IBM Maintenance Library

4224

Maintenance Analysis Procedures

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INTRODUCTION

HOW TO USE THE MAPs.

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**************************************************
*                     N O T E                    *
*                                                *
*  ON MACHINES THAT MAY BE USED IN A HIGH HUMIDITY *
*  ENVIRONMENT LUBRICATE CARRIER SHAFT (M.I.M.     *
*  SECTION 329, REFERENCE -A-) WITH A LIGHT FILM   *
*  OF IBM #23 GREASE.                            *
*                                                *
**************************************************
```

When using the MAPs, you must:

READ CAREFULLY! The MAPs will aid you in finding the failure only if you follow every instruction and answer questions accurately.

FOLLOW THE SEQUENCE. Always do one question at a time. When a procedure precedes the question, do all steps in the procedure before answering the question. Some steps have additional information that pertains to that step. This information is in the MAP flow and is an aid in describing why questions or actions are needed in finding the correct failing Field Replacement Unit (FRU). At times the MAP instructions might not seem to point to the problem. However, they can be important in determining the correct failing FRU.

FOLLOW INSTRUCTIONS. Instructions must be carried out exactly and in the order given. Questions rely on instructions immediately before the questions. Do not change the conditions prepared by the instructions before answering the questions. Do not turn power off or disconnect any cable unless informed to do so. Whenever possible the MAPs are written so that 'no' is the error path answer and is a machine error.

******** NOTE **********
When a card or cable is diagnosed as the failing FRU, reseat FRU and VERIFY repair. IF still failing EXCHANGE FRU.

INTRODUCTION

******** VERIFY REPAIR OR EXCHANGE FRU ********
When a card or cable is called out as the failing FRU, reseat card or cable and VERIFY. If machine is still failing, EXCHANGE the FRU. Go to VERIFY MAPS to verify correct machine operation before returning it to customer.

SEE MIMs represents check MIMs for location references unless MAPs instruct you to EXCHANGE a FRU, then SEE MIMs and use procedure.

INTERMITTENT STRATEGY.
SYMPTOM MAP 4000 has additional diagnostic information, error codes, description of errors, suspect FRU lists, service checks, and symptom lists to aid in isolating the failing FRUs.
This additional information is valuable in diagnosing failures.

USE THE FOLLOWING AIDS:
For operation of General logic probe see MIM 740.
When using the PROBE, connect the power leads to:
Red DJ1-4 (See Reference AA015)
Black DJ1-6
NOTE: If Driver Card is removed, unplug Cable Connector "P". (SEE AA014).
Connect power leads to Base Card Connector "P":
Red P4 (+5V) (See Reference AA014)
Black P1 (GND)

Ensure the ground side of the probe lead is grounded.

Probe switch setting = Mult, None, and Grd.

Pulsing is :
Up light ON and down light ON.
OR
Up light alternating with down light.
OR
One light ON solid and other light flashing.

When using the general logic probe in multimode, both lights might flash once when power is switched on. Ignore this flash, it is caused by switching noise.

INTRODUCTION

Always use a CE voltmeter to check voltage lines. Using a general logic probe can give a result that is not correct.

LOCATING THE CORRECT PIN FOR VOLTAGE READINGS:

When taking voltage or continuity readings do exactly as the MAP tells you to do. Example: If you are told to measure at Base Card connector "S" Pin-4 then connect the meter lead to Base Card connector "S" Pin-4. If you are told to measure at Cable connector "R" Pin-2 then connect the meter lead to Cable connector "R" Pin-2.

USING THE IBM 4224 PRINTER MAINTENANCE ANALYSIS PROCEDURES (MAPs):

The MAPs guide you through the service call using step-by-step procedures that have you follow the yes or no lines when responding to questions or when leaving or entering a page. The MAPs use a sequential plan for isolating the possible causes of machine failures and point you to the part needing adjustment, repair, or exchanging.

NOTE: You will be instructed to GO TO ENTRY POINTS and STEP numbers when using the MAPS. Ensure you go to the instructed ENTRY POINT or STEP.

MAP ORGANIZATION

2000 ENTRY / VERIFY MAP (Start of Call)

2000 map is the starting point for each service call. From here you will be guided to the ERROR/INDEX MAP (if an error is displayed) or any one of the other MAPs described below.

This MAP is also returned to after completing a repair action to VERIFY correct operation of the printer.

Start every repair action with the ENTRY/VERIFY MAP ENTRY POINT A.

INTRODUCTION

3000 ERROR/INDEX MAP
This MAP is entered ONLY from the ENTRY/VERIFY MAP.
This MAP is an index of all errors leading you to the correct MAP to isolate the failing area.

3200 INTERFACE MAP
This MAP diagnoses interface problems.

3300 PRINTHEAD CARRIER MOVEMENT AND CONTROL MAP
This MAP isolates problems in the printhead carrier area of the machine.

3400 FORMS MOVEMENT AND CONTROL MAP
This MAP isolates problems in the forms movement and control area of the machine.

3500 PRINT WIRE MAP
This MAP isolates failing print wires to printhead or the associated driver card, control card.

3600 POWER SUPPLY MAP
This MAP isolates problems in the power supply.

3800 RIBBON MOVEMENT, COLOR RIBBON SHIFT AND CONTROL MAP
This MAP isolates problems in the ribbon drive and color shift assemblies of the machine.

3900 SENSOR MAP
This MAP isolates problems in machine sensor areas (EOF, jam detect, head speed inhibitor, ribbon)

4000 SYMPTOM MAP
FRU lists and descriptions associated with the error log number will be included. The FRUs will be listed in order of their highest probable failure rate.
Symptom charts, Intermittent Service Checks and Voltage Checks are supplied.

VERIFY/OP PANEL

PAGE 1 OF 14

ENTRY POINTS

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

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
4	019	3000	A
5	025	3000	A
11	075	3000	A
13	097	3000	A
9	061	3400	A
10	068	3400	A
11	071	3500	A
3	007	3600	A
13	088	3600	A
13	092	3600	A
13	095	3600	A
4	015	3800	A
4	022	3800	A
9	065	3800	A
7	045	3900	A
8	048	3900	A
8	050	3900	A
8	054	3900	A
2	003	4000	A
11	074	4000	A
11	077	4000	F

001
(ENTRY POINT A)

START OF CALL

NOTE ANY CONCERNS REGARDING NORMAL OPERATION OF PRINTER, LOADING FORMS, PAPER, ETC., SEE PRINTER OPERATORS GUIDE.

```
**********************************
* RETURN TO THIS MAP AFTER       *
* COMPLETING A REPAIR ACTION,    *
* TO VERIFY CORRECT OPERATION    *
* OF THE PRINTER.                *
**********************************
```

CAUTION: When working in the Head Carrier area with POWER ON, be careful as Head Drive is under program control and moves as different routines are executed.

IS THIS THE FIRST TIME IN THIS MAP FOR THIS PROBLEM?
Y N

002
ARE YOU HERE TO VERIFY A REPAIR?
Y N

003

GO TO MAP 4000,
ENTRY POINT A.

004
- If service is being performed in Customer Office, clear error log by running TEST 860 MIM 055.

GO TO PAGE 3, STEP 006,
ENTRY POINT B.

005

GO TO PAGE 3, STEP 006,
ENTRY POINT B.

006
(ENTRY POINT B)

POWER OFF
Ensure forms device, forms, ribbon and print head are installed.

NOTE
Due to the many indications occurring during BASIC ASSURANCE TESTS (BATS), it may be necessary to perform more than one (POWER OFF/POWER ON) procedure to answer a question correctly.

Wait approximately 10 seconds between POWER OFF and POWER ON operations.

BATS are initiated when power is turned ON and when exiting Diagnostic Test Mode. BATS are completed approximately 20 seconds later.

Indications during that first 20 seconds after POWER ON are as follows:

1. Fan is running.

2. For approximately 1 second — Ready Indicator is ON and Display = FFF.

3. Ready Indicator goes OFF, Display remains FFF for approximately 5 seconds.

4. Display = 200.
(Step 006 continues)

(Step 006 continued)

5. Display = 100.

6. Head moves and stops.

7. Ribbon runs and stops

8. Head moves to left side (home), and stops.

TURN POWER ON.

IS COOLING FAN RUNNING?
Y N

007

GO TO MAP 3600, ENTRY POINT A.

008
DID READY INDICATOR COME ON AND GO OFF? (SEE MIM REF 010)
Y N

009

GO TO PAGE 12, STEP 079, ENTRY POINT I.

010
DID DISPLAY = FFF, THEN DISPLAY = 200, THEN DISPLAY = 100?
Y N

011

GO TO PAGE 12, STEP 079, ENTRY POINT I.

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ECA35707 PECA35675

VERIFY/OP PANEL

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012
AFTER 20 SECONDS FROM POWER ON
IS DISPLAY BLANK AND READY LIGHT
ON?
Y N

013

GO TO STEP 017,
ENTRY POINT C.

014
DID THE RIBBON RUN AND STOP?
Y N

015

GO TO MAP 3800, ENTRY POINT A.

016

GO TO PAGE 5, STEP 028,
ENTRY POINT D.

017
(ENTRY POINT C)

DOES DISPLAY = "00" (AFTER 20
SECONDS FROM POWER ON.)

Y N

018
Press START key.

IS READY INDICATOR ON ?
Y N

019

GO TO MAP 3000,
ENTRY POINT A.

020

GO TO PAGE 12, STEP 079,
ENTRY POINT I.

021
DID THE RIBBON RUN AND STOP?
Y N

022

GO TO MAP 3800, ENTRY POINT A.

023
Press START Key.
****

IS READY INDICATOR ON ?
Y N

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VERIFY/OP PANEL

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024
DOES DISPLAY = "00"?

Y N

025

GO TO MAP 3000,
ENTRY POINT A.

026

Exchange op panel (MIM 511)
Suspect control card. (MIM 215)

027

GO TO STEP 028,
ENTRY POINT D.

028
(ENTRY POINT D)
KEYS AND ALARM

Press STOP Key
****
Op Panel indications should be:
"00" in display and Ready Indicator is OFF.

ALL INDICATIONS O.K.?
Y N

029
POWER OFF.
POWER ON.

DID READY INDICATOR GO OFF AFTER 5 SECONDS?
Y N

030

GO TO PAGE 12, STEP 079,
ENTRY POINT I.

031
Exchange Op Panel (MIM 511)
Suspect Control Card (MIM 215)

032
Select TEST 300.
Press and hold the "A" key
Press the "TEST" "8" key.
Release both keys.
Display will blink "300".

ALL INDICATIONS O.K.?
Y N

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VERIFY/OP PANEL

PAGE 6 OF 14

033
Exchange Op Panel. (MIM 511)
Suspect control card (MIM 215)

034
Select TEST 800.
Press and hold "A" Key, then press "B" & "0" keys
TOGETHER
Release all keys.
Display will blink "800".

ALL INDICATIONS O.K.?
Y N

035
Exchange Op Panel. (MIM 511)
Suspect Control Card (MIM 215)

036
Select TEST 850.
Press and hold "A" key, then press "5" key.
While holding "A" key pressed, press "0" key.
Release both keys.
Display will blink "850".

ALL INDICATIONS O.K.?
Y N

037
Exchange Op Panel. (MIM 511)
Suspect Control Card (MIM 215)

038
Press START.
"850" stays on solid in Display.
Ready Indicator is on.

Test Procedure:
Press and hold "B" key.
Display will show "bbb" and alarm will beep until key is released.

Repeat Test Procedure using each key. (Display should show 3 digits of key being tested.)

(ALARM SOUNDS WHEN KEY IS PRESSED, STOPS WHEN KEY IS RELEASED.)
DOES ALARM FUNCTION PROPERLY?
Y N

039

Exchange Op Panel.(MIM 511)
Suspect Control Card.

040
ARE ALL KEY AND DISPLAY INDICATIONS O.K.?
Y N

041

Exchange Op Panel.(MIM 511)
Suspect Control Card

042
Remove forms.

Press and hold "A" key.
Then press STOP "2" key. (This will exit TEST 850)
Release both keys.
"850" blinks.

Select TEST 851 by pressing and holding "A" key and pressing "5" key.
Release "5" key.
While holding "A" Key pressed, press "1" key.
Release both keys.
("851" blinks).

Press START (Starts TEST 851 - SEE MIM Ref 056).
Ready Indicator is ON.

Observe Op-panel AND OPEN AND **CLOSE ACCESS COVER**
SEVERAL TIMES

DOES POSITION 1 (LEFT) OF DISPLAY CHANGE FROM 1 TO 0 WHEN ACCESS COVER IS OPENED ?
Y N

043
Inspect Access Cover Magnet (MIM 713) to ensure it is not loose or missing

ARE ALL INDICATIONS OK?
Y N

044
Replace Access Cover. (MIM 111)

045

GO TO MAP 3900, ENTRY POINT A.

046

GO TO PAGE 8, STEP 047,
ENTRY POINT E.

047
(ENTRY POINT E)

Remove forms, if installed and verify End Of Forms (EOF) Sensor is clear of obstructions (SEE MIM 710).

DOES POSITION 3 (RIGHT) OF DISPLAY = 0?
Y N

048

GO TO MAP 3900, ENTRY POINT A.

049
Insert a solid sheet (no holes) of paper all the way into the EOF Sensor (extreme left).

DOES POSITION 3 (RIGHT) OF DISPLAY = 1?
Y N

050

GO TO MAP 3900, ENTRY POINT A.

051
IS THE PRINTER A MODEL C2 ? (COLOR)
Y N

052

GO TO PAGE 9, STEP 056, ENTRY POINT F.

053
Move printhead to center of machine.
Remove ribbon. (MIM 812)

Operate color ribbon switches A and B together
See MIM 715
DID POSITION 2 (CENTER) OF DISPLAY CHANGE FROM 0 TO 3?
Y N

054

GO TO MAP 3900, ENTRY POINT A.

055

GO TO PAGE 9, STEP 056, ENTRY POINT F.

056
(ENTRY POINT F)

POWER OFF.
Ensure Forms Device and ribbon are installed.
(MIM 820 and 810)
Ensure printhead and printhead cables are installed. (MIM 320 and 325)

POWER ON.
Wait 20 Seconds.
Press STOP Key.
Press and hold "A" Key.
While holding "A" Key, Press and release "4" key.

DOES DISPLAY MATCH FORM "DEVICE CODE" (MIM 820)?
RELEASE "A" KEY.
Y N

057
Set Device Code to proper setting. (MIM 820)

GO TO PAGE 2, STEP 001, ENTRY POINT A.

058
IS FORMS DEVICE EITHER DOCUMENT ON DEMAND "F2" OR CONTINUOUS FORMS DEVICE "F1"? (MIM 820)
Y N

059

GO TO PAGE 10, STEP 067, ENTRY POINT G.

060
Load forms. (MIM 820)
POWER ON.
Wait 20 seconds: Press STOP key.
Press Forms Feed Key (4) several times.

DID FORMS MOVE EACH TIME KEY (4) IS PRESSED?
Y N

061

GO TO MAP 3400, ENTRY POINT A.

062
IS THE PRINTER A MODEL C2 WITH COLOR RIBBON INSTALLED?
Y N

063
Verify forms thickness lever is properly set.
Select CUSTOMER TEST 301 (MIM 053)
Press START.

GO TO PAGE 11, STEP 070, ENTRY POINT H.

064
Select TEST 840 (MIM 055).
Press START Key. After 1 full page press STOP.

DO ALL COLORS PRINT CORRECTLY? (MIM 056 TEST 840)
Y N

065

GO TO MAP 3800, ENTRY POINT A.

VERIFY/OP PANEL

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066
Verify forms thickness lever is properly set.
Select CUSTOMER TEST 301 (MIM 053)
Press START.

GO TO PAGE 11, STEP 070, ENTRY POINT H.

067
(ENTRY POINT G)

(DID MODULE)

Verify Forms Thickness Lever (MIM 715) is properly set.
Select TEST 301. (MIM 053).
Load a sheet of paper (min. 8" by 11") into the printer. Press Load/Eject Key. (MIM 835)

DID FORMS MOVE TO PLATEN AND TEST 301 PRINT?
Y N

068

GO TO MAP 3400, ENTRY POINT A.

069

GO TO PAGE 11, STEP 070, ENTRY POINT H.

070
(ENTRY POINT H)

See MIM 054, ROUTINE 301, TEST #1.
Single cable head = 9 lines.
Two cable head = 18 lines.

DID CORRECT NUMBER OF LINES PRINT?
Y N

071

GO TO MAP 3500, ENTRY POINT A.

072
ARE ALL INDICATIONS OK IN TESTS 2 THROUGH 5 INCLUDING COLOR PATTERNS IF MODEL C2 AND COLOR RIBBON IS INSTALLED?
Y N

073
IS ERROR CODE IN DISPLAY?
Y N

074

GO TO MAP 4000,
ENTRY POINT A.

075

GO TO MAP 3000, ENTRY POINT A.

076
IS PRINT QUALITY O.K.? (MIM 054, 301 TEST 4 & 5)
Y N

077

GO TO MAP 4000, ENTRY POINT F.

078

GO TO PAGE 2, STEP 001,
ENTRY POINT A.

079
(ENTRY POINT I)

DISPLAY AND READY INDICATOR

POWER OFF.
POWER ON.

Observe Op Panel indications.

DID DISPLAY = FFF AND DID READY INDICATOR COME ON AND GO OFF?

Y N

080
DID DISPLAY = FFF?
Y N

081
PRESS STOP.
IS DISPLAY BLANK?
Y N

082
NOTE THE FOLLOWING STEPS ARE USED TO ISOLATE DISPLAY PROBLEMS. FOLLOW INSTRUCTIONS IN THIS STEP EVEN IF DISPLAY INDICATIONS ARE WRONG.
Select TEST 300 by:
Press and hold "A" key, then press "TEST" key.

Select TEST 850 by:
Press and hold "A" key, press "0" & "B" key together.
Press and hold "A" key, then press "5" key.
While holding "A" key
(Step 082 continues)

(Step 082 continued)
pressed, press "0" key.
Release both keys.

(Display may not be "850").

Press START Key.

DOES DISPLAY STOP BLINKING?
Y N

083

Exchange Op Panel.
or check cable.

084
Depress "1" key. Display = 111.
Depress "2" key. Display = 222.
Depress "4" key. Display = 444.
Depress "8" key. Display = 888.

ARE INDICATIONS O.K.?
Y N

085

Verify Op Panel cable seated properly.
Exchange Op Panel
Suspect Control Card.

086

Exchange Op Panel
Suspect Control card.

087

DID HEAD MOVE?
Y N

088

GO TO MAP 3600,
ENTRY POINT A.

089

Exchange Op Panel
Suspect Control Card.

090
DOES "FFF" REMAIN IN DISPLAY
AFTER 20 SECONDS?
Y N

091

Exchange Op Panel.
Suspect Control Card.

092

GO TO MAP 3600, ENTRY POINT A.

093
AFTER 20 SECONDS FROM POWER ON,
PRESS STOP, DOES DISPLAY = "00" ?

Y N

094
IS FAN RUNNING?
Y N

095

GO TO MAP 3600,
ENTRY POINT A.

096
Press START.

DID READY INDICATOR COME ON?
Y N

097

GO TO MAP 3000,
ENTRY POINT A.

098

Exchange Op Panel.
Suspect Control Card.

099
Select TEST 300. (MIM 053)

IS "300" IN DISPLAY?
Y N

100

Exchange Op Panel.
Suspect Control Card.

101
IS DISPLAY "300" BLINKING (3
DIGITS)?
Y N

102

Exchange Op Panel.
Suspect Control Card.

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4

Y 4224
1
3 **VERIFY/OP PANEL**

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103
Select TEST 800 by:
Press and hold "A" key, then press "B" & "0" keys
Release all keys.

Select TEST 850 by:
Press and hold "A" key, then press "5" key.
While holding "A" key pressed, press "0" key.
Release both keys.
Display will blink "850".

ARE ALL INDICATIONS O.K.?
Y N

104
Exchange Op Panel.
Suspect Control Card.

105
Press START Key.
"850" stays ON solid in Display.

Test Procedure:
Press and hold "B" key.
Display will show "bbb" and alarm will beep until key is released.

Repeat Test Procedure using each key. (Display should show 3 digits of key being tested.)

(ALARM SOUNDS WHEN KEY IS PRESSED, STOPS WHEN KEY IS RELEASED.)
DOES ALARM FUNCTION PROPERLY?
Y N

A
Z A

Z A **MAP 2000-14**
A

106

Exchange Op Panel.
Suspect Control Card.

107
DID OP-PANEL TEST 850 CHECK O.K.?
Y N

108

Exchange Op Panel.
Suspect Control Card.

109

No trouble found!
Verify operations.
GO TO PAGE 2, STEP 001, ENTRY POINT A.

ERROR CODES

PAGE 1 OF 7

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
2000	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
7	002	2000	A

001
(ENTRY POINT A)

The following table describes MAP ENTRIES for errors displayed and actions to be taken.

********** NOTE **********
IF THE ERROR DISPLAYED CHANGES AFTER YOU HAVE ENTERED A MAP, ON POWER OFF/POWER ON SEQUENCES, YOU ARE SEEING CHANGING SYMPTOMS.
IF THIS OCCURS, LEAVE THE MAP YOU ARE IN AND GO TO MAP 4000, ENTRY POINT B TO SUSPECT THE FRU(S) THAT ARE COMMON TO THE TWO OR MORE ERROR CODES THAT HAVE BEEN DISPLAYED.
****

DISPLAY CODES	MAP ENTRY
BLANK	BLANK Display and Ready Indicator ON. On-line Host polling printer but not responding. Normal Condition.
BLANK	Ready Indicator OFF, fan running. **GO TO MAP 4000, ENTRY POINT B, CODE BLANK.**
00	On-line Not Ready. Normal - Press START key.
01	End of Forms. Ensure forms are installed. **GO TO MAP 3900 ENTRY POINT A.**

(Step 001 continues)

ERROR CODES

(Step 001 continued)

DISPLAY CODES	MAP ENTRY
02	Forms Jam. Ensure forms are installed properly. **GO TO MAP 3900 ENTRY POINT A.**
03	Document on Demand (DOD) - Forms Ejected. **GO TO MAP 4000 ENTRY POINT B, CODE 03.**
06	Host Attention (Bel Command). **GO TO MAP 4000 ENTRY POINT B, CODE 06.**
07	Invalid PCIA order **GO TO MAP 4000 ENTRY POINT B, CODE 07.**
08	Hold print timeout **GO TO MAP 4000 ENTRY POINT B, CODE 08.**
09	Invalid operation **GO TO MAP 4000 ENTRY POINT B, CODE 09.**
11	Attachment detected Process Check **GO TO MAP 4000 ENTRY POINT B, CODE 11.**
15	No line activity **GO TO MAP 4000 ENTRY POINT B, CODE 15.**
17	Line Parity Check **GO TO MAP 4000 ENTRY POINT B, CODE 17.**
19	Attachment diagnostic error **GO TO MAP 3200 ENTRY POINT A,**
20	Pacing Protocol mismatch. **GO TO MAP 4000 ENTRY POINT B, CODE 20.**
21	Invalid language selection. **GO TO MAP 4000 ENTRY POINT B, CODE 21.**

(Step 001 continues)

(Step 001 continued)

DISPLAY CODES	MAP ENTRY
22	On line but address not received in last second. **GO TO MAP 4000 ENTRY POINT B, CODE 22.**
23	Transmit Buffer Overrun Error. **GO TO MAP 4000 ENTRY POINT B, CODE 23.**
24	Parity Error. **GO TO MAP 4000 ENTRY POINT B, CODE 24.**
25	Framing Error. **GO TO MAP 4000 ENTRY POINT B, CODE 25.**
26	Receive Buffer Overrun Error. **GO TO MAP 4000 ENTRY POINT B, CODE 26.**
27/28	Communication failure. **GO TO MAP 4000 ENTRY POINT B, CODE 27/28.**
29	Link not established. **GO TO MAP 4000 ENTRY POINT B, CODE 29.**
31	End of forms (Timeout) **GO TO MAP 4000 ENTRY POINT B, CODE 31.**
32	Forms jam (Timeout) **GO TO MAP 4000 ENTRY POINT B, CODE 32.**
33	D.O.D. forms ejected (Timeout) **GO TO MAP 4000 ENTRY POINT B, CODE 33.**
34	D.I.D. load paper (Timeout) **GO TO MAP 4000 ENTRY POINT B, CODE 34.**
41	Forms error - Overcurrent. **GO TO MAP 3400 ENTRY POINT A.**

(Step 001 continues)

(Step 001 continued)

DISPLAY CODES	MAP ENTRY
42	Forms error - No drive, bad driver card. **GO TO MAP 3400 ENTRY POINT A.**
43	Forms error - Open motor or fuse - driver card. **GO TO MAP 3400 ENTRY POINT A.**
45	Form drive failure during BATS. **GO TO MAP 3400 ENTRY POINT A.**
50	Command Decode check. **GO TO MAP 4000 ENTRY POINT B, CODE 50.**
51	Head error MP-2 no response timeout, Decode Check, Invalid Response. **GO TO MAP 4000 ENTRY POINT B, CODE 51.**
52	Print Buffer not empty, print line incomplete. **GO TO MAP 4000 ENTRY POINT B, CODE 52**
53	Head position check (motion problem). **GO TO MAP 4000 ENTRY POINT B, CODE 53**
54	Head error - Speed check. **GO TO MAP 3300 ENTRY POINT A.**
55	Head error - Overcurrent. **GO TO MAP 3300 ENTRY POINT B.**
56	Head error - Head Drive/Emitter Failure **GO TO MAP 3300 ENTRY POINT C.**
58	MP-2 invalid response to command. **GO TO MAP 4000 ENTRY POINT B, CODE 58.**
59	Cancel select by Host **GO TO MAP 4000 ENTRY POINT B, CODE 59.**

(Step 001 continues)

ERROR CODES

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(Step 001 continued)

DISPLAY CODES	MAP ENTRY
60	Press START and Buffer will reprint **GO TO MAP 4000 ENTRY POINT B, CODE 60.**
61	PA-1 operator response **GO TO MAP 4000 ENTRY POINT B, CODE 61.**
62	PA-2 operator response **GO TO MAP 4000 ENTRY POINT B, CODE 62.**
63	Printer in send state **GO TO MAP 4000 ENTRY POINT B, CODE 63.**
64	Host Reset received. **GO TO MAP 4000 ENTRY POINT B, CODE 64.**
65	Attachment Card not installed. **GO TO MAP 3200 ENTRY POINT A.**
66	Attachment Card defective **GO TO MAP 3200 ENTRY POINT A.**
67	Graphic Check **GO TO MAP 4000 ENTRY POINT B, CODE 67.**
68	Press STOP, then press START. (Soft error). **GO TO MAP 4000 ENTRY POINT B, CODE 68.**
69	Loss of Data / during error condition. **GO TO MAP 4000 ENTRY POINT B, CODE 69.**
72	Buffer parity error detected by Attachment logic **GO TO MAP 4000 ENTRY POINT B, CODE 72.**
75	Interrupt Check. Go to 4000 Entry Point B, Code 75.
88	No ribbon installed. Install Ribbon. **GO TO MAP 3900 ENTRY POINT A.**

(Step 001 continues)

ERROR CODES

(Step 001 continued)

DISPLAY CODES	MAP ENTRY
89	Ribbon motor overcurrent Possible ribbon jam Goto map 3800 Entry Point A.
000	STOP depressed off-line use only. **GO TO MAP 4000 ENTRY POINT C, CODE 000.**
100	BAT TEST - Attachment card good.
200	BAT TEST - Controller card good.
700	BAT TEST failure - controller or driver card. **GO TO MAP 3300 ENTRY POINT D.**
750	BAT TEST failure - controller or attachment card. **GO TO MAP 4000 ENTRY POINT C.**
999	Invalid values in NVRAM. **GO TO MAP 4000 ENTRY POINT C, CODE 999.**
FFF	Processor error. Power On hardware sets "FFF" in display. **GO TO MAP 3600 ENTRY POINT A**
A80 thru A9D	Printer detected Application errors. See Operator Guide. **GO TO MAP 4000 ENTRY POINT D.**

(Step 001 continues)

(Step 001 continued)
IS VALID ERROR DISPLAYED?
