

045

On the Temperature display, is the temperature still increasing ?
Y N

046

The cover(s) was not fastened tightly.
Go To Map 1000, Entry Point R.

047
Go to Step 048, Entry Point E.

048

(Entry Point E)

Either the air flow is prevented by a dirty filter, the sensor is dirty, or the fan above the sensor is running slowly.
If the sensor is dirty, clean it.
If the filter is dirty, exchange it.
If the fan is running slowly, exchange it.
Go To Map 1000, Entry Point R.

049

Check if the cover(s) of the 01A-gate boards are fastened. If not, fasten the cover(s) tightly.

Were all the covers on tightly ?
Y N

050
Go to Page 3, Step 003, Entry Point C.

051
Go to Step 048, Entry Point E.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	2	001
1000	B	2	006

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
5	018	0001	A
6	022	0001	A
8	031	0001	A
15	054	0001	A
12	049	0001	A
2	005	1000	B
16	061	1000	I
5	017	1000	R
6	019	1000	R
7	024	1000	R
6	021	1000	R
7	023	1000	R
15	055	1000	R
8	030	1000	R
8	033	1000	R
8	035	1000	R
9	037	1000	R
9	040	1000	R
9	042	1000	R
14	051	1000	R
15	053	1000	R
10	044	1000	R
12	046	1000	R
12	048	1000	R
15	058	1000	R
16	063	1000	R
18	068	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

NOTE: Wait until you see a ref code or ACTION DONE message.

Is PROC UNIT power ON (ACTION DONE on screen) ?

Y N

002

Is the UU field of the ref code displayed on the screen 1X ?

Y N

003

This is not a power problem.

Go To Map 0000, Entry Point A.

18 A B

004

Chart 1

Ref Code RRRR	Device	PCC Con.
D160 or D162	AMD107	20
D200 or D202	PCC K3	--
D550 or D552	AMD202	24
D560 or D562	AMD102	21
D570 or D572	AMD201	24

Is the displayed RRRR field listed in Chart 1 ?

Y N

005

The first failure is caused by the failure indicated by this displayed ref code. To determine and repair, use the displayed ref code.

Go To Map 1000, Entry Point B.

006

(Entry Point B)

The ref code indicates that one of the air moving devices (AMDs) is failing or that Primary Control Compartment (PCC) contactor K3 is failing.

To determine which device is indicated, use the ref code and Chart 1 in step 004.

The cause of the failure may be one of the following:

1) Failing AMD
2) Failing AFS
3) Failing PCC K3
4) Failing PS101
5) Failing 01A-B2S4, 01A-D2E2, or 01A-D2D2 card
6) Failing 01A-B2 or 01A-D2 board
7) Failing AFS sense line
8) Failing PCC K3 sense line
9) Failing ac voltage to the AMD
10) Failing +24Vdc to PCC K3

(Step 006 continues)

(Step 006 continued)

Chart 2 gives a list of possible failing FRUs, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

Chart 2

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
AMD102 AFS102	D560 D562	YA417 YA418	10-035c, 050c 20-245c
AMD107 AFS107	D160 D162	YA417 YA418	10-035c, 040c 20-245c
AMD201 AFS201	D570 D572	YA417 YA418	10-035c, 055c 20-245c
AMD202 AFS202	D550 D552	YA417 YA418	10-035c, 060c 20-245c
PCC K3	all ref codes	YA411 YA415	10-045c, 065
PS101	all ref codes	YA601	10-045c 20-160c, 165c, 175c
01A-D2D2 card	all ref codes	YA721 YA723 YA725 YA727	10-035c, 050c 14-105f 20-285, 310
01A-D2E2 card	all ref codes	YA741 YA745 YA747	10-035c, 050c 14-105f 20-285, 320
01A-B2S4 card	D160 D162		10-035c 14-105f, 310 VOL 17 Page 34-170
01A-D2 board	all ref codes		10-035c, 050c 20-205c, 285
01A-B2 board	all ref codes		10-035c, 050c 20-211c, 230c
Connector 241	D55X D57X	YA659	10-035c, 055c

(Step 006 continues)

(Step 006 continued)

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?
Y N

007

(Entry Point C)

Check if there is anything preventing the air flow of the indicated device (such as cables or paper). NOTE: If PCC K3 is indicated answer NO to this question.

Did you find anything preventing the air flow ?
Y N

008

Check if the indicated AMD starts to run when you power up the processing unit. NOTE: If PCC K3 is indicated (RRRR of D20X) check AMD107.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and see if the AMD starts to run.

Did the AMD start to run ?
Y N

009

Set the CE meter to measure the line ac voltage.

DANGER

THIS CONNECTOR HAS A HIGH VOLTAGE. BE CAREFUL WHEN YOU MEASURE NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF THE METER LEAD (TOOL).

To check if ac voltage is supplied to the device disconnect the ac line connector from the device and connect your CE meter to Pin 1 and Pin 3 in the connector on the end of the cable that goes back to the PCC. NOTE: If PCC K3 is

(Step 009 continues)

1 1 8
5 5 E
C D

(Step 009 continued)

indicated check AMD107.

Check if the meter indicates the ac line voltage for a few seconds when you power up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the CE meter for ac voltage indication.

Did the meter indicate the ac line voltage ?
Y N

010

Was the indication in Chart 1 PCC K3 (RRRR of D20X) ?
Y N

011

Is the indicated AMD located in the 01 frame ?
Y N

012

This is to check if PCC K3 picks.

For the next question observe if AMD102 starts to run when you power up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and check if AMD102 starts to run.

Did AMD102 start to run ?
Y N

8 8 8 7 5
F G H J K

013

(Entry Point G)

To check the +24Vdc output of PS101 perform the following:
Set the CE meter to measure +24Vdc.
Connect the CE meter to PS101 Connector 6 as follows:

PS101 CON 6 Pin 2 -- Positive lead (tool)
PS101 CON 6 Pin 3 -- Negative lead (tool)

The meter should indicate between +21Vdc and +27Vdc.

Did the meter indicate between +21Vdc and +27Vdc ?
Y N

014
To check the 'PICK PS101 K04' input to PS101 perform the following:
Set the CE meter to measure +5Vdc.
Connect the CE meter to PS101 Connector 8 as follows:

PS101 CON 8 Pin 4 -- Positive lead (tool).
Frame ---------- Negative lead (tool).

The meter should indicate less than +0.8Vdc.

Did the meter indicate less than +0.8Vdc ?
Y N

7 6
L M N

015
To check the 'PICK PS101 K04' output of the 01A-D2E2 card perform the following:
Set the CE meter to measure +5Vdc.
Connect the CE meter to the 01A-D2E2 card as follows:

01A-D2E2D05 -- Positive lead (tool).
Frame -------- Negative lead (tool).

The meter should indicate less than +0.8Vdc.

Did the meter indicate less than +0.8Vdc ?
Y N

016

Did you just exchange the 01A-D2E2 card ?
Y N

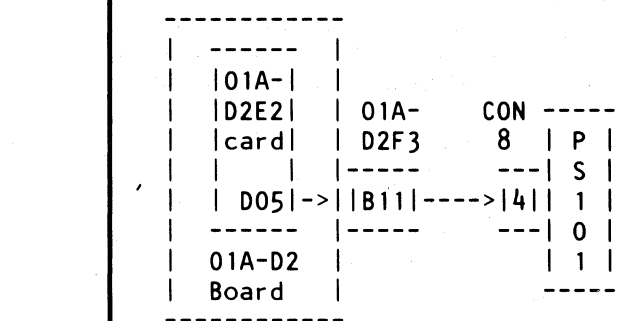
017
Exchange the 01A-D2E2 card.
Go To Map 1000, Entry Point R.

018
Problem is not corrected.
Go To Map 0001, Entry Point A.

6
P

019

The 'PICK PS101 K04' line from 01A-D2E2D05 (YA741) to PS101 Connector 8 Pin 4 is open. The following figure shows the pins and connectors in the line:



Using the figure, determine where the line to PS101 is failing. Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

020

Did you just exchange PS101 ?

Y N

021

Exchange PS101.

Go To Map 1000, Entry Point R.

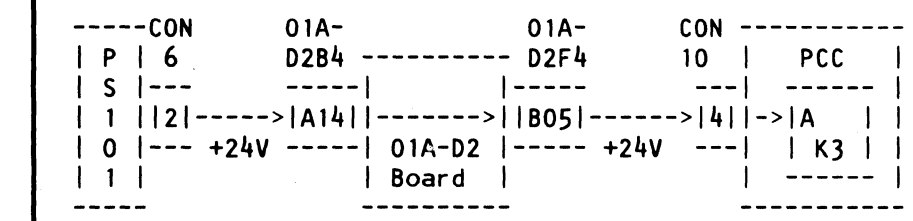
022

Problem is not corrected.

Go To Map 0001, Entry Point A.

023

The +24V line to PCC K3 is failing. The line starts at PS101 (ALD YA601) and goes through the 01A-D2 board to PCC K3 coil point A (ALD YA415). See the label on the PCC cover for a pin layout of PCC K3. The following figure shows the pins and connectors in the line.



Using this figure, find where the +24V is failing. Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

024

(Entry Point F)

DANGER

THE PCC BOX HAS A HIGH VOLTAGE. BE CAREFUL NOT TO TOUCH THE METAL PART OF ANY CABLE IN THE PCC BOX.

PCC K3 is good.

The AC line of the failing AMD is open. Find and repair the AC line. Use Chart 1 to get the connector number in the PCC box. See ALD YA411 and YA417 and MIM VOL13/16 Page 20-245c.
Go To Map 1000, Entry Point R.

025

This is to check if PCC K3 picks.

For the next question observe if AMD202 starts to run when you power up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and check if AMD202 starts to run.

Did AMD202 start to run ?

Y N

026

Go to Page 5, Step 013, Entry Point G.

027

Go to Page 7, Step 024, Entry Point F.

028

Go to Page 5, Step 013, Entry Point G.

029

Did you just exchange the indicated AMD ?

Y N

030

Exchange the indicated AMD.

Go To Map 1000, Entry Point R.

031

Problem is not corrected.

Go To Map 0001, Entry Point A.

032

To check the +24Vdc for the PCC K3 sense line, perform the following:

Set the CE meter to measure +24Vdc.

See the label on the PCC cover for a pin layout of PCC K3.

Connect the CE meter as follows (YA415) :

PCC K3 Pin 5 -- Positive lead (tool).

Frame --------- Negative lead (tool).

The meter should indicate between +21Vdc and +27Vdc.

Did the meter indicate between +21Vdc and +27Vdc ?

Y N

033

The line from PCC K3 coil point A to PCC K3 Pin 5 is failing. Repair or exchange the cable. See ALD YA415.

Go To Map 1000, Entry Point R.

034

To check the normally open point on PCC K3 perform the following:

Set the CE meter to measure +24Vdc.

See the label on the PCC cover for a pin layout of PCC K3.

Connect the CE meter as follows (YA415):

PCC K3 Pin 8 -- Positive lead (tool).

Frame --------- Negative lead (tool).

The meter should indicate less than +0.8Vdc.

Did the meter indicate less than +0.8Vdc ?

Y N

035

Exchange PCC K3.

Go To Map 1000, Entry Point R.

036

To check the operation of the normally open point on PCC K3 perform the following:

Keep the meter leads (tool) as before on PCC K3 Pin 8.

The meter should indicate between +21Vdc and +27Vdc for a few seconds when you power up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the CE meter for voltage indication.

Did the meter indicate between +21Vdc and +27Vdc ?

Y N

037

Exchange PCC K3.

Go To Map 1000, Entry Point R.

038

Does the ref code indicate PCC K3 (Chart 1) ?

Y N

039

Did you just exchange the indicated AMD's air flow sensor ?

Y N

040

Exchange the air flow sensor (AFS) of the indicated AMD.

Install the new AFS with the hole of the AFS aligned in the direction of the air flow so that the air flow from the AMD flows directly through the hole (NOTE: Exchange the AFS and bracket as a unit).

Go To Map 1000, Entry Point R.

1 3 R S

041

The sense card may be failing.

Use the RRRR field of the ref code and the following Chart 5 to determine the indicated sense card:

Chart 5

Ref Code RRRR	Device	Indicated Sense Card
D160 or D162	AMD107	01A-B2D2
D550 or D552	AMD202	01A-B2C2
D560 or D562	AMD102	01A-B2C2
D570 or D572	AMD201	01A-B2C2

Did you just exchange the indicated sense card ?

Y N

042

Exchange the indicated sense card.

Go To Map 1000, Entry Point R.

043

Is AMD107 the indicated failing AMD ?

Y N

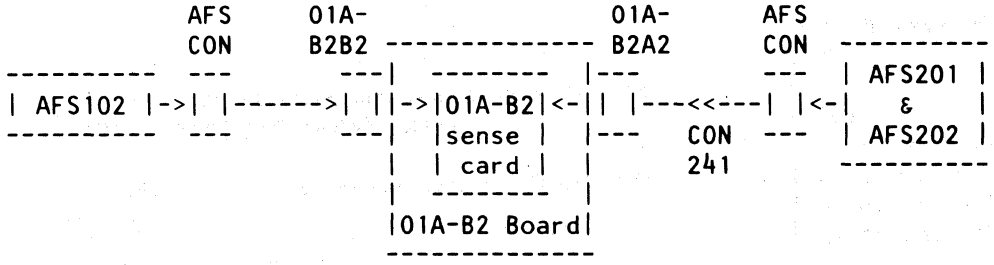
1 1 1 0 T U

044

The sense line of the AFS for the indicated AMD is failing.

The sense lines start at Pin 2 of the connector on the AFS of the indicated AMD (ALD YA418). The sense line for AFS102 goes through the 01A-B2B2 connector card to the 01A-B2C2 sense card (ALD YF131 and YF171). The sense lines for AFS201 and AFS202 go through Connector 241 (ALD YA659), and then through the 01A-B2B2 connector card to the 01A-B2C2 sense card (ALD YF131 and YF171).

The following figure shows these lines and connectors:



The following Chart 4 gives the pins for each sense line:

Chart 4

Ref Code RRRR	Device	Digital Sensor Number	AFS CON Pin	CON 241 Pin	01A-B2 Connector Card Pin	01A-B2 Sense Card Pin
D55X	AMD202	D55	2	9	01A-B2A2D02	01A-B2C2M05
D56X	AMD102	D56	2	---	01A-B2B2D04	01A-B2C2M07
D57X	AMD201	D57	2	7	01A-B2A2D06	01A-B2C2P07

Using this figure and chart and the ALDs, find and fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

045

To check the AFS107 sense line for continuity, perform the following:

Press 'POWER OFF' on the Operator Control Panel (OCP).

Set Primary Control Compartment (PCC) CB1 and CB2 to the OFF position.

Set the CE meter to measure ohms.

Unseat the 01A-B2S4 (serial number) card.

Disconnect the connector on the end of the AFS.

Check the sense line from the AFS connector to the input to the 01A-B2S4 (serial number) card and from the output of the 01A-B2S4 card to the input to the 01A-B2D2 sense card. See Chart 6 for the meter lead probing points.

NOTE: When connecting the meter lead to the AFS connector, connect the meter lead to the connector on the end of the cable that goes to the 01A-B2S4 (serial number) card; DO NOT connect the meter lead to the connector on the end of the AFS.

Chart 6

Indicated Sensor	Meter Lead Probing Points to Check for Continuity
AFS107	AFS CON Pin 2 to 01A-B2S4D06 and 01A-B2S4J02 to 01A-B2D2D09

Connect the meter leads to the points indicated by Chart 6 and check for continuity.

Did the meter indicate continuity for BOTH lines ?

Y N

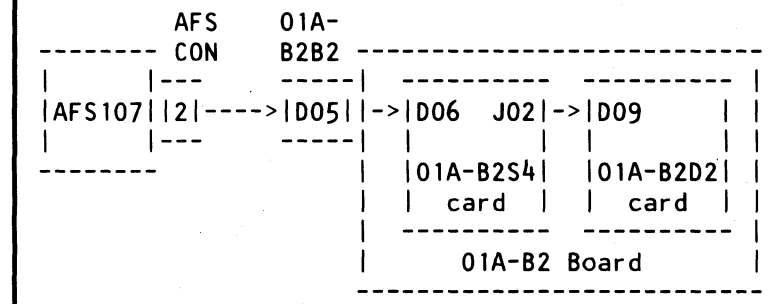
1 1
2 2
V W

046

The sense line is failing.

The line starts at Pin 2 of the connector on the end of AFS107 (ALD YA418). The line then goes through Pin D05 of the 01A-B2B2 connector card to Pin D06 on the 01A-B2S4 card. The line goes through the 01A-B2S4 card, leaves the card through Pin J02, and goes to Pin D09 on the 01A-B2D2 sense card (ALD YF121 and YF171).

The following figure shows the pins and connectors in this line:



Using this figure and the ALDs, find and fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

047

Did you just exchange the 01A-B2S4 card ?

Y N

048

Exchange the 01A-B2S4 card.

Go To Map 1000, Entry Point R.

049

Problem is not resolved.

Go To Map 0001, Entry Point A.

050

To check the PCC K3 pick sense input to the sense card perform the following:

Set the CE meter to measure +5Vdc.

Connect the CE meter as follows:

01A-B2D2M03 -- Positive lead (tool).
01A-B2D2P08 -- Negative lead (tool).

The meter should indicate between +2.4Vdc and +5.5Vdc for a few seconds when you power up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the CE meter for voltage indication.

Did the meter indicate between +2.4Vdc and +5.5Vdc ?

Y N

1 1
5 4
X Y

051

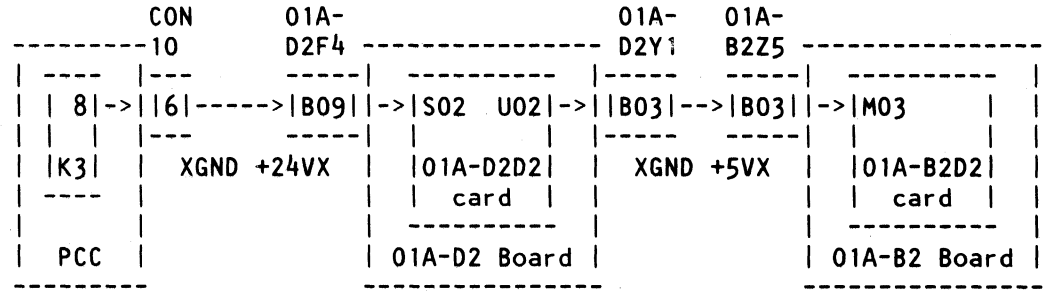
The 'K3 BLOWER SENSE' line is failing.

The sense line starts at PCC K3 Pin 8 (ALD YA415). NOTE: See the label on the PCC cover for a pin layout of PCC K3. The line goes through PCC Connector 10 Pin 6 and enters the 01A-D2 board through Pin B09 of the 01A-D2F4 connector card. On the 01A-D2 board, the line enters the 01A-D2D2 card at Pin S02, goes through the card, and leaves the 01A-D2D2 card at Pin U02. The line leaves the 01A-D2 board through Pin B03 of the 01A-D2Y1 connector card, and enters the 01A-B2 board through Pin B03 of the 01A-B2Z5 connector card, and goes to Pin M03 on the 01A-B2D2 sense card (ALD YF121 and YF171).

NOTE: The active level for the sense line is ground (GND). The inactive level from PCC K3 to the 01A-D2D2 card is +24Vdc. In the 01A-D2D2 card the line goes through a voltage divider; from the output of the 01A-D2D2 card to the sense card the inactive level is +5Vdc. These levels are shown on the following figure as XGND +24VX and XGND +5VX.

NOTE: If PCC K3 is picked, the INACTIVE level should be present.

The following figure shows this line:



Using this figure, find where the PCC K3 BLOWER SENSE line is failing. Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

052

Did you just exchange the 01A-B2D2 card ?

Y N

053
Exchange the 01A-B2D2 card.
Go To Map 1000, Entry Point R.

054
Problem is not resolved.
Go To Map 0001, Entry Point A.

055
Ensure the path for a correct air flow.
Go To Map 1000, Entry Point R.

056

Was the indication in Chart 1 PCC K3 ?

Y N

057
Compare (visually and by sound) the operation of the indicated AMD with a similar AMD on the same machine.

Does the indicated AMD seem about the same ?

Y N

058
Repair or exchange the indicated AMD.
Go To Map 1000, Entry Point R.

059
Check the AFS of the indicated AMD for dirt or air flow obstruction.
Check the air flow path of the indicated AMD for obstruction.

Did you find any failure ?

Y N

060

DANGER

THIS CONNECTOR HAS A HIGH VOLTAGE. BE CAREFUL WHEN YOU MEASURE NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF THE METER LEAD (TOOL).

Check for poor or loose connection of the ac line from PCC K3 to the indicated AMD. See ALD YA411 and YA417 and MIM VOL 13/16 Page 20-245c. Move and lightly hit the cables and connectors in the indicated ac line to try and generate the fault again.

Did the failure occur again ?

Y N

061

(Entry Point J)

The failure was an intermittent failure.
Chart A gives a FRU list for each ref code.

