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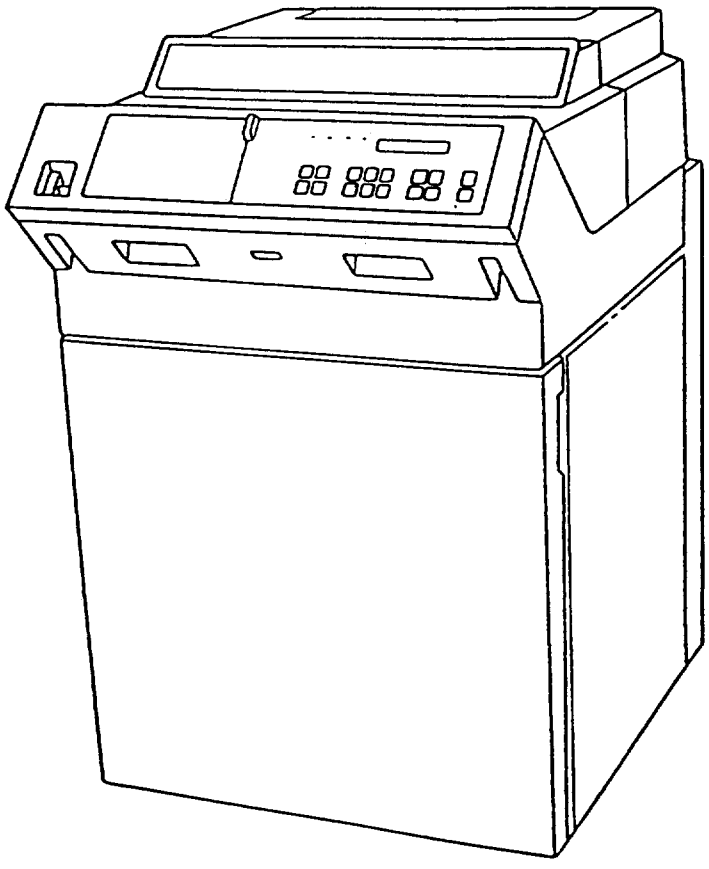
IBM 4234 Printer
Models 007, 008, 009, 011, 012, and 013
Maintenance Analysis Procedures



About This Book

The information in this book applies equally to the Models 011, 012, 013, and the Models 007, 008, and 009 of the 4234 Printer.

Any reference in this book to the Model 011 also applies to the Model 007.
Any reference in this book to the Model 012 also applies to the Model 008.
Any reference in this book to the Model 013 also applies to the Model 009.

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Preface

These Maintenance Analysis Procedures (MAPs) are a guide for servicing the IBM 4234 Printer Models 011, 012, and 013. It is the primary maintenance tool for trouble analysis and repair. This manual is used with the *IBM 4234 Printer Models 011, 012, and 013 Maintenance Information Manual*, SC31-3738. Use the Maintenance Information Manual (MIM) for supporting information, such as service checks, locations, removals, installations, adjustments, diagnostic tests, and other helpful information.

Related Publications

- *IBM 4234 Printer Planning and Site Preparation Guide*, GC31-2555
- *IBM 4234 Printer Models 011, 012, and 013 Customer Setup Instructions*, GC31-3735
- *IBM 4234 Printer Model 011 Operating Instructions*, GC31-3736
- *IBM 4234 Printer Model 012 Operating Instructions*, GC31-3737
- *IBM 4234 Printer Model 013 Operating Instructions*, GC31-3861
- *IBM 4234 Printer Models 011, 012, and 013 Principles of Operation*, GC31-3878
- *IBM 4234 Printer Models 011 and 012 Product and Programming Description*, GC31-3879
- *IBM 4234 Printer Model 013 Product and Programming Description*, GC31-3880
- *IBM 4234 Printer Models 011, 012, and 013 Maintenance Information Manual*, SC31-3738
- *IBM 4234 Printer Models 011, 012, and 013 Parts Catalog*, SC31-3739

Contents

Figures

Maintenance Analysis Procedures

Notes

MAP 0000: General Information

The following pages provide information and procedures to fix printer problems.

Maintenance Analysis Procedures (MAPs)

The MAPs are printed in two-column format. Use the MAPs as follows. Follow the left-hand column to the bottom of the page. Then go to the top of the right-hand column on the same page. Read down the right-hand column. From the bottom of the right-hand column go to the top of the left-hand column on the next page.

A MAP asks questions about printer symptoms or conditions. Each question is answered Yes or No. **Yes** answers follow the left-hand trace under that question. **No** answers follow the right-hand trace under that question.

Suggested Steps for Using these MAPs

1. Discuss the printer symptoms with the operator.
2. Make a quick visual check for defects, such as loose or broken parts, unplugged connectors, or forms jams.
3. Start at "MAP 0010: Start of Call" on page 010-1. It will direct you to another MAP that is determined by your symptoms.

If the problem is not fixed, begin again at "MAP 0010: Start of Call" on page 010-1. Read each step carefully. If the same problem exists after a second time through the MAPs, the printer may have two interrelated problems. Use other diagnostic techniques or call your support structure for aid.

Maintenance Information Manual References

The MAPs refer to the Maintenance Information Manual (MIM). It has supporting information, such as service checks, locations, removals, installations, adjustments, diagnostic tests, and other helpful information. An example Maintenance Information Manual reference is (MIM 300-1, "Top Cover"), which means that you should see the *Maintenance Information Manual*, Section 300, page 1 and find the procedures listed under *Top Cover*. Page 1 of each MIM section is an index to the procedures covered within that section.

Safety

Read this information before going to "MAP 0010: Start of Call" on page 010-1.