Y N

002

GO TO MAP 2000, ENTRY POINT A.

003
GO TO MAP SHOWN IN TABLE ABOVE.

ATTACHMENT MAP

PAGE 1 OF 2

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
3000	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
1	003	2000	A
2	008	2000	A

001
(ENTRY POINT A)

POWER OFF.

POWER ON.
Wait 20 seconds.

DOES DISPLAY = 65?
Y N

002
DOES DISPLAY = 19, 66, OR 750.
Y N

003

GO TO MAP 2000,
ENTRY POINT A.

004
POWER OFF.
Remove Attachment card (MIM 411)
POWER ON.
Wait 20 seconds.

DOES DISPLAY = 65?
Y N

ATTACHMENT MAP

PAGE 2 OF 2

005

Exchange Control card (MIM 215)
Suspect Attachment card
Suspect Base Card

006

Exchange Attachment Card. (MIM 411)
Suspect Control card
Suspect Base Card

007

POWER OFF
Install or reseat Attachment card. (MIM 411)
POWER ON
wait 20 seconds

DOES DISPLAY = 65?
Y N

008

GO TO MAP 2000, ENTRY POINT A.

009

Exchange Attachment Card. (MIM 411)
Suspect Control card

HEAD DRIVE

PAGE 1 OF 5

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
3000	A	1	001
3000	B	2	006
3000	C	3	009
3000	D	5	024

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	007	2000	A
2	004	4000	B

001
(ENTRY POINT A)
SPEED CHECK.

POWER OFF.

Visually inspect for any restriction preventing head movement.

Manually move head carrier checking for binds.

IS HEAD BINDING?
Y N

002
POWER ON.

Select and run TESTS 810, 811, 812.**(MIM 055)**

ALL TESTS RUN OK?
Y N

HEAD DRIVE

003

Exchange head drive motor (MIM 337)
Suspect Control Card

004

GO TO MAP 4000, ENTRY POINT B.

005

Reference MIM 057 and perform Service Checks 4, 10, 11, 12 and 13.

006
(ENTRY POINT B)
HEAD OVER CURRENT.

Select and run TESTS 810, 811 812.(MIM 055)

IS 55 IN DISPLAY?
Y N

007

GO TO MAP 2000, ENTRY POINT A.

008

Exchange Driver Card. (MIM 211)
Suspect Control Card.

009
(ENTRY POINT C)

** NOTE ** IN THIS MAP IT IS IMPORTANT TO MONITOR HEAD MOTION.

POWER OFF.

Remove Paper Guide Shield. (MIM 119)

Move head manually from left to right margin, checking for obvious binds, broken drive belt, loose motor, other broken parts and head tilt actuator binding. Ribbon cartridge can cause head binds.

Ensure Head Motor connectors "N" and "P" are properly seated (SEE AA013).

ALL CHECKS OUT O.K.?
Y N

010

Reference MIM 057 and Perform Service Checks 4, 10, 11, 12 and 13.

011
Set Forms Thickness lever to the highest number (MIM 719).
Remove ribbon. (MIM 812)

** NOTE **(Read carefully) CORRECT HEAD MOTION INDICATIONS AFTER POWER ON ARE:

Head moves approximately 1 inch to the right, then immediately moves to left approximately 2 to 4 inches.

Manually position head in center of machine.
Disconnect Cable Connector "P" (Emitter) from Base card. (See AA013)

POWER ON.
(Head motion begins approximately 10 seconds after POWER ON.)

DID HEAD MOVE APPROXIMATELY 1 INCH TO THE RIGHT?
Y N

012
POWER OFF.
Disconnect Cable Connector "N" from Base card (AA013).
Check continuity at cable connector "N":

See (AA008)
(CABLE CONNECTOR-"N")

FROM	TO	RESISTANCE
Pin-3	Pin-4 =	5 to 20 ohms
Pin-3	Frame Ground =	OPEN

(Step 012 continues)

(Step 012 continued)

BOTH READINGS CORRECT?
Y N

013

Exchange Head Drive Motor
If motor is shorted, suspect Driver Card.

014

Reconnect Connectors N and P.
Exchange Driver Card (MIM 211)
Suspect Control Card.
Suspect Base Card.

015
DID HEAD MOVE APPROXIMATELY 1 INCH TO THE RIGHT AND THEN APPROXIMATELY 2 to 4 INCHES TO THE LEFT AND STOP ?

Y N

016

POWER OFF.
Reconnect Connector P.
Exchange Driver Card. (MIM 211)
Suspect Control Card.
Suspect Base Card.

017
POWER OFF.
Reconnect Cable Connector P (emitters).

Connect Logic Probe as follows:
Switch settings -
Technology = Multi
Latch = None
Gate Ref = GND

Power leads -
(Red) = DJ1-4 (+5V)
(Black) = DJ1-6 (GND)
(SEE AA015)

Probe lead = CJ2-4 (A Emitter)
Ground lead
of Probe = CJ2-3 (GND)

POWER ON.
Wait 20 seconds.
Disregard head motion, if any.

Manually move head to left side frame, then to right side frame while observing probe.

DID PROBE PULSE (BOTH UP AND DOWN LIGHTS)?
Y N

018
Disconnect cable Connector "P" from Base Card.
Check for +5VDC between Base Card Connector "P" pin-4 (+) and pin-3 (-) (See AA008)

IS +5VDC PRESENT?
Y N

12DEC85 PN6258886

ECA35707 PECA35675

HEAD DRIVE

019

POWER OFF.
Exchange Base Card. MIM 213)

020

POWER OFF.
Exchange Head Drive Motor. (MIM 337)
Suspect Control Card.
Suspect Base Card.

021

Move probe signal lead (+) to CJ2-5 (B Emitter).
Manually move head to left side frame, then to right side frame while observing probe.

DID PROBE PULSE (BOTH LIGHTS)?
Y N

022

POWER OFF.
Exchange Head Drive Motor.(MIM 337)
Suspect Control Card.
Suspect Base Card.

023

POWER OFF.
Exchange Control Card. (MIM 215)
Suspect Head Drive Motor
Suspect Base Card.

024
(ENTRY POINT D)

CONTROL CARD/DRIVER CARD WRAP FAILURE.

POWER OFF.

Remove forms.
Remove Forms Device.
Remove Paper Guide Shield (MIM 119).

Remove Driver Card. (MIM 211)

POWER ON.

Wait approximately 20 seconds.

IS DISPLAY = 45?
Y N

025
POWER OFF.
Exchange Control Card. (MIM 215)

026
POWER OFF.
Exchange Driver Card.(MIM 211)

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FORMS DRIVE

PAGE 1 OF 5

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
2000	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
1	003	2000	A
2	008	2000	A
3	020	2000	A
4	026	2000	A

001
NOTE: ENSURE FORMS DEVICE AND FORMS ARE INSTALLED UPON ENTERING THIS MAP. (MIM 820)

(ENTRY POINT A)

Power off wait 20 seconds
Power on
Observe display after approximately 20 seconds

IS ERROR CODE 45 INDICATED?
Y N

002

PRESS "STOP" KEY
DOES DISPLAY = 00 ?
Y N

003

GO TO MAP 2000,
ENTRY POINT A.

FORMS DRIVE

PAGE 2 OF 5

004
Press Form Feed key, several times.

DID FORMS FEED EACH TIME THE KEY IS PRESSED ?
Y N

005
POWER OFF

Remove forms.
Remove forms device. (MIM 820)
Inspect forms device for binding or broken gears.
Turn forms idler gear (MIM 715).
Manually turn idler gear and check for binds and improper gear mesh with motor gear or damaged teeth.

ARE ALL INDICATIONS OK ?
Y N

006
Go to MIM 057 and perform steps 3,4,5,6 and 7

007

Exchange Driver Card. (MIM 211)
Suspect Control Card.

008

GO TO MAP 2000, ENTRY POINT A.

009
Power off.
Remove paper guide shield (MIM 119).
Power on; after approximately 20 seconds
Press "STOP" key
Put the printer in customer test mode
(MIM 053)
DOES DISPLAY = 300 BLINKING AFTER 5 SECONDS?
Y N

010
Connect Logic Probe as follows:
Switch settings -
Technology = Multi
Latch = None
Gate Ref = GND

Power leads - (SEE AA015)
(Red) = DJ1-4 (+5V)
(Black) = DJ1-6 (GND)

Probe lead = DJ1-7 (+15V Seq)
Ground lead
of Probe = DJ1-9 (GND)
Probe Indicator Status -
Up

IS DJ1-7 LINE UP ?
Y N

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FORMS DRIVE

PAGE 3 OF 5

011
Move probe lead to DJ1-2 (-Enable Driver Card).
Monitor Probe lights and press **STOP.**

DID PROBE LIGHTS PULSE?
Y N

012

Exchange Control Card. (MIM 215)

013
Move Probe lead to DJ1-1 (-Power Good).

IS LINE DOWN?
Y N

014

Exchange Power Supply.(MIM 611)
Suspect Driver Card.

015

Exchange Driver Card. (MIM 211)

016

Exchange Driver Card. (MIM 211)

017
Select Test 820.
(MIM 055)
Press START Key.

DISPLAY = 41?
Y N

018
DISPLAY = 42?
Y N

019
DISPLAY = 43?
Y N

020

GO TO MAP 2000, ENTRY POINT A.

021
POWER OFF.
Remove Paper Guide Shield (MIM 119).
Remove Driver card (MIM 211)
Continuity check Form Motor fuse (color coded) on Driver card (SEE AA015).

IS FUSE GOOD?
Y N

022
Disconnect Form Motor (Connector "L") from Base card (SEE AA013).

Continuity check Cable Connector "L" as follows: (See AA009)

FROM	TO	RESISTANCE
Pin-3	Frame Ground	OPEN
Pin-4	Frame Ground	OPEN

CONTINUITY CHECK O.K.?
Y N

023

Exchange Form Drive Motor (MIM 381) and Exchange Driver Card (MIM 211).

024

Exchange Driver card. (MIM 211)
Suspect Base Card.

025
IS "L" CABLE CONNECTOR SEATED PROPERLY? (AA013)
Y N

026

POWER OFF.

Reseat Cable Connector "L". Reinstall Driver Card.

GO TO MAP 2000, ENTRY POINT A.

027
Disconnect Cable Connector "L" from Base card (SEE AA013).

Continuity check Cable Connector "L" as follows (SEE AA009):

FROM	TO	RESISTANCE
Pin-3	Pin-5	Less than 5.0 ohms
Pin-4	Pin-6	Less than 5.0 ohms

ALL READINGS CORRECT?
Y N

028

Exchange Forms Drive Motor. (MIM 381)

029

Exchange Driver Card. (MIM 211)
Suspect Control Card.

030

Exchange Driver card. (MIM 211)
Suspect Control Card.

FORMS DRIVE

PAGE 5 OF 5

031
Press "STOP" key.
Disconnect Cable Connector L from
Base card.
see AA013

Press "START" key

DISPLAY = 41 AGAIN?
Y N

032

Exchange Form Motor (MIM 381)

033

Exchange Driver card.(MIM 211)

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PRINT WIRE

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
2000	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
4	025	2000	A

001
(ENTRY POINT A)

POWER OFF.
Remove forms. (MIM 820)
Remove forms Device. (MIM 820)
Remove Paper Guide Shield. (MIM 119)

Verify following cable connectors are properly connected for respective machine:
For Model - 01:
Cable connector J to Printhead connector CH1 (SEE AA013 and MIM 325).

For Models- 02 and C2:
Cable connector J to Printhead connector 2 and cable connector K to Printhead connector 1 (SEE AA013, MIM 325).

Reinstall Forms Device and forms.

DOES PRINTER HAVE TWO PRINT HEAD CABLES? (SEE MIM 325)

Y N

1

PRINT WIRE

PAGE 2 OF 4

002
POWER ON wait 20 seconds.
Select and Run TEST 801 (MIM 055 and 056 ,test 801 Successful 9 wire print head test.)

ARE ANY OF THE FOLLOWING LINES MISSING?
1, 3, 4, 5 or 6.
Y N

003
Disconnect head cable from head. Reconnect to head in "TEST" position (MIM 325).
Move forms to new page.
Run TEST 815. (MIM 055)

DID 5 LINES PRINT? (MIM 056, TEST 815)
Y N

004
POWER OFF.
Bad Print Head
Exchange Print Head. (MIM 321)

005
POWER OFF.
Exchange Driver Card. (MIM 211)
Suspect cable.
Suspect Base Card.

006

IS LINE 6 MISSING?
Y N

007
Disconnect head cable from head. Reconnect to head in "TEST" position (SEE MIM 325).
Run TEST 815 (MIM 055, TEST 815).

DID 5 LINES PRINT?
Y N

008
POWER OFF.
Exchange Driver Card.(MIM 211)
Suspect cable.
Suspect Base Card.

009
POWER OFF.
Bad Print Head
Exchange Print Head. (MIM 321)

010
Disconnect head cable from head.
Reconnect to head in "TEST" position (MIM 325).
Run TEST 815 (MIM 055, TEST 815).

IS THE SECOND LINE MISSING?
Y N

011

Exchange Driver card. (MIM 211)
Suspect cable.
Suspect Base Card.

012
POWER OFF.
Bad Print Head
Exchange Print Head. (MIM 321)

PRINT WIRE

PAGE 3 OF 4

013
POWER ON.
Wait 20 seconds.

Run TEST 801 (MIM 055).

ARE ALL LINES PRINTING? (18 LINES)?
(MIM 056, SUCCESSFUL 18 WIRE PRINTHEAD TEST)
Y N

014
Disconnect cable connector 1 (MIM 325).
Run TEST 801. (MIM 055)
Spacing is not important.

DID 9 LINES PRINT?
(MIM 056, 801D.)
Y N

015
Disconnect cable connector 2.
Connect cable 1 to Print Head Connector 2. (SEE MIM 325).
Run TEST 801.
Spacing is not important

DID 9 LINES PRINT? (MIM 056, 801F)
Y N

016
POWER OFF.
Bad Print Head
Exchange Print Head. (MIM 321)

017
POWER OFF.

Disconnect cable 1 from Print Head connector 2 and connect cable 2 to Print Head connector 2.

Remove Paper Guide Shield (MIM 119).

Disconnect Cable Connectors J and K.
Reconnect Cable Connector J into Base Connector K (See AA013).

Insert Forms Device.
Insert Forms.

POWER ON
Run TEST 801.

SPACING IS NOT IMPORTANT. DID 9 LINES PRINT?
(MIM 056, 801E)

Y N

018

Repair/Exchange Print Head cable. (MIM 325)
Restore machine.

019
POWER OFF.
Exchange Driver Card. (MIM 211)
Suspect Base Card.
Suspect Control card.
Restore machine.

F 4224
3

PRINT WIRE

PAGE 4 OF 4

020
Remove cable connector 2 and connect it to Printhead Connector 1. (MIM 325).
Run TEST 801.
Spacing is not important

DID 9 LINES PRINT?
Y N

021
POWER OFF.
Bad Print Head
Exchange Print Head. (MIM 321)

022
POWER OFF.

Disconnect cable connector 2 from Print Head connector 1.
Connect cable 1 to Print Head connector 1.

Remove Forms.
Remove Forms Device.
Remove Paper Guide Shield (MIM 119)

Disconnect Cable Connectors J and K (SEE AA013).
Reconnect Cable Connector K into Base Connector J.

Insert Forms Device.
Insert Forms.

POWER ON.
Run TEST 801.

DID 9 LINES PRINT?
Y N

H J

E H J MAP 3500-4
3

023
POWER OFF.
Repair/Exchange Print Head Cable. (MIM 325)
Restore machine.

024
POWER OFF.
Exchange Driver Card. (MIM 211)
Suspect Control Card.
Suspect Base Card.
Restore machine.

025

GO TO MAP 2000, ENTRY POINT A.

POWER SUPPLY

PAGE 1 OF 9

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
2000	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
9	046	4000	F

001
(ENTRY POINT A)

POWER OFF.
Verify line cord is properly connected between Customer Voltage Source and Printer.

POWER ON.

DID THE OP PANEL (LEDS) OR THE READY INDICATOR COME ON FOR AT LEAST 1 SECOND?
Y N

002
IS FAN RUNNING?

Y N

003
IS POWER SUPPLY INDICATOR (LED) ON? (MIM 719, AA015)

Y N

POWER SUPPLY

PAGE 2 OF 9

004
Check Customer Source Voltage.

IS CUSTOMER SOURCE VOLTAGE O.K.?
Y N

005

Notify Customer of Voltage Source problem.

006
Continuity check line cord.

IS LINE CORD O.K.?
Y N

007

Exchange Line Cord.

008

Exchange Power Supply. (MIM 611)

009
POWER OFF.

Remove Attachment Card (MIM 411, AA013).

POWER ON.

DID POWER SUPPLY INDICATOR STAY ON?
Y N

010

Exchange Attachment Card. (MIM 411)

011
POWER OFF.

Leave Op Panel Cable connected to CJ1 (SEE AA015).
Remove Control Card (MIM 215).

POWER ON.

DID POWER SUPPLY INDICATOR STAY ON?
Y N

012
POWER OFF.

Reinstall Control Card.
Remove Op Panel cable from CJ1. (AA015)

POWER ON.

DID POWER SUPPLY INDICATOR STAY ON?
Y N

013

Exchange Op Panel. (MIM 511)
Reinstall Attachment Card. (MIM 411)

POWER SUPPLY

PAGE 3 OF 9

014

POWER OFF.

Remove Driver Card (MIM 211).

POWER ON.

DID POWER SUPPLY INDICATOR STAY ON?
Y N

015
POWER OFF.
Exchange Driver card. (MIM 211)
Restore machine.

016

POWER OFF.
Exchange Control Card. (MIM 215)
Restore machine.

017
POWER OFF.
Remove Paper Guide Shield (MIM 119)

Remove Driver Card.(MIM 211)
POWER ON.

DID POWER SUPPLY INDICATOR STAY ON?
Y N

5
J K

018
POWER OFF.

Disconnect Connectors H,J,L,M,N (AA013).
(Q if color),
(K if 2 cable head)

Reinstall Driver Card. (MIM 211)

POWER ON.

DID POWER SUPPLY INDICATOR STAY ON?
Y N

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POWER SUPPLY

PAGE 4 OF 9

019

1. Turn POWER OFF.
2. Reconnect cable H.
3. Turn POWER ON.
4. Wait 10 seconds.

Repeat above 3 steps, reconnecting cables one at a time in the following order until the failing unit has been detected (failing = Power Supply Indicator stays ON).

Failing Connector	Unit Exchange	Reference MIM	Reference Drawing
H	Fan	613	AA010
J	Head cable	325	AA005, AA006
K (MOD 2)	Head cable	325	AA007
L	Forms motor	381	AA009
M	Ribbon motor	363	AA010
N	Head motor	337	AA008
Q (color)	Color Shifter motor	365	AA011

Exchange failing unit. Replug any remaining cables.
Suspect Driver card.

020

POWER OFF.
Exchange Driver Card. (MIM 211)
Restore machine (Attachment Card, Reconnect Cable Connectors, Control Card, Paper Guide Shield).
(SEE AA013)

021
POWER OFF.
Disconnect cables T,P,R,S (S = color only). (AA013)
POWER ON.

DID POWER SUPPLY INDICATOR STAY ON?
Y N

022
1. Turn POWER OFF.
2. Reconnect cable P.
3. Turn POWER ON.
4. Wait 10 seconds.

Repeat above 3 steps, reconnecting cables one at a time in the following order until the failing unit has been detected (failing = Power Supply Indicator stays ON).

Failing Connector	Unit Exchange	Ref MIM	Ref Drawing
P	Head Motor (Emitters)	337	AA008
S (Color)	Ribbon Sensors, Suspect cable	369,371	AA012
T	Forms Sensor, Suspect cable	383	AA012
R	Interlock circuit	345	AA012

If failing unit is P, exchange Head motor.

023
POWER OFF.

Disconnect cables H,J,K,L,M,N,Q
(AA013).
(Q if color)
(K if two cable head)

POWER ON.

DID POWER SUPPLY INDICATOR STAY ON?
Y N

024
1. Turn POWER OFF.
2. Reconnect cable H.
3. Turn POWER ON.
4. Wait 10 seconds.

Repeat above 3 steps, reconnecting cables one at a time in the following order until the failing unit has been detected (failing = Power Supply Indicator stays ON).

Failing Connector	Unit Exchange	Reference MIM	Reference Drawing
H	Fan	613	AA010
J	Head cable	325	AA005, AA006
K (MOD 2)	Head cable	325	AA007
L	Forms motor	381	AA009
M	Ribbon motor	363	AA010
N	Head motor	337	AA008
Q (color)	Color Shifter motor	365	AA011

Exchange failing unit. Replug any remaining cables.

025
POWER OFF.
Disconnect Line Cord from machine power supply.
Remove Power Supply from machine (MIM 611).

Put tape over the opening in the bottom of the power supply.
While holding the Power Supply on a flat smooth surface, reconnect line cord.

Turn POWER SWITCH ON for 10 seconds.
Observe that Power Supply Indicator comes ON for approximately 5 seconds and then goes OFF.

Turn POWER SWITCH OFF.

DID POWER SUPPLY INDICATOR STAY ON FOR 10 SECONDS?
Y N

026
POWER OFF.

Remove line cord from Power Supply.
Remove tape from Power Supply opening.

Install Power Supply in Printer. (MIM 611)
Reconnect line cord to Power Supply.

POWER ON.

(Step 026 continues)

(Step 026 continued)
DID POWER SUPPLY INDICATOR STAY ON?
Y N

027

Check normal POWER ON indications.
Visual check - for loose screws, etc.
Vibration.

028

Exchange Base Card. (MIM 213)

029

Exchange Power Supply. (MIM 611)

030
Remove Op Panel cable.
Check +5 volts on connector CJ1-pin 17 (SEE AA015)

IS +5 VOLTS PRESENT?
Y N

031
Remove Control Card.
Check +5 volts between Ground and Base card connector "D": (AA013)
D-B36 (+5 volts)
D-B34 (+5 volt rtn)

IS +5 VOLTS PRESENT?
Y N

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ECA35707 PECA35675

032
POWER OFF.
Remove Power Supply. (MIM 611)
Continuity check Base Card: (AA014)
D-B36 to B-A15

IS CONTINUITY CHECK O.K?
Y N

033

Exchange Base Card. (MIM 213)

034

Exchange Power Supply. (MIM 611)

035

Exchange Control Card. (MIM 215)

036
Check cable connector for +5 volts between:
CJ1-16 (-)
CJ1-17 (+) (SEE AA015)

IS +5 VOLTS PRESENT?
Y N

037

Exchange Control Card. (MIM 215)

038

Exchange Op panel. (MIM 511)

039

SELECT AND RUN TEST 300.
DID MACHINE POWER OFF ?
Y N

040
IS FAN RUNNING?
Y N

041
POWER OFF.

Remove forms. (MIM 820)
Remove Forms Device. (MIM 820)
Remove Paper Guide Shield (SEE MIM 119).

Disconnect Cable Connector "H" (AA013).
Set meter for 60VDC scale.
Connect (-) meter lead to Base card connector "H" Pin-3.
Connect (+) meter lead to Base card connector "H" Pin-1 **(SEE AA010).**

POWER ON.

CAUTION: Wait 20 seconds as head movement may occur.

IS +38 VDC PRESENT?
Y N

042

Repair/Exchange Base Card (MIM 213)
Suspect Power Supply.

043

Exchange fan. (MIM 613)

044

POWER OFF.
Exchange Control Card. (MIM 215)
Suspect Power Supply.
Suspect base card.

045
POWER OFF.

Remove Paper Guide Shield. (MIM 119)
Disconnect cables J, K, L, M, N, Q.
(Q if color).
(K if two cable head).

POWER ON.

Wait 20 seconds.

DOES MACHINE POWER STAY ON (FAN RUNNING)?

Y N

A
Z A

046

POWER OFF.
Exchange Driver Card. (MIM 211)
If intermittent:
GO TO MAP 4000, ENTRY POINT F.

047

Turn POWER OFF.
Replug cable N.
Turn POWER ON.
Repeat above 3 steps, replugging cables, one at a time, in the following order: L, M, J, K, Q.
Repeat until the failing unit has been detected. (SEE AA013)
Exchange failing unit. Replug any remaining cables.
Suspect Driver card.

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RIBBON MOVEMENT AND CONTROL

PAGE 1 OF 7

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
2000	A	1	001
2000	B	2	008

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
4	022	2000	A
7	039	2000	A

001
(ENTRY POINT A)

Power off: wait 20 seconds
Power on: and observe ribbon knob during BATS.

DID RIBBON START AND STOP ?

Y N

002
Power off. Remove ribbon.
Power on.