Chart A

Ref CODE RRRR	Indicated FRUs (1)	(2)	(3)	(4)
D16X	AFS107	AMD107	01A-B2S4	
D20X	01A-D2D2	01A-D2E2	PCCK3	PS101
D55X	AFS202	AMD202		
D56X	AFS102	AMD102		
D57X	AFS201	AMD201		

Make a note of the indicated FRU's using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

062

Go to Page 17, Step 066, Entry Point Y.

063

Repair the failure.

Go To Map 1000, Entry Point R.

064

DANGER

THE PCC BOX HAS A HIGH VOLTAGE. BE CAREFUL NOT TO TOUCH THE METAL PART OF ANY CABLE IN THE PCC BOX.

Check for poor or loose connection of the following:

PCC K3 pick sense line (See step 051 in this MAP for a figure and pin list of the line).
+24Vdc supply to PCC K3 (See step 023 in this MAP for a figure and pin list of the line).
'PICK PS101 K04' line (See step 019 in this MAP for a figure and pin list of the line).

Move and lightly hit the cables and connectors of these lines to try and generate the failure again. Also hit lightly in the area of PCC K3.

Did the failure occur again ?

Y N

065

Go to Page 16, Step 061, Entry Point J.

A
C

066

(Entry Point Y)

If the UU field of the ref code displayed on the screen is not 1X, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1X, check if the RRRR field is listed in Chart 1 in step 004. If the RRRR field is not listed in Chart 1, GO TO MAP 1000, ENTRY POINT B.

IF THE RRRR FIELD OF THE REF CODE IS D200 OR D202:

Check for an open in the PCC K3 pick sense line, +24Vdc supply line to PCC K3, and 'PICK PS101 K04' line.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

IF THE RRRR FIELD OF THE REF CODE IS D160, D162, D550, D552, D560, D562, D570, OR D572:

Check for an open in the ac line of the indicated AMD.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

(Step 066 continues)

(Step 066 continued)

Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?
Y, N

067
Go to Page 16, Step 061, Entry Point J.

068

Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

069

The failure is an intermittent.
Go to Page 2, Step 006, Entry Point B.

MAP CODE 1171CXXX FIX 0006

Air Flow Sensor

PAGE 1 OF 13

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	G	4	008

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	004	0000	A
5	016	0001	A
6	018	0001	A
7	023	0001	A
9	031	0001	A
12	040	0001	A
2	006	1000	B
12	044	1000	B
13	050	1000	I
4	008	1000	R
4	010	1000	R
5	015	1000	R
6	019	1000	R
7	022	1000	R
12	046	1000	R
8	026	1000	R
8	028	1000	R
9	030	1000	R
11	033	1000	R
12	035	1000	R
12	037	1000	R
12	039	1000	R
13	051	1161	K

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Check AMD102 on the 01A gate.
(Step 001 continues)

(Step 001 continued)

Is AMD102 running while the PARTIAL POWER UP/DOWN screen is displayed ?
Y N

002
Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen)?
Y N

003

Is the UU field of the ref code displayed on the screen 1x ?
Y N

004
This is not a power problem.
Go To Map 0000, Entry Point A.

005

Is the RRRR field of the displayed ref code 1712 ?
Y N

006
The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.
Go To Map 1000, Entry Point B.

1 1
3 3
A B C

C

SEQ356C MAP 1171-2

007
The ref code indicates that one of the air flow sensors (AFS) is failing.

To determine the failing AFS, perform the following:

Get the ERROR STATUS DISPLAY using the following procedure:

Holding the ALT key on the operator control panel (OCP), press the PF8 key twice.

You should see the ERROR STATUS DISPLAY on the screen (For more information, or if you did not get the ERROR STATUS DISPLAY screen, see MIM VOL 13/16 Page 20-080c).

The address of any failing AFS is recorded on the ERROR BITS: BITS/ADDR line at the bottom of the ERROR STATUS DISPLAY. To determine the indicated failing AFS, use the recorded failing AFS address and the following Chart 1:

Chart 1

ERROR BITS: BITS/ADDR	Indicated AFS
04B1	AFS101
01B1	AFS102
0183	AFS107
80B3	AFS201
02B1	AFS202
1081	AFS301
4081	AFS302
5081	AFS301 & AFS302

NOTE: If more than one AFS is indicated, use any one indicated AFS as the indicated failing AFS.

NOTE: AFS301 and AFS302 are on the Channel To Channel Adapter (CTCA). The CTCA is a feature.

The cause of the failure may be one of the following:

1) Failing AFS
2) Failing AFS sense line
3) AFS out of alignment
4) Failing +24Vdc to AFS
5) Failing 01A-B2 board

(Step 007 continues)

PAGE 3 OF 13

(Step 007 continued)
6) Failing 01A-B2C2, 01A-B2D2, or 01A-B2S4 card.

Chart 2 gives a list of possible failing FRUs, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

Chart 2

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
AFS102	1712	YA417 YA418	10-035c, 050c 20-245c
AFS107	1712	YA417 YA418	10-035c, 040c 20-245c
AFS201	1712	YA417 YA418	10-035c, 055c 20-245c
AFS202	1712	YA417 YA418	10-035c, 060c 20-245c
AFS301	1712	YA417 YA418	10-035c, 061 20-245c
AFS302	1712	YA417 YA418	10-035c, 061 20-245c
01A-B2 board	1712		10-035c, 050c 20-211c, 230c
01A-B2C2 and 01A-B2D2 card	1712		10-035c, 050c 14-105f 20-225c, 230c, 235c
01A-B2S4 card	1712 (AFS107, AFS301, AFS302 only)		10-035c 14-105f, 310 VOL 17 Page 34-170
Connector 241	1712	YA659	10-035c, 055c

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD YF171 when following sense and other lines into the 01A-B2 board.

Some of the AFS are features they might not be in this system. Check if the indicated AFS is in this system.
(Step 007 continues)

(Step 007 continued)

Is the indicated AFS in this system ?
Y N

008

(Entry Point G)

The diskette is featured for a wrong power group or has included the Channel To Channel Adapter (CTCA). To correct the power group or disable the CTCA in the SYSTEM CONFIGURATION screen, perform the following:

1. Press MODE SELECT key
2. Key in FS
3. Press ENTER key. The SYSTEM CONFIGURATION screen should be displayed.

Ensure that there is an __ (underscore) next to 'CHANNEL TO CHANNEL:' and also ensure that the number next to 'POWER GROUP:' is correct using the MIM, VOL 13/16, Section 14, 'SYSTEMS CONFIGURATION', then press the ENTER key.

To IML press POWER ON key on the operator control panel (OCP).
Go To Map 1000, Entry Point R.

009

Check if the hole of the AFS is in the direction of air flow to ensure that the air flow from the AMD flows directly through the hole.

Is the AFS in the correct alignment ?
Y N

010

Align the hole of the AFS in the direction of air flow so that the air flow from the AMD flows directly through the hole.
Go To Map 1000, Entry Point R.

D

011

Do you have a spare AFS ?
Y N

012

(Entry Point B)

To check the +24Vdc input to the indicated AFS, perform the following:
Set the CE meter to measure +24Vdc.
Locate the connector which is at the end of the failing AFS.
Connect the CE meter's positive lead (tool) to the red wire and the negative meter lead (tool) to the black wire of that connector without disconnecting the connector.
The meter should indicate between +21Vdc and +27Vdc.

Does the meter indicate between +21Vdc and +27Vdc ?
Y N

1
2 6 5
E F G

013

Set the CE meter to measure +24Vdc.

To check the +24Vdc output from the 01A-B2 board, perform the following:

Connect the meter leads to the 01A-B2 board as indicated in the following Chart 3:

Chart 3

Sensor	01A-B2 Board Probing Point (+)	(-)
AFS102	01A-B2B4B12	01A-B2B4D08
AFS107	01A-B2B4B12	01A-B2B4D08
AFS201	01A-B2A2B02	01A-B2A2D08
AFS202	01A-B2A2B02	01A-B2A2D08
AFS301	01A-B2A4D13	01A-B2A4D08
AFS302	01A-B2A4D13	01A-B2A4D08

The meter should indicate between +21Vdc and +27Vdc.

Does the meter indicate between +21Vdc and +27Vdc ?

Y N

014

Did you just exchange the 01A-B2 board ?

Y N

015

Exchange the 01A-B2 board.

Go To Map 1000, Entry Point R.

016

Problem is not resolved.

Go To Map 0001, Entry Point A.

017

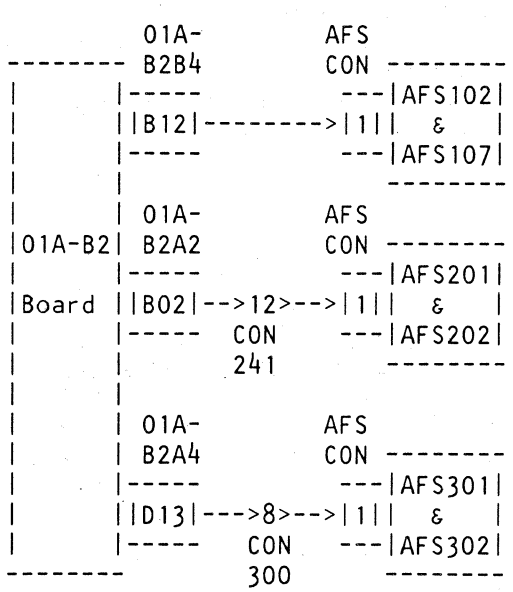
The +24Vdc line to the indicated AFS is failing.

The +24Vdc line for AFS102 and AFS107 starts at the 01A-B2B4 connector card Pin B12 (ALD YF151) and goes to Pin 1 of the connector on AFS102 and AFS107 (ALD YA418).

The +24Vdc line for AFS201 and AFS202 starts at the 01A-B2A2 connector card Pin B02 (ALD YF151), goes through Connector 241 Pin 12 (ALD YA659), and then to Pin 1 of the connector on AFS201 and AFS202 (ALD YA418).

The +24Vdc line for AFS301 and AFS302 starts at the 01A-B2A4 connector card Pin D13 (ALD YF151), goes through Connector 300 Pin 8 (ALD YA659), and then to Pin 1 of the connector on AFS301 and AFS302 (ALD YA418).

The figure at the right shows these lines and connectors------>



Using this figure and the ALDs, find where the +24Vdc is failing.

Did you find the failure ?

Y N

018

Problem is not corrected.

Go To Map 0001, Entry Point A.

019

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

020

Set the CE meter to measure 3Vdc.

Connect the positive meter lead to the yellow wire of the same connector and the negative meter lead to the black wire of the same connector.

When the air moving device (AMD) has stopped the meter should indicate less than +0.5Vdc.

Does the meter indicate less than +0.5Vdc ?

Y N

021

Did you just exchange the indicated AFS ?

Y N

022

The indicated AFS is failing.

Exchange the indicated AFS.

Install the new AFS with the hole of the AFS aligned in the direction of the air flow so that the air flow from the AMD flows directly through the hole (NOTE: Exchange the AFS and bracket as a unit).

Go To Map 1000, Entry Point R.

023

(Entry Point C)

The new AFS is probably failing also. If you have another one, exchange it again and power up. If you get the same ref code, call for aid.

Go To Map 0001, Entry Point A.

024

Is the indicated AFS either AFS107, AFS301, or AFS302 ?

Y N

1 0
L M

025

To check the sense line for continuity, perform the following:

Press 'POWER OFF' on the Operator Control Panel (OCP).

Set Primary Control Compartment (PCC) CB1 and CB2 to the OFF position.

Set the CE meter to measure ohms.

Disconnect the connector on the end of the AFS.

Connect one meter lead to the yellow wire (Pin 2) in the connector. NOTE: Connect the meter lead to the connector on the end of the cable that goes to the sense card; DO NOT connect the meter lead to the connector on the end of the AFS.

Connect the other meter lead to the input to the sense card on the 01A-B2 board as indicated by the following Chart 4 and check for continuity:

Chart 4

Indicated Sensor	01A-B2 Sense Card Pin
AFS102	01A-B2C2M07
AFS201	01A-B2C2P07
AFS202	01A-B2C2M05

Did the meter indicate continuity ?

Y N

8 8
N P

026

The sense line is failing.

The sense lines start at Pin 2 of the connector on the end of the indicated AFS (ALD YA418).

The sense line for AFS102 goes through the 01A-B2B2 connector card to the 01A-B2C2 sense card (ALD YF131 and YF171).

The sense lines for AFS201 and AFS202 go through Connector 241 (ALD YA659), and then through the 01A-B2A2 connector card to the 01A-B2C2 sense card (ALD YF131 and YF171).

The figure at the right shows these lines and connectors------>

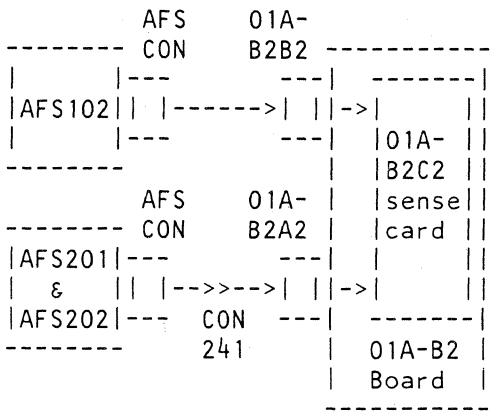


Chart 5 gives the pins for each sense line:

Chart 5

Sensor	AFS CON Pin	Connector 241 or 300 Pin	01A-B2 Connector Card Pin	01A-B2 Sense Card Pin
AFS102	2	---	01A-B2B2D04	01A-B2C2M07
AFS201	2	CON 241 Pin 7	01A-B2A2D06	01A-B2C2P07
AFS202	2	CON 241 Pin 9	01A-B2A2D02	01A-B2C2M05

Using this figure and chart and the ALDs, find and fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

027

Did you just exchange the indicated AFS ?

Y N

028

Exchange the indicated AFS.

Install the new AFS with the hole of the AFS aligned in the direction of the air flow so that the air flow from the AMD flows directly through the hole (NOTE: Exchange the AFS and bracket as a unit).

Go To Map 1000, Entry Point R.

029

Did you just exchange the 01A-B2C2 sense card ?

Y N

030

Exchange the 01A-B2C2 sense card.

Go To Map 1000, Entry Point R.

031

Problem is not resolved.

Go To Map 0001, Entry Point A.

032

To check the sense line for continuity, perform the following:

Press 'POWER OFF' on the Operator Control Panel (OCP).

Set Primary Control Compartment (PCC) CB1 and CB2 to the OFF position.

Set the CE meter to measure ohms.

Unseat the 01A-B2S4 (serial number) card.

Disconnect the connector on the end of the AFS.

Check the sense line from the AFS connector to the input to the 01A-B2S4 (serial number) card and from the output of the 01A-B2S4 card to the input to the 01A-B2D2 sense card. See Chart 6 for the meter lead probing points.

NOTE: When connecting the meter lead to the AFS connector, connect the meter lead to the connector on the end of the cable that goes to the 01A-B2S4 (serial number) card; DO NOT connect the meter lead to the connector on the end of the AFS.

Chart 6

Indicated Sensor	Meter Lead Probing Points to Check for Continuity
AFS107	AFS CON Pin 2 to 01A-B2S4D06 and 01A-B2S4J02 to 01A-B2D2D09
AFS301	AFS CON Pin 2 to 01A-B2S4B04 and 01A-B2S4D10 to 01A-B2D2G06
AFS302	AFS CON Pin 2 to 01A-B2S4B02 and 01A-B2S4D07 to 01A-B2D2J06

Connect the meter leads to the points indicated by Chart 6 and check for continuity.

Did the meter indicate continuity for BOTH lines ?

Y N

1 1
2 1
R S

033

The sense line is failing.

The sense lines start at Pin 2 of the connector on the end of the indicated AFS (ALD YA418).

The sense line for AFS107 goes through the 01A-B2B2 connector card and the 01A-B2S4 serial number card to the 01A-B2D2 sense card (ALD YF121 and YF171).

The sense lines for AFS301 and AFS302 go through Connector 300 (ALD YA671), then through the 01A-B2A4 connector card and the 01A-B2S4 serial number card to the 01A-B2D2 sense card (ALD YF121 and YF171).

The following figure shows these lines and connectors:

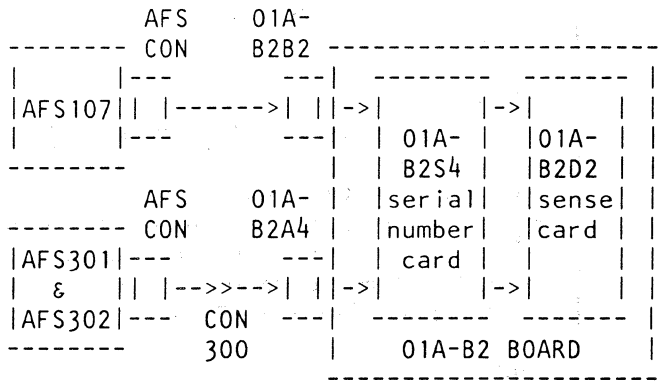


Chart 7 gives the pins for each sense line:

Chart 7

Sensor	AFS CON Pin	CON 300 Pin	01A-B2 Connector Card Pin	01A-B2S4 Serial Number Card Pin (in)	01A-B2S4 Serial Number Card Pin (out)	01A-B2 Sense Card Pin
AFS107	2	---	01A-B2B2D05	D06	J02	01A-B2D2D09
AFS301	2	7	01A-B2A4D02	B04	D10	01A-B2D2G06
AFS302	2	10	01A-B2A4B11	B02	D07	01A-B2D2J06

Using this figure and chart and the ALDs, find and fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

034

Did you just exchange the indicated AFS ?

Y N

035

Exchange the indicated AFS.

Install the new AFS with the hole of the AFS aligned in the direction of the air flow so that the air flow from the AMD flows directly through the hole (NOTE: Exchange the AFS and bracket as a unit).

Go To Map 1000, Entry Point R.

036

Did you just exchange the 01A-B2S4 card ?

Y N

037

Exchange the 01A-B2S4 card.

Go To Map 1000, Entry Point R.

038

Did you just exchange the 01A-B2D2 sense card ?

Y N

039

Exchange the 01A-B2D2 sense card.

Go To Map 1000, Entry Point R.

040

Problem is not resolved.

Go To Map 0001, Entry Point A.

041

Did you just exchange the indicated AFS ?

Y N

T U

042

Exchange the failing AFS.

Install the new AFS with the hole of the AFS aligned in the direction of the air flow so that the air flow from the AMD flows directly through the hole (NOTE: Exchange the AFS and bracket as a unit).

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen) ?

Y N

043

Did you get the same ref code ?

Y N

044

Check if you have set PCC CB1 and CB2 to the ON position.

Also check the rework.

The failure could be a double failure case. If you cannot find the failure, use the displayed ref code to determine and repair the failure.

Go To Map 1000, Entry Point B.

045

Go to Page 4, Step 012, Entry Point B.

046

The AFS you removed was failing.

Go To Map 1000, Entry Point R.

047

Did you check the +24Vdc supply to the indicated AFS ?

Y N

048

Go to Page 4, Step 012, Entry Point B.

049

Go to Page 7, Step 023, Entry Point C.

050

The failure was an intermittent.

Go To Map 1000, Entry Point I.

051

Either PCC K3 is failing (The contacts may be welded closed) or the pick line to PCC K3 is failing.

For a figure of the 'PICK PCC K3' line,

Go To Map 1161, Entry Point K.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
6	018	0001	A
6	024	0001	A
2	005	1000	B
7	029	1000	I
4	009	1000	R
4	010	1000	R
5	012	1000	R
5	015	1000	R
6	017	1000	R
6	023	1000	R
6	025	1000	R
6	027	1000	R
8	032	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Power on the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen)
?

Y N

8 2
A B

MODEL GROUP 2,
FERRO POWER

002

Is the UU field of the ref code displayed on the screen 1X ?
Y N

003
This is not a power problem.
Go To Map 0000, Entry Point A.

004

Is the RRRR field of the displayed ref code 1722 ?
Y N

005
The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.
Go To Map 1000, Entry Point B.

006

(Entry Point B)

The indicated failure is that either there is no ac voltage to TR201 or the fuse(s) in TR201A, B, & C are failing.

NOTE: TR201 is a matched set of three TRs: TR201 A, TR201 B, and TR201 C.

The cause of the failure may be one of the following:

1) Failing TR201 A, B, or C
2) Failing PS201
2) Failing IPS201
8) Failing ac voltage supply line to the TR201

Chart 1 gives a list of possible failing FRUs, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

See Chart 1 on the next page.

(Step 006 continues)

(Step 006 continued)

Chart 1

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
IPS board (02A-A1 or 02A-A2)	1722	YA620 YA630	10-035c, 060c 20-185c, 190c, 200c, and 385c
TR/PS201	1722	YA605 YA607	10-035c, 055c 20-155c, 165c
PCC CB2	1722	YA411	10-035c, 045c
PCC K4	1722	YA411	10-035c, 045c
PCC CON 57	1722	YA411	10-035c, 045c
TB205	1722	YA419	10-035c, 055c

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

007

Check if TR201A, B, & C's fuses are good.