Select and run test 830 (MIM 055)

DID TEST RUN SUCCESSFULLY? (MIM 056)
Y N

003

GO TO PAGE 2, STEP 008,
ENTRY POINT B.

004
Replace ribbon

RIBBON MOVEMENT

PAGE 2 OF 7

005
Select and run test 830 (MIM 055)

PRESS STOP
DID TEST RUN SUCCESSFULLY? (MIM 056)
Y N

006

GO TO STEP 008,
ENTRY POINT B.

007

GO TO PAGE 4, STEP 019,
ENTRY POINT D.

008
(ENTRY POINT B)

DOES RIBBON RUN CONTINUOUSLY WHEN POWER IS ON?
Y N

009
Power off: remove base cover (MIM 113)
Remove Ribbon Cartridge, if installed. (MIM 812)

POWER ON
Select and run test 830. (MIM 055)

Press START.
Observe ribbon drive gears (MIM 363)

DO RIBBON MOTOR GEARS TURN ?
Y N

010
Press STOP Key.

POWER OFF.

Remove Paper Guide Shield (SEE MIM 119)
Disconnect Cable Connector "M" from Base Card (AA013).
Check for +38VDC on Base Card connector "M" Pin-3 (+) meter lead and "M" Pin-4 (-) meter lead. SEE AA010

POWER ON.

Rerun TEST 830.

(Step 010 continues)

RIBBON MOVEMENT

PAGE 3 OF 7

(Step 010 continued)
IS +38VDC PRESENT?
Y N

011

POWER OFF.
Exchange Driver card. (MIM 211)
Suspect Control Card.
Restore machine.

012

POWER OFF.
Exchange Ribbon Drive Motor Assembly.
(MIM 363)

013
Press STOP Key.
Remove Ribbon Cartridge. (MIM 812)
Press START Key.

DOES RIBBON DRIVE GEAR TURN? (MIM 363)
Y N

014

Exchange Ribbon Drive Motor Assembly.(MIM 363)

015
Exchange Ribbon Cartridge. (MIM 810)

016
POWER OFF.

Remove Paper Guide Shield (MIM 119).
Disconnect Cable Connector "M" from Base card.

POWER ON.

Wait until BATS are complete, approximately 20 seconds.
Connect (+) meter lead to Base Connector "M" Pin-3 (-) meter lead to base connector "M" Pin-4. **(AA010).**

IS +38VDC PRESENT?
Y N

017

Replace Ribbon Drive Motor Assembly.(MIM 363)

018

Exchange Driver Card. (MIM 211)
Suspect Control card.
Suspect Base Card.

019
(ENTRY POINT D)

POWER OFF.

Move carrier to middle of travel (to clear tractors).

Visually check for following:

Folded ribbon

Proper setting of thickness control.

Verify printhead is seated correctly and properly latched (SEE MIM 321).

Verify that the ribbon drive gear is not damaged (see MIM 360)

ALL ABOVE CHECKS O.K.?
Y N

020

Correct problem.
Exchange ribbon.
Remove bind

021
IS MACHINE A MODEL C2 (COLOR)?
Y N

022

GO TO MAP 2000, ENTRY POINT A.

023
COLOR RIBBON MOVEMENT & CONTROL

NOTE: Color Ribbon should be installed.

Manually move the ribbon shield up and down through its travel checking for binds.

Inspect Ribbon Guide Rack Gear teeth (MIM 360).

Verify cable Connectors Q and Z (motor to cable connector) are seated properly (SEE MIM 365, AA013).

ALL ABOVE CHECKS O.K.?
Y N

024

Correct problem.
Exchange ribbon.
Remove bind

025
POWER ON.

NOTE: When running TESTS 840 through 848, disregard last line after STOP (2) Key is pressed.

Wait 20 seconds or until BATS are complete.

Reinstall forms and forms device. (MIM 820)
Select and run TEST 840 (MIM 055, 056).
Print one full page.
(Step 025 continues)

(Step 025 continued)
Press STOP Key.

DOES PRINTER PRINT ALL FOUR COLORS CORRECTLY? (SEE MIM 056 TEST 840)
Y N

026
POWER OFF.

Remove Attachment Card (MIM 411) and Control Card (MIM 215).
Continuity check for Zero ohms from Base card Connector D-A25 to frame ground (SEE AA013).

CONTINUITY CHECK O.K.?
Y N

027

Exchange Driver Card. (MIM 211)

028

Remove Forms Device. (MIM 820)
Remove Paper Guide Shield. (MIM 119)
Disconnect Cable Connector Q from Base Card.(AA013)
Resistance check Cable Connector "Q" as follows:

FROM	TO	RESISTANCE
Pin-3	Pin-5	5 to 15 ohms.
Pin-4	Pin-6	5 to 15 ohms.
Pin-4	Frame Ground	OPEN

(Step 028 continues)

(Step 028 continued)
CONTINUITY CHECK O.K.?
Y N

029
Disconnect Shift Motor Connector "Z" (MIM 365).

Continuity check Motor Connector "Z" as follows:

FROM	TO	RESISTANCE
Pin-1	Pin-4	5 to 15 ohms
Pin-3	Pin-5	5 to 15 ohms
Pin-3	Frame Ground	OPEN

CONTINUITY CHECK O.K.?
Y N

030

Exchange Ribbon Shift Motor. (MIM 365)
Suspect Driver Card.
Restore machine.

031

Exchange Ribbon Shift Cable. (MIM 367)
Restore machine.

032

Exchange Driver Card.(MIM 211)
Suspect Control Card.
Restore machine.

RIBBON MOVEMENT

PAGE 6 OF 7

033
NOTE: Run approximately 8 to 10 lines of print of each of following tests.
Select and run TESTS 841 thru 848 (SEE MIM 055,056).
** TESTS 845, 846, 847, 848 are run if Subtractive ribbon is installed. **

TEST	COLOR PRINTED ACCENT	COLOR PRINTED SUBTRACTIVE
841	Blue	Blue (Cyan & Magenta)
842	Red	Red (Yellow & Magenta)
843	Black	Magenta (Red)
844	Green	Green (Yellow & Cyan)
845	Black	Cyan
846	Black	Yellow
847	Black	Black
848	Black	Brown (Magenta & Cyan)

DID ALL COLORS PRINT IN PROPER SEQUENCE?
Y N

034
POWER OFF.

Remove Forms Device.
Remove Paper Guide Shield. (MIM 119)
Disconnect Cable Connector "Q" from Base Card (SEE AA011, AA013).

Resistance check Cable Connector "Q" as follows:

FROM	TO	RESISTANCE
Pin-3	Pin-5	5 to 15 ohms.
Pin-4	Pin-6	5 to 15 ohms.
Pin-4	Frame	

(Step 034 continues)

(Step 034 continued)
Ground OPEN

CONTINUITY CHECK O.K.?
Y N

035
Disconnect Shift Motor
Connector "Z".(MIM 365)

Continuity check Motor
Connector "Z" as follows:

FROM	TO	RESISTANCE
Pin-1	Pin-4	5 to 15 ohms
Pin-3	Pin-5	5 to 15 ohms
Pin-3	Frame Ground	OPEN

CONTINUITY CHECK O.K.?
Y N

036

Exchange Ribbon Shift
Motor.(MIM 365)
Suspect Driver Card.
Restore machine.

037

Exchange Cable. (MIM 367)
Restore machine.

038

Exchange Driver Card. (MIM 211)
Suspect Control Card.
Restore machine.

039

No problem found.
GO TO MAP 2000, ENTRY POINT A.

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SENSOR MAP

PAGE 1 OF 5

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
0000	B	3	012
2000	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
4	021	2000	A
5	036	2000	A

001
(ENTRY POINT A)

POWER ON.

Select TEST 851 (MIM 055), and press "START" Key.

Correct indication of position 1 (LEFT) of display is:
"0" when access cover is open.
"1" when access cover is closed.
Open and close cover several times.

ARE ALL INDICATIONS CORRECT ?
Y N

002

DOES POSITION 1 (LEFT) OF DISPLAY = 0 ?
Y N

SENSOR MAP

PAGE 2 OF 5

003
Power off
Remove paper guide shield (MIM 119)
Disconnect connector "R" (see AA013) from base card.

Power on and run test 851

DOES POSITION 1 (LEFT) OF DISPLAY = 0 ?
Y N

004
Exchange Control Card. (MIM 215)
Suspect base card

005
Exchange head speed inhibitor switch. (MIM 345)

006
Remove paper guide shield (see MIM 119)
Disconnect connector "R" from base card
Check voltage at base card connector "R"
See AA012
Connect - meter lead to frame ground
+ meter lead to "R" Pin-1 = +5v
+ meter lead to "R" Pin-3 = +15v

ARE VOLTAGE READINGS CORRECT ?
Y N

007
IS +5V PRESENT ?
Y N

008
Replace control card. (MIM 215)
Suspect base card

009
Replace power supply. (MIM 611)

010
Exchange head speed inhibitor switch. (MIM 345)

011

GO TO PAGE 3, STEP 012, ENTRY POINT B.

12DEC85 PN6258891

ECA35707 PECA35675

SENSOR MAP

PAGE 3 OF 5

012
(ENTRY POINT B)

Verify E.O.F. Sensor is clear of obstructions (MIM 711).
Observe operator panel status position 3 (MIM 011)

IS STATUS POSITION 3 (RIGHT) OF DISPLAY "0" WITH NO PAPER **INSERTED IN E.O.F. SENSOR?**
Y N

013
POWER OFF.

Remove Paper Guide Shield (MIM 119).
Disconnect Cable Connector T from Base card.(AA013)

POWER ON.

Wait 20 seconds or until BATS are complete.
(See AA012)
Connect (-) meter lead to frame ground.
Connect (+) meter lead to the following Base card pins and check for +5 volts: (AA012)

Base card connector "T" Pins 1, 3, 5, 6 and 7.

IS +5 VOLTS PRESENT ON ALL PINS?
Y N

014

Exchange Control card.(MIM 215)
Suspect Base card.
Restore machine.

015

Exchange Sensor Assembly. (MIM 383)
Restore machine.

016
Insert a solid sheet (no holes) of paper into E.O.F. Sensor (extreme left). (MIM 711)

DID STATUS OF POSITION 3 (RIGHT) OF DISPLAY CHANGE FROM "0" TO "1"?
Y N

017
POWER OFF.

Remove Paper Guide Shield (MIM 119).
Disconnect Cable Connector T from Base card.(AA013)

POWER ON.

Wait 20 seconds or until BATS are complete.
(See AA012)
Connect (-) meter lead to frame ground.
Connect (+) meter lead to the following Base card pins and check for +5 volts: (AA012)

(Step 017 continues)

SENSOR MAP

PAGE 4 OF 5

(Step 017 continued)
Base card connector "T" Pins 1, 3, 5, 6 and 7.

IS +5 VOLTS PRESENT ON ALL PINS?
Y N

018

Exchange Control card. (MIM 215)
Suspect Base card.
Restore machine.

019

Exchange Sensor Assembly. (MIM 383)
Restore machine.

020
IS THE PRINTER A MODEL C2 ? (COLOR)
Y N

021

GO TO MAP 2000, ENTRY POINT A.

022
Observe operator panel status position 2 (MIM 011)
Remove ribbon and operate color ribbon switch "A" (MIM 369).

DID POSITION 2 (CENTER) OF DISPLAY CHANGE FROM 0 TO 1?
Y N

023
Power off and remove base cover. (MIM 113) Power on
Check for +5 volts at Ribbon Switch A (MIM 369). Connect (+) meter lead to the "N/O" side of the switch and the (-) lead to the "COM" side of the switch.

IS +5 VOLTS PRESENT?
Y N

024
Disconnect cable connector "S".
Check for +5 volts at Base card connector S:
Connect (+) meter lead to Base Card connector "S" Pin-4 and (-) meter lead to "S" Pin-1.

IS +5 VOLTS PRESENT?
Y N

025

Exchange control card. (MIM 215)
Suspect Base Card.
Restore machine.

026

Exchange Sensor cable. (MIM 371)
Restore machine.

027

Exchange Sensor. (MIM 369)
Suspect Control Card.
Restore machine.

SENSOR MAP

PAGE 5 OF 5

028
Operate Color Ribbon Switch B. (MIM 369)

DID POSITION 2 OF DISPLAY CHANGE FROM 0 TO 2?
Y N

029
Power off. Remove base cover.(MIM 113) Power on. Check for +5 volts at switch B (MIM 369). Connect (+) meter lead to "N/O" side of the switch and the (-) lead to frame ground

IS +5 VDC PRESENT?
Y N

030
Power off. Remove paper guide shield. Power on Check for +5 volts at Base card connector "S": Connect (+) meter lead to Base card connector "S" Pin-5 and (-) meter lead to frame ground.

IS +5VDC PRESENT?
Y N

031

Exchange control card. (MIM 215)
Suspect Base Card.
Restore machine.

032

Exchange Sensor cable. (MIM 371)
Restore machine.

033

Exchange Sensor. (MIM 369)
Suspect Control Card.
Restore machine.

034
Operate color ribbon switches A and B together.

DID POSITION 2 OF DISPLAY CHANGE FROM 0 TO 3?
Y N

035

Exchange Control card. (MIM 215)

036

GO TO MAP 2000, ENTRY POINT A.

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SYMPTOM MAP

PAGE 1 OF 39

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
2000	A	1	001
2000	C	25	018
2000	F	38	027
3000	B	5	015

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
3	002	2000	A
3	008	2000	A
24	017	2000	A
28	020	2000	A
30	023	2000	A
37	026	2000	A
39	029	2000	A

001
(ENTRY POINT A)

THIS MAP SHOULD BE USED WHEN SYMPTOMS CHANGE, WHEN OTHER MAPS DO NOT FIND THE FAILURE, OR WHEN AN ERROR INDICATION IS SENSED AND CANNOT BE DUPLICATED ALSO, WHEN A FAILURE DOES NOT OCCUR ALL THE TIME.

ALL POSSIBLE INDICATIONS AND SYMPTOMS SHOULD BE RECORDED TO AID YOU IN USING THIS MAP.

SYSTEM ERROR LOGS AID IN IDENTIFYING INTERMITTENT PROBLEMS WHEN AVAILABLE.

OBTAIN ALL INFORMATION CONCERNING FAILURE FROM CUSTOMER SYSTEM AIDS AND CUSTOMER INFORMATION.

ERROR CODES (DISPLAYED ON OPERATOR PANEL).
SYSTEM ERROR LOG (HOST SYSTEM INFORMATION).
ON-LINE PROBLEM (CUSTOMER IDENTIFIED).
SYSTEM IDENTIFIED PROBLEM .
FIRST POWER-ON FAILURE (COLD START).
LONG RUN TIME FAILURES (HOT, OVERHEATED)

(Step 001 continues)

(Step 001 continued)

AN ON-LINE PROGRAM CAN BE USED TO FIND INTERMITTENT FAILURES
HAVE THE CUSTOMER RUN THE FAILING JOB FOR YOU TO OBSERVE IF
AVAILABLE.

EACH FRU IN THE SUSPECT LIST IS IN THE ORDER OF PRIORITY TO REPAIR
THE FAILURE.
FIRST FRU REPAIRS THE HIGHEST NUMBER OF FAILURES WITH THE
ASSOCIATED INDICATION.

PRINTER POWER SYSTEM SPECIFICATIONS:

INPUT POWER REQUIREMENTS

IBM P/N	VOLTS AC MIN	VOLTS AC NOM	VOLTS AC MAX	FREQUENCY +/-0.5 HZ
6372538	90V	100-127	137V	50/60 HZ
6372539	180V	200-240	259V	50/60 HZ

OUTPUT VOLTAGES

VOLTAGE DC VOLTS	TOTAL (+/-%)
+15	+10/-8
+ 5	+ 5/-4
-15	+10/-8
+38	+10/-8

(Step 001 continues)

(Step 001 continued)

YOUR ENTRY TO THIS MAP WAS EITHER FROM SOME OTHER PRINTER MAP IN THIS MAINTENANCE PACKAGE OR DUE TO AN INTERMITTENT ERROR FAILURE OR REPORTED FAILURE.
Y N

002
Verify Printer operation

GO TO MAP 2000, ENTRY POINT A.

003

GO TO STEP 004,
ENTRY POINT AA.

004
(ENTRY POINT AA)

IS THE ERROR CODE A THREE DIGIT CODE ?
Y N

005
IS THERE A TWO DIGIT CODE?
Y N

006
ARE THERE CHANGING DISPLAY CODES, WRONG OR MULTIPLE ERROR CODES?
Y N

007
IS THERE AN IDENTIFIED SYMPTOM OR REPORTED FAILURE?
Y N

008
Verify Printer operation

GO TO MAP 2000,
ENTRY POINT A.

009
IS THERE AN IDENTIFIED PRINT QUALITY PROBLEM?
Y N

010

GO TO PAGE 31,
STEP 024,
ENTRY POINT E.

12MAY86 PN6258892

ECA43594 PECA35707

SYMPTOM MAP

011

GO TO PAGE 38,
STEP 027,
ENTRY POINT F.

012

GO TO PAGE 29, STEP 021,
ENTRY POINT D.

013

GO TO PAGE 5, STEP 015,
ENTRY POINT B.

014

GO TO PAGE 25, STEP 018,
ENTRY POINT C.

015
(ENTRY POINT B)

NOTE: Error Codes are listed in a lowest to highest order.

STATUS CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
BLANK	DISPLAY IS BLANK WITH READY INDICATOR OFF.	FAN IS RUNNING ——>	EXCHANGE OPERATOR PANEL, SUSPECT CONTROL CARD, ATTACHMNT CARD
		FAN NOT RUNNING ——> POWER SUPPLY INDICATOR IS ON.	CUSTOMER SOURCE POWER PROBLEM, EXCHANGE POWER SUPPLY

STATUS CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
00	THIS STATUS CODE IS ON-LINE NOT READY TO MAKE THE PRINTER READY PRESS THE START KEY. NOTHING IS WRONG WITH THE PRINTER.	PRESS THE START KEY	SUSPECT CONTROL CARD, OP PANEL

(Step 015 continues)

(Step 015 continued)

STATUS CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
01	END OF FORMS	PRESS THE "STOP" KEY THEN INSTALL AND REALIGN THE FORMS, THEN SET THE TOP OF FORMS PRESS "START" AND RESUME PRINTING.	EXCHANGE E.O.F SENSOR/ CABLE SUSPECT CONTROL CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
02	FORMS JAM	PRESS THE "STOP" KEY AND CLEAR THE FORMS JAM, REALIGN THE FORMS AND RESET THE TOP OF FORMS, PRESS THE "START" KEY AND RESUME PRINTING.	EXCHANGE E.O.F. SENSOR/ CABLE SUSPECT CONTROL CARD

STATUS CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
03	DOCUMENT ON DEMAND FORMS EJECTED.	TO MAKE THE PRINTER READY PRESS "LOAD/EJECT" WHICH WILL CAUSE THE PAPER TO LOAD AND THE PRINTER TO GO INTO A READY STATE. NOTHING IS WRONG WITH THE PRINTER	EXCHANGE CONTROL CARD

(Step 015 continues)

(Step 015 continued)

CODE	DESCRIPTION	UNIT CHECKS	LIST
06	HOST ATTENTION (BEL COMMAND)	THE ATTACHMENT CARD SETS THE DISPLAY TO "06" AND SOUNDS THE ALARM. PRESS THE STOP KEY AND CLEAR THE ERROR THEN PRESS START	EXCHANGE ATTACH-MENT CARD SUSPECT HOST PROGRAM OR CON-TROL CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
07	INVALID PCIA ORDER	RETRANSMIT JOB AND APPLICATION FAILURE VERIFY DATA STREAM	EXCHANGE ATTACH-MENT CARD SUSPECT HOST PROGRAM, CONTROL CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
08	HOLD PRINT TIMEOUT	"STOP" KEY PRESSED, DISPLAY CHANGES FROM "00" TO "08" IF MACHINE IS NOT ATTENDED WITHIN 10 MINUTES. PRESS THE START KEY.	SUSPECT HOST PROGRAM OR ATTACH-MENT CARD CONTROL CARD

(Step 015 continues)

(Step 015 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
09	INVALID OPERATION	INVALID SEQUENCE ON ENTERING OPERATOR PANEL COMMANDS. VERIFY SEQUENCE AND RE-ENTER COMMANDS	SUSPECT ATTACH-MENT CARD CONTROL CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
11	ATTACHMENT DETECTED PROCESS CHECK	SEE PROBLEM DETERMIN-ATION PROCEDURES (IN OP-GUIDE) TEST OFF-LINE RUN VERIFICATION TESTS	SUSPECT HOST PROGRAM SUSPECT ATTACH-MENT CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
15	NO LINE ACTIVITY		EXCHANGE ATTACH-MENT CARD SUSPECT CONTROL CARD

(Step 015 continues)

(Step 015 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
17	PARITY CHECK (LINE)	PRESS STOP AND CHECK DATA COMMUNICATION LINK	EXCHANGE ATTACHMNT CARD SUSPECT CONTROL CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
18	DATA CLEARED		EXCHANGE ATTACHMNT CARD, SUSPECT HOST PROGRAM

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
19	ATTACHMENT CARD DID NOT RESPOND TO ATTACHMENT CARD BAT NOTE IF IT ONLY OCCURS AFTER OFF/LINE TEST EXIT. SEE SUSPECT LIST.	POWER OFF: RESEAT ATTACHMENT CARD: POWER ON: IF ERROR IS STILL PRESENT EXCHANGE ATTACHMENT CARD.	EXCHANGE ATTACH-MENT CARD SUSPECT CONTROL CARD,BASE CARD

(Step 015 continues)

(Step 015 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
20	ELECTRICAL CONNECTION AND PACING PROTOCOL MISMATCH.	PRESS STOP: PRESS START:	SUSPECT ATTACH-MENT CARD.

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
21	INVALID LANGUAGE SELECTION FAILED DURING BATS	SEE OPERATORS GUIDE LANGUAGE SELECTION ROUTINES TEST 303	SUSPECT HOST PROGRAM, ATTACH-MENT CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
22	ON LINE BUT PRINTER ADDRESS NOT RECEIVE IN LAST SECOND.	SUBMIT PRINT JOB	EXCHANGE ATTACH-MENT CARD HOST CABLE/ CONNECTOR

(Step 015 continues)

(Step 015 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
23	TRANSMIT BUFFER OVERRUN ERROR	PRESS STOP: PRESS AND HOLD ALTERNATE, THEN PRESS CANCEL: ENSURE PROPER CABLING.	SUSPECT HOST PROGRAM, ATTACH-MENT CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
24	PARITY ERROR	PRESS STOP: PRESS AND HOLD ALTERNATE, THEN PRESS CANCEL. ENSURE PROPER CABLING.	SUSPECT ATTACH-MENT CARD SUSPECT CONTROL CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
25	FRAMING ERROR	PRESS STOP: ENSURE PROPER CABLING. PRESS AND HOLD ALTERNATE, THEN PRESS CANCEL.	SUSPECT H.I.C. SUSPECT ATTACH-MENT CARD

(Step 015 continues)

(Step 015 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
26	RECEIVE BUFFER OVERRUN ERROR	PRESS STOP: ENSURE PROPER CABLING. PRESS AND HOLD ALTERNATE, THEN PRESS CANCEL.	SUSPECT HOST. SUSPECT ATTACH-MENT CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
27	COMMUNICATION FAILURE	SUBSYSTEM NOT READY OR BAD H.I.CABLE. SEE PROBLEM DETERMINE-ATION PROCEDURES (OP-GUIDE)	EXCHANGE ATTACHMNT CARD SUSPECT HOST

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
28	COMMUNICATION FAILURE	SUBSYSTEM NOT READY OR BAD H.I.CABLE. SEE PROBLEM DETERMINE-ATION PROCEDURES (OP-GUIDE)	EXCHANGE ATTACHMNT CARD SUSPECT HOST

(Step 015 continues)

(Step 015 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
29	LINK NOT ESTABLISHED	PRESS START:	SUSPECT HOST, H.I.C., ATTACH-MENT CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
31	"END" OF FORMS	PRESS THE STOP KEY INSTALL NEW FORMS AND SET THE TOP OF FORMS PRESS THE START KEY AND RESUBMIT PRINT JOB	EXCHANGE ATTACH-CARD SUSPECT HOST

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
32	FORMS JAM	PRESS THE STOP KEY AND CLEAR THE CAUSE OF THE PAPER JAM. SET THE TOP FORMS PRESS START AND RESUBMIT JOB.	EXCHANGE ATTACHMNT CARD SUSPECT HOST

(Step 015 continues)

SYMPTOM MAP

(Step 015 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
33	D.O.D FORMS EJECTED	PRESS THE STOP KEY THEN PRESS THE START KEY.	EXCHANGE ATTACHMNT CARD SUSPECT HOST

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
34	D.I.D LOAD PAPER	PRESS THE STOP KEY THEN PRESS THE START KEY.	EXCHANGE ATTACHMNT CARD SUSPECT HOST

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
41	FORMS MOVEMENT (OVERCURRENT)	POWER OFF MACHINE AND UNPLUG THE "L" CONNEC-TOR AND, POWER ON MACHINE. RERUN TEST 820. IS ONE OF THE FOLLOWING ERRORS PRESENT? 41 EXCHANGE DRIVER CARD 43 EXCHANGE FORMS MOTOR	EXCHANGE DRIVER CARD, FORM DRIVE MOTOR SUSPECT BASE CARD

(Step 015 continues)

(Step 015 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
42	FORMS MOVEMENT PROBLEM (OPEN PHASE OR DEFECTIVE COMPARATOR ON DRIVER CARD)	POWER OFF MACHINE AND RESEAT THE DRIVER CARD AND POWER MACHINE ON. RERUN TEST 820. IF THE SAME ERROR IS PRESENT, EXCHANGE THE DRIVER CARD.	EXCHANGE DRIVER CARD SUSPECT CONTROL CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
43	FORMS DRIVE FAILURE	POWER OFF MACHINE AND UNPLUG THE "L" CONNECTOR (AA009) AND CHECK CONTINUITY BETWEEN GROUND AND PINS 3THRU6 IF THERE IS MORE THAN 5 OHMS OF RESISTANCE EXCHANGE THE FORMS MOTOR. IF THERE IS LESS LESS THAN 5 OHMS EXCHANGE THE DRIVER CARD.	EXCHANGE FORMS MOTOR, DRIVER CARD SUSPECT BASE CARD

(Step 015 continues)

(Step 015 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
45	FORMS DRIVE CIRCUIT FAILED THE BAT TEST	POWER OFF MACHINE RESEAT "L" CONNECTOR. PERFORM OFFLINE DIAGNOSTIC TEST 820 FOR FAILURE ISOLATION. IF ONE OF THE FOLLOWING ERROR CODES ARE DISPLAYED:41,42,43 GO TO THE RESPECTIVE ERROR CODE IN THIS MAP.	EXCHANGE DRIVER CARD SUSPECT FORMS MOTOR

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
50	COMMAND DECODE CHECK ERROR IN PROCESSING COMMANDS. THE COMMAND DOES NOT MATCH ANY DEFINED COMMAND CODES	POWER OFF, POWER ON. WAIT 20 SECONDS SAME ERROR CODE ——>	EXCHANGE CONTROL CARD

(Step 015 continues)

(Step 015 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
51	MP-2 NO RESPONSE TIMEOUT. THIS ERROR INDICATES A HARDWARE ERROR. IF MP2 FAILS TO RESPOND WITHIN 10 SECONDS THE MP1 DISPLAYS A 51 ERROR. MP2 CONTROLS THE HEAD MOTOR.	POWER OFF, POWER ON. WAIT 20 SECONDS SAME ERROR CODE	EXCHANGE CONTROL CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
52	PRINT BUFFER NOT EMPTY, PRINT LINE INCOMPLETE. HEAD MOTION PROBLEM, THE HEAD CARRIER DID NOT MOVE THE CORRECT NUMBER OF POSITIONS.	PRESS STOP THEN PRESS START AND RESUBMIT PRINT JOB. IF A 52 ERROR IS STILL PRESENT, CHECK FOR BINDS IN CARRIER ASSEMBLY.	EXCHANGE CONTROL CARD. SUSPECT HEAD MOTOR

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
53	PRINT LINE INCOMPLETE PRINT HEAD WITHIN PRINT BOUNDRY. HEAD MOTION PROBLEM THE HEAD CARRIER DID NOT MOVE THE CORRECT NUMBER OF POSITIONS.	PRESS STOP AND REPLACE RIBBON AND VERIFY ALL UNIT CHECKS LISTED IN ERROR CODE 56 PRESS START AND RESUBMIT JOB IF ERROR CODE 53 IS IS STILL PRESENT REPLACE CONTROL CARD.	EXCHANGE CONTROL CARD SUSPECT DRIVER CARD, HEAD MOTOR

(Step 015 continues)

(Step 015 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
54	HEAD SPEED CHECK DUE TO A SPEED OUT OF NORMAL OPERATING RANGE, AN OVERFLOW OF REGISTERS WAS RECEIVED. BATS ONLY	CHECK VOLTAGE AT DJ1-10 WHILE MACHINE IS BEING POWERED ON. SEE ERROR CODE 56 FOR MECHANICAL CHECKS.	EXCHANGE DRIVER CARD SUSPECT CONTROL CARD, HEAD MOTOR

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
55	HEAD OVERCURRENT CHECK AN ERROR IS SENSED BY BY THE MICRO INDICATING THE PRESENCE OF A HIGH CURRENT CONDITION IN THE HEAD DRIVE CIRCUIT.		EXCHANGE DRIVER CARD, CONTROL CARD. SUSPECT HEAD MTR

(Step 015 continues)

(Step 015 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
56	HEAD CARRIER MOVEMENT PROBLEM. AN ERROR WAS DISPLAYED, DUE TO HEAD EMMITTERS NOT BEING RECEIVED.	LOOSE OR BROKEN DRIVE BELT, IDLER ASSEMBLY, CARRIER BELT CLAMP. AN OBSTRUCTION WAS PRESENT DURING THE HEAD CALIBRATION CYCLE. VERIFY THE CARRIER MOVES FREELY FROM THE LEFT SIDE FRAME TO THE RIGHT SIDE FRAME. SEE MIM 329 , 333 , 337 339 , 343	EXCHANGE CONTROL CARD DRIVER CARD SUSPECT HEAD MTR BASE CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
58	MP-2 INVALID RESPONSE ERROR DETECTED BY THE PROCESSOR, AN INVALID RESPONSE BYTE TO COMMAND WAS RECEIVED.	POWER OFF, POWER ON. WAIT 20 SECONDS SAME ERROR CODE ———>	EXCHANGE CONTROL CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
59	CANCEL SELECT	PRESS THE START KEY	EXCHANGE ATTACHMNT CARD

(Step 015 continues)

(Step 015 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
60	BUFFER REPRINT KEY PRESSED.	PRESS THE START KEY AND THE BUFFER WILL BE REPRINTED.	EXCHANGE ATTACHMNT CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
61	PA-1 OPERATOR RESPONSE	PRESS (7). THEN PRESS START."61" WILL GO OFF WHEN THE CONTROLLER ACCEPTED THE INPUT.	EXCHANGE ATTACHMNT CARD SUSPECT HOST

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
62	PA-2 OPERATOR RESPONSE	PRESS (8). THEN PRESS START."62" WILL GO OFF WHEN THE CONTROLLER ACCEPTED THE INPUT.	EXCHANGE ATTACHMNT CARD SUSPECT HOST

(Step 015 continues)

(Step 015 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
63	PRINTER IN SEND STATE HOST REQUESTS REPONSE	PRESS THE (7) OR THE (8) KEY(S)	EXCHANGE ATTACHMNT CARD SUSPECT HOST

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
64	HOST RESET RECEIVED	PRESS THE STOP KEY CLEAR THE ERROR AND THEN PRESS THE START KEY.	EXCHANGE ATTACHMNT CARD SUSPECT HOST

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
65	ATTACHMENT CARD NOT INSTALLED	INSTALL/RESEAT THE ATTACHMENT CARD	EXCHANGE ATTACH-MENT CARD SUSPECT CONTROL CARD

(Step 015 continues)

(Step 015 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
66	ATTACHMENT CARD FAILED. ATTACHMENT FAILED TO COMMUNICATE WITH CONTROL CARD WITHIN 10 SECONDS.	POWER OFF MACHINE AND RESEAT THE ATTACHMENT CARD. POWER ON MACHINE IF THE SAME ERROR IS DISPLAYED REPLACE THE ATTACHMENT CARD.	ATTACH-MENT CARD SUSPECT CONTROL CARD, BASE CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
67	GRAPHIC CHECK	VERIFY DATA STREAM	SUSPECT ATTACHMNT CARD, CONTROL CARD,

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
68	SOFT RESET	PRESS THE STOP KEY AND THEN PRESS THE START KEY.	SUSPECT CONTROL CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
69	LOSS OF DATA	PRESS ALTERNATE/CANCEL RESUBMIT PRINT JOB OR PRESS START TO CONT.	SUSPECT CONTROL CARD

(Step 015 continues)

(Step 015 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
72	BUFFER PARITY ERROR DETECTED BY ATTACH-MENT LOGIC		EXCHANGE ATTACH-MENT CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
75	INTERRUPT CHECK: ALARM SOUNDS CONTINUOUSLY AND OP-PANEL IS LOCKED UP	TO RECOVER POWER OFF MACHINE AND WAIT APPROXIMATELY 20 SECONDS POWER ON THE PRINTER IF THE SAME ERROR CODE IS STILL PRESENT ——>	EXCHANGE CONTROL CARD SUSPECT ATTACH-MENT CARD
	INTERRUPT CHECK: ALARM SOUND IS PULSING. (BEEPING)	TO RECOVER PRESS STOP: RESUBMIT PRINT JOB. NOTE: THIS ERROR WAS CAUSED BY A MICROCODE FAILURE IN THE ATTACHMENT CARD OR THE CONTROL CARD. IF THE SAME ERROR CODE APPEARS AGAIN ——>	CONTACT SERVICE SUPPORT FOR ASSISTANCE

(Step 015 continues)

(Step 015 continued)

STATUS CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
88	NO RIBBON INSTALLED	COLOR MODELS ONLY INSTALL A NEW RIBBON AND RUN TEST 851 TO VERIFY THAT THE RIBBON SENSORS ARE WORKING CORRECTLY.	EXCHANGE CONTROL CARD SUSPECT RIBBON OR RIBBON SWITCHES CABLE

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
89	RIBBON MOTOR OVERCURRENT SENSED POSSIBLE RIBBON JAM	ENSURE RIBBON IS NOT JAMMED OR BINDING POWER OFF: DISCONNECT RIBBON MOTOR CONNECTOR "M" (AA013) POWER ON: (WAIT 20 SECONDS) IF THE SAME ERROR CODE ———>	EXCHANGE DRIVER CARD, SUSPECT CONTROL CARD

HAS THE PROBLEM BEEN CORRECTED ?

Y N

016

VERIFY the symptoms! Perform SERVICE CHECKS (MIM 057).

017

GO TO MAP 2000, ENTRY POINT A.

018
(ENTRY POINT C)

STATUS CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
000	"STOP"KEY PRESSED. (OFFLINE USE ONLY)		SUSPECT CONTROL CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
100	BAT STATUS CODE ATTACHMENT CARD TESTED GOOD	IF 100 IS IN DISPAY	SUSPECT CONTROL CARD ATTACHMNT CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
200	BAT STATUS CODE CONTROLLER CARD TESTED GOOD.		SUSPECT CONTROL CARD ATTACHMNT CARD

(Step 018 continues)

(Step 018 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
700	BAT TEST FAILURE	POWER OFF MACHINE AND REMOVE DRIVER CARD. POWER ON MACHINE: IF A 700 APPEARS THE PROBLEM IS IN THE CONTROL CARD/BASE CARD IF THE DISPLAY IS NOT 700 REPLACE THE DRIVER CARD	IF "700" EXCHANGE CONTROL CARD IF NOT "700" EXCHANGE DRIVER CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
750	BAT TEST FAILURE	POWER OFF: REMOVE ATTACHMENT CARD. POWER ON: IF 750 APPEARS THE PROBLEM IS CONTROL CARD OR BASE CARD. IF THE DISPLAY IS NOT 750 REPLACE THE ATTACHMENT CARD OR BASE CARD	IF "750" CONTROL CARD/SUSP BASE CARD IF NOT "750" ATTACHMNT CARD/SUSP BASE CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
999	FATAL ERROR, INVALID VALUES IN THE NVRAM (RESET FACTORY DEFAULTS)	TO RECOVER POWER OFF THE MACHINE: POWER ON THE MACHINE WHILE DEPRESSING THE TOF OF FORMS "3" KEY UNTIL A "100" APPEARS.	EXCHANGE CONTROL CARD

(Step 018 continues)

(Step 018 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
FFF WITH READY LIGHT ON	PROCESSOR ON CONTROL CARD HAS NOT STARTED BAT TEST FAILED.	POWER OFF MACHINE AND RESEAT THE CONTROL CARD. POWER ON THE MACHINE, IF THE ERROR IS STILL PRESENT EXCHANGE THE CONTROL CARD. IF POWER SUPPLY INDICATOR IS ON ———>	EXCHANGE CONTROL CARD EXCHANGE POWER SUPPLY.

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
FFF WITH READY LIGHT OFF	PROCESSOR ON CONTROL CARD HAS NOT STARTED BAT TEST FAILED.	POWER OFF MACHINE AND RESEAT THE CONTROL CARD. POWER ON THE MACHINE, IF THE ERROR IS STILL PRESENT, PROBE PIN CJ2-2. IF LINE IS UP ———>	EXCHANGE POWER SUPPLY, SUSPECT BASE CARD
		IF LINE IS DOWN ———>	EXCHANGE CONTROL CARD

(Step 018 continues)

(Step 018 continued)
HAS THE PROBLEM BEEN CORRECTED ?
Y N

019
VERIFY the symptoms! Perform SERVICE CHECKS: IF PROBLEM is NOT corrected, request aid.

020

GO TO MAP 2000, ENTRY POINT A.

021
(ENTRY POINT D)

COMMON ERROR CODES

CONTROL CARD	DRIVER CARD	ATTACHMENT CARD
00 53 750	41	06 33 ALL CODES
01 54 999	42	07 34 THAT ARE
02 55 FFF	43	08 56 PREFIXED
03 58	45	09 61 WITH AN
19 66	55	11 62 "A"
41 75	56	15 63
42 88	88	17 65
43 89	89	19 66
45 000	700	21 72
50 002		22 75
51 100	(defective	27 100
52 200	drivers to the	28
56 700	print head wires)	31
BLANK		32

COMMON ERROR CODES

MOTORS	POWER SUPPLY	VOLTAGE CHECKS
56 HEAD MOTOR	(power supply	DRIVER CARD
55 " "	LED is ON all	CONNECTOR DJ1
	the time)	
41 FORMS MOTOR		ATTACHMENT CARD
42 " "	BLANK DISPLAY	-15V
43 " "		
	FFF WITH READY	
	INDICATOR ON	

(Step 021 continues)

(Step 021 continued)

HAS THE PROBLEM BEEN CORRECTED ?
Y N

022
Verify the symptoms! perform SERVICE CHECKS (MIM 057).

023

GO TO MAP 2000, ENTRY POINT A.

024

(ENTRY POINT E)

The following are Symptom failures:

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
INVALID OR CHANG-ING ERROR CODES, KEY FAILURE	ERROR CODES NOT IN ERROR LIST, OR DISPLAY CODE CHANGE TO INVALID CODES.	RESEAT OP-PANEL CABLE RUN TEST 850	EXCHANGE CONTROL CARD, OPERATOR PANEL

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
BLANK	FAN RUNNING MACHINE POWERS UP AND MECHANICAL BATS COMPLETED	RESEAT OP PANEL CABLE	EXCHANGE OPERATOR PANEL, CONTROL CARD
	MECHANICAL BATS NOT COMPLETE	RESEAT OP PANEL CABLE	EXCHANGE CONTROL CARD, OP PANEL

(Step 024 continues)

(Step 024 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
BLANK	POWER SUPPLY INDICATOR ON SOLID OR THIS PROBLEM INTERMITTENT	CHECK THE FOLLOWING CABLES FOR CHAFING AND TOUCHING FRAME GROUND: ALL MOTOTR CABLES, PRINTHEAD CABLES, SENSOR CABLE, AND OP PANEL CABLE.	POWER SUPPLY, DRIVER CARD, OP PANEL, CONTROL CARD, ATTACH CARD, BASE CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
BLANK	POOR HORIZONTAL OR VERTICAL SPACING	ALL MECHANICAL CHECKS O.K. SEE PRINT QUALITY MAP	EXCHANGE DRIVER CARD, CONTROL CARD

(Step 024 continues)

(Step 024 continued)

STATUS CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
BLANK	DISPLAY IS BLANK WITH READY INDICATOR OFF.	FAN IS RUNNING ——>	EXCHANGE OPERATOR PANEL, SUSPECT CONTROL CARD, ATTACHMNT CARD
		FAN NOT RUNNING ——> POWER SUPPLY INDICATOR IS ON.	CUSTOMER SOURCE POWER PROBLEM EXCHANGE POWER SUPPLY

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
NONE	NO ERROR NUMBER BEING RECORDED IN PRINTER LOG.	CLEAR ERROR LOG. FORCE AN ERROR ON MACHINE AS FOLLOWS: POWER OFF. REMOVE DRIVER CARD. POWER ON. WAIT UNTIL ERROR IS DISPLAYED. POWER OFF. POWER ON. PRINT ERROR LOG. LOG = 00	EXCHANGE POWER SUPPLY SUSPECT CONTROL CARD

(Step 024 continues)

(Step 024 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
NONE	OP PANEL LOCKS UP CANNOT RESET ERRORS		EXCHANGE OP PANEL SUSPECT CONTROL CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
NONE	PRINTOUT 301 OR 801 MISSING LINES, OR DROPPING DOTS.	CHECK RIBBON CHECK FORMS SETTING. ENSURE PRINT HEAD IS GOOD. RERUN 801	EXCHANGE DRIVER CARD, CONTROL CARD, PRINTHEAD
	NO PRINTING	CHECK PLATEN TO PRINT-HEAD GAP, FORMS THICKNESS SETTINGS.	CABLES, PRINTHEAD BASE CARD
	PRINTING WRONG CHARACTERS		EXCHANGE CONTROL CARD

(Step 024 continues)

(Step 024 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
NONE	WRONG/NO COLORS INTERMITTENTLY	RUN TESTS 840 - 848 VERIFY COLOR. CHECK FOR BINDS. ENSURE RIBBON GUIDE RACK GEAR TEETH ARE O.K.	SUSPECT DRIVER CARD, CONTROL CARD, SHIFT MECHANSM, RIBBON SHIFT MOTOR

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
NONE	POOR COLORS USING SUBTRACTIVE COLOR RIBBON.	CHECK FOR MECHANICAL FAILURES, LOOSE BELTS, OTHER THINGS CAUSING REGISTRATION PROBLEMS.	

(Step 024 continues)

(Step 024 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
NONE	PRINTER IS NOT PRINTING AND HOST SYSTEM HAS NO ERRORS.	ENSURE ATTACHMENT CARD AND CABLE ARE PROPERLY SEATED. CHECK CABLE IS SEATED AT HOST END.	SUSPECT HOST AND CABLE. EXCHANGE ATTACHMNT CARD

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
NONE	PRINTER HAS NO ON-LINE ERROR INDICATION AND IS PRINTING INCORRECT DATA.	ENSURE ATTACH CARD AND CABLE ARE PROPERLY SEATED. CHECK CABLE IS SEATED AT HOST END.	HOST AND CABLE. ATTACHMNT CARD.

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
NONE	PRINT HEAD CARRIER HITS SIDE FRAME WHEN PRINTING OR DURING TESTS	CHECK BELT TENSION. REMOVE ALL BINDS. CHECK FORMS THICKNESS LEVER AND ADJUSTMENT.	EXCHANGE CONTROL CARD. SUSPECT HEAD DRIVE MOTOR.

(Step 024 continues)

(Step 024 continued)

ERROR CODE	DESCRIPTION	UNIT CHECKS	SUSPECT LIST
NONE	RIBBON MOTOR RUNS ALL THE TIME. STOPS INTERMITTENTLY. WILL NOT RUN.		SUSPECT DRIVER CARD, CONTROL CARD, RIBBON MOTOR, SUSPECT BASE CARD

HAS THE PROBLEM BEEN CORRECTED?
Y N

025
VERIFY the symptoms! Perform SERVICE CHECKS (REFERENCE MIM 057).

026
Verify repair
GO TO MAP 2000, ENTRY POINT A.

027
(ENTRY POINT F)

PRINT QUALITY FAILURES AND RESOLUTIONS

DESCRIPTION OF FAILURE	REFERENCE M.I.M. 057 AND PERFORM STEPS INDICATED TO RESOLVE THE FAILURE.
VARIATIONS IN PRINT DENSITY, LIGHT OR DARK ACROSS THE PRINTED PAGE.	PERFORM STEPS 1, 2, 4, 10, AND 11 TO IDENTIFY AND REPAIR
CHARACTER AND OR LINE SPACING IS UNEVEN OR OVERPRINTING OCCURS.	PERFORM STEPS 3, 5, 6, 7, 8, 9, 10, 11 & 13 TO IDENTIFY AND REPAIR
SMUDGING OR PRINTING TO LIGHT OR TO DARK CONSISTENTLY.	PERFORM STEPS 1, 2, 4, 9, 10, 11 AND 12 TO IDENTIFY AND REPAIR
MISSING DOTS, CHARACTERS, INCOMPLETE LINES OR CHARACTERS UNRECOGNIZABLE	PERFORM STEPS 1, 2, 3, 4, 9, 11 AND 12 TO IDENTIFY AND REPAIR
PRINTING UPWARD OR DOWNWARD FROM NORMAL PRINT POSITION	PERFORM STEPS 3, 5, 6, 7, 9, 10, 11, 12, 13 TO IDENTIFY AND REPAIR
WRONG, POOR, OR MISSING COLORS (MODEL C2E ONLY)	PERFORM STEPS 1, 2, 3, 4, 5, 6, 7, 8 AND 12 TO IDENTIFY AND REPAIR

HAS PROBLEM BEEN CORRECTED?

Y N

PAGE 39 OF 39

028
VERIFY the symptoms! Perform SERVICE CHECKS (REFERENCE MIM 057).

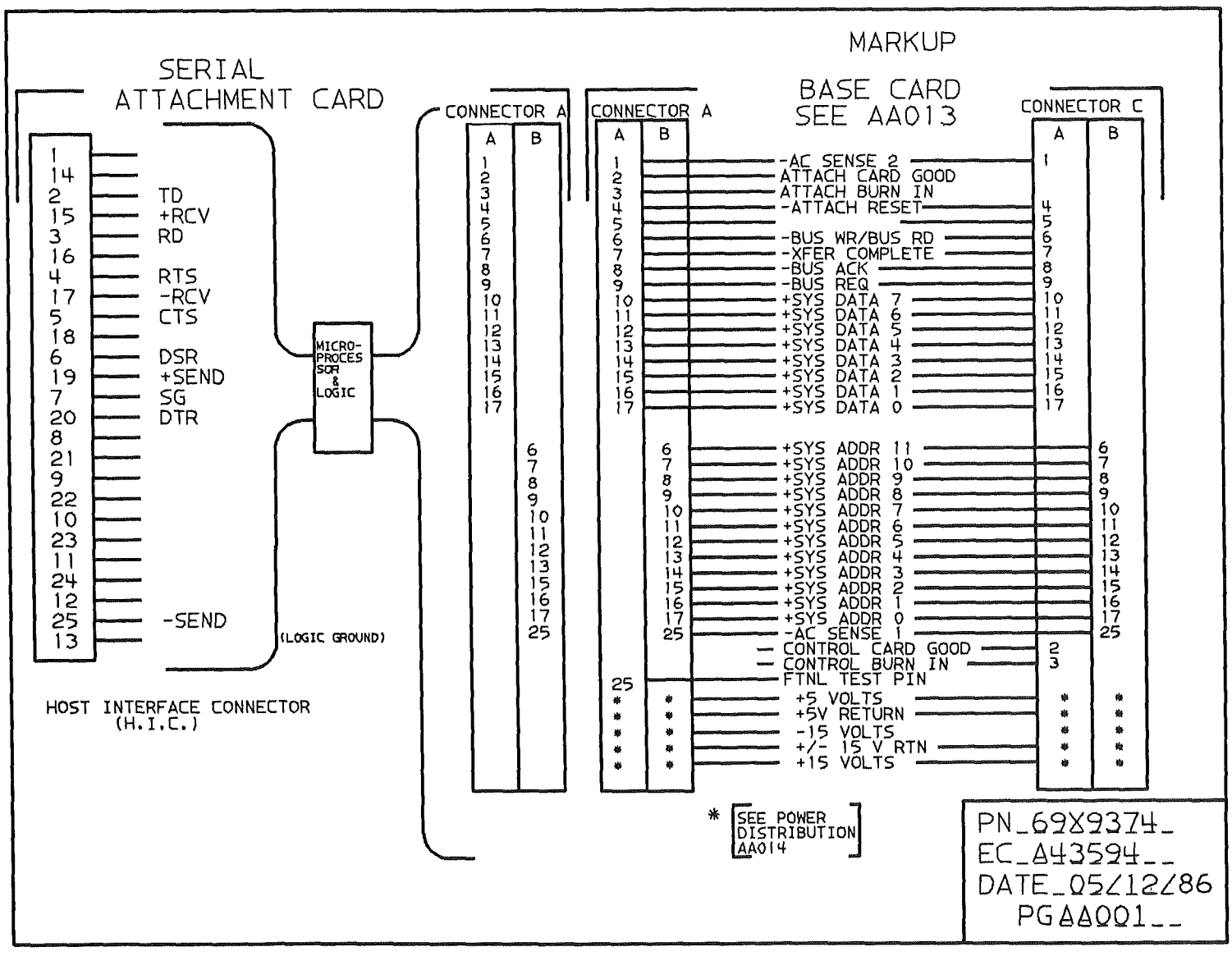
029
Verify repair
GO TO MAP 2000, ENTRY POINT A.