Are all the fuses good ?

Y N

008

Did you just exchange the failing fuse(s) ?

Y N

6 4 4 4
C D E F

009

Exchange the failing fuse(s).

Go To Map 1000, Entry Point R.

010

There is a short circuit in one of the following:

1. IPS201
2. Cables from PS201 to IPS201
3. PS201
4. TR201 A, B, or C

To find the failure, perform the following:

One at a time, disconnect the bulk voltage output FDS cables of PS201 for the -1.5V and -4.25V levels.

The -1.5V cables are located from PS201 TB2 Pin 1 through PS201 TB2 Pin 8.

The -4.25V cables are located from PS201 TB1 Pin 1 through PS201 TB1 Pin 8.

See ALD YA605 and MIM VOL 13/16 Pages 10-055c and 20-165c.

After disconnecting each output FDS cable, try to power up and then check the fuse(s). When the fuse(s) does not fail during power up, the short circuit is in the voltage level you just disconnected. Find and fix the failure.

If you disconnect all the output connectors of PS201 and the fuse(s) still fail while powering up, disconnect the output connectors of the TR(s) with the failing fuse(s). Power up. If the fuse(s) still fails, exchange the TR(s) with the failing fuse (NOTE: TR201 is a matched set and MUST be exchanged as a set of three TRs). If the fuse does not fail, exchange PS201.

Go To Map 1000, Entry Point R.

011

Set the CE meter to measure the ac line voltage.

DANGER

THIS CONNECTOR HAS A HIGH VOLTAGE. BE CAREFUL WHEN YOU MEASURE NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF THE METER LEAD (TOOL).

Perform the following action on TR201 A first. If TR201 A indicates the ac voltage check TR201 B and then TR201 C.

Locate TR201 Connector 1 and disconnect it.

NOTE: Connector 1 is located on top of the air barrier above TR201. Connect the meter leads to the connector on the frame. DO NOT connect the leads to the connector on the end of the cable that goes to the TR.

Connect your CE meter to TR201 Connector 1 Pins 1 and 3.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for ac line voltage indication.

Did the meter indicate ac line voltage on TR201A, B and C ?

Y N

H
4

MAP CODE 1172CXXX

PAGE 5 OF 8

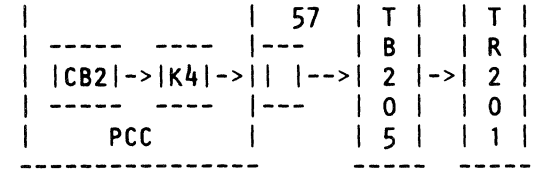
012

DANGER

THIS CONNECTOR HAS A HIGH VOLTAGE. BE CAREFUL WHEN YOU MEASURE NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF THE METER LEAD (TOOL).

Starting with ALD page YA411 find and repair where the ac voltage is failing. The ac voltage comes from Primary Control Compartment (PCC) CB2 (ALD YA411), goes through PCC K4 (ALD YA411) and leaves the PCC through PCC Connector 57 (ALD YA411). The ac voltage line then goes through TB205 (ALD YA419) to TR201 A, B, and C (ALD YA605). NOTE: Some of the pins in the ac voltage line depend on ac line voltage and frequency; see ALDs for pins in the ac voltage line.

See the following for a figure of the ac voltage line:



Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

G
4

SEQ358C MAP 1172-5

013

Connect the connector you disconnected.

Set the CE meter to measure 15Vac.

Perform the following action on TR201 A first. If TR201 A indicates the ac voltage check TR201 B and then TR201 C.

Check the ac output voltage of TR201:

Locate and disconnect TR201 Connector 2.

Connect your CE meter to TR201 Connector 2 Pins 1 and 2.

When the machine is powering up, the meter should indicate between 8Vac and 13Vac.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for ac voltage indication.

Did the meter indicate between 8Vac and 13Vac on TR201 A, B and C Connector 2 ?
Y N

014

(Entry Point G)

Power down by pressing 'POWER OFF' on the OCP.

Set PCC CB1 and CB2 to the OFF position.

The ac line inputs of TR201 may be connected for the wrong voltage or frequency.

Use ALD YA015 and YA605 to check the wiring connections on TR201.

NOTE: Also check the wiring connections on TB205 (ALD YA419).

Are TR201 and TB205 connected correctly ?
Y N

015

Using ALD YA015, YA419, and YA605, connect TR201 and TB205 correctly.
Go To Map 1000, Entry Point R.

016

Have you just exchanged TR201 ?
Y N

017
Exchange all three TR201s (The TRs are a matched set).
Go To Map 1000, Entry Point R.

018
Problem is not resolved.
Go To Map 0001, Entry Point A.

019
Set the CE meter to measure 15Vac.
Perform the following action on TR201 A first. If TR201 A indicates the ac voltage check TR201 B and then TR201 C.
Check the ac output voltage of TR201:
Locate and disconnect TR201 Connector 3.

Connect your CE meter to TR201 Connector 3 Pins 1 and 2 ON THE TR.

When the machine is powering up, the meter should indicate between 5Vac and 9Vac.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for ac voltage indication.

Did the meter indicate between 5Vac and 9Vac on TR201A, B and C ?
Y N

020
Go to Page 5, Step 014, Entry Point G.

021
Reconnect all the connectors you disconnected.
Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen) ?
Y N

022

Did you just exchange PS201 ?
Y N

023
Exchange PS201.
Go To Map 1000, Entry Point R.

024
Problem is not resolved.
Go To Map 0001, Entry Point A.

025
Probably there was a loose connection in one or more of the connectors you disconnected and reconnected.
Go To Map 1000, Entry Point R.

026
Power down the machine by pressing 'POWER OFF' on the OCP.
Set PCC CB1 and CB2 to the OFF position.
The ac line inputs of TR201 may be connected for the wrong voltage or frequency.
Use ALD YA015 and YA605 to check the wiring connections on TR201.
NOTE: Also check the wiring connections on TB205 (ALD YA419).

Are TR201 and TB205 connected correctly ?
Y N

027
Using ALD YA015, YA419, and YA605, connect TR201 and TB205 correctly.
Go To Map 1000, Entry Point R.

028

Reconnect any cables that are disconnected.
Set PCC CB1 and CB2 to the ON position.
Press 'POWER ON' on the CE Panel.
When the PARTIAL POWER UP/DOWN screen is displayed, power up the processing unit by entering 00 01.

NOTE: If the machine fails to power up, GO TO STEP 030 ENTRY POINT Z in this MAP.

DANGER

THE PCC BOX HAS A HIGH VOLTAGE. BE CAREFUL NOT TO TOUCH THE METAL PART OF ANY CABLE IN THE PCC BOX.

Check the ac line from the PCC (ALD page YA417) to TR201 (ALD page YA605) for poor or loose connection.
See step 012 in this MAP for a figure of this line.
Try to generate the failure again by moving and lightly hitting the cables and connectors.

Did the failure occur again ?

Y N

N P

029

(Entry Point Y)

The failure was an intermittent failure.
Chart A gives a FRU list for each ref code.
NOTE: TR201 A, B, and C are a matched set and are exchanged as a set.

Chart A

Ref Code RRRR	Indicated FRUs
1722	TR201 A, B, & C

Make a note of the indicated FRUs using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

030

(Entry Point Z)

If the UU field of the ref code displayed on the screen is not 1X, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1X, check the RRRR field. If the RRRR field is NOT 1722, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is 1722, check for an open in the ac line between PCC CB2 and TR201.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

(Step 030 continues)

(Step 030 continued)

Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated sense line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?

Y N

031

Go to Page 7, Step 029, Entry Point Y.

032

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

033

The failure is an intermittent.

Go to Page 2, Step 006, Entry Point B.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	B	2	006

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
5	013	0001	A
6	025	0001	A
2	005	1000	B
7	029	1000	I
4	009	1000	R
4	010	1000	R
5	014	1000	R
6	020	1000	R
6	022	1000	R
6	024	1000	R
6	027	1000	R
7	032	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Power on the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen)
?

Y N

7 2
A B

MODEL GROUP 2,
FERRO POWER

002

Is the UU field of the ref code displayed on the screen 1X ?
Y N

003
This is not a power problem.
Go To Map 0000, Entry Point A.

004

Is the displayed RRRR field 1732 ?
Y N

005
The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.
Go To Map 1000, Entry Point B.

006

(Entry Point B)

The indicated failure is that either there is no ac voltage to TR202 or the fuse in TR202 is failing.
The cause of the failure may be one of the following:

1) Failing TR202
2) Failing PS201
2) Failing IPS201
8) Failing ac voltage supply line to the TR202

Chart 1 gives a list of possible failing FRUs, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

See Chart 1 on the next page.

(Step 006 continues)

(Step 006 continued)

Chart 1

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
IPS board (02A-A1 or 02A-A2)	1732	YA620 YA630	10-035c, 060c 20-185c, 190c, 200c, and 385c
TR202	1732	YA607	10-035c, 055c 20-155c, 165c
PS201	1732	YA605 YA607	10-035c, 055c 20-155c, 165c
PCC CB2	1732	YA411	10-035c, 045c
PCC K4	1732	YA411	10-035c, 045c
PCC CON 57	1732	YA411	10-035c, 045c
TB205	1732	YA419	10-035c, 055c

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

007

Check if TR202's fuse is good.

Is the fuse good ?

Y N

008

Have you just exchanged TR202's fuse ?

Y N

6 4 4 4
C D E F

009

Exchange TR202's fuse.

Go To Map 1000, Entry Point R.

010

There is a short circuit in one of the following:

1. IPS201
2. Cables from PS201 to IPS201
3. PS201
4. TR202

To find the failure, perform the following:

One at a time, disconnect the bulk voltage output FDS cables of PS201 for the -2.2V, +6V, and +4.25V levels.

The -2.2V cables are located at PS201 TB1 Pin 9 through PS201 TB1 Pin 12.

The +4.25V cables are located at PS201 TB2 Pin 9 through PS201 TB2 Pin 12.

The +6V cable is located at PS201 Connector 1.

See ALD YA607 and MIM VOL 13/16 Pages 10-055c and 20-165c.

After disconnecting each output FDS cable, try to power up and then check the fuse(s). When the fuse(s) does not fail during power up, the short circuit is in the voltage level you just disconnected. Find and fix the failure.

If you disconnect all the output connectors of PS201 and the fuse still fails while powering up, disconnect the output connectors of TR202 Power up. If the fuse still fails, exchange TR202. If the fuse does not fail, exchange PS201.

Go To Map 1000, Entry Point R.

011

DANGER

THIS CONNECTOR HAS A HIGH VOLTAGE. BE CAREFUL WHEN YOU MEASURE NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF THE METER LEAD (TOOL).

Locate TR202 connector 1 and disconnect it. Connector 1 is on the frame.

Set the CE meter to measure the ac line voltage.

Connect your CE meter to TR202 connector P1 (on the frame) pins 1 and 2.

Check if the meter indicates the ac line voltage after powering up the processing unit. NOTE: The meter may not be fast enough to indicate the voltage, it may only start to indicate the voltage before the machine powers down.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for ac voltage indication.

Did the meter indicate the ac line voltage ?

Y N

012

DANGER

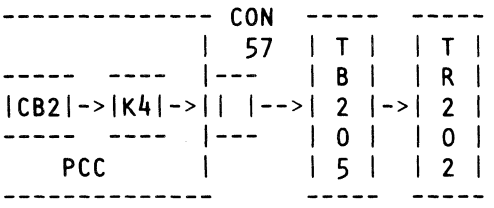
THE PCC BOX HAS A HIGH VOLTAGE. BE CAREFUL WHEN YOU MEASURE NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF ANY CABLE IN THE PCC BOX.

(Entry Point D)

The 'PWR LINE 1 PH TB205 TO TR206' ac line to TR202 is failing.

The line starts at PCC K4 L1 and L3 (ALD YA411) and goes through PCC Connector 57 Pins 1 and 3 (ALD YA411) to TB205 Pins 1 and 3 (ALD YA419). The output pins from TB205 depend on line voltage and frequency; see ALD YA419 for these pins. The ac to TR202 goes from TB205 to TR202 Connector 1. The input pins to TB205 depend on line voltage and frequency; see ALD YA607 for these pins.

The following figure shows these lines and connectors:



Use this figure and the ALDs to find where the ac line is failing.

Did you find the failure ?

Y N

013

Problem is not corrected.

Go To Map 0001, Entry Point A.

014

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

015

Connect the connector you disconnected.

Set the CE meter to measure 200Vac.

DANGER

THE PCC BOX HAS A HIGH VOLTAGE. BE CAREFUL WHEN YOU MEASURE NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF ANY CABLE IN THE PCC BOX.

Locate Primary Control Compartment (PCC) Contactor K4.

Ensure PCC CB2 is set ON.

Connect the meter to L3 and T3 on PCC K4 and observe the meter for voltage indication.

Does the meter indicate more than 75Vac ?

Y N

016

Go to Step 012, Entry Point D.

017

Set the CE meter to measure 200Vac.

Ensure PCC CB2 is set ON.

Connect the meter to L1 and T1 on PCC K4 and observe the meter for voltage indication.

Does the meter indicate more than 75Vac ?

Y N

018

Go to Step 012, Entry Point D.

019

Press 'POWER OFF' on the OCP.

Set PCC CB1 and CB2 to the OFF position.

Using VOL 13/16, Section 12, 'Removal/Replacements' in the MIM, remove TR202.

Using ALD YA015 and YA607, determine the correct pins on TR202 TB1 for the ac voltage input to TR202.

Check if the ac voltage input line is connected to the correct pins.

NOTE: Also check the wiring connections on TB205 (ALD YA419).

Is the ac line connected correctly ?

Y N

020

Connect the ac line correctly.

Reinstall TR202. Connect any connectors you disconnected.

Go To Map 1000, Entry Point R.

021

Set the CE meter to measure ohms.

Check continuity of the ac voltage supply lines in the cable between TR202 Connector J1 (on the end of the cable) and TR202 TB1.

Using ALD YA607, connect the meter between TR202 Connector J1 Pins 1 and 2 and the ac voltage input pins on TR202 TB1 (ALD YA015).

Does the meter indicate continuity for both lines ?

Y N

022

The cable is failing. Repair or exchange the cable.

Go To Map 1000, Entry Point R.

023

Have you just exchanged TR202 ?

Y N

024

Exchange TR202.

Go To Map 1000, Entry Point R.

025

Problem is not corrected.

Go To Map 0001, Entry Point A.

026

Power down the machine by pressing 'POWER OFF' on the OCP.

Set PCC CB1 and CB2 to the OFF position.

The ac line inputs of TR202 may be connected for the wrong voltage or frequency.

Use ALD YA015 and YA607 to check the wiring connections on TR202.

NOTE: Also check the wiring connections on TB205 (ALD YA419).

Are TR202 and TB205 connected correctly ?

Y N

027

Using ALD YA015, YA419, and YA607, connect TR202 and TB205 correctly.

Go To Map 1000, Entry Point R.

028

Reconnect any cables that are disconnected.

Set PCC CB1 and CB2 to the ON position.

Press 'POWER ON' on the CE Panel.

When the PARTIAL POWER UP/DOWN screen is displayed, power up the processing unit by entering 00 01.

NOTE: If the machine fails to power up, GO TO STEP 030 ENTRY POINT Z in this MAP.

DANGER

THE PCC BOX HAS A HIGH VOLTAGE. BE CAREFUL WHEN YOU MEASURE NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF ANY CABLE IN THE PCC BOX.

Check the AC line from PCC CB2 (ALD page YA411) to TR202 (ALD page YA607) for poor or loose

(Step 028 continues)

(Step 028 continued)
connection.

See step 012 in this MAP for a figure of this line.

Try to generate the failure again by moving and lightly hitting the cables and connectors.

Did the failure occur again ?
Y N

029

(Entry Point Y)

The failure was an intermittent failure.
Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRUs
1732	TR202

Make a note of the indicated FRUs using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

030

(Entry Point Z)

If the UU field of the ref code displayed on the screen is not 1X, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1X, check the RRRR field. If the RRRR field is NOT 1732, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is 1732, check for an open in the ac line between PCC CB2 and TR202.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER
(Step 030 continues)

(Step 030 continued)
DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated sense line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?
Y N

031
Go to Step 029, Entry Point Y.

032

Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

033

The failure is an intermittent.
Go to Page 2, Step 006, Entry Point B.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	B	2	006
1143	B	2	006

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
5	016	0001	A
6	024	0001	A
9	039	0001	A
10	043	0001	A
2	005	1000	B
11	055	1000	I
11	052	1000	R
5	015	1000	R
5	022	1000	R
6	023	1000	R
6	027	1000	R
5	017	1000	R
7	033	1000	R
7	036	1000	R
10	042	1000	R
11	050	1000	R
12	058	1000	R
10	045	1143	K

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.
(Step 001 continues)

(Step 001 continued)

Is PROC UNIT power ON (ACTION DONE on screen)?
Y N

002

Is the UU field of the ref code displayed on the screen 1X ?
Y N

003
This is not a power problem.
Go To Map 0000, Entry Point A.

004

Chart 1

Ref Code RRRR	Voltage Level
1730 or 1752	+4.25
1740 or A422 or A420	+6
A060 or A062	+4.25
A280 or A282	-4.25
A460 or A462	-1.5
A470 or A472	-2.2(-6.45)

Is the RRRR field of the displayed ref code listed in Chart 1 ?
Y N

005
The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.
Go To Map 1000, Entry Point B.

1
2
A B

B SEQ362C MAP 1174-2

006

(Entry Point B)

The ref code indicates a bulk voltage line or a bulk sense line failure.

PS201 supplies bulk voltage to IPS201 (02A-A1 and 02A-A2 boards). PS201 is located on the rear of frame 02.

Determine which voltage level the ref code is indicating by using the ref code and Chart 1 in step 004.

NOTE: The -2.2(-6.45)V level starts at 02A-A2J5 (IPS201) as -2.2Vdc, and is referenced to the -4.25V level at TBB1 to make the -6.45V level that goes to the 01A-C1 board.

The cause of the failure may be one of the following:

1) Failing IPS control card, board, or power module
2) Failing bulk voltage supply line
3) Failing bulk voltage sense line
4) Failing PS201
5) Failing 01A-B2 board

Chart 2 gives a list of possible failing FRU's, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

See Chart 2 on the next page.

(Step 006 continues)

(Step 006 continued)

Chart 2

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
IPS control card, board or power module	all ref codes	See NOTE1 after this chart	10-035c, 040c, 060c 20-185c, 190c, 191c, 200c, and 385c
TR/PS201	all ref codes	YA605 YA607	10-055c 20-155c, 165c
01A-B2 board	all ref codes		10-035c, 050c 20-211c, 230c
CON 240	1730 1752 A06X A28X A46X A47X	YA659	10-060c
CON 242	1740 A420 A422	YA661	10-060c

NOTE1: See MAP 1004, Entry Point A, Charts 1, 2, 3, and 4 in step 001 for IPS control card and power module location. For ALD pages, see ALD YA012, 'FRU LOCATION'.

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

007

(Entry Point H)

Did you test the power modules and control card of the indicated level ?

Y N

1 1 1
1 1 4
C D E

008

(Entry Point C)

Make a note of the MAP, page, and step number of this step.

Use the test station to test the power module(s) and the control card of the failing level. The procedure of how to use the test station is in MAP 1004 ENTRY POINT A. After you have reached 'return to the MAP you came from', return here.

Did you find the failing module(s) or control card ?
Y N

009

(Entry Point G)

Did you test all of the power modules of the indicated level ?
Y N

010
Go to Step 008, Entry Point C.

011

Set the CE meter to measure +15Vdc.

Locate the probing point on PS201 using the indicated voltage and the following Chart 3:

Chart 3

Indicate Voltage	Measure Volts (dc)	PS201 Terminal Probing Point Pins (+) (-)		
+6	+11.5	CON.1	D04	B04
+4.25	+10.3	TB2	11	9
-1.5	+6.8	TB2	7	4
-4.25	+10.0	TB1	7	5
-2.2 (-6.45)	+7.0	TB1	11	9

Connect your CE meter's leads(tool) as indicated in Chart 3.

NOTE: If the indicated failing voltage is the +6V level, disconnect PS201 Connector 1 before connecting the meter leads.

Check if the meter shows within 1.5Vdc of the voltage in the 'Measure Volts' column of Chart 3 after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for the voltage.

Did the meter indicate the voltage ?
Y N

012

Did the meter indicate any voltage ?
Y N

013

Switch the CP of that level on PS201 to off position and then to on. If there are two CPs, do both.

With the meter leads still connected to PS201 as in Chart 3, power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for voltage indication.

Did the meter indicate voltage ?

Y N

014

(Entry Point E)

Did you just exchange PS201 ?

Y N

015

Exchange PS201.

Go To Map 1000, Entry Point R.

016

Problem is not corrected.

Go To Map 0001, Entry Point A.

017

The CP(s) that you switched off and on are failing. Exchange the supply (PS201).

Go To Map 1000, Entry Point R.

018

Is the indicated failing voltage the +8V level ?

Y N

019

With the meter leads still connected to PS201, wait one minute and check if the voltage has decreased to less than one volt.