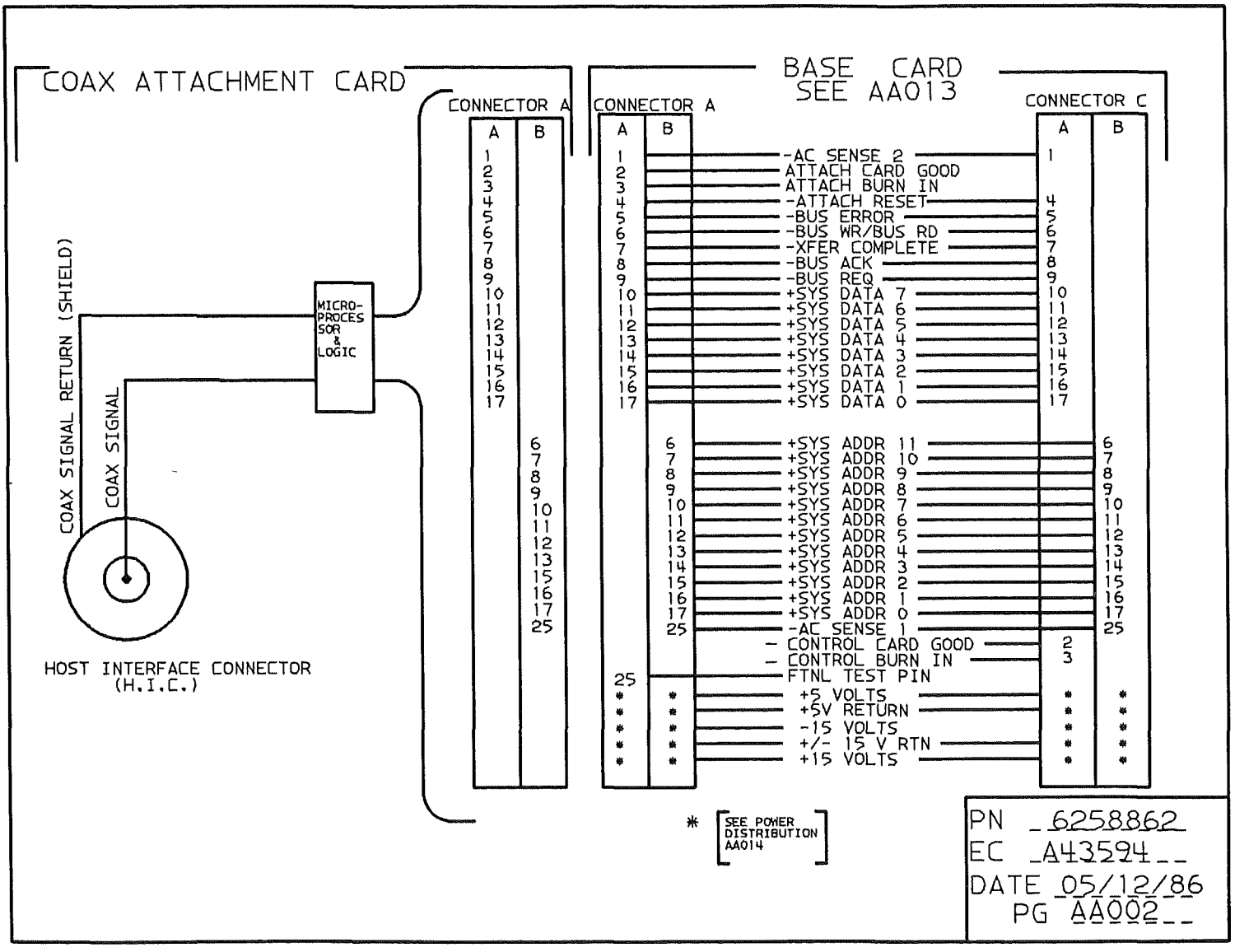
INDEX

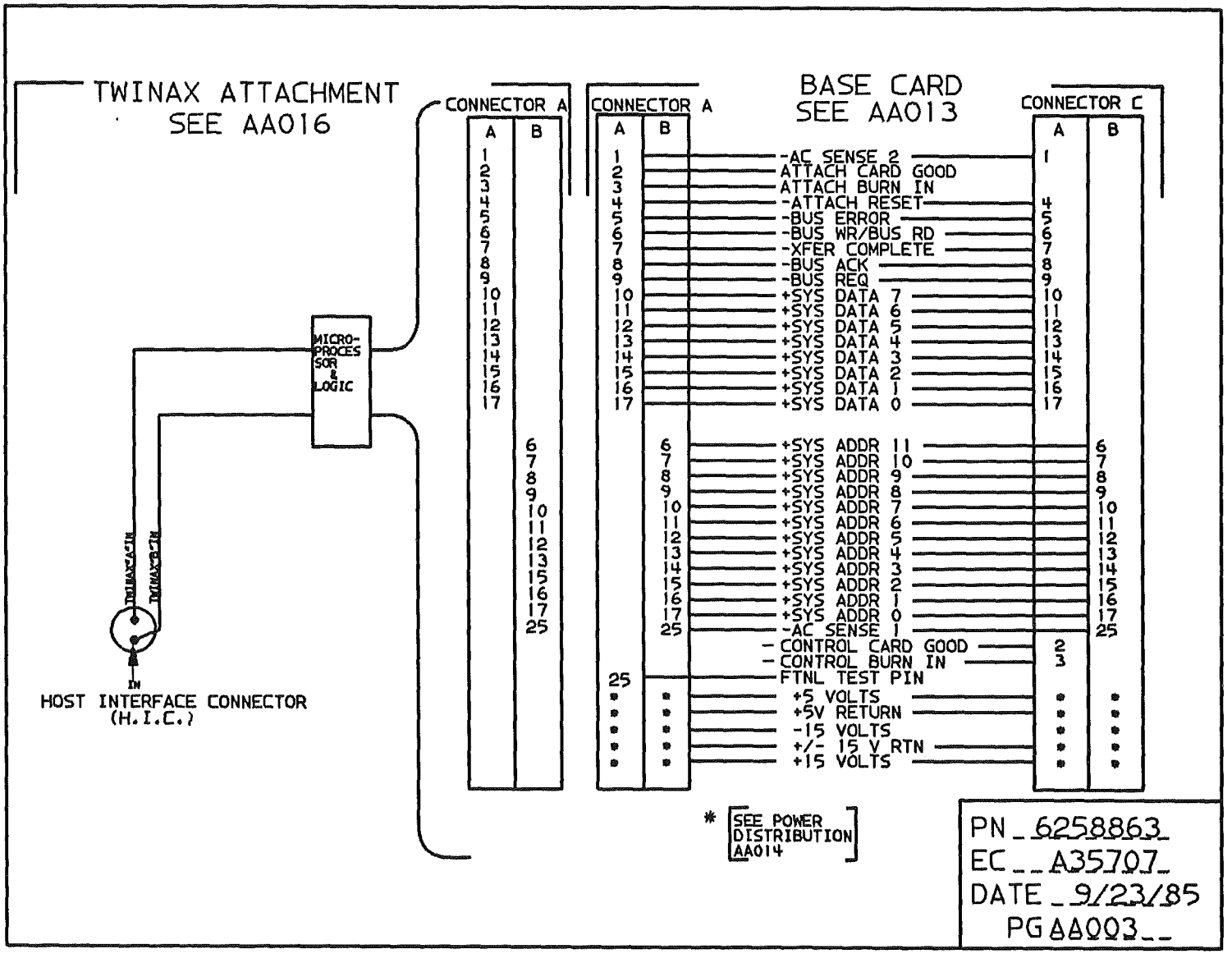
DRAWING	P/N	DESCRIPTION
AA000	6258860	DRAWING INDEX
AA001	69X9374	ATTACHMENT CARD (SERIAL)
AA002	6258862	ATTACHMENT CARD (COAX)
AA003	6258863	ATTACHMENT CARD (TWINAX)
AA004	6258864	OPERATOR PANEL
AA005	6258865	MOD1-MACHINE HEAD CABLE
AA006	6258866	MOD2-MACHINE RIGHT HEAD CABLE
AA007	6258867	MOD2-MACHINE LEFT HEAD CABLE
AA008	6258868	HEAD DRIVE MOTOR
AA009	6258869	FORM DRIVE MOTOR
AA010	6258870	RIBBON/FAN MOTOR DRIVE
AA011	6258871	COLOR RIBBON MOTOR SHIFT
AA012	6258872	SENSOR CIRCUITUT
AA013	6258873	BASE CARD LAYOUT
AA014	6258874	POWER DISTRIBUTION BASE CARD
AA015	6258877	CARD IDENTIFICATION
AA017	6258880	GROUND PATH

A/C=ATTACHMENT CARD
B/C=BASE CARD
C/C=CONTROL CARD
D/C=DRIVER CARD

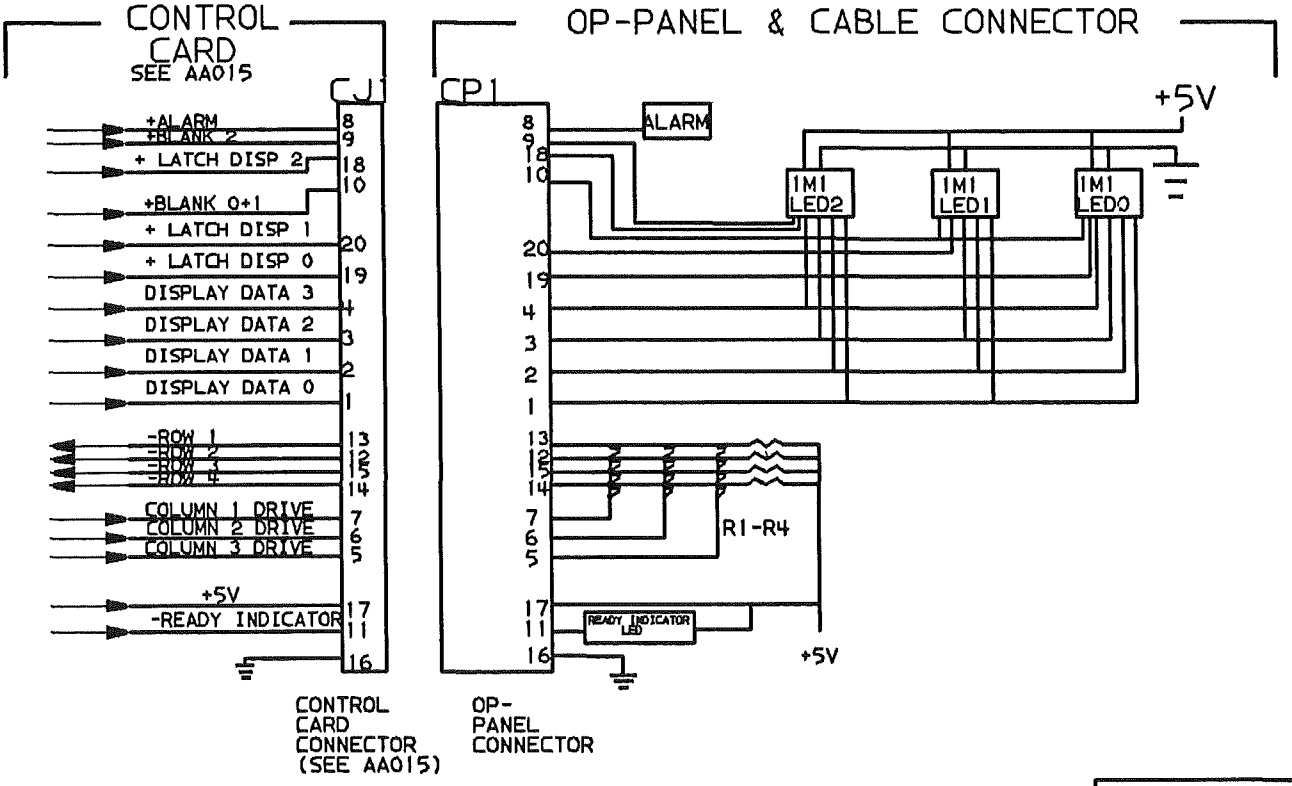
PN_6258860_
EC_A43594__
DATE 05/12/86
PG AA000


MARKUP
SERIAL ATTACHMENT CARD
BASE CARD SEE AA013
CONNECTOR A
CONNECTOR A
CONNECTOR C
A
B
TD
+RCV
RD
RTS
-RCV
CTS
DSR
+SEND
SG
DTR
-SEND
(LOGIC GROUND)
MICRO-PROCESSOR & LOGIC
HOST INTERFACE CONNECTOR (H.I.C.)
-AC SENSE 2
ATTACH CARD GOOD
ATTACH BURN IN
-ATTACH RESET
-BUS WR/BUS RD
-XFER COMPLETE
-BUS ACK
-BUS REQ
+SYS DATA 7
+SYS DATA 6
+SYS DATA 5
+SYS DATA 4
+SYS DATA 3
+SYS DATA 2
+SYS DATA 1
+SYS DATA 0
+SYS ADDR 11
+SYS ADDR 10
+SYS ADDR 9
+SYS ADDR 8
+SYS ADDR 7
+SYS ADDR 6
+SYS ADDR 5
+SYS ADDR 4
+SYS ADDR 3
+SYS ADDR 2
+SYS ADDR 1
+SYS ADDR 0
-AC SENSE 1
CONTROL CARD GOOD
CONTROL BURN IN
FTNL TEST PIN
+5 VOLTS
+5V RETURN
-15 VOLTS
+/- 15 V RTN
+15 VOLTS
* SEE POWER DISTRIBUTION AA014
PN_69X9374_
EC_A43594__
DATE_05/12/86
PGAAQQ1__


COAX ATTACHMENT CARD
CONNECTOR A
A B
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
6 7 8 9 10 11 12 13 15 16 17 25
COAX SIGNAL RETURN (SHIELD)
COAX SIGNAL
MICRO-PROCESSOR & LOGIC
HOST INTERFACE CONNECTOR (H.I.C.)
BASE CARD
SEE AA013
CONNECTOR A
CONNECTOR C
-AC SENSE 2
ATTACH CARD GOOD
ATTACH BURN IN
-ATTACH RESET
-BUS ERROR
-BUS WR/BUS RD
-XFER COMPLETE
-BUS ACK
-BUS REQ
+SYS DATA 7
+SYS DATA 6
+SYS DATA 5
+SYS DATA 4
+SYS DATA 3
+SYS DATA 2
+SYS DATA 1
+SYS DATA 0
+SYS ADDR 11
+SYS ADDR 10
+SYS ADDR 9
+SYS ADDR 8
+SYS ADDR 7
+SYS ADDR 6
+SYS ADDR 5
+SYS ADDR 4
+SYS ADDR 3
+SYS ADDR 2
+SYS ADDR 1
+SYS ADDR 0
-AC SENSE 1
- CONTROL CARD GOOD
- CONTROL BURN IN
FTNL TEST PIN
+5 VOLTS
+5V RETURN
-15 VOLTS
+/- 15 V RTN
+15 VOLTS
* SEE POWER DISTRIBUTION AA014
PN 6258862
EC A43594
DATE 05/12/86
PG AA002

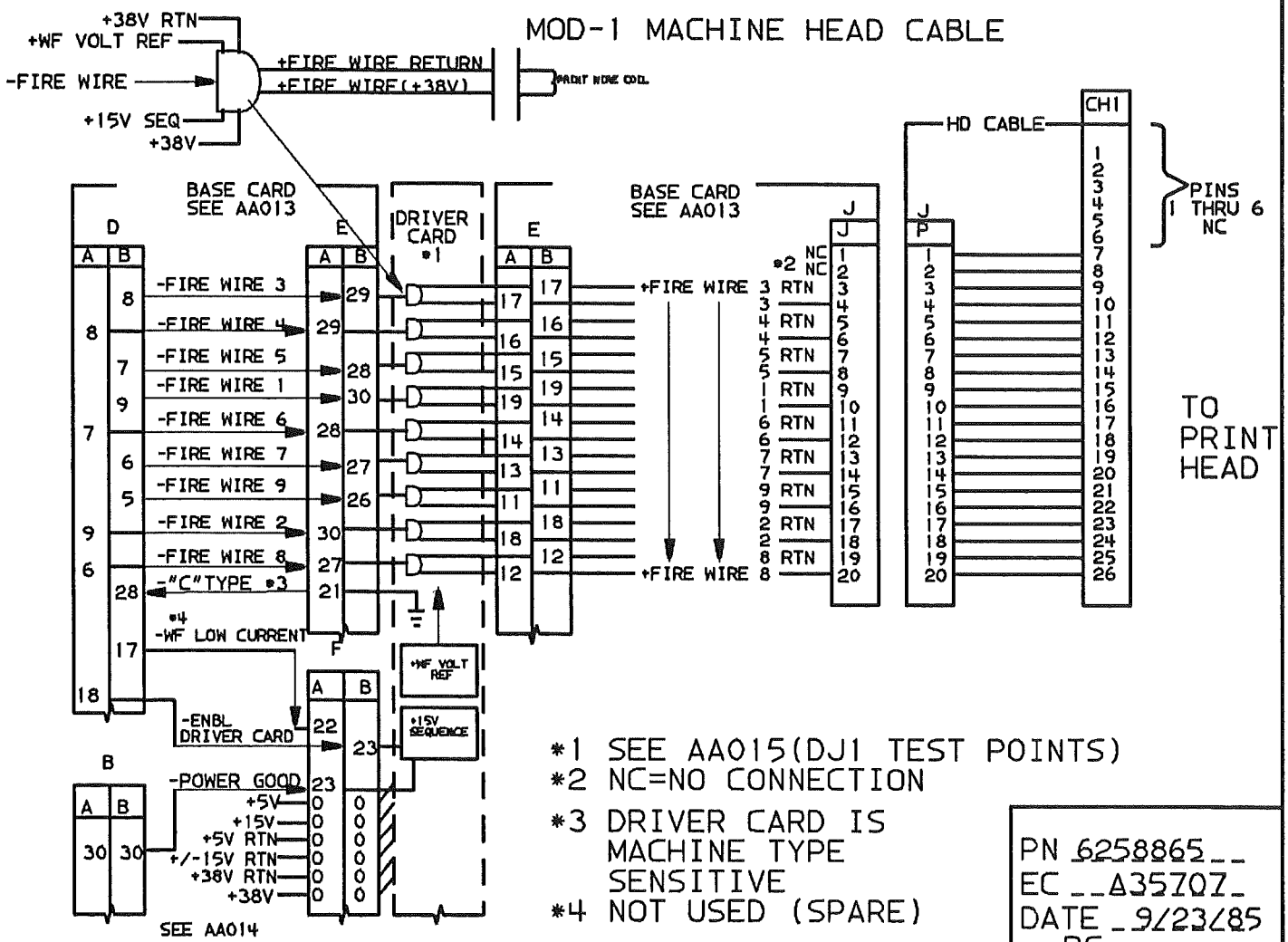

TWINAX ATTACHMENT
SEE AA016
MICRO-
PROCES
SOR
&
LOGIC
TWINAX IN
TWINAX IN
IN
HOST INTERFACE CONNECTOR
(H.I.C.)
CONNECTOR A
A B
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
6
7
8
9
10
11
12
13
15
16
17
25
CONNECTOR A
BASE CARD
SEE AA013
A B
1 -AC SENSE 2
2 ATTACH CARD GOOD
3 ATTACH BURN IN
4 -ATTACH RESET
5 -BUS ERROR
6 -BUS WR/BUS RD
7 -XFER COMPLETE
8 -BUS ACK
9 -BUS REQ
10 +SYS DATA 7
11 +SYS DATA 6
12 +SYS DATA 5
13 +SYS DATA 4
14 +SYS DATA 3
15 +SYS DATA 2
16 +SYS DATA 1
17 +SYS DATA 0
6 +SYS ADDR 11
7 +SYS ADDR 10
8 +SYS ADDR 9
9 +SYS ADDR 8
10 +SYS ADDR 7
11 +SYS ADDR 6
12 +SYS ADDR 5
13 +SYS ADDR 4
14 +SYS ADDR 3
15 +SYS ADDR 2
16 +SYS ADDR 1
17 +SYS ADDR 0
25 -AC SENSE 1
- CONTROL CARD GOOD
- CONTROL BURN IN
25 FTNL TEST PIN
+5 VOLTS
+5V RETURN
-15 VOLTS
+/- 15 V RTN
+15 VOLTS
CONNECTOR C
A B
1
4
5
6
7
8
9
10
11
12
13
14
15
16
17
6
7
8
9
10
11
12
13
14
15
16
17
25
2
3
* SEE POWER DISTRIBUTION AA014
PN 6258863
EC A35707
DATE 9/23/85
PG AA003

OPERATOR PANEL



PN_6258864_
EC___A35707
DATE_9/23/85
PG AA004__

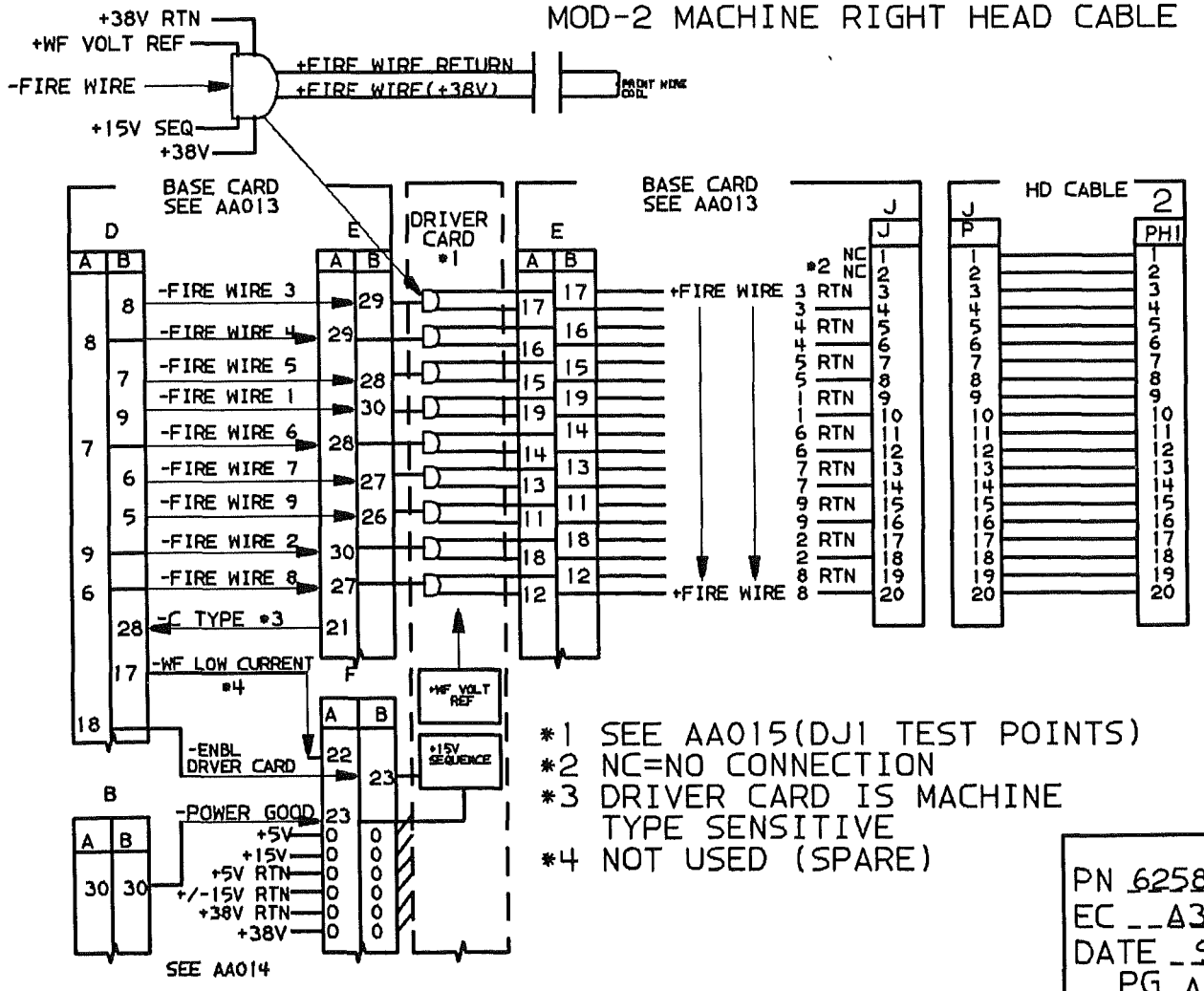
MOD-1 MACHINE HEAD CABLE



*1 SEE AA015(DJ1 TEST POINTS)
*2 NC=NO CONNECTION
*3 DRIVER CARD IS MACHINE TYPE SENSITIVE
*4 NOT USED (SPARE)

PN 6258865__
EC __A3570Z_
DATE _9/23/85
PG _AA005_

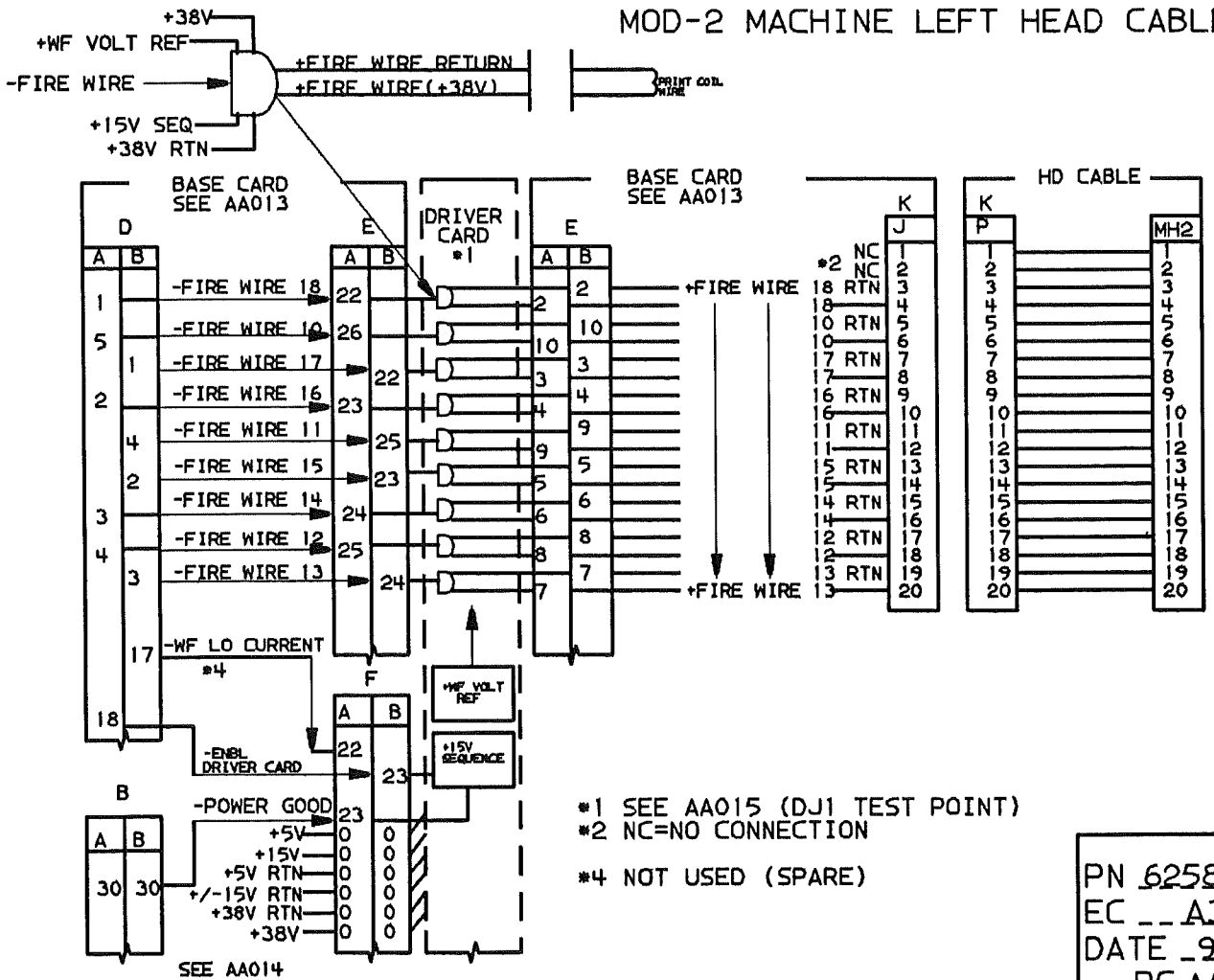
MOD-2 MACHINE RIGHT HEAD CABLE



*1 SEE AA015(DJ1 TEST POINTS)
*2 NC=NO CONNECTION
*3 DRIVER CARD IS MACHINE TYPE SENSITIVE
*4 NOT USED (SPARE)

PN 6258866__
EC __A3570Z_
DATE _9/23/85
PG _AA006_

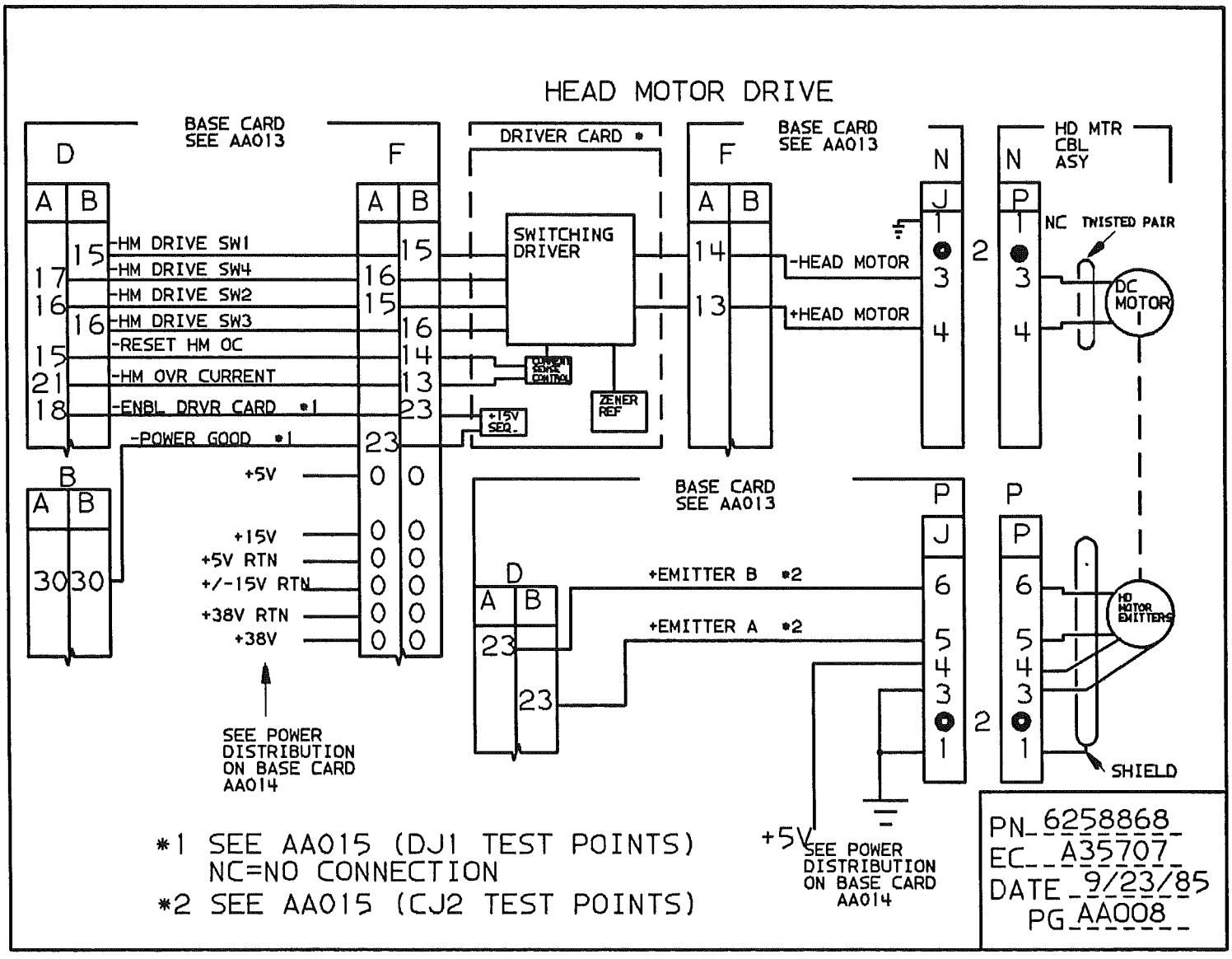
MOD-2 MACHINE LEFT HEAD CABLE



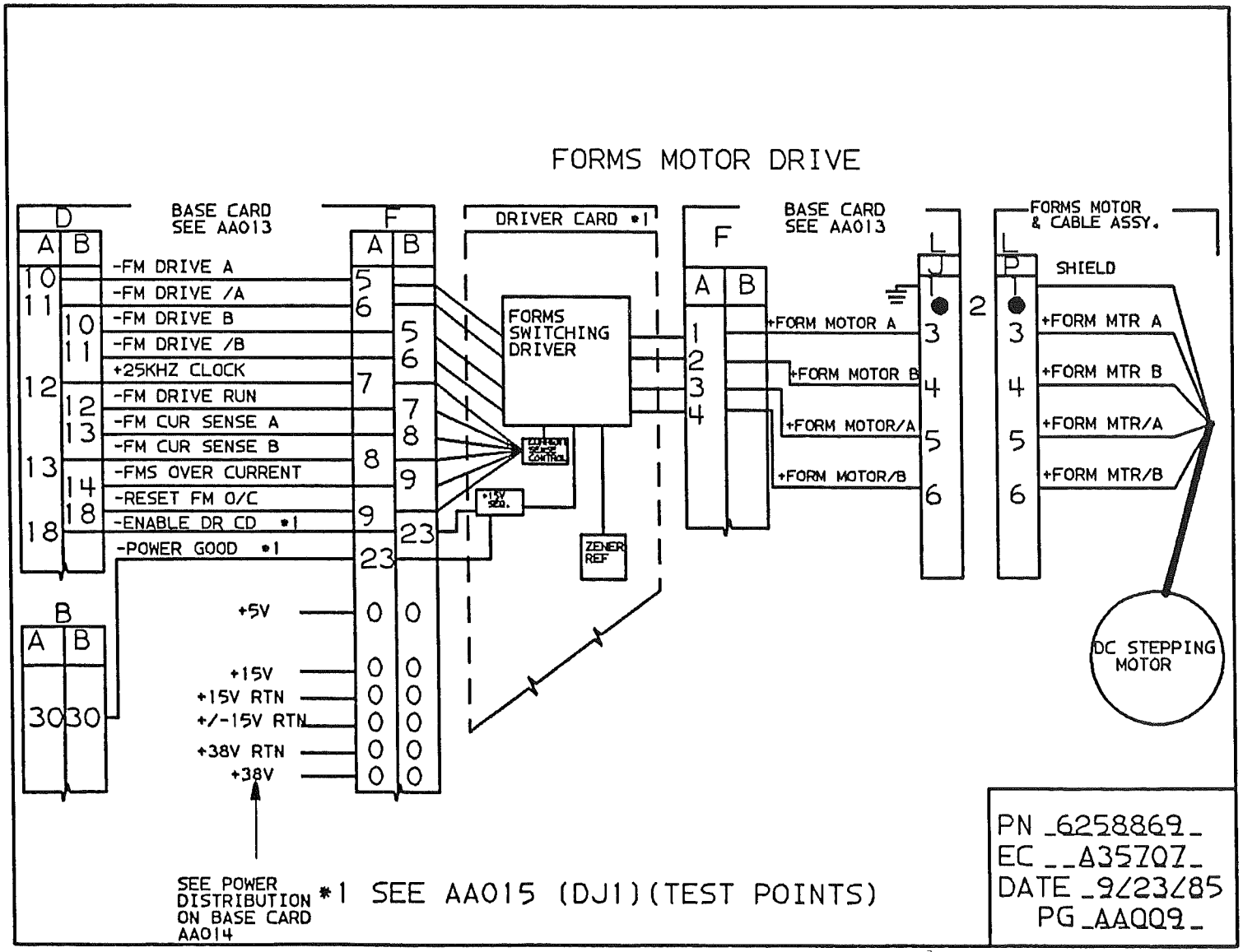
*1 SEE AA015 (DJ1 TEST POINT)
*2 NC=NO CONNECTION

*4 NOT USED (SPARE)

PN 6258867__
EC __A35707_
DATE _9/23/85
PG AA007__

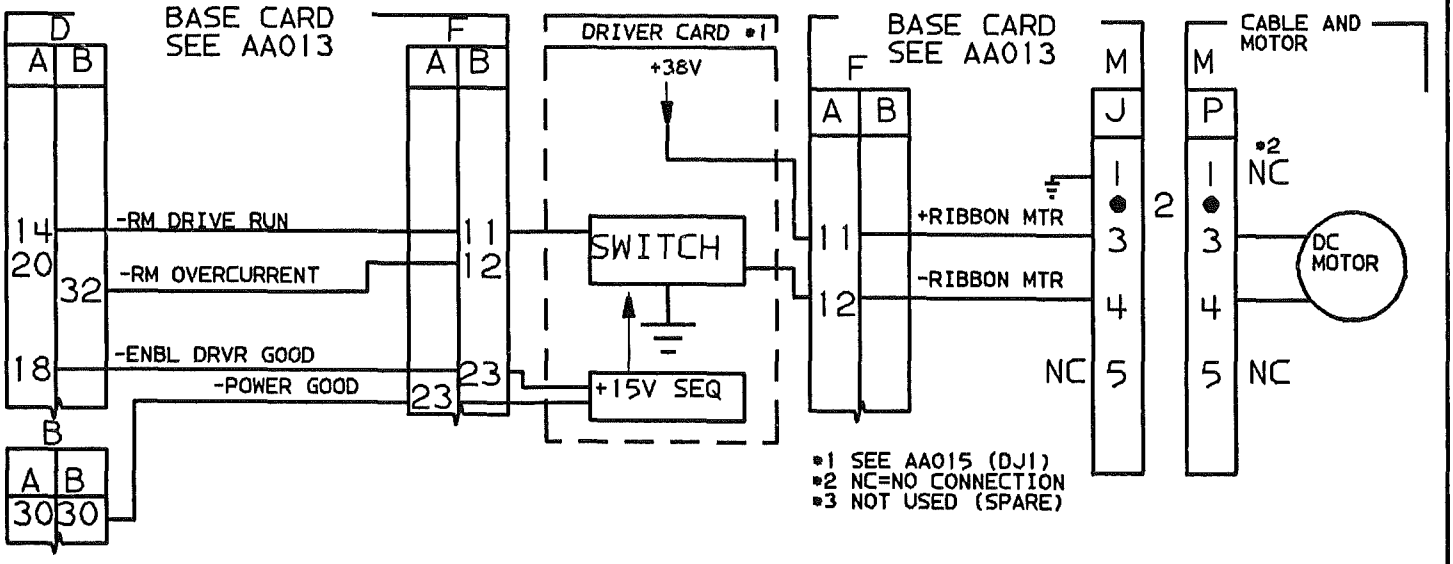

HEAD MOTOR DRIVE
BASE CARD SEE AA013
DRIVER CARD *
BASE CARD SEE AA013
HD MTR CBL ASY
SWITCHING DRIVER
-HM DRIVE SW1
-HM DRIVE SW4
-HM DRIVE SW2
-HM DRIVE SW3
-RESET HM OC
-HM OVR CURRENT
-ENBL DRVR CARD *1
-POWER GOOD *1
+5V
+15V
+5V RTN
+/-15V RTN
+38V RTN
+38V
-HEAD MOTOR
+HEAD MOTOR
NC TWISTED PAIR
DC MOTOR
ZENER REF
+15V SEQ.
BASE CARD SEE AA013
+EMITTER B *2
+EMITTER A *2
HD MOTOR EMITTERS
SHIELD
+5V
SEE POWER DISTRIBUTION ON BASE CARD AA014
SEE POWER DISTRIBUTION ON BASE CARD AA014
*1 SEE AA015 (DJ1 TEST POINTS)
NC=NO CONNECTION
*2 SEE AA015 (CJ2 TEST POINTS)
PN 6258868
EC A35707
DATE 9/23/85
PG AA008

FORMS MOTOR DRIVE

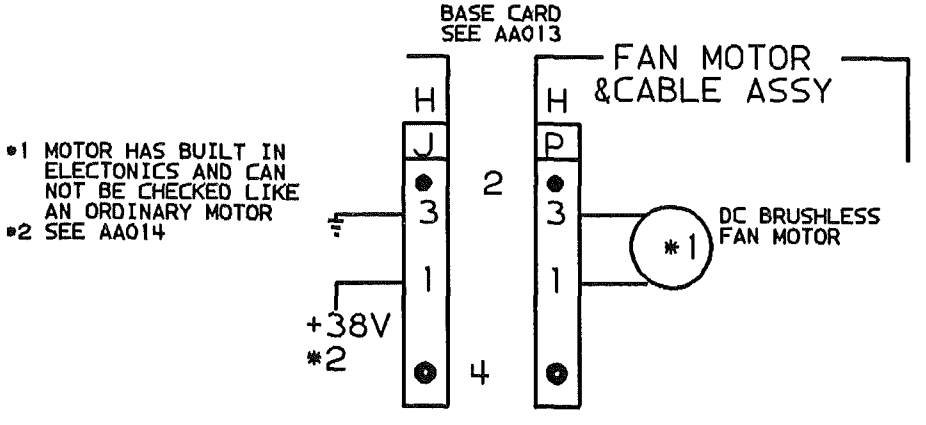


PN _6258869_
EC __A35707_
DATE _9/23/85
PG _AAQQ9_

RIBBON DRIVE MOTOR

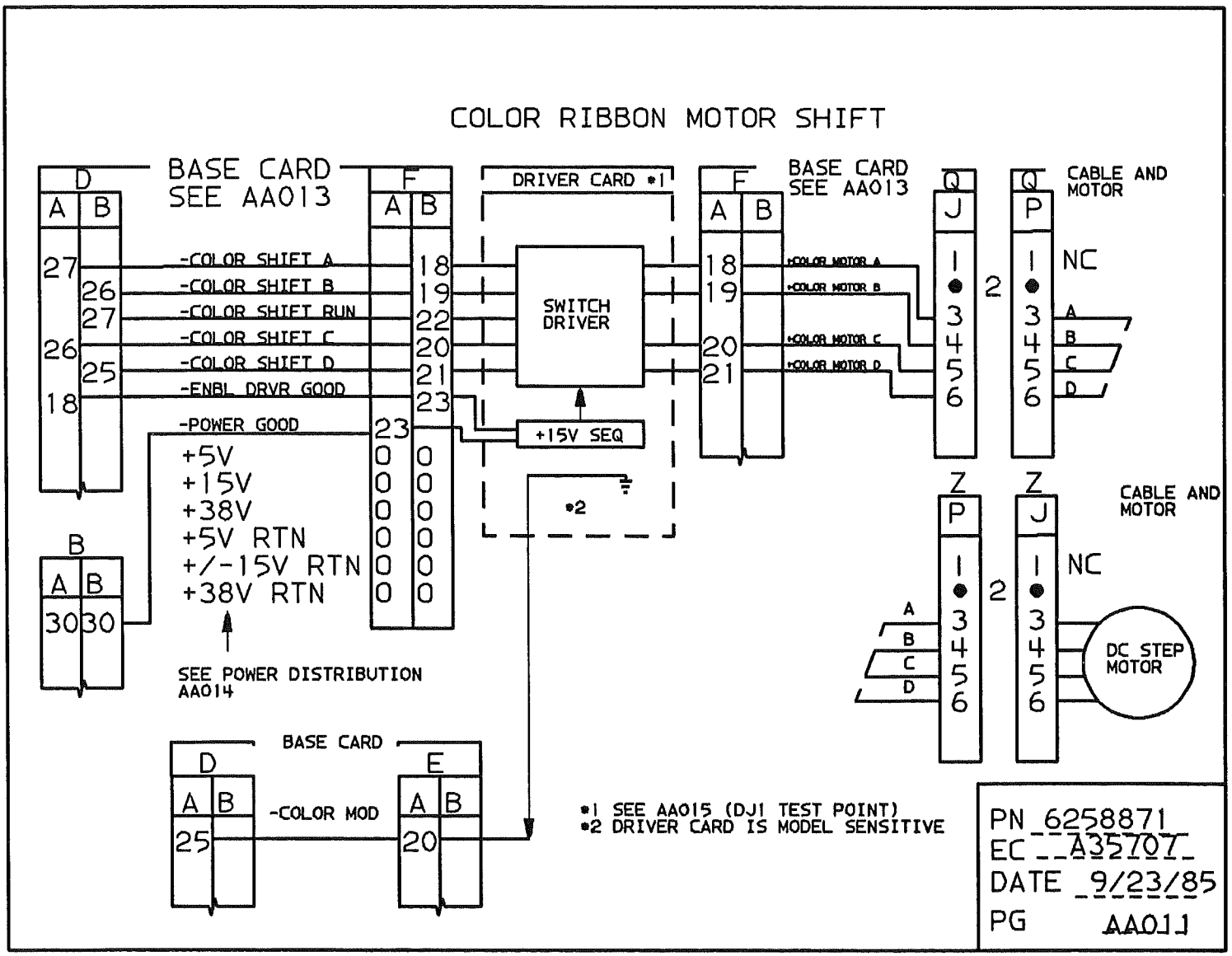


FAN MOTOR



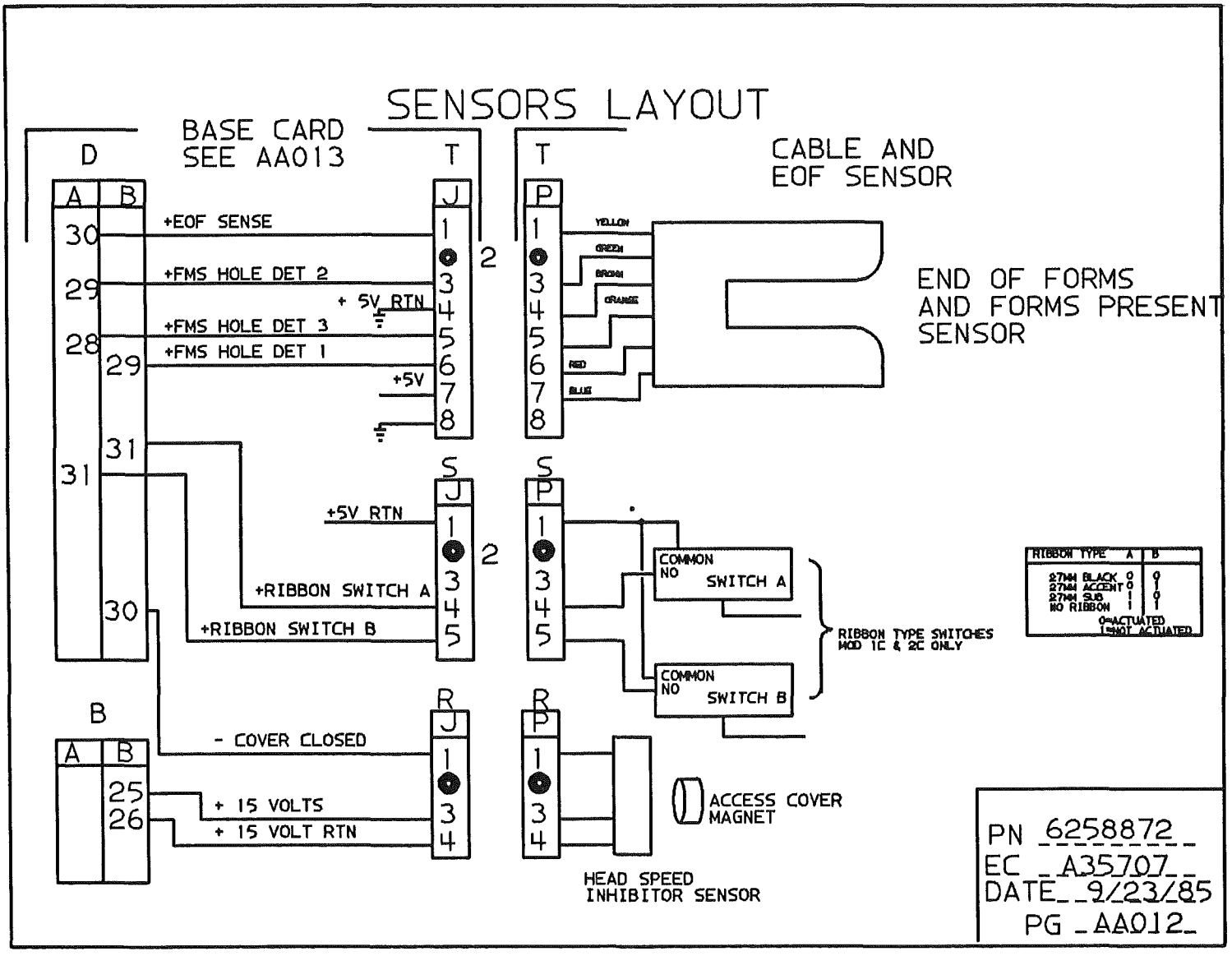
PN 6258870__
EC_A35707__
DATE_9/23/85
PG----AA010

COLOR RIBBON MOTOR SHIFT



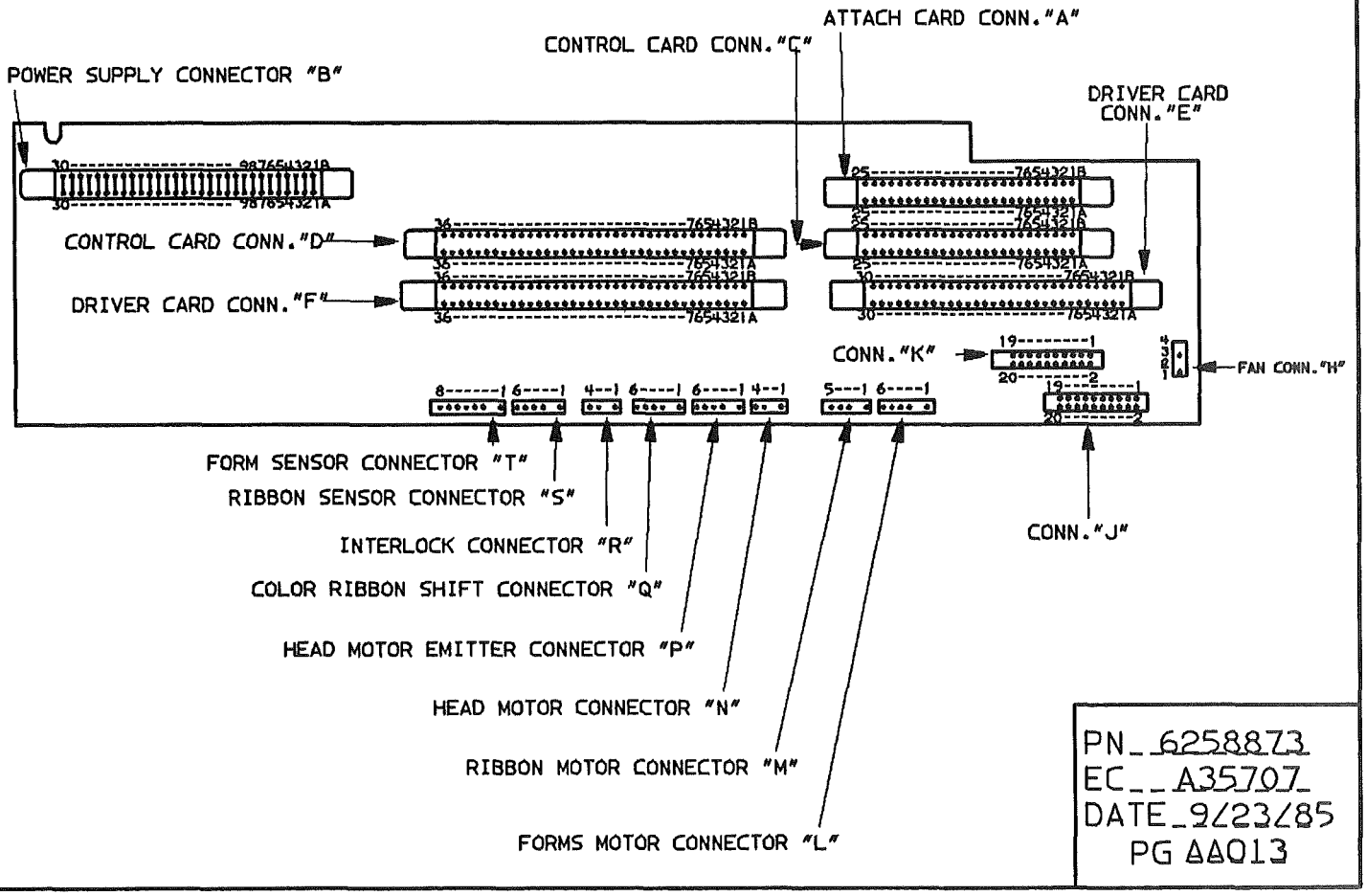
PN 6258871
EC A32707
DATE 9/23/85
PG AA011

SENSORS LAYOUT



PN 6258872
EC A35707
DATE 9/23/85
PG AA012

BASE CARD LAYOUT



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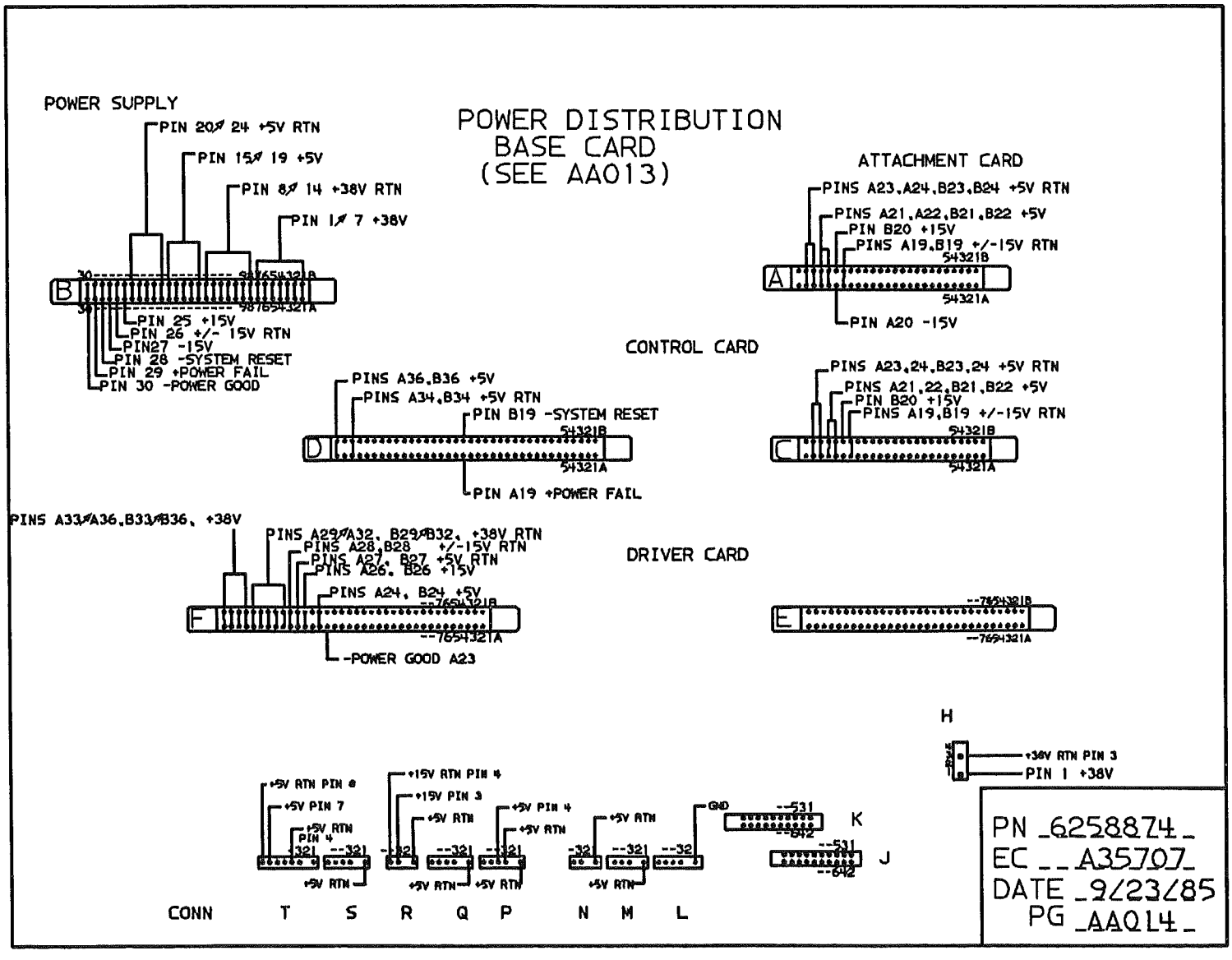
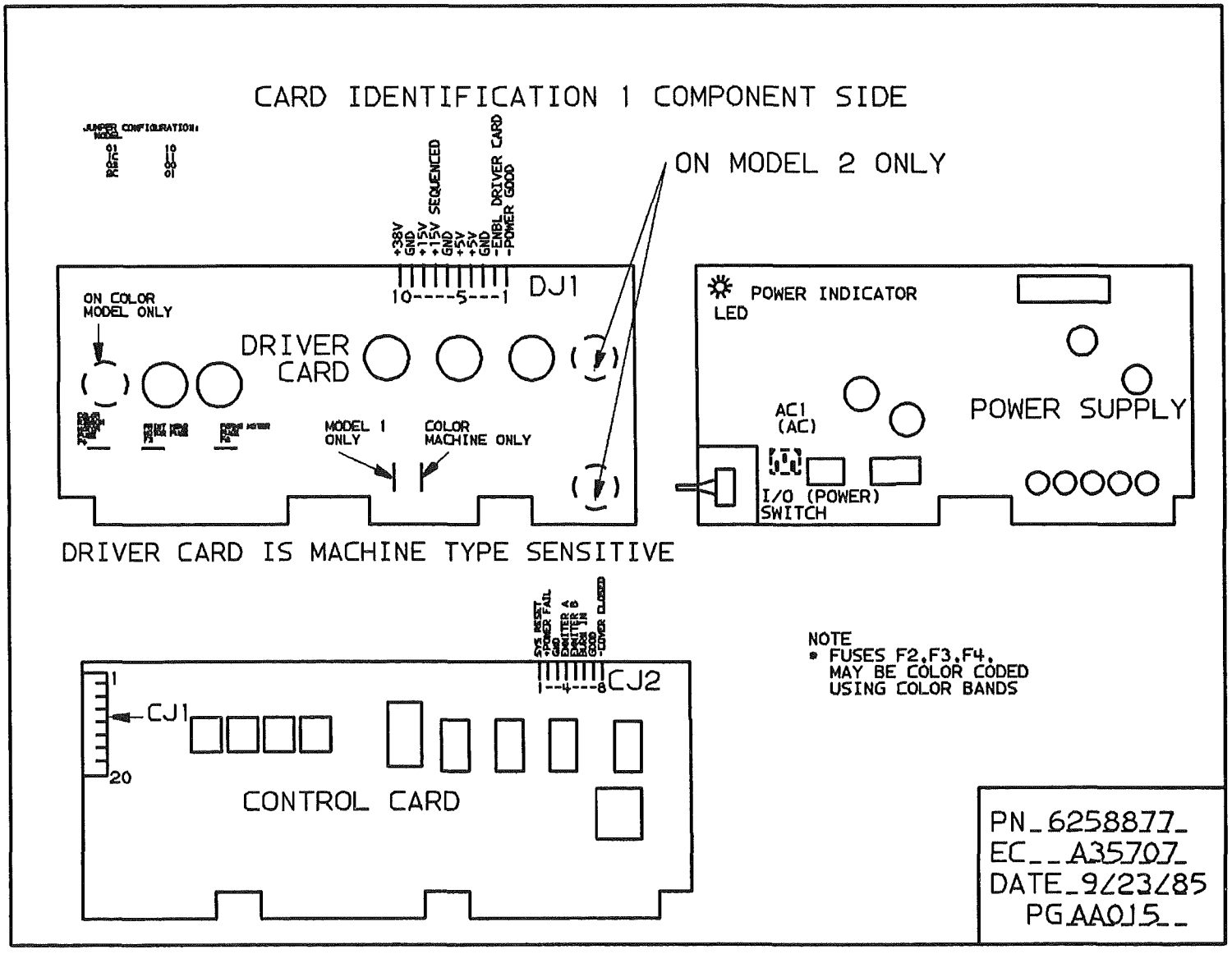
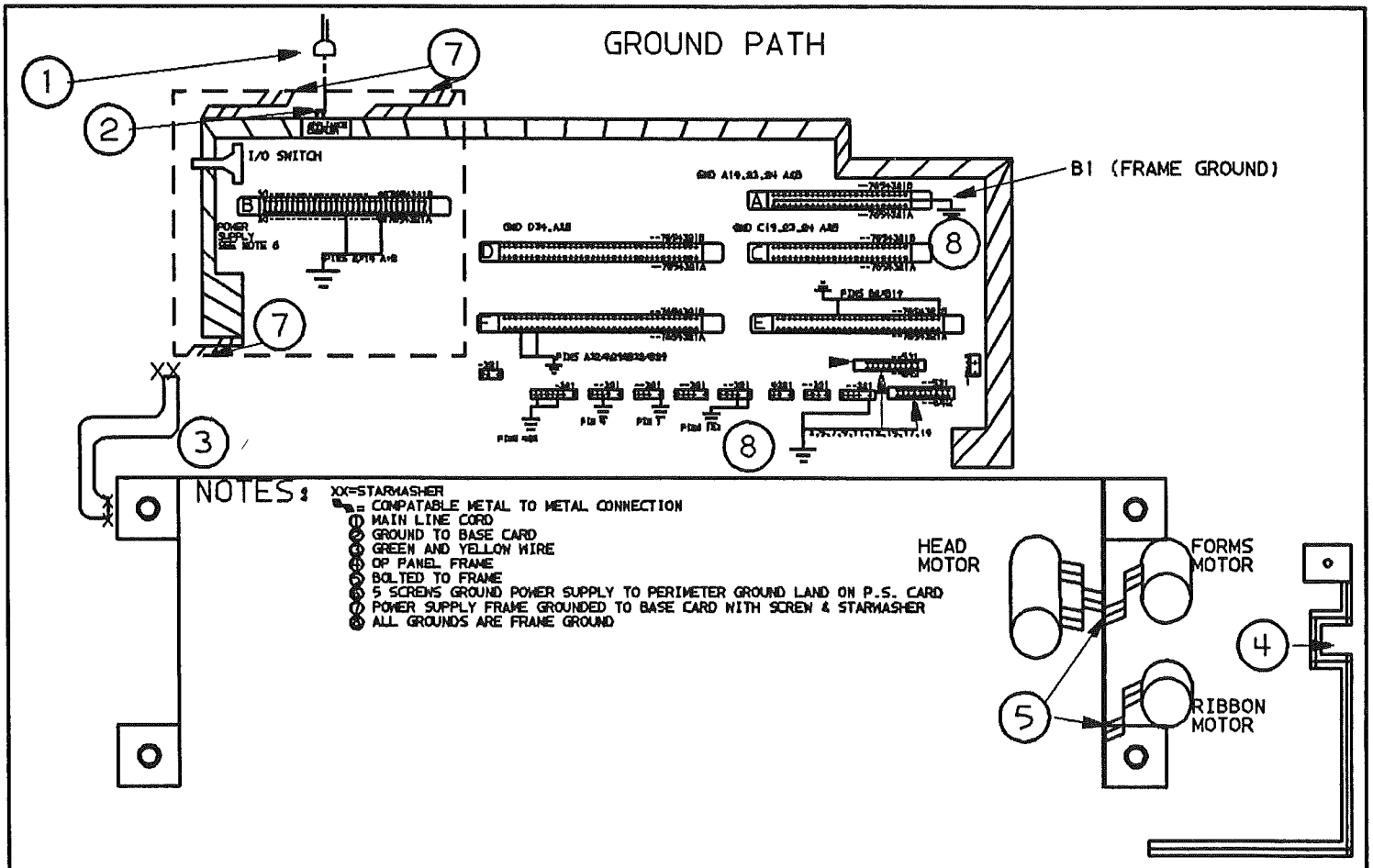
DATE_9/23/85
PG AA013


POWER SUPPLY
POWER DISTRIBUTION
BASE CARD
(SEE AA013)
PIN 20⁄ 24 +5V RTN
PIN 15⁄ 19 +5V
PIN 8⁄ 14 +38V RTN
PIN 1⁄ 7 +38V
B
PIN 25 +15V
PIN 26 +/- 15V RTN
PIN27 -15V
PIN 28 -SYSTEM RESET
PIN 29 +POWER FAIL
PIN 30 -POWER GOOD
ATTACHMENT CARD
PINS A23,A24,B23,B24 +5V RTN
PINS A21,A22,B21,B22 +5V
PIN B20 +15V
PINS A19,B19 +/-15V RTN
A
PIN A20 -15V
CONTROL CARD
PINS A36,B36 +5V
PINS A34,B34 +5V RTN
PIN B19 -SYSTEM RESET
D
PIN A19 +POWER FAIL
PINS A23,24,B23,24 +5V RTN
PINS A21,22,B21,B22 +5V
PIN B20 +15V
PINS A19,B19 +/-15V RTN
C
PINS A33⁄A36,B33⁄B36, +38V
PINS A29⁄A32, B29⁄B32, +38V RTN
PINS A28,B28 +/-15V RTN
PINS A27, B27 +5V RTN
PINS A26, B26 +15V
PINS A24, B24 +5V
F
-POWER GOOD A23
DRIVER CARD
E
H
+38V RTN PIN 3
PIN 1 +38V
+5V RTN PIN 8
+5V PIN 7
+5V RTN
PIN 4
+15V RTN PIN 4
+15V PIN 3
+5V RTN
+5V PIN 4
+5V RTN
+5V RTN
GND
K
J
CONN T S R Q P N M L
PN 6258874
EC A35707
DATE 9/23/85
PG AA014


CARD IDENTIFICATION 1 COMPONENT SIDE
ON MODEL 2 ONLY
+38V
GND
+15V
+15V SEQUENCED
GND
+5V
+5V
GND
-ENBL DRIVER CARD
-POWER GOOD
10----5---1
DJ1
ON COLOR MODEL ONLY
DRIVER CARD
MODEL 1 ONLY
COLOR MACHINE ONLY
POWER INDICATOR LED
AC1 (AC)
POWER SUPPLY
I/O (POWER) SWITCH
DRIVER CARD IS MACHINE TYPE SENSITIVE
CJ1
1
20
CJ2
1---4---8
CONTROL CARD
NOTE
* FUSES F2,F3,F4, MAY BE COLOR CODED USING COLOR BANDS
PN_6258877_
EC__A35707_
DATE_9/23/85
PG AA015__

GROUND PATH



NOTES:

XX=STARWASHER

= COMPATABLE METAL TO METAL CONNECTION

1. MAIN LINE CORD
2. GROUND TO BASE CARD
3. GREEN AND YELLOW WIRE
4. OP PANEL FRAME
5. BOLTED TO FRAME
6. 5 SCREWS GROUND POWER SUPPLY TO PERIMETER GROUND LAND ON P.S. CARD
7. POWER SUPPLY FRAME GROUNDED TO BASE CARD WITH SCREW & STARWASHER
8. ALL GROUNDS ARE FRAME GROUND

PN 6258880__
EC __A35707_
DATE 9/23/85
PG AA0J7__

IBM Maintenance Library

4224 Printer Parts Catalog

SC31-3542-0

Preface

This Parts Catalog (PC) contains listings and illustrations of all replaceable assemblies, subassemblies and detail parts released to Production Control on or before December 1985 for the IBM 4224 Printer

First Edition (December 1985)

Information contained in this manual is subject to change from time to time Any such change will be reported in subsequent revisions or Technical Newsletters.

IBM has prepared this maintenance manual for the use of IBM customer engineers in the installation, maintenance, or repair of the specific machines indicated IBM makes no representations that it is suitable for any other purpose.

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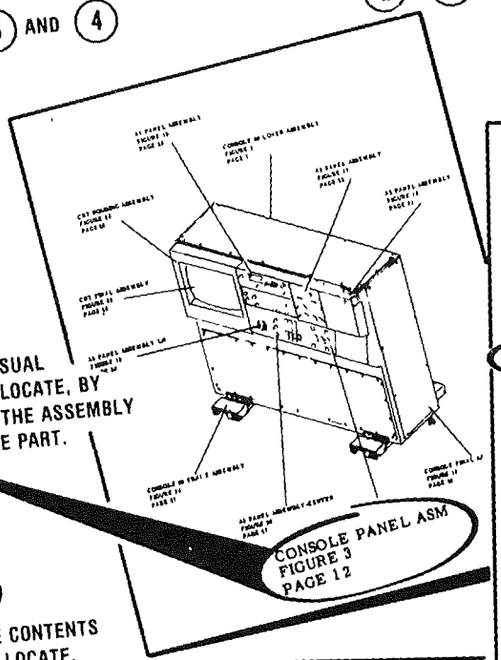
HOW TO USE THIS PARTS CATALOG

HOW TO FIND PART INFORMATION:

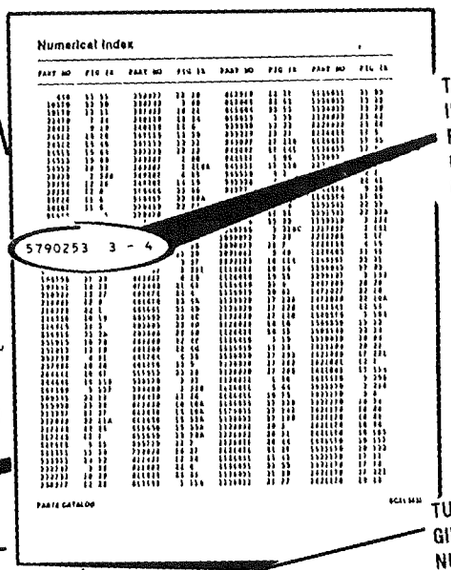
WHEN ASSEMBLY LOCATION IS KNOWN
PERFORM STEPS (1), (3) AND (4)

WHEN ASSEMBLY NAME IS KNOWN
PERFORM STEPS (2), (3) AND (4)

WHEN PART NUMBER IS KNOWN
PERFORM STEPS (5), (6) AND (7)

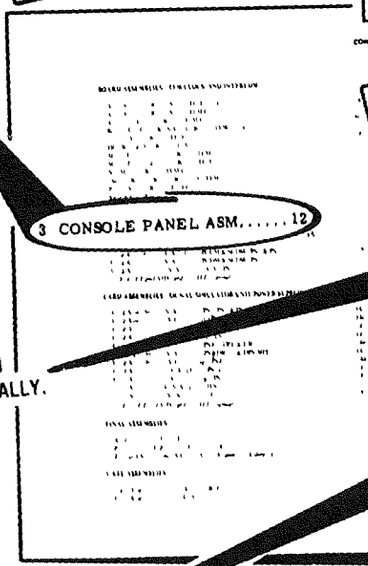


(1) TURN TO THE VISUAL INDEX - THEN LOCATE, BY ILLUSTRATION, THE ASSEMBLY CONTAINING THE PART.

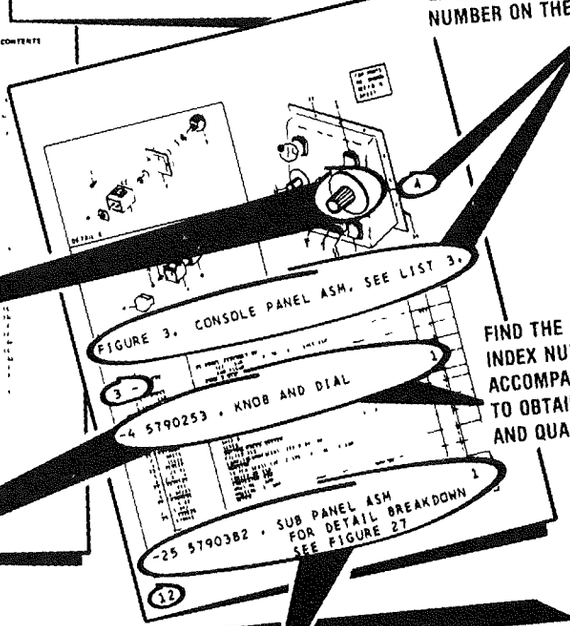


(5) TURN TO THE NUMERICAL INDEX - THEN NOTE THE FIGURE AND INDEX NUMBER GIVEN FOR THAT PART NUMBER.

(2) TURN TO THE CONTENTS PAGE - THEN LOCATE, BY NAME, THE ASSEMBLY CONTAINING THE PART.



(6) TURN TO THE FIGURE NUMBER GIVEN - THEN FIND THE INDEX NUMBER ON THE ILLUSTRATION.



(3) TURN TO THE PAGE FOR THAT ASSEMBLY - THEN LOCATE THE PART VISUALLY.

(7) FIND THE CORRESPONDING INDEX NUMBER IN THE ACCOMPANYING LISTING TO OBTAIN THE DESCRIPTION AND QUANTITY OF THE PART.

(4) USING THE INDEX NUMBER SHOWN WITH THE PART, REFER TO THE ACCOMPANYING LISTING TO OBTAIN THE PART NUMBER, DESCRIPTION AND QUANTITY.

NOTE:

IF THE DESIRED ITEM IS PART OF A SUBASSEMBLY NOT BROKEN DOWN WITHIN THAT FIGURE, REFER TO THE FIGURE ASSIGNED TO THE SUB-ASSEMBLY, LOCATE THE PART VISUALLY AND OBTAIN THE PART NUMBER, DESCRIPTION AND QUANTITY FROM THE ACCOMPANYING LISTING.

GLOSSARY

(1) NO P/N - When this notation appears in the Part No. column, it denotes a part or group of parts that have not been assigned a part number or which are not recommended for field replacement.