Has the voltage decreased to less than one volt ?

Y N

020

(Entry Point J)

Did you just exchange PS201 ?

Y N

021

Is the fault indicated level the -4.25V (RRRR of A28X)?

Y N

022

Exchange PS201.

Go To Map 1000, Entry Point R.

023

The indicated fault is an open -4.25V bleeder resistor in PS201. This can cause the output capacitors of the -4.25V level to remain charged at a dangerous level after powering down. Before exchanging PS201, to ensure the capacitors are discharged do the following:

Ensure PS201 CP1 and CP2 are set ON.

Set the CE meter to measure 15Vdc.

Connect the CE meter to PS201 TB1 pin 7 (positive lead) and TB1 pin 5 (negative lead).

Wait until the CE meter indicates less than +5Vdc. This should take 10-20 minutes.

Set PS201 CP1 and CP2 OFF.

DANGER

DO NOT INSERT A SCREWDRIVER UNLESS THE VOLTAGE AT THE OUTPUT TERMINALS IS +5Vdc OR LESS.

Insert a large screwdriver between TB1 pin 3 (+10V supply, ALD YA605) and the +10V Return bus bar that goes from TB1 pins 1 and 2 to TB1 pins 5 and 6.

Set CP1 and CP2 ON. If either CP trips, set the CP ON again until it no longer trips when set on and the CE meter indicates zero (0) volts.

(Step 023 continues)

(Step 023 continued)

When the CE meter indicates zero (0) volts and the CPs do not trip when set on, exchange PS201 using the procedure in VOL 13/16 Section 12 of the MIM.

Go To Map 1000, Entry Point R.

024

Problem is not corrected.

Go To Map 0001, Entry Point A.

025

Disconnect the terminals on PS201 indicated in Chart 3 by the indicated voltage.

Connect the CE meter on the PS to the probing points indicated in Chart 3 by the indicated voltage.

Check if the meter shows within 1.5Vdc of the voltage indicated by the 'Measure Volts' column of Chart 3 after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for voltage indication.

Did the meter indicate the voltage ?

Y N

026

Go to Page 5, Step 014, Entry Point E.

027

If the indicated voltage level is +6 or -4.25, exchange the 02A-A1 board. If the indicated voltage level is -1.5, -2.2(-6.45), or +4.25 exchange the 02A-A2 board.

Go To Map 1000, Entry Point R.

028

Go to Page 5, Step 014, Entry Point E.

029

With the meter leads still connected to PS201, wait one minute and check if the voltage has decreased to less than one volt.

Has the voltage decreased to less than one volt ?

Y N

Q R

030

Go to Page 5, Step 020, Entry Point J.

031

Is the fault indicated level the -4.25 voltage level ?

Y N

032

(Entry Point D)

Set the CE meter to measure +15Vdc.

Locate the probing point on IPS201 using the voltage level and the following Chart 4:

NOTE: If the indicated failing voltage is the +6V level, reconnect PS201 Connector 1.

Chart 4

Indicated Voltage	Measure Volts (Vdc)	Probing Point on IPS201 (+)	(-)
+4.25	+10.3	A2E2	A2F1
+6	+11.5	A1F2	A1G1
-4.25	+10.0	A1E2	A1F1
-1.5	+6.8	A2G7	A2H6
-2.2(-6.45)	+7.0	A2E7	A2F6

Connect your CE meter's leads(tool) as indicated in Chart 4.

Check if the meter indicates within 1.5Vdc of the voltage indicated by the 'Measure Volts' column of Chart 4 after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for the voltage.

Did the meter indicate the correct voltage ?

Y N

1
Q 7 7
S T U

033

The bulk voltage supply line from where you measured (Chart 3) to where you are measuring now (Chart 4) is failing.

The bulk voltage is supplied by PS201 (ALD YA605 and YA607) to IPS201 (ALD YA620 and YA630).

Also see MIM VOL 13/16 Pages 10-055c, 20-165c, 20-185c, and 20-190c.

Use the ALDs and MIM to find the failure.

(Entry Point F)

Fix the failure.

Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

034

Disconnect your CE meter's positive lead and connect it to the frame (GND). Leave the other lead where it is now connected as indicated in Chart 4.

This test is to check if there is a ground shift.

Set the CE meter to measure +5Vdc maximum.

Check if the meter indicates over +0.5Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for voltage indication.

Did the meter indicate over +0.5Vdc?

Y N

1
0
V W

035

To check the bulk sense line output from IPS201, perform the following:

Set the CE meter to measure +15Vdc.

Locate the probing point on IPS201 using the ref code and the following Chart 5.

Chart 5

Indicate Voltage	Measure Volts (Vdc)	Probing Point on IPS201	(+)	(-)
+4.25	+10.3	02A-A1B4	D10	D08
+6	+11.5	02A-A1B4	D10	D08
-4.25	+10.0	02A-A2B4	D05	D08
-1.5	+6.8	02A-A1B4	D10	D08
-2.2	+7.0	02A-A2B4	D02	D08
(-6.45)				

Connect your CE meter's leads(tool) as indicated in Chart 5.

After powering up the processing unit, the meter should indicate within 1.5Vdc of the voltage in the 'Measure Volts' column of Chart 5.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the meter.

Did the meter indicate the correct voltage ?

Y N

036

The IPS board is failing. Repair or exchange it.

Go To Map 1000, Entry Point R.

8
X

037

The IPS201 board is good.

To check the bulk sense line input to the sense card on the MSS (01A-B2 board), perform the following:

Set the CE meter to measure +2.0Vdc.

Locate the probing point on the sense card (01A-B2C2 or 01A-B2D2 card) using the ref code and the following Chart 6.

Chart 6

Indicate Voltage	Measure Volts (Vdc)	Probing Point on the 01A-B2 board (+)	(-)
+4.25	+1.5	D2B04	D2D08
+6	+1.5	C2B11	C2D08
-4.25	+1.5	D2U05	D2D08
-1.5	+1.5	C2D07	C2D08
-2.2	+1.5	C2D06	C2D08
(-6.45)			

Connect your CE meter's leads(tool) as indicated in Chart 6.

The meter should indicate between +1.3Vdc and +1.7Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the meter.

Did the meter indicate between +1.3Vdc and +1.7Vdc?

Y N

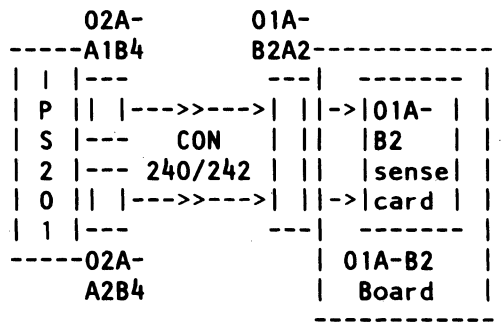
1
0 9
Y Z

038

The failure is in the bulk voltage sense line.

The IPS201 bulk voltage sense lines go from connector card 02A-A1B4 (ALD YA626) or connector card 02A-A2B4 (ALD YA636), through Connector 240 (ALD YA659) or Connector 242 (ALD YA661), enter the 01A-B2 board through connector card 01A-B2A2, and go to the 01A-B2C2 or 01A-B2D2 sense card (ALD YF101, YF111, and YF171).

The figure at the right shows these lines-->



See the following Chart 7 for a pin list of these lines:

Chart 7

Indicated Voltage	02A Gate Connector Card Pin	CON 240/242 Pin	01A-B2A2 Connector Card Pin	01A-B2 Sense Card Pin
+4.25	A2B4B08	CON 240 Pin 15	D09	D2B04
+6	A1B4B05	CON 242 Pin 1	D04	C2B11
-4.25	A1B4B03	CON 240 Pin 23	D10	D2U05
-1.5	A2B4B10	CON 240 Pin 27	D12	C2D07
-2.2 (-6.45)	A2B4B13	CON 240 Pin 19	D11	C2D06

NOTE: The bulk sense voltage is reduced to a normal +1.5Vdc by a resistor divider network on the 02A-A1B4 and 02A-A2B4 connector cards. A voltage between +1.35Vdc and +1.65Vdc is within tolerance for the sense line from the output of the 02A-A1B4 or 02A-A2B4 connector card to the 01A-B2C2 or 01A-B2D2 sense card.

Using this figure and pin list and the ALDs, find the failure.

Did you find the failure ?

Y N

039

Problem is not corrected.

Go To Map 0001, Entry Point A.

040
Go to Page 7, Step 033, Entry Point F.

041
The sense card (01A-B2C2 or 01A-B2D2) may be failing.

Did you just exchange the indicated sense card?
Y N

042
Exchange the indicated sense card (01A-B2C2 or 01A-B2D2).
Go To Map 1000, Entry Point R.

043
Problem is not corrected.
Go To Map 0001, Entry Point A.

044
Inspect the line from IPS201 to TBB1 for an open. See MIM VOL 13/16 Pages 10-055c, 20-165c, 20-185c, and 20-190c. Also see ALD YA605, YA607, YA620, and YA630.

Did you find the open ?
Y N

045
To check the control line of the indicated level, do the following:
1. Make a note of the indicated voltage level. Use this voltage level in the charts of MAP 1143.
2. Make a note that you got to MAP 1143 from MAP 1174 for future reference.
Go To Map 1143, Entry Point K.

046
Go to Page 7, Step 033, Entry Point F.

047
Set the CE meter to measure +15Vdc.
Connect your CE meter's leads(tool) as follows:

Positive meter lead(tool)----PS201 TB1 pin 3
Negative meter lead(tool)----PS201 TB1 pin 1

The meter should indicate between +9.0Vdc and +11.0Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the meter for the voltage.

Did the meter indicate between +9.0Vdc and +11.0Vdc ?
Y N

048
Go to Page 5, Step 014, Entry Point E.

049
Set the CE meter to measure +15Vdc.
Connect your CE meter's leads(tool) as follows:

Positive meter lead(tool)----02A-A1E7
Negative meter lead(tool)----02A-A1F6

The meter should indicate between +9.0Vdc and +11.0Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the meter for the voltage.

Did the meter indicate between +9.0Vdc and +11.0Vdc ?
Y N

050

One of the following lines is open:

1. From PS201 TB1 pin 3 to IPS201 A1G7
2. From PS201 TB1 pin 1 to IPS201 A1H6
3. From IPS201 A1G7 to IPS201 A1E7
4. From IPS201 A1H6 to IPS201 A1F6

See MIM VOL 13/16 Pages 10-055c, 20-165c and 20-185c.

Find the open and repair or exchange the cable.

Go To Map 1000, Entry Point R.

051

Go to Page 6, Step 032, Entry Point D.

052

Exchange the failing power module or control card.

Go To Map 1000, Entry Point R.

053

Go to Page 4, Step 009, Entry Point G.

054

Check for poor or loose connection of the indicated bulk voltage supply FDS cables from PS201 to IPS201. Also check the indicated bulk voltage sense line from IPS201 to the MSS (01A-B2) board. See MIM VOL 13/16 Pages 10-055c, 20-165c, 20-185c, and 20-190c; and ALD YA605, YA607, YA620, and YA630 for the bulk voltage supply lines. See step 038 in this MAP for a figure and pin listings of the bulk voltage sense lines.

Try to generate the failure again by moving and lightly hitting the cables and connectors of the indicated voltage level's bulk voltage supply and sense lines.

Did the failure occur again ?

Y N

A A
D E

055

(Entry Point Y)

The failure was an intermittent failure.
Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRUs (1)	(2)	(3)
1730	02A-A2C2	PS201	TR201
1740	02A-A1B2	PS201	TR201
1752	02A-A2C2	PS201	TR201
A06X	02A-A2C2	PS201	TR201
A28X	02A-A1D2	PS201	TR201
A42X	02A-A1B2	PS201	TR201
A46X	02A-A2D4	PS201	TR201
A47X	02A-A2C4	PS201	TR201

NOTE: TR201 is a matched set (TR201 A, B, and C) and is exchanged as a set.

Make a note of the indicated FRUs using the ref code and Chart A and then

Go To Map 1000, Entry Point I.

056

If the UU field of the ref code displayed on the screen is not 1X, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1X, check if the RRRR field is listed in Chart 1 in step 004. If the RRRR field is not listed in Chart 1, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is listed in Chart 1, check for an open in the indicated level's bulk voltage supply and sense lines.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF'
(Step 056 continues)

(Step 056 continued)
ON THE OPERATOR CONTROL PANEL (OCP). SET POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated sense line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?
Y N

057
Go to Page 11, Step 055, Entry Point Y.

058
Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

059
The failure is an intermittent.
Go to Page 2, Step 006, Entry Point B.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
4	013	0001	A
5	020	0001	A
2	005	1000	B
6	029	1000	I
3	009	1000	R
4	010	1000	R
4	014	1000	R
5	017	1000	R
5	019	1000	R
5	024	1000	R
6	027	1000	R
7	032	1000	R
5	023	1132	W
6	025	1132	W

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power ON (ACTION DONE on screen)
?

Y N

7 2
A B

MODEL GROUP 2,
FERRO POWER

002

Is the UU field of the ref code displayed on the screen 1X ?

Y N

003

This is not a power problem.

Go To Map 0000, Entry Point A.

004

Is the RRRR field of the displayed ref code 1762 ?

Y N

005

The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.

Go To Map 1000, Entry Point B.

006

(Entry Point B)

The indicated failure is that either there is no ac voltage to TR206 or the fuse in TR206 is failing, or both the bulk voltage and +12Vdc bias voltage are missing from IPS101 (01C gate).

The cause of the failure may be one of the following:

1) Failing TR206
2) Failing PS206
2) Failing IPS101
8) Failing ac voltage supply line to the TR202

Chart 1 gives a list of possible failing FRUs, ref codes that could indicate the FRU, and references to the ALDs and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

See Chart 1 on the next page.

(Step 006 continues)

(Step 006 continued)

Chart 1

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
IPS board (01C-A1)	1762	YA639	10-035c, 040c 20-191c, 200c, and 385c
TR206	1762	YA615	10-035c, 055c 20-155c, 165c
PS206	1762	YA615	10-035c, 055c 20-155c, 165c
TB205	1762	YA419	10-035c, 055c

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

007

Check if TR206's fuse is good.

Is the fuse good ?

Y N

008

Have you just exchanged TR206's fuse ?

Y N

009

Exchange TR206's fuse.

Go To Map 1000, Entry Point R.

6 4 4
C D E

010

There is a short circuit in one of the following:

1. IPS101
2. Cables from PS201 to IPS201
3. PS206
4. TR206

To find the failure, perform the following:

One at a time, disconnect the output connectors of PS206.

The -4.25 Add On level's bulk voltage supply cables are located at PS206 Connectors 5 and 6.

The -4.25 Add On level's +12.5 bias voltage supply cables are located at PS206 Connector 3.

See ALD YA615 and MIM VOL 13/16 Pages 10-055c and 20-165c.

After disconnecting each output, try to power up and then check the fuse. When the fuse does not fail during power up, the short circuit is in the voltage level you just disconnected. Find and fix the failure.

If you disconnect all the output connectors of PS201 and the fuse still fails while powering up, disconnect the output connectors of TR206. Power up. If the fuse still fails, exchange TR206. If the fuse does not fail, exchange PS206.

Go To Map 1000, Entry Point R.

011

Locate TR206 connector 1 (ALD page YA615) and disconnect it. Connector 1 is located on the frame.

DANGER

THE CONNECTORS OF THE TR HAVE A HIGH VOLTAGE. BE CAREFUL WHEN YOU MEASURE NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF THE METER LEAD (TOOL).

Set the CE meter to measure the ac line voltage.

Connect your CE meter to TR206 connector P1 (on the frame) pins 1 and 2.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your

(Step 011 continues)

(Step 011 continued)

meter for ac voltage indication.

Did the meter indicate ac line voltage ?

Y N

012

DANGER

THE PCC BOX HAS A HIGH VOLTAGE. BE CAREFUL NOT TO TOUCH THE METAL PART OF ANY CABLE IN THE PCC BOX.

The 'PWR LINE 1 PH TB205 TO TR206' ac line from TB205 to TR206 is failing.

The line starts at TB205 (ALD YA419) and goes to to TR206 Connector 1 (ALD YA615).

NOTE: The output pins of TB205 depend on line voltage and frequency; see ALD YA419 for these pins.

Did you find the failure ?

Y N

013

Problem is not corrected.

Go To Map 0001, Entry Point A.

014

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

015

Connect the connector you just disconnected.

Locate and disconnect connector 02 on TR206.

DANGER

THE CONNECTORS OF THE TR HAVE A HIGH VOLTAGE. BE CAREFUL WHEN YOU MEASURE NOT TO SHORT CIRCUIT OR TOUCH THE METAL PART OF THE METER LEAD (TOOL).

Set your CE meter to measure 15Vac.

Connect your CE meter leads (tool) as follows to TR206 connector 2 on the TR:

1. positive meter lead-------pin 1
2. negative meter lead-------pin 2

The meter should indicate between 8Vac and 12Vac after powering up.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for ac voltage indication.

Did the meter indicate between 8Vac and 12Vac ?

Y N

016

Press 'POWER OFF' on the OCP.

Set PCC CB1 and CB2 to the OFF position.

Using VOL 13/16, Section 12, 'Removal/Replacements' in the MIM, remove TR206.

Using ALD YA015 and YA615, determine the correct pins on TR206 TB1 for the ac voltage input to TR206.

Check if the ac voltage input line is connected to the correct pins.

NOTE: Also check the wiring connections on TB205 (ALD YA419).

Is the ac line connected correctly ?

Y N

G H J

G H J

017

Connect the ac line correctly.

Reinstall TR206. Connect any connectors you disconnected.

Go To Map 1000, Entry Point R.

018

Did you just exchange TR206 ?

Y N

019

Exchange TR206.

Go To Map 1000, Entry Point R.

020

Problem is not resolved.

Go To Map 0001, Entry Point A.

021

There may be a short circuit in PS206, IPS101 (01C gate), or the cables that connect IPS101 and PS206.

Have you just tested the control card and power modules of IPS101 ?

Y N

022

Use the test station to test the control card and power modules of IPS101 (-4.25Vdc add on level). The procedure of how to use the test station is in MAP 1004 ENTRY POINT A. After you have reached 'return to the MAP you came from', return here.

Did you find the failing modules or control card ?

Y N

023

To check for a short circuit in PS206 or in the load of PS206,

Go To Map 1132, Entry Point W.

024

Exchange the failing control card or power module(s).

Go To Map 1000, Entry Point R.

025

To check for a short circuit in PS206 or in the load of PS206,
Go To Map 1132, Entry Point W.

026

Power down the machine by pressing 'POWER OFF' on the OCP.

Set PCC CB1 and CB2 to the OFF position.

The ac line inputs of TR206 may be connected for the wrong voltage or frequency.

Use ALD YA015 and YA615 to check the wiring connections on TR206.

NOTE: Also check the wiring connections on TB205 (ALD YA419).

Are TR206 and TB205 connected correctly ?
Y N

027

Using ALD YA015, YA419, and YA615, connect TR206 and TB205 correctly.
Go To Map 1000, Entry Point R.

028

Reconnect any cables that are disconnected.

Set PCC CB1 and CB2 to the ON position.

Press 'POWER ON' on the CE Panel.

When the PARTIAL POWER UP/DOWN screen is displayed, power up the processing unit by entering 00 01.

NOTE: If the machine fails to power up, GO TO STEP 030 ENTRY POINT Z in this MAP.

DANGER

THE PCC BOX HAS A HIGH VOLTAGE. BE CAREFUL NOT TO TOUCH THE METAL PART OF ANY CABLE IN THE PCC BOX.

Check the 'PWR LINE 1 PH TB205 TO TR206' ac line from TB205 (ALD page YA419) to TR206 (ALD page YA615) for poor or loose connection.
(Step 028 continues)

(Step 028 continued)

Try to generate the failure again by moving and lightly hitting the cables and connectors.

Did the failure occur again ?
Y N

029

(Entry Point Y)

The failure was an intermittent failure.

Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRUs
1762	TR206

Make a note of the indicated FRUs using the ref code and Chart A and then
Go To Map 1000, Entry Point I.

030

(Entry Point Z)

If the UU field of the ref code displayed on the screen is not 1X, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1X, check the RRRR field. If the RRRR field is NOT 1762, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is 1762, check for an open in the ac line between TB205 and TR206.

CAUTION

BEFORE CHECKING FOR CONTINUITY - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET
(Step 030 continues)

(Step 030 continued)
POWER CONTROL COMPARTMENT (PCC) MAINLINE CBs (CB1 AND CB2) TO THE OFF POSITION.

Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated sense line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?
Y N

031
Go to Page 6, Step 029, Entry Point Y.

032
Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

033
The failure is an intermittent.
Go to Page 2, Step 006, Entry Point B.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
4	014	0001	A
3	003	1000	B
3	007	1000	B
4	018	1000	I
4	019	1000	R
4	022	1000	R
3	009	1000	R
4	015	1000	R
4	016	1000	R
4	025	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Answer the next question YES if this is the first power up or if you have just reworked the IPS201 or the IPS201 or sense leads part of the system.

Did you just rework the IPS201 or the sense leads ?