(2) NR - This notation in the Units Per Asm. column denotes a part not recommended for field replacement

(3) NP - This notation in the Units Per Asm column indicates parts that are non-procurable In these cases the next higher assembly should be ordered

(4) AR - The notation AR in the Units Per Asm column indicates that the quantity of the part is used as required

(5) REF - The notation REF in the Units Per Asm column indicates that the listing of the assembly is repeated and reference should be made to its previous listing for the quantity required.

(6) SIMILAR ASSEMBLIES - If two or more assemblies contain a majority of identical parts, they are combined in the same listing. Parts common to assemblies are illustrated and listed by one index number. Parts peculiar to one or the other of the assemblies are listed separately and identified either in the description of the part, or by a descriptive trailer line.

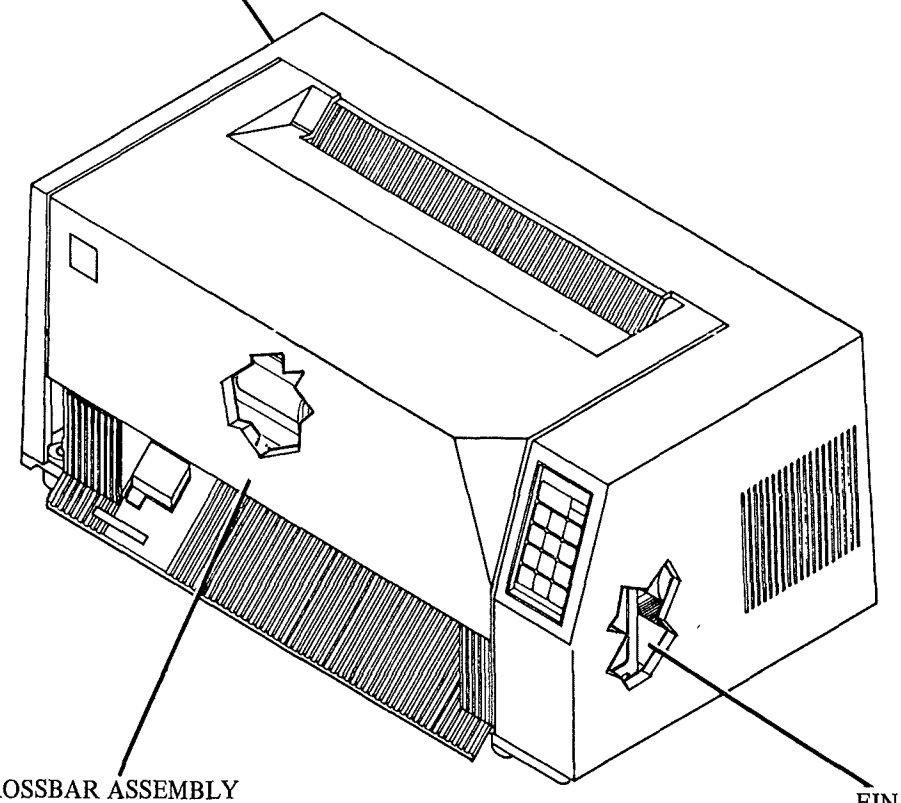
(7) INDENTURE - The indentation of items under the numerals 1 through 4 at the head of the Description column shows the relationship between assemblies, subassemblies and detail parts. For example:

	1 2 3 4
(No dot)	MAIN ASSEMBLY
(One dot)	• Detail parts of main assembly
(One dot)	• Assembly within main assembly
(Two dot)	• • Detail part of one dot assembly
(Two dot)	• • Assembly within one dot assembly
(Three dot)	• • • Detail parts of two dot assembly

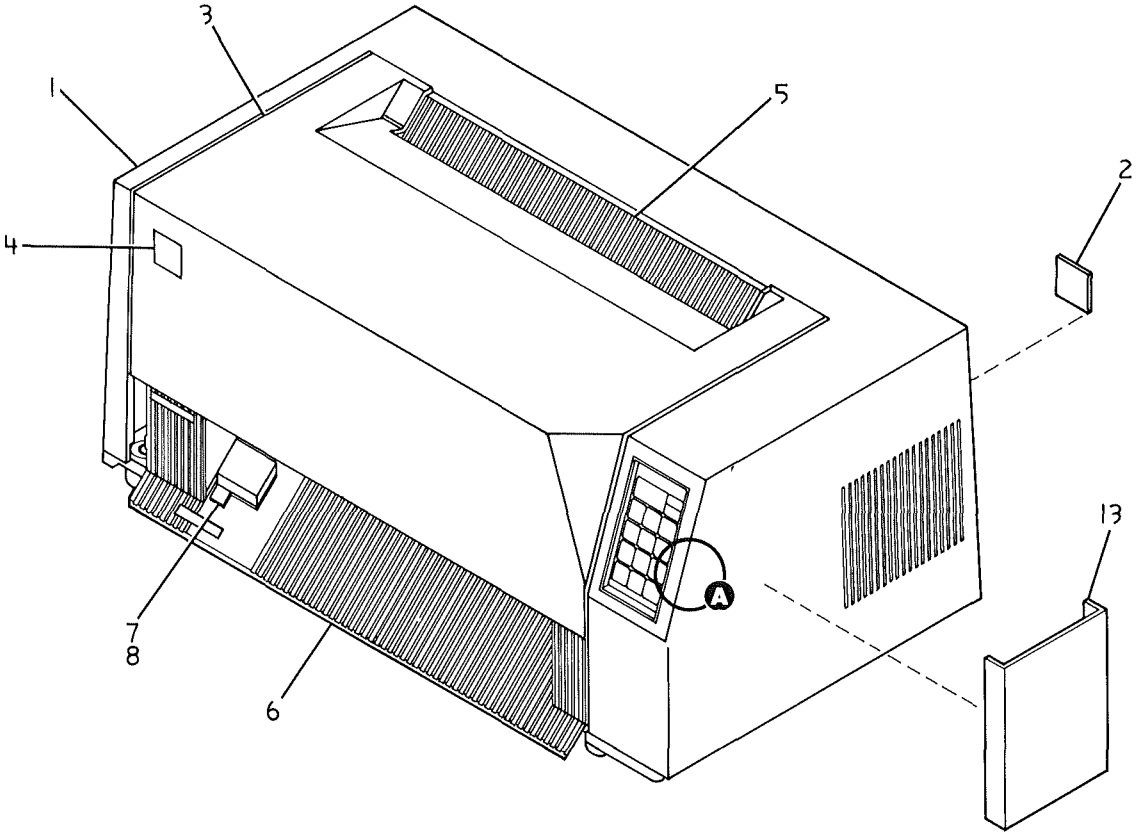
FIGURE INDEX NUMBER	PART NUMBER	UNITS PER ASM.	DESCRIPTION 1 2 3 4
22 -	No. P/N (1)	REF (5)	TRANSPORT AND VACUUM ASSEMBLY
			(7) THIS ASSEMBLY CANNOT BE ORDERED FOR REPLACEMENT, SEE LIST 2-252 FOR NEXT HIGHER ASM
- 1	1846187 (6)	1	• DOOR ASSEMBLY, VACUUM COLUMN - MODS 6, 8
- 1	1846188 (6)	1	• DOOR ASSEMBLY, VACUUM COLUMN - MOD 4
			FOR DETAIL BREAKDOWN, SEE FIGURE 23A
- 2	55918	(4) 5	• SCREW, MACH BD HD — 10-32 X 0.625 LG
- 3	45690	5	• WASHER, FL — 0.203 ID X 0.408 OD
- 4	2512946	AR	• SHIM, DOOR VAC COLUMN 0.015 THK
- 4	2512948	AR	• SHIM, DOOR VAC COLUMN 0.030 THK
- 5	1846100	AR (3)	• PNEUMATIC HOSES TRANSPORT ASSEMBLY
			FOR DETAIL BREAKDOWN, SEE FIGURE 24
- 9	2523727	NP	• DISC, DECORATIVE
- 10	1767707	1	• COVER
- 11	322562	3	• SCREW, BD HD — 10-32 X 2.000 INCHES LG
- 12	1767705	1	• CAM
- 13	1766920	1	• SPRING, COMP 1.190 OD X 2.750 LG
- 14	1767720	1	• HUB ASM
- 15	356742	3	• • CLAMP, 0.375 ID X 0.173 MTG HOLE
- 16	5489002	(2) 3	• • SCREW, MACH BD HD — 6-32 X 0.250 LG
- 17	1090873	6	• • LOCKWASHER, SPLIT — 0.168 ID X 0.296 OD
- 18	1767703	NR	• • ROLLER, TRIPLE
- 19	1767711	NR	• • ROLLER, SINGLE

CONTENTS

VISUAL INDEX



CATALOG SECTION



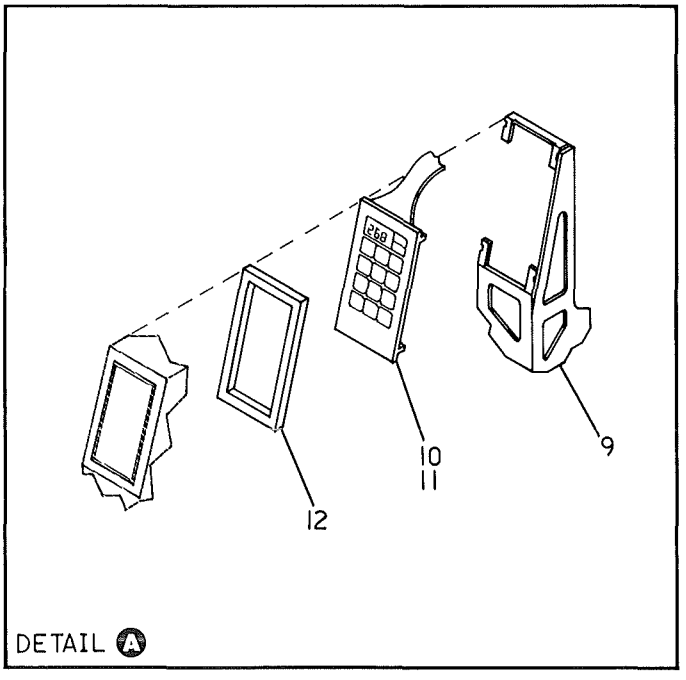


Figure 1. COVER ASSEMBLY

FIGURE INDEX	PART NUMBER	UNITS	DESCRIPTION
1-0	No PN	1	COVER ASSEMBLY FOR ILLUSTRATION SEE FIGURE 1
-1	6372560	1	.TOP COVER ASSEMBLY
-2	No PN	1	.LOGO
-3	6372561	1	.ACCESS COVER ASSEMBLY
-4	No PN	1	.LOGO
-5	8577361	1	.CHUTE-EXIT
-6	6115573	1	.CHUTE-PAPER ENTRY
-7	6413218	1	.END OF FORM SENSOR-WITH CABLE
-8	6274710	2	..SCREW
-9	8577363	1	.BRACKET
-10	6091562	1	.OPERATOR PANEL
-11	6091563	1	.OVERLAY-ENGLISH
-11	6274786	1	.OVERLAY-ITALY
-11	6274787	1	.OVERLAY-SPAIN
-11	6274788	1	.OVERLAY-PORTUGAL
-11	6274789	1	.OVERLAY-THE NETHERLANDS
-11	6274790	1	.OVERLAY-FRANCE
-11	6274791	1	.OVERLAY-GERMANY
-11	6274806	1	.OVERLAY-JAPAN
-11	56X8403	1	.OVERLAY-NORWAY
-11	6934380	1	.OVERLAY-CANADIAN/FRENCH
-11	6091563	1	.OVERLAY-BELGIUM/FRANCE/DENMARK/FINLAND
-12	6258913	1	.GASKET
-13	64X8671	1	.HOLDER

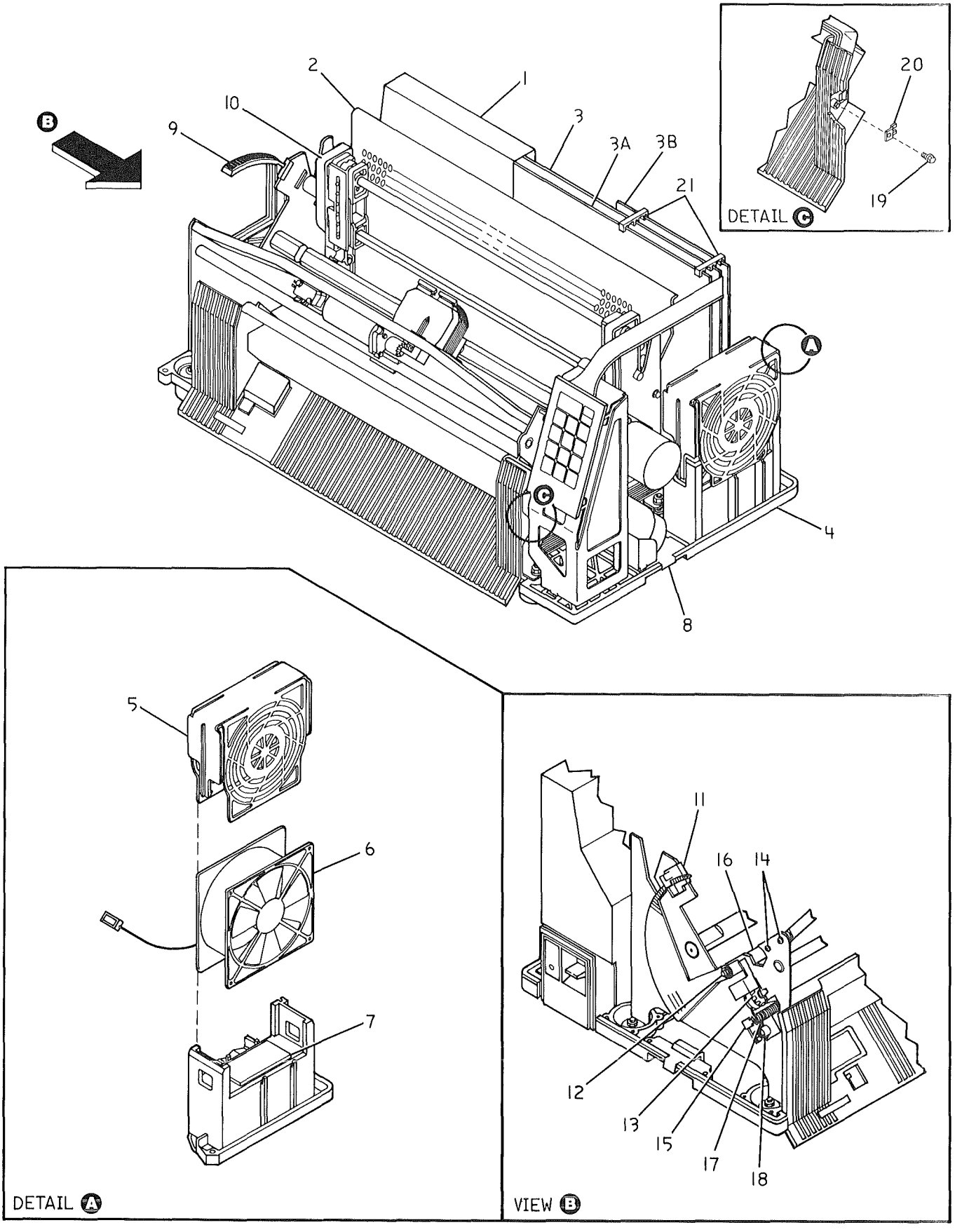


Figure 2. FINAL ASSEMBLY (1 of 2)

FIGURE INDEX	PART NUMBER	UNITS	DESCRIPTION
2-0	No PN	NP	FINAL ASSEMBLY FOR ILLUSTRATION SEE FIGURE 2
-1	6372538	1	.POWER SUPPLY- 50/60 HZ- LOW VOLTAGE
-1	6372539	1	.POWER SUPPLY-I50/60 HZ- HIGH VOLTAGE
-2	6400475	1	.PAPER GUIDE SHIELD
-3	No PN	1	.CONTROL CARD } ORDER PART NUMBER STAMPED
-3A	No PN	1	.DRIVER } ON CARD BEING REPLACED
-3B	No PN	1	.ATTACHMENT CARD }
-4	6091585	1	.BASE ASSEMBLY
-5	6217479	1	.FAN BRACKET-INCLUDES UPPER FOAM PAD
-6	6115587	1	.FAN
-7	6258918	1	.LOWER FAN PAD
-8	6372576	1	.COVER COMPRESSION SPRING (PART OF PART NUMBER 6091585)
-9	6115496	1	.LEVER C/D
-10	6091600	1	.CONTINUOUS FORMS DEVICE-F1 (SHOWN)
-10	6091601	1	.DOCUMENT ON DEMAND DEVICE-F2
-10	6091602	1	.DOCUMENT INSERTION DEVICE-F3
-11	8577494	1	.SPRING LEVER
-12	6274758	1	.SCREW-LEFT HAND THREADED
-13	6115597	1	.IDLER
-14	6258894	2	.SCREW
-15	6115515	1	.BRACKET
-16	6115495	1	.MAIN SHAFT
-17	6115589	1	.SPRING-BELT TENSION
-18	6258898	1	.SCREW
-19	No PN	NP	.SCREW
-20	No PN	NP	.CLAMP
-21	6325711	2	.CARD SPACER

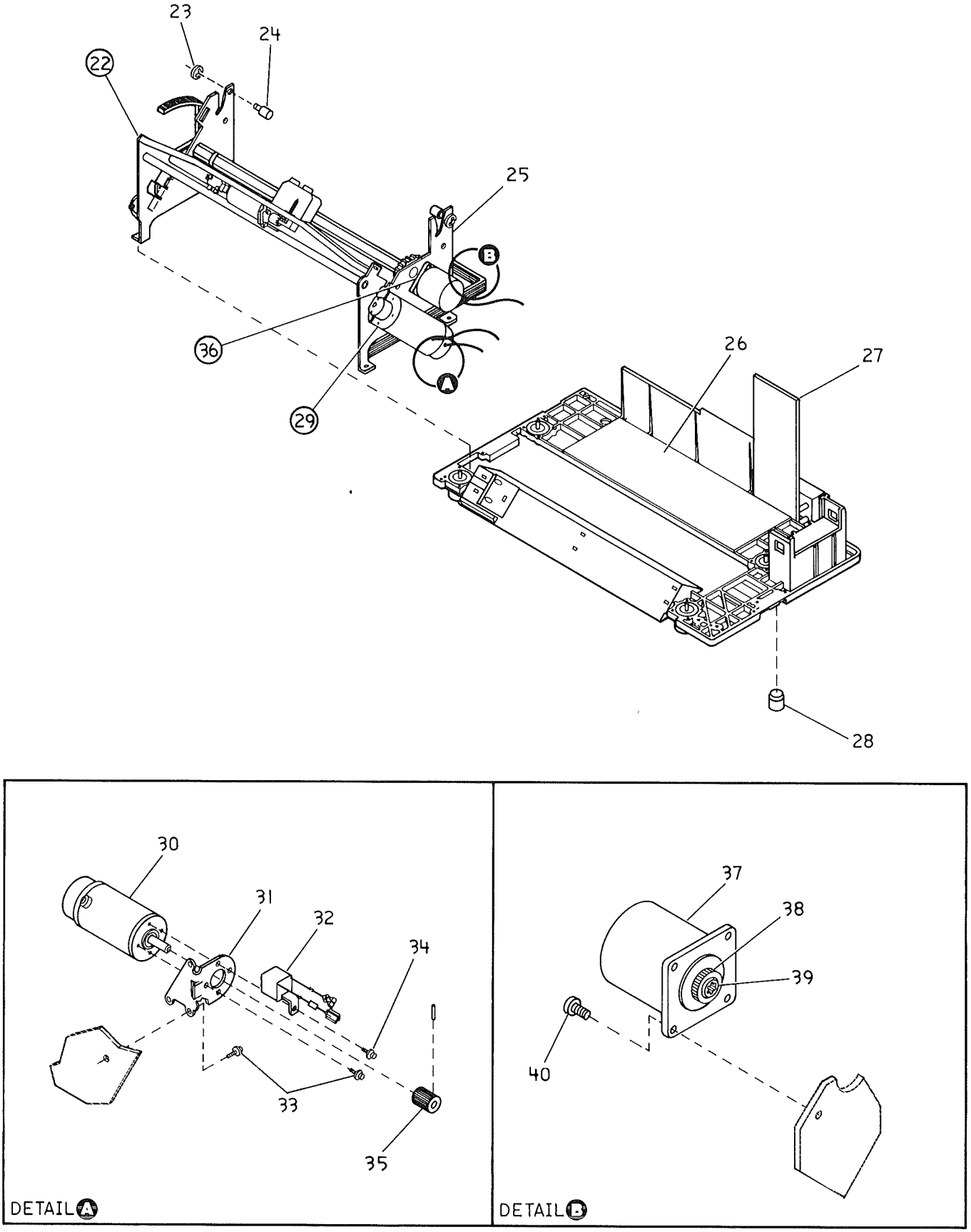
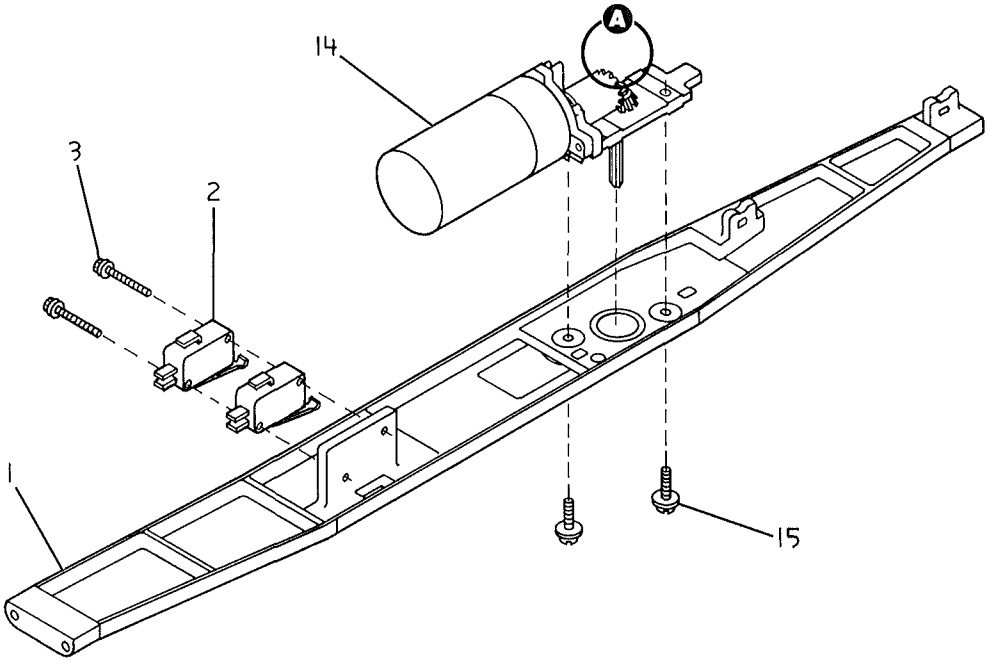


Figure 2. FINAL ASSEMBLY (2 of 2)

FIGURE INDEX	PART NUMBER	UNITS	DESCRIPTION
2-22	No PN	NP	PRINTER ASSEMBLY
-23	56X9880	2	.RETAINER RING
-24	56X9879	2	.POST-COLOR ONLY