Y N

4 2
A B

MODEL GROUP 2,

FERRO POWER

002

The ref code's RRRR field is set up as follows:

1. The first digit indicates whether the sensor is an analog (A) or digital (D).
2. The next two digits indicate the number of the sensor.
3. The last digit of the RRRR field indicates whether the failure is sensed before or after power is completed. Zero (0) means power was completely up and 2 indicates power up sequence was not complete.

Chart 1

Ref Code RRRR	Voltage Level	Case
D240	-2.2	O.V.
D260	-2.2	U.V.
D280	-4.25	C.L.
D510	-4.25	U.V.
D640	+4.25	U.V.

Chart 2

Ref Code RRRR	Voltage Level	Case
D080	+6	O.V.
D090	+6	U.V.
D230	+4.25	C.L.
D250	-2.2	C.L.
D270	-4.25	O.V.
D290	-1.5	O.V.
D520	K4 aux.	
D630	+6	C.L.

Chart 3

Ref Code RRRR	Voltage Level	ALD Page
1802	+4.25	YA635
D082	+6	YA625
D242	-2.2/-6.45	YA635
D272	-4.25	YA625
D292	-1.5	YA635

Is the RRRR field of the ref code listed in Chart 1, 2,
(Step 002 continues)

(Step 002 continued)
or 3 ?
Y N

003
You are in the wrong MAP to find the correct MAP for this ref code.
Go To Map 1000, Entry Point B.

004

Is the RRRR field of the ref code listed in Chart 1 ?
Y N

005
Power on the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC power ON (action done) ?
Y N

006

(Entry Point B)

Is the RRRR field of the ref code listed in Chart 1, 2, or 3 ?
Y N

007
This failure could be a double failure condition. To find and repair the failure use the displayed ref code.
Go To Map 1000, Entry Point B.

4 4
C D E

008
Using the ref code and Chart 1, 2, or 3 determine which level is indicated.
Swap the control card of the indicated level with one of the other level's control card in the IPS201.
The failure will be on the other level if the control card is failing.
Power up.

Is the displayed ref code the same ?
Y N

009
The control card is failing. Exchange it.
Go To Map 1000, Entry Point R.

010
Return the control card you swapped.

(Entry Point C)

Use the test station to test the power module(s) and the control card of the failing level. The procedure of how to use the test station is in MAP 1004 ENTRY POINT A. After you have reached 'return to the MAP you came from', return here.

Did you find the failing module(s) or control card ?
Y N

011

Did you test all of the power modules of the indicated level ?
Y N

012
Go to Step 010, Entry Point C.

4 4
F G

MAP CODE 1182CXXX

013

Use ALD page YF121 or YF131 to find a starting point for the indicated sensor and check if the sensor line is open (also see MIM VOL 13/16 Pages 14-405 for aid in using ALDs and Page 20-230 for aid in using ALD YF171).

Did you find the sensor line open ?
Y N

014

Problem is not corrected.
Go To Map 0001, Entry Point A.

015

Repair the failure.
Go To Map 1000, Entry Point R.

016

Exchange the failing power module or control card.
Go To Map 1000, Entry Point R.

017

Using ALD pages YF121 and YF131, move and lightly hit the indicated sense line to try and generate the failure again.

Did the failure occur again ?
Y N

018

The failure was an intermittent failure.
Go To Map 1000, Entry Point I.

019

There is a loose connection.
Using ALD, find and fix the failure.
Go To Map 1000, Entry Point R.

020

These sensors' signals pass through the 01A-D2B2 card. Press POWER OFF switch on the OCP. Trip the main line CB1 to off position. Reseat the 01AD2B2 card. If this does not work, exchange the 01AD2B2 card.

After setting the CB, power up.

Is power ON (action done) ?
Y N

021

Go to Page 3, Step 006, Entry Point B.

022

The card was failing.
Go To Map 1000, Entry Point R.

023

The failure is that one of the IPS201 level's sense lines is reversed.

To determine which one use the ref code and Chart 3 above.

The probable place where the sense line is reversed is in connector 244 or on the IPS201 board. Use the ALD page in Chart 3 to find where the line is reversed.

Did you find where it has been reversed ?
Y N

024

Go to Page 3, Step 010, Entry Point C.

025

Interchange the leads.
Go To Map 1000, Entry Point R.

PS206 Bulk/Bias

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	2	001
1000	B	2	006

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
7	044	0000	A
5	023	0001	A
5	018	0001	A
5	025	0001	A
6	033	0001	A
11	069	0001	A
9	054	0001	A
9	059	0001	A
2	005	1000	B
10	063	1000	I
7	046	1000	R
5	015	1000	R
5	017	1000	R
5	020	1000	R
5	022	1000	R
5	026	1000	R
6	031	1000	R
6	034	1000	R
11	070	1000	R
7	041	1000	R
10	061	1000	R
9	055	1000	R
9	057	1000	R
9	060	1000	R
10	066	1000	R

001

(Entry Point A)

CAUTION

BEFORE REMOVING OR EXCHANGING POWER SUPPLIES - POWER DOWN THE MACHINE BY PRESSING 'POWER OFF' ON THE OPERATOR CONTROL PANEL (OCP). SET PRIMARY CONTROL COMPARTMENT (PCC) MAINLINE CB'S (CB1 AND CB2) TO THE OFF POSITION.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Is PROC power ON (ACTION DONE on screen) ?
Y N

002

Is the UU field of the ref code displayed on the screen 1x ?
Y N

003
This is not a power problem.
Go To Map 0000, Entry Point A.

004

Is the RRRR field of the displayed ref code A390, A392, A610, or A612 ?
Y N

005
The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.
Go To Map 1000, Entry Point B.

10 A B

006

(Entry Point B)

A ref code of A390 or A392 indicates a -4.25Vdc add on (-4.25V AO) bulk voltage line or bulk sense line failure, or that the -4.25V add on level start line is shorted to ground.

A ref code of A610 or A612 indicates an IPS101 +12 Vdc bias supply or bias sense line failure.

PS206 supplies the bulk voltage to IPS101 (01C-A1 board) for the -4.25Vdc add on (-4.25V AO) level and the +12.5Vdc bias to IPS101.

PS206 is located in frame 02, behind the 02A gate. IPS101 is located in frame 01 behind the 01A gate.

The cause of the failure may be one of the following:

1) Failing PS206
2) Failing IPS101 (01C-A1) control card, power module, or board
3) Failing IPS101 -4.25Vdc add on bulk sense line
4) Failing IPS101 +12.5Vdc bias sense line
5) Failing add on bulk voltage supply cable between PS206 and IPS101 (01C-A1) board
6) Failing bias voltage supply cable between PS206 and IPS101 (01C-A1) board
7) Failing IPS101 -4.25V add on level start line cable
8) Failing 01A-B2 board

Chart 1 gives a list of possible failing FRU's, ref codes that could indicate the FRU, and references to the ALD's and the MIM for the FRU. Also listed are connectors and other parts and assemblies that could be associated with this failure. NOTE: All MIM references are to VOL 13/16 unless it is noted that a different VOL is specified.

See Chart 1 on the next page.

(Step 006 continues)

(Step 006 continued)

Chart 1

Possible Failing FRUs Connectors and Other Parts	Ref Code RRRR Fields	ALD Pages	MIM Pages
TR/PS206	A390 A392 A610 A612	YA615	10-035c, 055c 20-155c, 160c, 165c
IPS101 control card, board or power module (02A-A2 board, -1.5V level)	A390 A392 A610 A612	YA642 YA643 YA644 (Also see NOTE1 after this chart)	10-035c, 040c 20-191c
01A-B2 board	A390 A392 A610 A612		10-035c, 050c 20-211c, 230c
Connector 142	A290 A292 A610 A612	YA648	10-040c

NOTE1: See MAP 1004, Entry Point A, Charts 1, 2, 3, and 4 in step 001 for IPS control card and power module location. For ALD pages, see ALD YA012, 'FRU LOCATION'.

See MIM page 14-405 for aid in using ALDs. Also see page 20-230c for usage of ALD page YF171 when following sense and other lines into the 01A-B2 board.

Is the failure an intermittent failure ?

Y N

007

Is the RRRR field of the displayed ref code A610 or A612 ?

Y N

1 0 C 8 D 4 E

008

(Entry Point C)

Make a note of the MAP, page, and step number of this step.

Use the test station to test the power modules and control card of IPS101 (01C gate), -4.25Vdc add on level. The procedure of how to use the test station is in MAP 1004 ENTRY POINT A. After you have reached 'return to the MAP you came from', return here.

Did you find the failing modules or control card ?

Y N

009

Did you test all of the power modules in IPS101 ?

Y N

010

Go to Step 008, Entry Point C.

011

Set the CE meter to measure +15Vdc.

Connect the CE meter leads (tool) on IPS101 (01C gate, ALD YA642) input terminals as follows:

1. positive meter lead-----terminal 01C-A1G2
2. negative meter lead-----terminal 01C-A1H1

Check if the meter indicates between +9Vdc and +11Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, and observe your meter for voltage indication.

Did the meter indicate between +9Vdc and +11Vdc ?

Y N

7 5
F G H

012

(Entry Point D)

Set the CE meter to measure +15Vdc.

Locate and disconnect connectors 5 and 6 on PS206 (ALD YA615).

Connect the meter leads (tool) to PS206 connectors 5 and 6 on the PS as follows:

1. positive meter lead------connector 6, any pin
2. negative meter lead------connector 5, any pin

The meter should indicate between +9Vdc and +11Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, and observe your meter for voltage indication.

Did the meter indicate between +9Vdc and +11Vdc ?

Y N

013

Connect the connectors you just disconnected.

To check the ac output of TR206:

Locate and disconnect connector 02 on TR206.

Set the CE meter to measure 15Vac.

The ac comes out of TR206 at Connector 2 Pins 1 and 2 and Connector 2 Pins 3 and 4 (ALD YA615). It is necessary to check the output at Pins 1 and 2 and at Pins 3 and 4.

To check the ac output of TR206, power up the machine first with the CE meter connected to TR206 Connector 2 Pins 1 and 2 and then with the CE meter connected to TR206 Connector 2 Pins 3 and 4. Each time you power up with the meter connected to TR206 the meter should indicate between 8Vac and 12Vac.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe your meter for ac voltage indication.

Did the meter indicate between 8Vac and 12Vac both for Pins 1 and 2 and for Pins 3 and 4 ?

Y N

5 5 5
J K L

014

(Entry Point W)

Did you just exchange TR206 ?
Y N

015
Exchange TR206.
Go To Map 1000, Entry Point R.

016

Did you just exchange PS206 ?
Y N

017
Exchange PS206.
Go To Map 1000, Entry Point R.

018
Problem is not corrected.
Go To Map 0001, Entry Point A.

019

(Entry Point X)

Did you just exchange PS206 ?
Y N

020
Exchange PS206.
Go To Map 1000, Entry Point R.

021

Did you just exchange TR206 ?
Y N

022
Exchange TR206.
Go To Map 1000, Entry Point R.

M

023
Problem is not corrected.
Go To Map 0001, Entry Point A.

024

(Entry Point F)

The '10V TO IPS101' line from PS206 Connector 5 and 6 (ALD YA615) to where you measured on IPS101 (01C-A1G2 and 01C-A1H1 or 01C-A1G7 and 01C-A1H6, ALD page YA642) is failing.
See MIM page 20-165c for a figure of these lines.
Use MIMs and ALDs to find the failure.

Did you find the failure ?
Y N

025
Problem is not corrected.
Go To Map 0001, Entry Point A.

026
Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

027
Set the CE meter to measure +15Vdc.
Connect the CE meter leads (tool) on IPS101 (01C gate, ALD YA642) input terminals as follows:

1. positive meter lead-----terminal 01C-A1G7
2. negative meter lead-----terminal 01C-A1H1

The meter should indicate between +9Vdc and +11Vdc after powering up the processing unit.
Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, and observe your meter for voltage indication.

Did the meter indicate between +9Vdc and +11Vdc ?
Y N

028
Go to Page 4, Step 012, Entry Point D.

6
N

029

Disconnect your CE meter's positive lead and connect it to the frame (GND). Leave the other lead where it is now connected.

This test is to check if there is a ground shift.

Set the CE meter to measure +1Vdc maximum.

Check if the meter indicates over +0.5Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, and observe your meter for voltage indication.

Did the meter indicate over +0.5Vdc ?

Y N

030

To check the -4.25V add on bulk sense line output of IPS101:

Set the CE meter to measure +10Vdc.

Connect the CE meter leads (tool) as follows:

positive meter lead----------01C-A1B4B03
negative meter lead----------01C-A1B4D08

The meter should indicate between +9Vdc and +11Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, and observe the meter for voltage indication.

Did the meter indicate between +9Vdc and +11Vdc ?

Y N

031

The IPS101 01C-A1 board is failing. Repair or exchange the 01C-A1 board.

Go To Map 1000, Entry Point R.

032

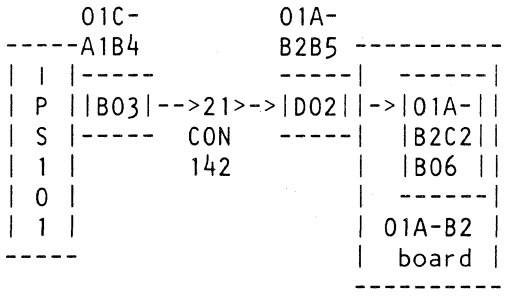
(Entry Point G)

The -4.25V add on bulk voltage sense line is failing.

The bulk voltage is sensed at IPS101 (01C gate).

The IPS101 -4.25V add on bulk sense line goes from connector card 01C-A1B4 Pin B03 (ALD YA645) through Connector 142 Pin 21 (ALD YA648) to 01A-B2 board connector card 01A-B2B5 Pin D02 to the sense card 01A-B2C2 Pin B06 (ALD YF111 and YF171).

The following figure shows these pins and connectors:



NOTE: The +10Vdc bulk sense voltage is reduced to a nominal +1.5Vdc by a resistor divider network on the 01C-A1B4 connector card. A voltage between +1.35Vdc and +1.65Vdc is within tolerance for the sense line from the output of the 01C-A1B4 card to the 01A-B2C2 sense card.

Using this figure and pin list and the ALDs, find the failure.

Did you find the failure ?

Y N

033

Problem is not resolved.

Go To Map 0001, Entry Point A.

034

Fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

035

The 'START' line of the -4.25 add on level may be shorted to ground.

Set the CE meter to measure +5Vdc maximum.

Connect the CE meter leads (tool) as follows on the MSS (01A-B2) board:

1. positive meter lead------01A-B2B5B09
2. negative meter lead------frame (GND)

The voltage should be above +2.0Vdc.

Is the voltage above +2.0Vdc ?

Y N

036

With the meter leads still connected to the 01A-B2 board, locate and disconnect Connector 142.

Does the meter now indicate above +2.0Vdc ?

Y N

037

Reconnect Connector 142.

There is a short to ground in one of the following:

1. The 01A-B2 board (ALD page YF141)
2. The '-4.25 ADD ON START' line from 01A-B2B5B09 (ALD page YF141) to connector 142 (ALD page YA648)

Go to Page 11, Step 068, Entry Point T.

038

Reconnect connector 142.

The short to ground is in one of the following:

1) '-4.25V ADD ON START' line from connector 142 (ALD page YA648) to connector card 01C-A1B5 (ALD page YA645)
2) IPS101 (01C-A1) board
3) IPS101 control card (01C-A1D2)

Go to Page 11, Step 068, Entry Point T.

R

039

With the meter leads still connected on the MSS (01A-B2) board, check to see if after powering up the meter indicates 0 volts for a short time (between .5 and 5 seconds).

Power on the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen and observe the meter.

Did the meter indicate 0 volts ?

Y N

040

Did you just exchange PS206 ?

Y N

041

Exchange PS206.

Go To Map 1000, Entry Point R.

042

Go to Step 044, Entry Point S.

043

Is PROC UNIT power ON (ACTION DONE on screen) ?

Y N

044

(Entry Point S)

Use the displayed ref code to find the right MAP.

Go To Map 0000, Entry Point A.

045

The failure is an intermittent.

Go to Page 10, Step 062, Entry Point Z.

046

Exchange the failing power module(s) or control card.

Go To Map 1000, Entry Point R.

047

(Entry Point L)

Make a note of the MAP, page, and step number of this step.

Use the test station to test the power modules and control card of IPS101 (01C gate), -4.25Vdc add on level. The procedure of how to use the test station is in MAP 1004 ENTRY POINT A. After you have reached 'return to the MAP you came from', return here.

Did you find the failing modules or control card ?
Y N

048

Set the CE meter to measure 15Vdc maximum.

Locate and disconnect connector 3 on PS206.

Connect the CE meter leads (tool) to PS206 connector 3 on the PS as follows:

1. positive meter lead-----connector 3 pin 1
2. negative meter lead-----connector 3 pin 2

Check if the meter indicates between +10.8Vdc and +13.2Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, and observe your meter for voltage indication.

Did the meter indicate between +10.8Vdc and +13.2Vdc ?
Y N

049

Reconnect connector 3 on PS206.

To check the ac output of TR206, do the following:

Set the CE meter to measure 15Vac.

Locate and disconnect connector 1 on PS206 (ALD YA615).

Check both pins 1 and 2 and pins 3 and 8 of PS206 Connector 1 (on the cable end) for ac voltage.

Power up the machine first with the CE meter connected to PS206 Connector 1 pins 1 and 2, and then to Connector 1 pins 3 and 8. Each time you power up with the meter connected to PS206

(Step 049 continues)

1 0
S T

(Step 049 continued)
Connector 1 (on the cable end) the meter should indicate between 9Vac and 15Vac.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, and observe your meter for voltage indication.

Did the meter indicate between 9Vac and 15Vac both for pins 1 and 2 and for pins 3 and 8 ?
Y N

050
Go to Page 5, Step 014, Entry Point W.

051
Go to Page 5, Step 019, Entry Point X.

052

Reconnect connector 3 on PS206.

Set the CE meter to measure +15Vdc.

Locate and disconnect connector 01C-A1A3 on IPS101.

Connect the CE meter leads (tool) to connector 01C-A1A3 on the cable as follows:

1. positive meter lead-----01C-A1A3, pin 5
2. negative meter lead-----01C-A1A3, pin 4

Check if the meter indicates between +10.8Vdc and +13.2Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, and observe your meter for voltage indication.

Did the meter indicate between +10.8Vdc and +13.2Vdc ?
Y N

9 9
U V

053

(Entry Point H)

The 'PS206 BIAS TO IPS101' line between PS206 (ALD page YA615) Connector 3 Pins 1 and 2 and IPS101 Connector A3 Pins 5 and 4 (ALD page YA644) is failing.

See MIM page 20-165c for a figure of this line.

Use MIMs and ALDs to find the failure.

Did you find the failure ?

Y N

054

Problem is not corrected.

Go To Map 0001, Entry Point A.

055

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

056

Reconnect connector 01C-A1A3 on IPS101.

Set the CE meter to measure +15Vdc.

Connect the CE meter leads (tool) on IPS101 as follows:

1. positive meter lead-----01C-A1B4D07
2. negative meter lead-----01C-A1B4D08

Check if the meter indicates between +10.8Vdc and +13.2Vdc after powering up the processing unit.

Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen, and observe your meter for voltage indication.

Did the meter indicate between +10.8Vdc and +13.2Vdc ?

Y N

057

The IPS101 board is failing.

Repair or exchange it.

Go To Map 1000, Entry Point R.

W

058

(Entry Point J)

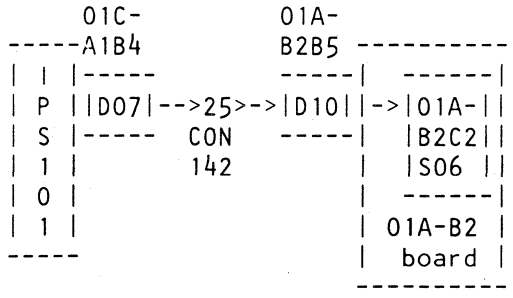
The IPS101 board is good.

The -4.25V add on bias voltage sense line is failing.

The bias voltage is sensed at IPS101 (01C gate).

The IPS101 -4.25V add on bias sense line goes from connector card 01C-A1B4 Pin D07 (ALD YA645) through Connector 142 Pin 25 (ALD YA648) to 01A-B2 board connector card 01A-B2B5 Pin D10 to the sense card 01A-B2C2 Pin S06 (ALD YF111 and YF171).

The following figure shows these pins and connectors:



NOTE: The +12.5Vdc bias sense voltage is reduced to a nominal +1.5Vdc by a resistor divider network on the 01C-A1B4 connector card. A voltage between +1.35Vdc and +1.65Vdc is within tolerance for the sense line from the output of the 01C-A1B4 card to the 01A-B2C2 sense card.

Using this figure and pin list and the ALDs, find the failure.

Did you find the failure ?

Y N

059

Problem is not resolved.

Go To Map 0001, Entry Point A.

060

Fix the failure. Repair or exchange any failing part(s).

Go To Map 1000, Entry Point R.

061

Exchange the failing power module(s) or control card.

Go To Map 1000, Entry Point R.

062

(Entry Point Z)

If the RRRR field of the ref code is A39x the indicated failure is the bulk voltage supply to IPS101. If the RRRR field of the ref code is A61x the indicated failure is the +12.5Vdc bias voltage supply to IPS101. Check for a loose connection in the indicated line from PS206 to IPS101. Also check the bulk and bias sense lines from IPS101 to the MSS (01A-B2) board.

See Entry Point F, Page 5, Step Number 024; and Entry Point G, Page 6, Step Number 032, for figures and pin lists of the bulk voltage supply and sense lines. See Entry Point H, Page 9, Step Number 053; and Entry Point J, Page 9, Step Number 058, for figures and pin lists of the bias voltage supply and sense lines.

Try to generate the failure again by moving and hitting lightly the cables and connectors of the indicated lines. Also hit lightly in the area of PS206 and IPS101.

Did the failure occur again ?

Y N

063

(Entry Point Y)

The failure was an intermittent failure.

Chart A gives a FRU list for each ref code.

Chart A

Ref Code RRRR	Indicated FRUs (1)	(2)	(3)
A39x	01C-A1D2	PS206	TR206
A61x	01C-A1D2	PS206	TR206

Make a note of the indicated FRU's using the ref

(Step 063 continues)

X

(Step 063 continued)

code and Chart A and then

Go To Map 1000, Entry Point I.

064

If the UU field of the ref code displayed on the screen is not 1x, this is not a power problem; GO TO MAP 0000, ENTRY POINT A.

If the UU field of the displayed ref code is 1x, check the RRRR field. If the RRRR field is not A39x or A61x, GO TO MAP 1000, ENTRY POINT B.

If the RRRR field of the ref code is A39x or A61x, check for an open in the indicated bias or bulk voltage supply and sense lines. Check connectors for bent or loose pins, or an open where the cable is fastened to the pin.

If the meter indicates continuity when checking a line that may be failing intermittently, try to make the open occur again. Move and lightly hit along the indicated line and observe the meter for indication of an open for a short time. NOTE: The meter may only start to indicate an open.

Did you find any failure ?

Y N

065

Go to Step 063, Entry Point Y.

066

Fix the failure. Repair or exchange any failing parts.

Go To Map 1000, Entry Point R.

067

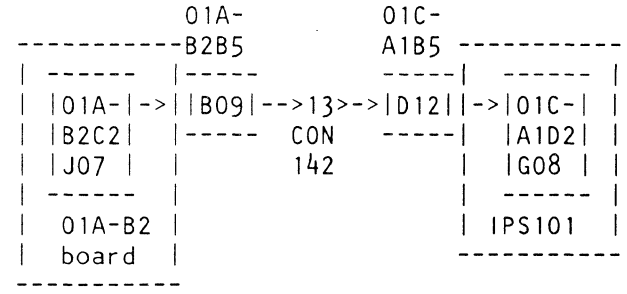
The failure is an intermittent.

Go to Page 2, Step 006, Entry Point B.

068
(Entry Point T)

The IPS101 '-4.25V ADD ON START' line goes from the sense card 01A-B2C2 Pin J07 to 01A-B2 board connector card 01A-B2B5 Pin B09 (ALD YF141 and YF171) and then through Connector 142 Pin 13 (ALD YA648) to IPS101 connector card 01C-A1B5 Pin D12 (ALD YA645) and then to the -4.25 add on control card 01C-A1D2G08 (ALD YA643).

The following figure shows these pins and connectors:



Using this figure and pin list and the ALDs find the failure in the 'START' line.

Did you find the failure ?
Y N

069
Problem is not corrected
Go To Map 0001, Entry Point A.

070
Fix the failure. Repair or exchange any failing parts.
Go To Map 1000, Entry Point R.

MAP CODE 11FFCXXX FIX 0003

Ref Code 1FF0 - 1FF2.

PAGE 1 OF 2

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1000	B	2	008
1400	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
1	003	0000	A
2	006	0001	A
2	005	1000	B
2	007	1000	I
2	009	1000	R
2	011	1000	R

001

(Entry Point A)

Reseat Connector 244.
Reseat 01A-B2Y1 connector.
Reseat connector card 01AD2-A03.
Using ALD YA419 ensure that TB205 jumpers are in the correct pins and also the cables are seated correctly.
Power on the processing unit by entering 00 00 in the PARTIAL POWER UP/DOWN screen.

Is PROC UNIT power on (ACTION DONE on screen) ?

Y N

002

Is the UU field of the ref code displayed on the screen 1X ?

Y N

003

This is not a power problem.

Go To Map 0000, Entry Point A.

004

List of RRRR fields.

1. 0FF2 HWS power failure.
2. 1FF0 PROC power failure.
3. 1FF2 PROC power failure.
4. 4FF0 CTCA power failure.
5. 4FF2 CTCA power failure.
6. FFF0 Power failure.

Is the displayed RRRR field any of the above five ?

Y N

005

The first failure is caused by the failure indicated by this displayed ref code. To determine and repair, use the displayed ref code.

Go To Map 1000, Entry Point B.

006

The cause of the failure is not known.

Problem is not corrected.

Go To Map 0001, Entry Point A.

007

If connector 244 or 01AD2-A03 was not seated correctly, GO TO MAP 1000, ENTRY POINT R.

If connector 244 and 01AD2-A03 were seated correctly, the failure was an intermittent failure.

Go To Map 1000, Entry Point I.

008

(Entry Point B)

The diskette may be featured for a wrong power group. To check the power group, get the CONFIGURATION screen using the following procedure:

1. Press MODE SELECT key.
2. Key in FS
3. Press ENTER key.

Check if the number next to 'POWER GROUP:' is correct using the MIM, VOL 13/16, Section 14, 'SYSTEM CONFIGURATION'.

Was the number next to 'POWER GROUP:' correct ?

Y N

009

Ensure the number next to 'POWER GROUP:' is correct. Change the number to the correct number.

After changing the number, press ENTER.

To IML press POWER ON key on the operator control panel (OCP).

Go To Map 1000, Entry Point R.

010

Check if the W and X Top Card Connectors (TCCs) on the C, D, and E cards on the 01A-B2 board are in the correct location. Ensure that the TCCs are not connected one or two pins up or down from the correct location.

Are the TCCs connected correctly ?

Y N

011

Connect the TCCs correctly.

Go To Map 1000, Entry Point R.

012

Call for assistance.

CTCA Entry Map.

PAGE 1 OF 4

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001
1401	B	2	002
1403	B	2	002
1410	B	2	002
1418	B	2	002
1420	B	2	002
1438	B	2	002
1446	B	2	002
1452	B	2	002
1470	B	2	002
1474	B	2	002

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	1000	B
4	006	1000	R

001

(Entry Point A)

You entered this MAP from the Power Entry MAP.
The fault is in the CTCA feature.
Power up the processing unit by entering 00 01 in the PARTIAL POWER UP/DOWN screen.

Chart A

#	ref code RRRR	Indicated sensor	Digital Display
1	D022	D02	no asterisk
2	D042	D04	no asterisk
3	D052	D05	no asterisk
4	D062	D06	have asterisk
5	D072	D07	no asterisk

Is the RRRR field of the ref code one of the above five ?

Y N

4 2
A B

002

(Entry Point B)

Is the UU field of the ref code 14 ?
Y N

003
The fault is not in the CTCA feature
Go To Map 1000, Entry Point B.

Find the ref code in this chart to get MAP number and entry point, and then go to the indicated MAP.

Ref Code UU RRRR IS	MAP Number	Entry Point	Ref Code UU RRRR IS	MAP Number	Entry Point
14 A310 0E ->	1438	A	14 4020 0E ->	1474	A
14 A312 0E ->	1438	A	14 4030 0E ->	1474	A
14 A410 0E ->	1410	A	14 4032 0E ->	1474	B
14 A412 0E ->	1410	B	14 4070 0E ->	1418	A
14 A430 0E ->	1474	A	14 4072 0E ->	1418	B
14 A432 0E ->	1474	B	14 4080 0E ->	1420	A
14 A440 0E ->	1474	A	14 4090 0E ->	1420	A
14 A442 0E ->	1474	B	14 4100 0E ->	1446	A
14 A450 0E ->	1474	A	14 4110 0E ->	1420	A
14 A452 0E ->	1474	B	14 4120 0E ->	1452	A
14 A510 0E ->	1474	A	14 4122 0E ->	1474	B
14 A512 0E ->	1410	B	14 4130 0E ->	1446	A
14 A590 0E ->	1410	A	14 4152 0E ->	1474	B
14 A592 0E ->	1410	B	14 4162 0E ->	1474	B
14 A600 0E ->	1474	A	14 4172 0E ->	1410	B
14 A602 0E ->	1418	G			
14 D020 0E ->	1470	A			
14 D022 0E ->	1470	A			
14 D040 0E ->	1470	A			
14 D042 0E ->	1470	A			
14 D050 0E ->	1446	A			
14 D052 0E ->	1446	C			
14 D060 0E ->	1452	A			
14 D062 0E ->	1452	B			
14 D070 0E ->	1446	A			
14 D072 0E ->	1446	C			
14 D390 0E ->	1401	A			
14 D392 0E ->	1401	B			
14 D400 0E ->	1420	A			
14 D402 0E ->	1420	B			
14 D410 0E ->	1452	A			
14 D412 0E ->	1452	B			
14 FEAC 0E ->	1000	B			
14 4FF2 0E ->	11FF	A			

005

To check if the serial read card is good get the MD screen as follows:

Press MODE SELECT key.
Key in MD
Press ENTER key.
The DIGITAL DISPLAY should displayed on the screen.
Key in c (for continuous mode).
Press ENTER key.
Compare the DIGITAL DISPLAY and Chart A. Out of the five digital sensors only digital 06 should have an asterisk (*) under it.

Does the Chart A and the digital display indicate the same ?
Y N

006

The serial read card (01A-B2S4) is bad.
After powering down exchange the serial read card.
Go To Map 1000, Entry Point R.

007

Press MODE SELECT key.
Key in MW
Press ENTER key.
The serial read card is good.
Go to Page 2, Step 002, Entry Point B.

CTCA Thermal.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1400	A	1	001
1400	B	2	016

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
1	003	0000	A
2	010	0001	A
2	015	1000	R
2	017	1000	R
2	016	1000	R
2	009	1000	R
2	011	1000	R
2	006	1400	B

001

(Entry Point A)

CAUTION

Before removing or replacing power supplies or cables - power down.

This is a thermal failure in TR301.

Power up the CTCA by entering 00 04 in the PARTIAL POWER UP/DOWN screen. If it powers on, wait for about three to five minutes.

Is CTCA power ON and remains ON (action done)?
Y N

002

Is the UU code of the displayed ref code 1x ?
Y N

003

This is not a power problem.

Go To Map 0000, Entry Point A.

2 2
A B

004

(Entry Point C)

Is the RRRR field D390 ?
Y N

005

Is the RRRR field D392 ?
Y N

006
You either came to the wrong MAP or the failure is an intermittent. Use the ref code on the screen to determine and repair the failure.
Go To Map 1400, Entry Point B.

007
Use ALD page YA609 to find the open thermal line from PS101 to PS301. If the line is good, continue to TR301 and all the way to the MSS (01A-B2) board (Refer to the POWER complex for TR301 thermal switches).

Did you find the open?
Y N

008

(Entry Point D)

Have you just exchanged TR301?
Y N

009
Exchange TR301.
Go To Map 1000, Entry Point R.

010
Problem is not resolved.
Go To Map 0001, Entry Point A.

011
Repair the open .
Go To Map 1000, Entry Point R.

012
TR301 is hot. Check if air flow is prevented around TR301. If the air flow is good, the thermal switch of TR301 is bad.
Go to Step 008, Entry Point D.

013
Check the air flow around the indicated supply.

Is the air flow obstructed ?
Y N

014
Check if this ref code has been recorded twice before in the log book.

Has this ref code been recorded twice before ?
Y N

015
The failure must have been an intermittent failure.
Try to make the machine repeat the fault by hitting lightly in the area of TR/PS301. Also follow the sense line from PS301 (ALD YA609) to the MSS (01A-B2) board.
If you cannot repeat the failure, make a note of this case (ref code) in the log book for future reference.
Go To Map 1000, Entry Point R.

016
Exchange TR301.
Go To Map 1000, Entry Point R.

(Entry Point B)

The RRRR field of the ref code that sent you here is D392, a thermal failure in TR301.
Go to Step 004, Entry Point C.

017
Correct the obstruction.
Go To Map 1000, Entry Point R.

CTCA Analog.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1400	A	1	001
1400	B	4	016

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
4	013	0001	A
4	019	1000	R
4	016	1000	R
4	012	1000	R
4	015	1000	R
4	014	1000	R
2	005	1400	B

001

(Entry Point A)

CAUTION

Power down before removing or exchanging power supplies or cables.

The cause of the failure is that a voltage level is out of the tolerance.

To determine which level is failing, use the ref code and Chart 1 at the right ---------->

Power up the CTCA. (by entering 00 04 in the PARTIAL POWER UP/DOWN screen.)

Chart 1

Ref Code RRRR Field	Volt Level
4172	+1.25
A410 or A412	+6
A512	-3
A590 or A592	+1.25

Is CTCA power on (action done) ?

Y N

002

Is the UU field of the displayed ref code 1X ?

Y N

4 2 2
A B C

003

This is not a power problem.

Go To Map 0000, Entry Point A.

004

Determine if the displayed ref code is listed in Chart 2 at the right ---------->

Chart 2

Ref Code RRRR	CTCA Board Volt Level	Sense CONN	Sense Line Name
4172	+1.25	R6E03	A59
A412	+6	N6D04	A41
A512	-3	E6A03	A51
A592	+1.25	R6E03	A59

Is the RRRR field of the displayed ref code listed in Chart 2 ?

Y N

005

The first failure is caused by the failure indicated by this displayed ref code. To determine and repair, use the displayed ref code.

Go To Map 1400, Entry Point B.

006

(Entry Point C)

Is the RRRR field of the ref code A412 ?

Y N

007

Have you tested the control card and power module of this level ?

Y N

4 4 3
D E F

008

Use the test station to test the power module(s) and the control card of the failing level. The procedure of how to use the test station is in MAP 1004 ENTRY POINT A. After you reached 'return to the MAP you came from', return here.

Did you find failing module(s) or control card ?
Y N

009

(Entry Point D)

Set your CE meter to read about the voltage indicated by the ref code and Chart 2 above

Using Chart 3 connect your CE meter as indicated by the ref code RRRR field and Chart 3 at the right---------->

Check if the meter shows a voltage deflection while powering up the CTCA. Note:If no deflection lower the voltage scale on your meter by one setting.

Power up the CTCA.(by entering 00 04 in the PARTIAL POWER UP/DOWN screen.) and observe your meter for deflection.

Did the meter indicate voltage ?
Y N

010

To determine where to probe next on the IPS301 or PS301 use the ref code and Chart 4 at the right---------->

Connect your meter leads (tool) as indicated in Chart 4.

At first, the voltage is about zero volt then while powering-up it should go to about three volts then back to zero volt.

Power up the CTCA.(by entering 00 04 in the PARTIAL POWER UP/DOWN screen.) and observe the meter.

Did the meter indicate the voltage as described above ?
Y N

4 4 4 4
G H J K

Chart 3

Ref Code RRRR	CTCA Board Sense Connector Probing Point (+)	(-)
4172	A1-K5D03	A1-K5D08
A412	A1-N2B08	A1-P4D08
A512	A1-K5B06	A1-K5D08
A592	A1-K5D03	A1-K5D08

Chart 4

Ref Code RRRR	Probing Point on IPS301 (CTCA) (+)	(-)
4172	A2-C2G08	frame
A412	PS301 CON.5-1	frame
A512	A2-C4G08	frame
A592	A2-C2G08	frame

011

Have you just exchange PS301 ?
Y N

012
Exchange PS301.
Go To Map 1000, Entry Point R.

013
Problem is not corrected.
Go To Map 0001, Entry Point A.

014

(Entry Point H)

Using ALD page YA688, find and repair, the open voltage line from the IPS301 to the CTCA board.
Go To Map 1000, Entry Point R.

015

(Entry Point F)

The sense line of that voltage in the CTCA board is open, this could occur in one of the two locations.
1. Sense connector on the board is loose or
2. The sense line from the board to 01A-B2 board is open. Use the 'Sense Line Name' column in Chart 2 and ALD page YA671 to locate and repair the failure.

Go To Map 1000, Entry Point R.

016
Exchange the failing control card or power module.
Go To Map 1000, Entry Point R.

(Entry Point B)

The cause of the failure is that a voltage level is out of the permissible tolerance.
To determine which level is failing, use the ref code and Chart 1 above.
Go to Page 2, Step 006, Entry Point C.

017
Go to Page 3, Step 009, Entry Point D.

018
Go to Page 3, Step 009, Entry Point D.

019
The failing was an intermittent.
Check for poor connection of flat wire system (FDS) connectors on the back side of the indicated board, or poor sense cable connection. Move and lightly hit cables to see if the failure can be generated. Use Chart 2 for board location.
Go To Map 1000, Entry Point R.

CTCA AC TR301.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1400	A	1	001
1400	B	3	017
1400	G	4	024

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
2	012	0001	A
3	016	0001	A
3	022	0001	A
4	027	0001	A
3	023	1000	R
2	008	1000	R
2	009	1000	R
3	019	1000	R
3	021	1000	R
2	013	1000	R
3	017	1000	R
4	028	1000	R
4	029	1000	R
2	005	1400	B

001

(Entry Point A)

CAUTION

Power down before removing or exchanging power supplies or cables.

The cause of the failure is that there is no ac voltage to TR301.

Power on the CTCA by entering 00 04 in the PARTIAL POWER UP/DOWN screen.

Is CTCA power ON (action done) ?

Y N

002

Is the UU field of the displayed ref code 1X ?

Y N

3 2 2
A B C

003
This is not a power problem.
Go To Map 0000, Entry Point A.

004

Is the displayed ref code RRRR field 4072 ?
Y N

005
The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.
Go To Map 1400, Entry Point B.

006

(Entry Point C)

Either there is no ac voltage to TR301 or the fuse in TR301 is failing.
Check if TR301's fuse is good.

Is the fuse good ?
Y N

007

Have you just exchanged TR301 fuse ?
Y N

008
Exchange TR301's fuse.
Go To Map 1000, Entry Point R.

009
DANGER
This connector has a high voltage. Be careful when you measure not to short circuit or touch the metal part of the meter lead (tool). Power down, CB1 off, before exchanging.

Using ALD page YA609 disconnect the output connectors one at a time of PS301 until the fuse stops to go bad, during power up. Find and correct the short circuit.
Go To Map 1000, Entry Point R.

010
Locate TR301 connector 1 and disconnect it.
Set the CE meter to measure the ac line voltage.
Connect your CE meter to TR301 connector 1 at the cable end (not the connector end that leads to the TR).

Did the meter indicate the line ac voltage ?
Y N

011
DANGER
The PCC box has a high voltage. Be careful when you measure not to short circuit or touch the metal part of any cable in the PCC box. Power down, CB1 off, before exchanging.

Use ALD to find where the ac line to TR301 connector 1 is open, starting from TR301 connector 1 (YA609) to the PCC box.

Did you find the open ?
Y N

012
Problem is not corrected.
Go To Map 0001, Entry Point A.

013
Repair or exchange the cable.
Reconnect the connector you disconnected.
Go To Map 1000, Entry Point R.

014
Reconnect the connector you disconnected.
Locate the pins in TR301 TB 1 where the ac line enters the TR. Use ALD page YA609.
Set the CE meter to measure the ac line voltage.
Connect your CE meter to TR301 TB 1 pins.

Did the meter indicate the ac voltage ?
Y N

05DEC80 PN 8633143
EC 379604 PEC 379599
SEQ378 MAP 1418-2

015

Use ALD YA609 to find where the ac line to TR301 TB 1 is open, starting from TR301 connector 1 to TR301 TB 1.

Did you find the open ?

Y N

016

Problem is not corrected.

Go To Map 0001, Entry Point A.

017

Repair or exchange the cable.

Go To Map 1000, Entry Point R.

(Entry Point B)

The cause of the failure is that there is no ac to TR301.

Go to Page 2, Step 006, Entry Point C.

018

Check if PS301 connector 3 is connected tightly.

Is PS301 connector 3 connected tightly ?

Y N

019

Connect PS301 connector 3 tightly.

Go To Map 1000, Entry Point R.

020

Have you just exchanged PS301 ?

Y N

021

Exchange PS301.

Go To Map 1000, Entry Point R.

022

Problem is not corrected.

Go To Map 0001, Entry Point A.

023

The failure was an intermittent.

DANGER

The PCC box has a high voltage. Be careful when you measure not to short circuit or touch the metal part of any cable in the PCC box. Power down, CB1 off, before exchanging.

Check the AC line from the PCC (ALD page YA411) to TR301 (ALD page YA609) for good connection. The line starts at PCC connector 57 and goes through TB205 to TR301.

Go To Map 1000, Entry Point R.

024

(Entry Point G)

CAUTION

Power down before removing or exchanging power supplies or cables.

The RRRR field of the ref code is A602.