-25	6091631	1	.FRAME ASSEMBLY
-26	No PN	1	.BASE CARD } ORDER PART NUMBER STAMPED
-27	No PN	1	.ATTACHMENT CARD } ON CARD BEING REPLACED
-28	6426193	2	..REAR SUPPORT
-29	6274747	1	.CARRIAGE MOTOR ASSEMBLY
-30	No PN	NP	..MOTOR
-31	No PN	NP	..BRACKET
-32	No PN	NP	..FILTER
-33	6258894	3	..SCREW
-34	No PN	NP	..SPRING PIN
-35	6115498	NP	..PULLEY
-36	6115543	1	.FORMS MOTOR ASSEMBLY
-37	No PN	NP	..MOTOR
-38	No PN	NP	..GEAR
-39	No PN	NP	..RETAINER
-40	6258894	4	..SCREW



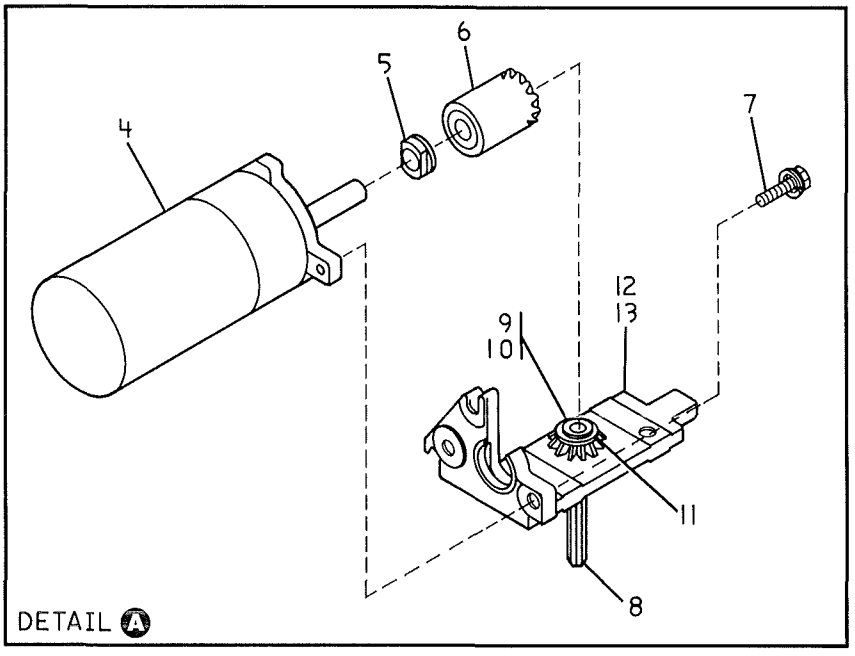


Figure 3. CROSSBAR ASSEMBLY

FIGURE INDEX	PART NUMBER	UNITS	DESCRIPTION
3-0	No PN	NP	CROSSBAR ASSEMBLY FOR ILLUSTRATION SEE FIGURE 3
-1	6426201	1	.CROSSBAR
-2	1297823	2	.SWITCH (COLOR ONLY)
-3	6258896	2	.SCREW (COLOR ONLY)
-4	No PN	NP	.MOTOR
-5	No PN	NP	.WASHER-KEYED
-6	No PN	NP	.GEAR ASSEMBLY
-7	No PN	NP	.SCREW-MOTOR
-8	No PN	NP	.RIBBON DRIVE SHAFT
-9	No PN	NP	.RETAINER RING
-10	No PN	NP	.BEARING
-11	No PN	NP	.RIBBON SHAFT GEAR
-12	No PN	NP	.BRACKET ASSEMBLY
-13	No PN	NP	.CROSSBAR BRACKET
-14	6274740	1	.BRACKET ASSEMBLY-WITH MOTOR INCLUDES INDEX NUMBERS 4-13
-15	6258895	2	.SCREWS

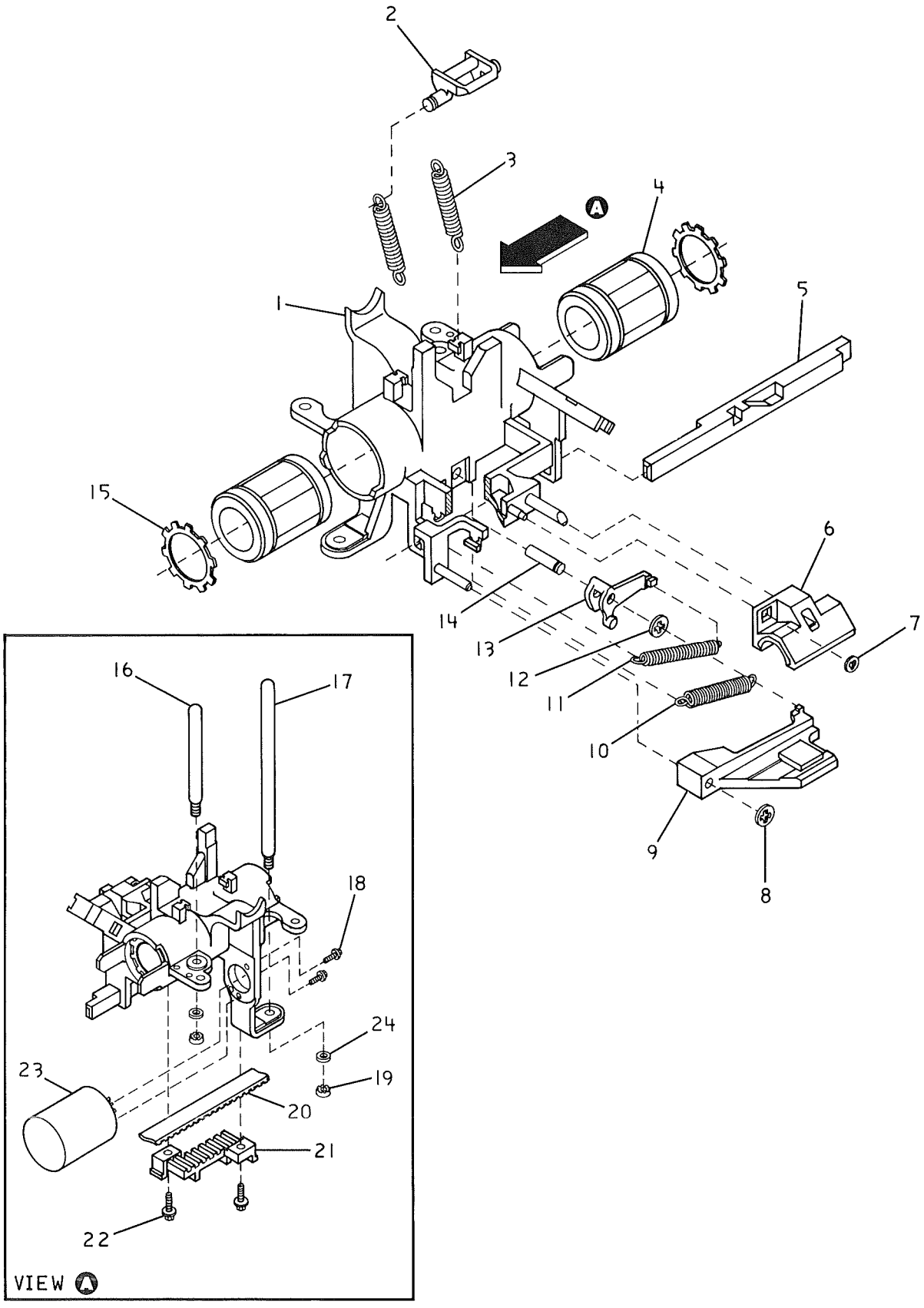


Figure 4. CARRIER ASSEMBLY

FIGURE INDEX	PART NUMBER	UNITS	DESCRIPTION
4-0	6099927	1	CARRIER ASSEMBLY 01-BLACK
-0	6091624	1	CARRIER ASSEMBLY 02-BLACK
-0	6115570	1	CARRIER ASSEMBLY C2-COLOR
			FOR ILLUSTRATION SEE FIGURE 4
-1	No PN	NP	.CARRIER-(COLOR)
-1	No PN	NP	.CARRIER-(BLACK)
-2	6115494	1	.LATCH
-3	6091625	2	.SPRING
-4	No PN	NP	.BUSHING-BALL
-5	6372792	1	.SHAFT-SHUTTLE (18 WIRE ONLY)
			MODEL 02
-6	8577493	1	.CARRIER SUPPORT BEARING ASSEMBLY
-7	6126151	1	.CLIP
-8	6126151	1	.CLIP
-9	6091627	1	.CARRIER SUPPORT GUIDE ASSEMBLY
-10	6426150	1	.SPRING-RED
-11	6115559	1	.SPRING-GREEN (MOD 2 ONLY)
-12	6126151	1	.CLIP (MOD 2 ONLY)
-13	6115577	1	.LEVER-TILT (MOD 2 ONLY)
-14	No PN	NP	.PIN-TILT
-15	No PN	NP	.CLIP
-16	6115562	1	.PIN-SHORT (COLOR ONLY)
-17	6115561	1	.PIN-LONG (COLOR ONLY)
-18	6258897	2	.SCREW (COLOR ONLY)
-19	1622440	2	.NUT (COLOR ONLY)
-20	6115512	1	.BELT-CARRIER
-21	8577104	1	.CLAMP-BELT
-22	6258899	2	.SCREW
-23	6115563	1	.MOTOR ASSEMBLY (COLOR ONLY)
-24	1622316	2	.WASHER (COLOR ONLY)

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Cable Assemblies and Component Parts

FIGURE INDEX	PART NUMBER	UNITS	DESCRIPTION
5-A	6217470	1	CABLE ASSEMBLY-18WH, COLOR - MODEL C2 FOR COMPONENT PARTS SEE INDEX NOS. 2,7A
-B	6217471	1	CABLE ASSEMBLY-18WH, BLACK - MODEL 02 FOR COMPONENT PARTS SEE INDEX NOS. 2,7A
-C	6217473	1	CABLE ASSEMBLY-9WH, BLACK - MODEL 01 FOR COMPONENT PARTS SEE INDEX NOS. 2,7A
-D	6161039	1	CABLE ASSEMBLY-HEAD INHIBITOR,BLACK - MODELS 01 AND 02 (INCLUDES INHIBITOR SWITCH) FOR COMPONENT PARTS SEE INDEX NOS. 1,2,3,4,5,6,7,8,9
-E	6372789	1	CABLE ASSEMBLY-HEAD INHIBITOR,COLOR - MODEL C2 (INCLUDES INHIBITOR SWITCH) FOR COMPONENT PARTS SEE INDEX NOS. 2,4,5,7,8,9
-F	64X8667	AR	T-CONNECTOR
-G	8248354	1	CABLE ASSEMBLY-LINE CORD-US
-G	6952320	1	CABLE ASSEMBLY-LINE CORD-INDONESIA
-G	6952356	1	CABLE ASSEMBLY-LINE CORD-UNITED KINGDOM
-G	6952365	1	CABLE ASSEMBLY-LINE CORD-SWITZERLAND
-G	6952329	1	CABLE ASSEMBLY-LINE CORD-DENMARK
-G	6952347	1	CABLE ASSEMBLY-LINE CORD-SOUTH AFRICA
-G	6952383	1	CABLE ASSEMBLY-LINE CORD-ISRAEL
-G	1838574	1	CABLE ASSEMBLY-LINE CORD-THAILAND, PERU
-G	6952291	1	CABLE ASSEMBLY-LINE CORD-ARGENTINA, PARAGUAY
-G	6952300	1	CABLE ASSEMBLY-LINE CORD-JAPAN, MEXICO, BARBADOS, GUATEMALA, HONDURAS, BOLIVIA, JAMIACA, PANAMA, TAIWAN, DOMINICAN REPUBLIC, PHILIPPINES, BERMUDAS, COSTA RICA, EL SALVADOR, NETHERLANDS-ANTILLES, NICARAGUA, ECUADOR, COLOMBIA, VENEZUELA, AND BAHAMAS.
-G	6952311	1	CABLE ASSEMBLY-LINE CORD-AUSTRALIA, NEW ZEALAND
-G	6952338	1	CABLE ASSEMBLY-LINE CORD-JAPAN
-G	6852356	1	CABLE ASSEMBLY-LINE CORD-SINGAPORE, MALAYSIA
-G	6952374	1	CABLE ASSEMBLY-LINE CORD-CHILE, ITALY

NOTE: NO ILLUSTRATIONS FOR THESE ASSEMBLIES

Figure 5. CABLE ASSEMBLIES AND COMPONENT PARTS (1 of 2)

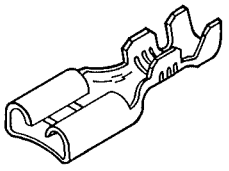
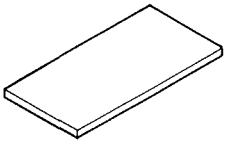
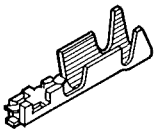
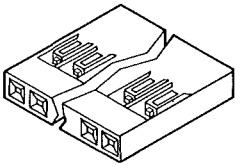
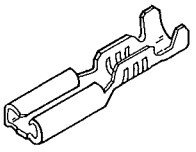
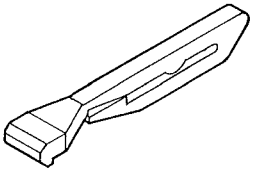
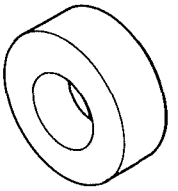
 1	 2	 3	 4
 5	 6	 7, 7A	

Figure 5. CABLE ASSEMBLIES AND COMPONENT PARTS (2 of 2)

FIGURE INDEX	PART NUMBER	UNITS	DESCRIPTION
5-1	430798	AR	.TERMINAL
-2	813769	AR	.LABELS
-3	1661528	AR	.TERMINAL
-4	2637680	AR	.HOUSING
-5	5412817	AR	.TERMINAL
-6	5681086	AR	.POLARIZATION KEY
-7	6132732	AR	.FERRITE SLEEVE
-7A	6258905	AR	.FERRITE SLEEVE
-8	6837467	AR	.TERMINAL
-9	1466244	AR	.HOUSING
-10	6115503	AR	.HEAD CABLE CLAMP
-11	6258915	AR	.CLAMP,SIDEPLATE
-12	6161036	AR	.CLAMP,COLOR MOTOR
-13	56X8419	AR	.RETAINER,HEAD CABLE CONNECTOR
-14	56X8420	AR	.CLAMP,RIGHT SIDE HEAD CABLE
-15	6258914	AR	.CLAMP,CROSSBAR

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