The cause of the failure indicated by this ref code is that the IPS301 control line (C24) is short circuited to ground or the power module is short circuited.

The failure could be on the -3Vdc or on the +1.25Vdc level.

Have you tested the control cards and the power modules of both levels ?

Y N

025

Use the test station to test the control card and the power module of the failing level. The procedure for using the test station is in MAP 1004 ENTRY POINT A. After reaching the statement 'return to the MAP you came from', return here.

Did you find the failing module or control card ?

Y N

026

(Entry Point F)

Use ALD page YA686 to find where the start line, C24, is short circuited to ground, starting from the MSS (B2) board to the IPS301 .

Did you find the failure ?

Y N

027

Problem is not corrected.

Go To Map 0001, Entry Point A.

028

Repair the failure.

Go To Map 1000, Entry Point R.

G H

G H SEQ378 MAP 1418-4

029

Exchange the failing control card or power module.

Go To Map 1000, Entry Point R.

030

Go to Step 026, Entry Point F.

CTCA CP.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1400	A	1	001
1400	B	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
5	037	0001	A
5	034	1000	R
5	036	1000	R
6	038	1000	R
6	039	1000	R
2	008	1000	R
2	012	1000	R
2	013	1000	R
3	015	1000	R
2	014	1000	R
4	020	1000	R
4	022	1000	R
5	023	1000	R
5	024	1000	R
5	029	1000	R
5	030	1000	R
2	005	1400	B

001

(Entry Point A)

CAUTION

Before removing or replacing power supplies or cables - power down.

To determine which voltage level is indicated, use the ref code and Chart 1.

(Entry Point B)

The failure indicated by this ref code is that there is a short circuit on the load of PS301 or PS301's CP(s) is tripped. PS301 is the bulk and bias supply to the IPS301.

Ensure that all PS301 CPs are set on.

Power up the CTCA by entering 00 04 in the PARTIAL

(Step 001 continues)

Chart 1

Ref Code RRRR	Voltage Level
4080	+6
4090	+1.25 Bias or Bulk
4100	-3 Bulk
4110	-3 Bias
D400 & D402	any one

(Step 001 continued)
POWER UP/DOWN screen.

Is CTCA power ON (action done) ?
Y N

002

Is the UU field of the displayed ref code 1X ?
Y N

003
This is not a power problem.
Go To Map 0000, Entry Point A.

004

Is the displayed RRRR field D402 ?
Y N

005
The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.
Go To Map 1400, Entry Point B.

006
Check if any PS301 CP is tripped.

Did any PS301 CP(s) trip ?
Y N

007
Check connectors 1 & 4 on PS301 for good connection.

Are the connectors connected tightly ?
Y N

008
Connect the connector tightly.
Go To Map 1000, Entry Point R.

5 3
A B C

C

009
Set the CE meter to read about 5Vdc.
Locate PS301 connector 4.
Connect the positive meter lead to connector 4 pin 3 and the other meter lead to connector 4 pin 8 while the connector is connected.

Does the meter indicate about 5Vdc ?
Y N

010
Set each PS301 CP off and then on (one at a time).

Does the meter indicate about 5Vdc ?
Y N

011
Set the CE meter to read about 24Vdc.
Locate PS301 connector 1.
Connect the positive meter lead to connector 1 pin 1 and the other meter lead to connector 1 pin 2 while the connector is connected.

Does the meter indicate about 24Vdc ?
Y N

012
PS301 is good.
Starting with ALD page YA609 check, the 24Vdc control voltage from PS101 to PS301 for an open. Find and repair the open.
Go To Map 1000, Entry Point R.

013
PS301 CP auxiliary contact is failing.
Exchange PS301.
Go To Map 1000, Entry Point R.

014
PS301 CP auxiliary contact is failing. Make a note of this case and if it occurs again exchange PS301.
Go To Map 1000, Entry Point R.

3
D

015

PS301 is good.

Starting with ALD page YA609 check for open PS301 CP sense line from connector 4 to the MSS (B2) board. Also check the connector card in the MSS board A4 socket by searching for the point where the 5Vdc you just measured is lost. Find and repair the open.

Go To Map 1000, Entry Point R.

016

Make a note of the CP number(s) and set PS301 CP(s) on.

Use Chart 2 to determine which level is failing.

Chart 2

PS301 CP Number	Voltage Level
CP1	+6 Volt
CP2	1.25 Bias
CP3	-3 Bias
CP4	-3 Bulk
CP5	1.25 Bulk

Was CP1 tripped ?

Y N

017

Have you tested the control card and the module of this level ?

Y N

018

(Entry Point F)

Use the test station to test the control card and the power module of the failing level. The procedure for using the test station is in MAP 1004 ENTRY POINT A. After reaching the statement 'return to the MAP you came from', return here.

Did you find a failing module or control card ?

Y N

019

(Entry Point D)

Use Chart 3 to locate terminal(s) on IPS301 and disconnect the indicated terminal(s) by the voltage level (YA680 or YA685).

Power up the CTCA by entering 00 04 in the PARTIAL POWER UP/DOWN screen.

Chart 3

Voltage Level	Terminal on IPS301 03A pin
1.25 Bulk	A2-A3 E2 & F1
-3 Bulk	A2-A3 E7 & F6
1.25 Bias	A2-A3 7 & 6
-3 Bias	A2-A3 9 & 8

Did any PS301 CP(s) trip ?
Y N

020

There is a short circuit on the IPS301 board where the indicated voltage level is located.

Repair the failing IPS301 board or exchange it.

Reconnect all the terminals you disconnected.

Go To Map 1000, Entry Point R.

021

Reconnect all the terminals you disconnected.

Use Chart 4 to locate the voltage level terminal(s) on PS301 and disconnect the indicated terminal(s). (YA609)

Set the CP(s) that tripped on PS301.

Power up the CTCA by entering 00 04 in the PARTIAL POWER UP/DOWN screen.

Chart 4

Voltage Level	Terminal on PS301 Connector 6
1.25 Bulk	TB1 & TB3 4-5
-3 Bulk	TB2 & TB3 6-7
1.25 Bias	CON. 6 4 & 2
-3 Bias	CON. 6 5 & 3

Did any PS301 CP(s) trip ?
Y N

022

The line that goes from the PS301 to the IPS301 has a short circuit (the line you disconnected).

Repair that line or exchange it.

Go To Map 1000, Entry Point R.

023
PS301 has either an internal or a terminal short circuit.
Repair or exchange PS301.
Reconnect all the terminals you disconnected.
Go To Map 1000, Entry Point R.

024
Exchange the failing control card or power module(s).
Go To Map 1000, Entry Point R.

025

Have you tested all of the power modules of that level ?
Y N

026
There could be two or more failing power modules.
Go to Page 3, Step 018, Entry Point F.

027
Go to Page 4, Step 019, Entry Point D.

028
Disconnect PS301 connector 5.
Set the CP(s) that tripped on PS301.
Power up the CTCA by entering 00 04 in the PARTIAL POWER UP/DOWN screen.

Did any PS301 CP(s) trip ?
Y N

029
PS301 is good.
The short circuit could be either in the cable, on cards in the 03A-A1 board, or in the 03A-A1 board.
Check the cable from PS301 to the 03A-A1 board for any damage. If the cable is good, check the cards in the 03A-A1 board by removing half of the cards at a time, powering up each time, and checking if the CP trips.
After all the cards are removed, if the CP trips, exchange the 03A-A1 board.
Go To Map 1000, Entry Point R.

030
PS301 has either an internal or a terminal short circuit.
Repair or exchange PS301.
Reconnect all the terminals you disconnected.
Go To Map 1000, Entry Point R.

031

Did you set any PS301 CP on ?
Y N

032
The failure was an intermittent.
The failure is in the PS301 CP sense line. Starting with connector 4 pins 3 and 8 in PS301 (ALD page YA609) follow the sense line to the MSS (01A-B2) board, moving and lightly hitting the cable and connectors to generate the fault again.

Did you generate the fault again ?
Y N

033
Check in the CE log book to see if this problem has been recorded before.

Has this problem occurred before ?
Y N

034
Record the ref code in the CE log book for future reference.
Go To Map 1000, Entry Point R.

035

Has PS301 been exchanged for this problem ?
Y N

036
Exchange PS301.
Go To Map 1000, Entry Point R.

037
Problem is not resolved.
Go To Map 0001, Entry Point A.

14MAY80 PN 8633144
EC 379599 PEC -------
SEQ380 MAP 1420-5

038

Repair the fault.

Go To Map 1000, Entry Point R.

039

There may be a short circuit from PS301 to IPS301 (03A gate). Try to generate the fault by moving and lightly hitting the cables starting from PS301 to the IPS.

Go To Map 1000, Entry Point R.

REF.CODE 1438XXXX FIX 0002

CTCA IPS 5V BIAS.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1400	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
1	003	0000	A
2	015	1000	R
2	009	1000	R
2	013	1000	R
2	011	1000	R
2	010	1000	R
2	014	1000	R
2	005	1400	B

001

(Entry Point A)

CAUTION

Before removing or replacing power supplies or cables - power down.

The failure indicated by this ref code is that the +5Vdc bias to the IPS301 (03A gate) is missing.

Power up the CTCA by entering 00 04 in the PARTIAL POWER UP/DOWN screen.

Is CTCA power ON (action done) ?

Y N

002

Is the UU field of the displayed ref code 1X ?

Y N

003

This is not a power problem.

Go To Map 0000, Entry Point A.

004

Is the displayed RRRR field A310 or A312 ?

Y N

2 2 2
A B C

005

The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.
Go To Map 1400, Entry Point B.

006

Set the CE meter to read about 5Vdc.
Locate connector A2 on the IPS301 board.
Connect the positive meter lead to connector A2 pin 2 and the other meter lead to connector A2 pin 3 while the connector is connected.

Does the meter indicate about 5Vdc ?
Y N

007

Locate TB206.
Connect the positive meter lead to TB206 pin 3 and the other meter lead to TB206 pin 4 while the connector is connected.

Does the meter indicate about 5Vdc ?
Y N

008

Locate PS101 connector 7 .
Connect the positive meter lead to PS101 connector 7 pin 3 and the other meter lead to PS101 connector 7 pin 8 while the connector is connected.

Does the meter indicate about 5Vdc ?
Y N

009

Exchange PS101.
Go To Map 1000, Entry Point R.

010

The line from PS101 to TB206 is open.
Repair or exchange that cable.
Go To Map 1000, Entry Point R.

011

The line from TB206 to the IPS301 is open.
Repair or exchange that cable.
Go To Map 1000, Entry Point R.

D

012

On the IPS301 board connect the positive meter lead on B4-D03 pin and the other lead to B4-D08 pin.

Does the meter indicate about 5Vdc ?
Y N

013

Repair or exchange the IPS board.
Go To Map 1000, Entry Point R.

014

The IPS301 board is good.
Check for open in the '+5 volt IPS bias sense line', starting from the IPS301 board connector card position B4 to the B2 board socket A4 (ALD page YA686)
Repair or exchange that cable.
Go To Map 1000, Entry Point R.

015

The failure was an intermittent.
Follow the +5V line from PS101 (ALD page YA601) to the IPS301 (03A-A2) board. The line starts at PS101 connector 7 and goes through TB206 to 03A-A2A2 connector. Move and lightly hit the cable and connectors to try to generate the fault again. Also follow the sense line from IPS301 (ALD page YA686) to the MSS (01A-B2) board.
Go To Map 1000, Entry Point R.

CTCA IPS OV & OC.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1400	A	1	001
1400	C	2	007

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	004	0000	A
2	010	0001	A
3	021	1000	R
3	019	1000	R
3	020	1000	R
2	012	1000	R
3	015	1000	R
3	017	1000	R
3	016	1000	R
2	006	1400	B

001

(Entry Point A)

CAUTION

Before removing or replacing power supplies or cables - power down.

To determine which voltage level is failing, use the ref code and Chart 1 at the right---------->

(Entry Point B)

The failure is an over voltage (OV) or over current (OC) condition.

Reset any CP's on PS301 that may have tripped.

The most probable failure for OV is the IPS control card or a short circuited pass device on the power module.

(Entry Point D)

Use the test station to test the control card and the power module of the failing level. The procedure for using the test station is in MAP 1004 ENTRY POINT A. After reaching the statement 'return to the MAP you came from', return here.

(Step 001 continues)

Chart 1

Ref Code RRRR	Voltage Level	Case
4100	-3	OV
4130	+1.25	OV
D050 or D052	+1.25	OC
D070 or D072	-3	OC

(Step 001 continued)

Did you find the failing module or card ?
Y N

002

(Entry Point F)

Power up the CTCA by entering 00 04 in the PARTIAL POWER UP/DOWN screen.

Is CTCA power ON (action done) ?
Y N

003

Is the UU code of the displayed ref code 1X ?
Y N

004
This is not a power problem.
Go To Map 0000, Entry Point A.

005

Is the displayed RRRR field listed in Chart 1 ?
Y N

006
The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.
Go To Map 1400, Entry Point B.

007
(Entry Point C)

Use the ref code on the screen and Chart 1 to determine which level is failing.

Have you just tested the card and module of this level ?
Y N

008
Go to Page 1, Step 001, Entry Point B.

3 3
A B C

C SEQ386 MAP 1446-2

009
Use the ref code on the screen and Chart 1 to determine the failing voltage level and the case.

Does the ref code indicate an over current condition for that voltage level ?
Y N

010
Problem is not corrected.
Go To Map 0001, Entry Point A.

011
Check if the required number of power module(s) is in the IPS301 for the indicated level.

Is the number of power modules correct ?
Y N

012
Add power module(s) to get the correct total number.
Go To Map 1000, Entry Point R.

013
A loose sense capacitor will give a current limit indication on the same or on another voltage level.
Inspect on TBB2 for any loose sense capacitor(s).

Did you find any loose capacitors ?
Y N

014
Inspect the FDS of the failing level for insulation break-down (if any it will be at the folds where a level and ground FDS runs together). Also check for pinched cables.

Did you find any FDS or cable failures ?
Y N

3 3 3
D E F

015

The over current condition could be caused by a short circuit.

The short circuit could be either in the cable, on cards in the 03A-A1 board, or in the 03A-A1 board.

Check the cable from IPS301 to the 03A-A1 board for damage. If the cable is good, check the cards in the 03A-A1 board by taking out half of the cards at a time and checking if the CP trips when attempting to power up.

If all the cards are out, and if the OC indicates, exchange the 03A-A1 board first, then the IPS301 board.

Go To Map 1000, Entry Point R.

016

Exchange the failing FDS or cable(s).

Go To Map 1000, Entry Point R.

017

Insure that the capacitor is well connected.

Go To Map 1000, Entry Point R.

018

The failure was an intermittent.

This failure could have been caused by a brief short circuit of the decoupling capacitor on a card of the voltage level indicated by the ref code in the above Chart 1.

All cards in the 03A gate A1 board use the -3.0Vdc and +1.25Vdc levels.

Has this failure occurred twice in the last month (see the CE log book) ?

Y N

019

The failure was an intermittent. Make a note of the ref code in the CE log book in case this problem occurs again.

Go To Map 1000, Entry Point R.

020

Exchange the cards which use the indicated voltage level. (See Maintenance Information Vol. 17 03A Gate Card Layout for card location.)

Go To Map 1000, Entry Point R.

021

Exchange the failing part.

Go To Map 1000, Entry Point R.

CTCA IPS UV.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1400	A	1	001
1400	B	2	013

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
1	003	0000	A
2	010	0001	A
2	015	1000	R
2	012	1000	R
2	013	1000	R
2	011	1000	R
2	005	1400	B

001

(Entry Point A)

CAUTION

Power down before removing or replacing power supplies or cables.

The ref code indicates an under voltage condition of one of the IPS301 voltage levels.

To determine which voltage level is failing use the ref code and Chart 1 at the right---------->

Power up the CTCA by entering 00 04 in the PARTIAL POWER UP/DOWN screen.

Chart 1

Ref Code RRRR Field	Volt Level
D060 or D062	-3 U.V.
D410 or D412 or 4120	+1.25 U.V.
	+1.25 U.V.

Is CTCA power ON (action done) ?

Y **N**

002

Is the UU field of the displayed ref code 1X ?

Y **N**

003

This is not a power problem.

Go To Map 0000, Entry Point A.

2 2
A B

004

Is the displayed RRRR field listed in Chart 1 ?
Y N

005
The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.
Go To Map 1400, Entry Point B.

006

(Entry Point C)

Have you tested the control card and power module of this voltage level ?
Y N

007
Use the test station to test the control card and the power module of the failing voltage level. The procedure for using the test station is in MAP 1004 ENTRY POINT A. After reaching the statement 'return to the MAP you came from', return here.

Did you find the failing card or module ?
Y N

008

(Entry Point D)

Check for open lines starting from IPS301 to the MSS (B2) board of the failing level's 'U.V. sense line' (YA686).

Did you find the discontinuity ?
Y N

C D E F

009
Check the connector card in the MSS (B2) board, where the failing sense line enters (A4 socket), for an open.

Did you find any failure ?
Y N

010
Problem is not corrected.
Go To Map 0001, Entry Point A.

011
Repair the failure.
Go To Map 1000, Entry Point R.

012
Repair or exchange the cable.
Go To Map 1000, Entry Point R.

013
Exchange the failing part(s).
Go To Map 1000, Entry Point R.

(Entry Point B)

The ref code indicates an under voltage condition of one of the IPS301 voltage levels.
To determine which level is failing, use the ref code and Chart 1.
Go to Step 006, Entry Point C.

014
Go to Step 008, Entry Point D.

015
The failure was an intermittent.
The failure is in the UV sense line or the ON/OFF control line. Starting from IPS301 (ALD page YA686) follow both lines to the MSS (01A-B2) board, moving and lightly hitting the cable and connectors to generate the fault again.
Go To Map 1000, Entry Point R.

MAP CODE 1470XXXX FIX 0002

CTCA Air Moving Device.

PAGE 1 OF 3

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1400	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
2	010	0001	A
2	014	0001	A
3	017	0001	A
3	020	1000	R
3	021	1000	R
3	018	1000	R
2	013	1000	R
2	011	1000	R
3	016	1000	R
2	005	1400	B

001

(Entry Point A)

CAUTION

Before removing or replacing power supplies or cables - power down.

The ref code indicates that one of the air moving devices (AMD) of the CTCA feature (AMD301 or AMD302) is failing.

Determine which AMD is indicated using the displayed ref code and Chart 1 at the right---------->

Power up the processing unit by entering 00 04 in the PARTIAL POWER UP/DOWN screen.

Chart 1

RRRR	AMD	Location
D020 or D022	AMD302	IPS301
D040 or D042	AMD301	PS301

Is CTCA power ON (action done) ?

Y N

002

Is the UU field of the displayed ref code 1X ?

Y N

3 2 2
A B C

MODEL GROUP 1 AND 2

003
This is not a power problem.
Go To Map 0000, Entry Point A.

004

Is the displayed RRRR field in Chart 1 ?
Y N

005
The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.
Go To Map 1400, Entry Point B.

006
Check if there is an obstruction preventing the air flow of the indicated device (could also be cables).

Did you find an obstruction preventing the air flow ?
Y N

007
Check if the indicated AMD starts to run when you power up the CTCA.
Power up the processing unit by entering 00 04 in the PARTIAL POWER UP/DOWN screen and see if the indicated AMD starts to run.

Did the indicated AMD start to run ?
Y N

008
To check if ac voltage is supplied to the device, disconnect the ac line connector from the device and connect your CE meter to the cable end of the connector.
Set the CE meter to measure the line ac voltage.
Check if the meter reads the ac line voltage for a few seconds when you power up the CTCA.
Power up the processing unit by entering 00 04 in the PARTIAL POWER UP/DOWN screen and check for ac voltage on the meter.
(Step 008 continues)

3
D E

(Step 008 continued)

Did the meter indicate the ac voltage ?
Y N

009
Using ALD page YA417 check where the ac line is open starting from the indicated fan connector, to the connector 25 in the primary control compartment (PCC).

Did you find the open ?
Y N

010
Problem is not corrected.
Go To Map 0001, Entry Point A.

011
Repair or exchange the cable.
Reconnect the ac connector that you disconnected to measure the ac voltage.
Go To Map 1000, Entry Point R.

012

Did you just exchange the indicated AMD ?
Y N

013
Exchange the indicated AMD.
Go To Map 1000, Entry Point R.

014
Problem is not corrected.
Go To Map 0001, Entry Point A.

015

Did you just exchange the indicated AMD's air flow sensor ?
Y N

3 3
F G

016
Exchange the indicated air flow sensor.
Install the new AFS with the hole of the AFS aligned in the direction of the air flow so that the air flow from the AMD flows directly through the hole (NOTE: Exchange the AFS and bracket as a unit).

Go To Map 1000, Entry Point R.

017
Problem is not corrected.
Go To Map 0001, Entry Point A.

018
Correct the air flow obstruction.
Go To Map 1000, Entry Point R.

019
The failure is an intermittent.
Compare (visually and by sound) the indicated AMD with a similar AMD on the same machine.

Does the indicated AMD seem about the same ?
Y N

020
Repair or exchange the indicated AMD.
Go To Map 1000, Entry Point R.

021
Check the AFS of the indicated AMD for dirt or air flow obstruction.
Check the air flow of the indicated AMD for obstruction.
If you find any failure, correct it. If no failure is found, record the ref code in the CE log book.
If this failure occurs again, exchange the AFS of the indicated AMD.
Install the new AFS with the hole of the AFS aligned in the direction of the air flow so that the air flow from the AMD flows directly through the hole (NOTE: Exchange the AFS and bracket as a unit).
Go To Map 1000, Entry Point R.

CTCA PS301.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1400	A	1	001
1400	B	6	030

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0000	A
4	020	0001	A
3	016	0001	A
5	026	0001	A
6	029	0001	A
6	033	1000	R
2	011	1000	R
3	013	1000	R
3	015	1000	R
3	017	1000	R
5	024	1000	R
4	021	1000	R
6	031	1000	R
2	005	1400	B

001

(Entry Point A)

CAUTION

Power down before removing or replacing power supplies or cables.

The ref code indicates a bulk or bias voltage line or sense line failure.

Determine which level the ref code is indicating by using the ref code and Chart 1 at the right------->

Power up the CTCA by entering 00 04 in the PARTIAL POWER UP/DOWN screen.

Chart 1

Ref Code RRRR	Voltage Level
4020 or 4152	+1.25 Bias
4030 or 4032	-3 Bulk
or A600	-3 Bulk
A430 or A432	+1.25 Bulk
or 4122	+1.25 Bulk
A440 or A442	+1.25 Bias
A450 or A452	-3 Bias
A510 or 4162	-3 Bias

(Step 001 continues)

(Step 001 continued)

Is CTCA power ON (action done) ?
Y N

002

Is the UU field of the displayed ref code 1X ?
Y N

003
This is not a power problem.
Go To Map 0000, Entry Point A.

004

Is the RRRR field of the displayed ref code listed in Chart 1 ?
Y N

005
The first ref code was caused by the failure indicated by this displayed ref code. To determine and repair the failure, use this displayed ref code.
Go To Map 1400, Entry Point B.

006

(Entry Point C)

Have you tested the control card and power module of this level ?
Y N

007
Use the test station to test the power module(s) and the control card of the failing level. The procedure of how to use the test station is in MAP 1004 ENTRY POINT A. After you have reached 'return to the MAP you came from', return here.

Did you find a failing module or control card ?
Y N

6 6 6
A B C D

D

008

(Entry Point D)

Locate the probing point on PS301 using the indicated bulk or bias voltage and Chart 2 below.

Connect your CE meter's leads(tool) as indicated in Chart 2.

Set the CE meter to read 15Vdc maximum.

Check if the meter measures about the voltage indicated in Chart 2.

Chart 2

Indicated Voltage	Measure Volts (D.C.)	Terminal on PS301 (+) pins	(-) pins
+1.25 Bias	+12.1	CON.6	4 2
-3 Bias	+12.1	CON.6	5 3
+1.25 Bulk	+9.7	TB1-1	TB3-1
-3 Bulk	+9.7	TB2-1	TB3-1

Did the meter indicate the voltage ?
Y N

009
Switch the CP of that level on PS301 to off position and then to on (ALD YA609).
Observe your meter for voltage indication.

Did the meter indicate the voltage ?
Y N

010
Check if PS301 connector 3 is connected tightly.

Is connector 3 plugged in tightly ?
Y N

011
Connect PS301 connector 3 tightly.
Go To Map 1000, Entry Point R.

3 3 3
E F G

012
Using ALD page YA609 check the ac voltage out of TR301.

Is the ac voltage out of TR301 good ?
Y N

013
Find and repair the open line from TR301 to PS301.
Go To Map 1000, Entry Point R.

014

Did you just exchange PS301 ?
Y N

015
Exchange PS301.
Go To Map 1000, Entry Point R.

016
Problem is not corrected.
Go To Map 0001, Entry Point A.

017
The CP that you switched off and on is failing. Exchange the supply (PS301).
Go To Map 1000, Entry Point R.

018
Locate the probing point on IPS301 using the indicated bulk or bias voltage level and Chart 3 at the right---------->
NOTE: See MIM VOL13/16 Page 20-195 for a diagram of IPS301.
Connect your CE meter's leads(tool) as indicated in Chart 3.
Set the CE meter to read 15Vdc maximum.
Check if the meter measures about the voltage indicated in Chart 3.

(Step 018 continues)

Chart 3

Indicated Voltage	Read Volts (D.C.)	Terminal on IPS301 (+)	(-)
+1.25 Bias	+12.1	A2A3-7	A2A3-6
-3 Bias	+12.1	A2A3-9	A2A3-8
+1.25 Bulk	+9.7	A2E2	A2F1
-3 Bulk	+9.7	A2E7	A2F6

(Step 018 continued)

Did the meter indicate the voltage ?
Y N

019
The line between PS301 and IPS301 is open.
Use the ALDs to find the open.

Did you find the open ?
Y N

020
Problem is not corrected.
Go To Map 0001, Entry Point A.

021
(Entry Point F)

Repair or exchange the cable.
Go To Map 1000, Entry Point R.

022
Disconnect your CE meter's positive lead and connect it to the frame (GND). Leave the other lead where it is now connected.

This test is to check if there is a ground shift of more than 1Vdc.

Set the CE meter to read 5Vdc maximum.

Check if the meter shows a voltage indication while powering up the CTCA.

Power up the CTCA by entering 00 04 in the PARTIAL POWER UP/DOWN screen and observe your meter for voltage indication.

Did the meter indicate more than 1Vdc ?
Y N

5 5
H J

023

To check for open in the control (POWER ON) line of +1.25V and -3V use the following procedure:

Power off on the OCP.
Ensure that PCC CB1 and CB2 are set off.
Disconnect 03A-A2B5 connector card.
Set the CE meter to measure ohms.
Connect the CE meter leads(tool) as follows:

Start Line	Points		
+1.25	01A-B2C2J12	to	03A-A2B5D09
-3	01A-B2C2J12	to	03A-A2B5D11

Did both lines show continuity ?
Y N

024

Using ALD YA686, find and repair the open.
Go To Map 1000, Entry Point R.

025

The failure is in the sense line.
Check for open in the failing level sense line from IPS301 to the MSS (B2) board socket A4.

Did you find the open ?
Y N

026

Problem is not corrected.
Go To Map 0001, Entry Point A.

027
Go to Page 4, Step 021, Entry Point F.

028

The line from the IPS301 to TBB2 is open.
Locate where the open is.

Did you find the open ?
Y N

029
Problem is not corrected.
Go To Map 0001, Entry Point A.

030
Go to Page 4, Step 021, Entry Point F.

(Entry Point B)

The ref code indicates a bulk or bias voltage line or sense line failure.
Determine which voltage level the ref code is indicating by using the ref code and Chart 1 in step 001 in this MAP.
Go to Page 2, Step 006, Entry Point C.

031
Exchange the failing control card or power module
Go To Map 1000, Entry Point R.

032
Go to Page 2, Step 008, Entry Point D.

033
The failure is an intermittent.
Try to generate the failure again by moving and lightly hitting the FDS cables of the indicated bulk voltage level from PS301 (ALD YA609) to IPS301 (ALD YA680).
NOTE: the ref code may change even though the failure is the same.
Go To Map 1000, Entry Point R.

MAP CODE 1701XXXX FIX 0005

I/O Reference Code.

PAGE 1 OF 4

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	004	1000	R
4	018	1000	R
4	020	1000	R
4	023	1000	R
3	012	1000	R
3	015	1000	R
2	006	1000	R
2	008	1000	R
3	009	1000	R

001

(Entry Point A)

CAUTION

TAKE THE NECESSARY PRECAUTIONS NOT TO DAMAGE ANY INFORMATION ON THE I/O'S (FOR EXAMPLE, UNLOAD TAPES FROM TAPE DRIVES, DISKS FROM DISK DRIVES, ETC.).

You entered this MAP with a ref code of 1770120E.

This ref code indicates that there is a fault in one of the following:

1. The Standard Power Interface (SPI) panel
2. The I/O unit
3. Cables between the SPI panels, also the dummy plug.
4. The time given to complete the powering up of the attached I/O units is not enough

For information on the Standard Power Interface, see the following pages in MIM VOL 13/16: 10-070, 14-425, and 20-270.

If you are installing this machine, follow the yes leg of the next question.

(Step 001 continues)

(Step 001 continued)

Did you just add I/O units to the system?
Y N

002

(Entry Point B)

Remove the SPI panel cover.
Disconnect the I/O (SPI CU1) connector in the first position and plug the SPI dummy plug into that position. Ensure that the dummy plug is connected tightly at both ends. For connector location and numbering see 'SPI Gate 01D' in MIM VOL 13/16, Section 10 'Locations'.
Power up the I/O by entering 00 07 in the PARTIAL POWER UP/DOWN screen.

Is I/O STATUS ON (ACTION DONE on screen) ?
Y N

003
Set the CE meter to measure +24Vdc.
SPI Card P 0 Connector 0 Pins 8 & 9 (ALD YA811) both should have between +21Vdc and +27Vdc with respect to the frame (GND). Connect the negative meter lead to the frame and the positive meter lead to SPI Card P 0 Connector 0 Pins 8 & 9 one at a time, while hardwired sequence power is on.
For connector location and numbering see 'SPI Gate 01D' in MIM VOL 13/16, Section 10 'Locations'.
NOTE: Ensure that Connector 0 is connected correctly. The correct connection is, when the connector is connected, pin 1 of both the card and of the connector should be located closest to you.

Did the meter indicate between +21Vdc and +27Vdc at BOTH Pins 8 and 9 ?
Y N

4 3
A B C D

C D

SEQ395 MAP 1701-2

004
Use the ALD to locate and repair where the 24Vdc is lost, starting from PS101 connector 5 (YA601) to the SPI P 0 card pins.
Go To Map 1000, Entry Point R.

005
Measure voltage from SPI card P 0 connector 9 pin 1 to frame while hardwired sequence power is up.

Does the meter indicate between +21Vdc and +27Vdc ?
Y N

006
Using ALD YA821 locate where the +24Vdc is failing.
If cable is correct, exchange the SPI P 0 card.
NOTE: If the SPI P 0 card has a pluggable relay, first exchange the relay. If that does not fix the problem, exchange the SPI P 0 card.
NOTE: When exchanging the SPI P 0 card, ensure that connector 0 is connected correctly. The correct connection is, when the connector is connected, pin 1 of both the card and of the connector should be located closest to you.
Go To Map 1000, Entry Point R.

007
Measure voltage at the same connector pins 1 & 3 while the negative meter lead is on the frame. They should have between +21Vdc and +27Vdc with respect to frame (GND) while I/O power is coming up.
Power up I/O by entering 00 07 in the PARTIAL POWER UP/DOWN screen.

Did the meter indicate between +21Vdc and +27Vdc on BOTH Pins 1 and 3 ?
Y N

008
Exchange the SPI P 0 card.
NOTE: If the SPI P 0 card has a pluggable relay, first exchange the relay. If that does not fix the problem, exchange the SPI P 0 card.
Go To Map 1000, Entry Point R.

3
E

009

DANGER

BEFORE REMOVING ANY PANEL, FIRST REMOVE ALL CABLES CONNECTED TO THE PANEL. NOTE: THE CABLES MAY HAVE +24VDC PRESENT EVEN THOUGH THE MACHINE IS POWERED DOWN.

Exchange SPI P 1 panel. If there is a spare panel, swap and mark the failing one.
Go To Map 1000, Entry Point R.

010

(Entry Point C)

Disconnect the dummy plug and reconnect the connector you disconnected earlier from this position.
In the PARTIAL POWER UP/DOWN screen the STATUS of the I/O is OFF
Disconnect the next I/O connector and plug the SPI dummy plug into that position. If there are no more I/O units, connect it in the first empty location.
Check in the PARTIAL POWER UP/DOWN screen the STATUS of I/O

Is the I/O STATUS ON ?
Y N

011
Disconnect the last I/O unit you connected (the CU just before the SPI dummy plug.)
Jumper pin 3 to pin 4 of that connector.
Check in the PARTIAL POWER UP/DOWN screen the STATUS of I/O

Is the I/O STATUS ON ?
Y N

F G H

012
The SPI panel, where the jumper is, is failing.

DANGER

BEFORE REMOVING ANY PANEL, FIRST REMOVE ALL CABLES CONNECTED TO THE PANEL. NOTE: THE CABLES MAY HAVE +24VDC PRESENT EVEN THOUGH THE MACHINE IS POWERED DOWN.

Power off and exchange the SPI panel.
NOTE: If the SPI panel has pluggable relays, first exchange the relay associated with the connector that is jumpered. See MIM VOL 13/16 Page 20-270. If there is another relay available in the SPI that is not being used, swap and mark the failing relay.
If exchanging the relay does not fix the problem, exchange the indicated SPI panel. If there is a spare panel, swap and mark the failing panel.
Go To Map 1000, Entry Point R.

013
The I/O unit, that was plugged in the connector where the jumper is, is faulty.
Remove the jumper.
Check the following in the faulty I/O unit
1. The I/O AC power cable
2. The I/O main line CB

014
The I/O unit(s) up to the SPI dummy plug are good.

Is there any I/O unit not connected ?
Y N

015
The fault must have been that one of the connectors was not plugged in tightly.
Go To Map 1000, Entry Point R.

016
Go to Step 010, Entry Point C.

017

If all of the SPI 48 Control unit (CU) connectors are not used the dummy plug should be plugged in the first empty CU connector.

Remove the SPI panel cover off and check where the dummy plug is plugged in.

Is the dummy plug connected in the correct position?

Y N

018

Plug in the SPI dummy plug in the first empty CU connector.

Go To Map 1000, Entry Point R.

019

Check if Connector 0 on the SPI P 0 card is connected correctly.

The correct connection is, when the connector is connected, pin 1 of both the card and of the connector should be located closest to you.

Is the connector connected correctly ?

Y N

020

Connect the connector correctly.

Go To Map 1000, Entry Point R.

021

The procedure to increase the time loop for the I/O's to power up is as follows:

1. Press MODE SELECT key.
2. Key in FS

Increase the time by 2 minutes from the displayed setting on the I/O line. (For example, change from 3.5 to 5.5)

3. Press the ENTER key.
4. IML by pressing the POWER ON switch on the OCP.

Wait until the PARTIAL POWER UP/DOWN screen is displayed.

Power up the I/O by entering 00 07 in the PARTIAL POWER UP/DOWN screen.

(Step 021 continues)

(Step 021 continued)

Is I/O STATUS ON (ACTION DONE on screen) ?

Y N

022

Check the change(s) you made on the I/O for error, if there is no error

Go to Page 2, Step 002, Entry Point B.

023

The I/O needed more time to complete the power up sequence.

Go To Map 1000, Entry Point R.

EMC Map

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
1000	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	003	0001	A
2	008	0001	A
2	010	0001	A
4	020	0001	A
2	006	1000	R
2	009	1000	R
3	014	1000	R
3	016	1000	R
4	019	1000	R
4	021	1000	R

001

(Entry Point A)

You were sent to this MAP because the UU field of the ref code is 1E.

Take the YES leg of the next question ONLY if you have a REFERENCE CODE (ref code) of 1EE005F8 or 1EE005FC.

Is the ref code 1EE005F8 or 1EE005FC ?

Y N

002

Do you have other ref code(s) with UU field OTHER THAN 1E, or have any system failures occurred ?

Y N

3A 2B 2C

MODEL GROUP 1 AND 2

MAP CODE 1E01XXXX

003

If there are no other ref codes with a UU field OTHER THAN 1E, and no system failures have occurred, IGNORE THIS REF CODE AND TAKE NO FURTHER ACTION. This ref code indicates that the EMC monitor has detected an electrostatic discharge and logged it to assist in problem determination for machine or system failure.

Problem is resolved.

Go To Map 0001, Entry Point A.

004

GO TO MAP 0000, ENTRY POINT A and use the machine failure symtoms and ref code(s) OTHER THAN those with UU field of 1E to try to fix the failure.

NOTE: If you cannot fix the failure, then return here.

Did you fix the failure ?

Y N

005

The ref code indicates Electro-Magnetic Compatibility (EMC) fault. 1EE0A008 indicates the highest in level, 1EE0D008 indicates the lowest and 1EE0B008 and 1EE0C008 are in the middle.

See MIM Page 20-295 for information on the EMC Monitor.

Check if the EMC reference voltage is set at the correct value as follows:

Set the CE meter to measure 1.5Vdc

Connect the CE meter on the 01A-D2 board as follows:

01A-D2D2S06 pin ----- positive meter lead
01A-D2D2D08 pin ----- negative meter lead

The meter should indicate between 0.99 and 1.01Vdc

Is the reference voltage set at the correct value ?

Y N

D E F

D E F

006

Using the top potentiometer on the 01A-D2D2 card, adjust the EMC reference voltage.

Using the CE Log Function screen (or other record of machine history), record for future reference the ref code and that you have adjusted the EMC reference voltage.

Problem is resolved.

Go To Map 1000, Entry Point R.

007

The failure may have been caused by an electrostatic discharge. To check if the system's grounding is good, perform the following:

1. Check frame to frame connection (star washer)
2. Reseat the 01A-D2F2 (ALD YA711) connector card (EMC signals come through this card)
3. Reseat the 01A-D2Y1 and 01A-D2Z1 (ALD YF141) cables
4. Reseat the 01AB2Z1 and 01AB2Z5 (ALD YA731) cables
5. Check for good connection in the coax cables(ALD YA411) connected to the system (line filter).
6. Check the I/O (rack) connectors for good connection or faulty part

Did you find any failing part(s) ?

Y N

008

Problem is not resolved.

Invoke your support structure.

Go To Map 0001, Entry Point A.

009

Repair or exchange the failing part.

Problem is resolved.

Go To Map 1000, Entry Point R.

010

Problem is resolved.

Go To Map 0001, Entry Point A.

A
1

MAP CODE 1E01XXXX

PAGE 3 OF 4

011

This ref code is generated by the Power Diagnostics. Ensure connector LF2 (in the line filter) is connected.

Is connector LF2 connected ?

Y N

012

Connect the connector and run the Power Diagnostics again as follows:

Press and hold the ALT key on the OCP.

Press PF9 key

Did the diagnostics run error free (END OF DIAGNOSTICS displayed on the screen) ?

Y N

013

Go to Step 015, Entry Point C.

014

Follow the instructions displayed on the screen.

Go To Map 1000, Entry Point R.

015

(Entry Point C)

Verify if the EMC reference voltage is set at the correct value as follows:

Set the CE meter to measure 1.5Vdc

Connect the CE meter on the 01A-D2 board as follows:

01A-D2D2S06 pin ----- positive meter lead

01A-D2D2D08 pin ----- negative meter lead

The meter should indicate between 0.99 and 1.01Vdc

Is the reference voltage set at the correct value ?

Y N

G H

016

Using the top potentiometer on the 01A-D2D2 card, adjust the EMC reference voltage.

Using the CE Log Function screen (or other record of machine history), record for future reference the ref code and that you have adjusted the EMC reference voltage.

Problem is resolved.

Go To Map 1000, Entry Point R.

017

Check if the system's grounding is good by checking the following:

1. Check frame to frame connection (star washer)
2. Reseat the 01A-D2F2 (ALD YA711) connector card (EMC signals come through this card)
3. Reseat the 01A-D2Y1 and 01A-D2Z1 (ALD YF141) cables
4. Reseat the 01AB2Z1 and 01AB2Z5 (ALD YA731) cables
5. Check for good connection in the coax cables(ALD YA411) connected to the system (line filter).
6. Check the I/O (rack) connectors for good connection or faulty part

Did you find any failing part or bad connection ?

Y N

018

Check in the CE Log Function screen (or other record of machine history) if the 01A-D2D2 card has been changed because of EMC fault.

Has the card been changed ?

Y N

4 4 4
J K L

019

Press 'POWER OFF' on the OCP and set PCC CB1 and CB2 to the OFF position.

Exchange the 01A-D2D2 card.

NOTE: The bottom potentiometer (+5V reference) on the new 01A-D2D2 card may need adjustment. If a +5V PS104 failure is indicated on the CE panel, use MAP 0231 for adjustment and then return here.

Using the CE Log Function screen (or other record of machine history), record for future reference that you have exchanged the 01A-D2D2 card because of EMC fault.

Set PCC CB1 and CB2 to the ON position.

Press POWER ON switch on the CE Panel.

Verify that the EMC reference voltage is set at the correct value as follows:

Set the CE meter to measure 1.5Vdc.

Connect the CE meter on the 01A-D2 board.

01A-D2D2S06 pin ----- positive meter lead
01A-D2D2D08 pin ----- negative meter lead

It should indicate between 0.99 to 1.01Vdc.

Adjust if necessary using the top potentiometer on the new 01A-D2D2 card.

Problem is resolved.

Go To Map 1000, Entry Point R.

020

Problem is not resolved.

Invoke your support structure.

Go To Map 0001, Entry Point A.

021

Repair or exchange the failing part or ensure good connection.

Problem is resolved.

Go To Map 1000, Entry Point R.