DANGER

Always unplug the printer before servicing an ac voltage or exchanging the power supply, the power switch, or an ac cable.

CAUTION:
To prevent damage to the logic cards, the printer power switch should be in the OFF position before disconnecting or connecting any cards or connectors.

Voltage Checks: Make voltage measurements with the volt-ohmmeter or the digital voltmeter. If a different meter is used in a World Trade country, that country's personnel are responsible for checking the measurements and for making a conversion table.

Nominal Voltage	Minimum Voltage	Maximum Voltage
+5 V dc	+4.8 V dc	+5.25 V dc
+12 V dc	+10.8 V dc	+13.2 V dc
−12 V dc	−10.8 V dc	−13.2 V dc
+60 V dc	+57.0 V dc	+66.0 V dc

All connectors should be connected normally when a voltage measurement is taken. Line voltage on U.S. printers is 90 through 137 V ac.

Ground Checks: To check a ground point, measure between the ground point and a known good voltage source. The reading must be the same as the voltage on that source to consider the ground good. Continuity measurements may be used to check grounds. Be certain to measure to a known good ground point using the lowest ohms scale (X1). Measure for 0 ohms.

DANGER

Always remove the power before making a continuity check.

Continuity Checks: When making continuity checks, ensure that no back circuits affect the measurement. Unplug the connectors or cards to remove any back circuits. Zero the meter on the lowest ohms scale (X1). An open circuit will read infinity. A circuit with good continuity will read 0 ohms.

MAP 0010: Start of Call

Start of Call Procedure

1. Ask the operator to describe the failure. Record any status codes.
2. Make a quick visual check for defects.
3. Start with a symptom.
4. Use the symptom to answer the questions.
5. For specific problems continue at the indicated MAP.
6. Repair the problem.
7. Verify the repair by doing the procedures in "MAP 0900: End of Call" on page 900-1.

001

Is the printer powered on?

Yes **No**

002

Continue at Step 026 on page 010-3.

003

(From step 030)

– Look at the display.

```
APPLICATION CHECK XX
```

XX represents any hexadecimal number between 80 through 9F and F0 through FF.

Is the above message displayed?

Yes **No**

004

Continue at Step 006.

005

You have a program problem. Have the operator contact the person responsible for the program.

The meaning of the *APPLICATION CHECK* is in the *Product and Programming Description* manual.

006

(From step 004)

– Look at the display.

```
MACHINE CHECK XX
```

XX represents any hexadecimal number between 40 through 7F and A0 through CF.

Is the above message displayed?

Yes **No**

007

Continue at Step 031 on page 010-3.

008

– Press the **Enter** key.

– Look at the display.

```
MACHINE CHECK XX
FRU1 yy    FRU2 zz
```

XX represents any hexadecimal number between 40 through 7F and A0 through CF. The **yy** and **zz** represent FRU identification codes.

Is the above message displayed?

Yes **No**

009

Continue at Step 018 on page 010-2.

010

Is the MACHINE CHECK in the display between 50 through 5F?

Yes **No**

011

Continue at Step 013 on page 010-2.

012

(Step **012** continues)

012 (continued)
Continue at "MAP 0370: Hammers" on page 370-1.

013

(From step 011)
- Note the FRU identification code beside the FRU1 header.
- Power OFF.
- Exchange the FRU beside the FRU1 header.

See the "FRU Identification Key" on page 100-4 for the identification code meaning.
- Power ON.
- Wait for the power-on self test (POST) to complete.

Is the same machine check displayed?

Yes **No**

014

Continue at "MAP 0900: End of Call" on page 900-1.

015

- Press the **Enter** key.
- Note the FRU identification code beside the FRU2 header.
- Power OFF.
- Exchange the FRU beside the FRU2 header.

See the "FRU Identification Key" on page 100-4 for the identification code meaning.
- Reinstall the first FRU you exchanged. It is not the problem.
- Power ON.
- Wait for the POST to complete.

Is the same machine check displayed?

Yes **No**

016

Continue at "MAP 0900: End of Call" on page 900-1.

017

- Reinstall the FRU beside the FRU2 header. It is not the problem. Continue at "MAP 0011: Quick Fix Exchange Chart" on page 011-1. Find the machine check and go to the indicated MAP.

The machine check number is listed in ascending numerical sequence, under the SC header in "MAP 0011: Quick Fix Exchange Chart."

018

(From step 009)
- Look at the display.

```
MACHINE CHECK XX
FRU1 yy    MAP 0010
```

XX represents any hexadecimal number between 40 through 7F and A0 through CF. The **yy** represents a FRU identification code.

Is the above message displayed?

Yes **No**

019

Continue at Step 023 on page 010-3.

020

- Note the FRU identification code beside the FRU1 header.
- Power OFF.
- Exchange the FRU beside the FRU1 header.

See the "FRU Identification Key" on page 100-4 for the identification code meaning.
- Power ON.
- Wait for the power-on self test (POST) to complete.

Is the same machine check displayed?

Yes **No**

021

Continue at "MAP 0900: End of Call" on page 900-1.

022

- Reinstall the FRU beside the FRU1 header. It is not the problem. Continue at "MAP 0011: Quick Fix Exchange Chart" on page 011-1. Find the machine check and go to the indicated MAP.

(Step 022 continues)

022 (continued)
The machine check number is listed in ascending numerical sequence, under the SC header in "MAP 0011: Quick Fix Exchange Chart."

023

(From step 019)
- Look at the display.
- If the display is as shown below, do **not** start over in MAP 0010. Continue with this step.

```
MACHINE CHECK XX
START AT MAP 0010
```

XX represents any hexadecimal number between 40 through 7F and A0 through CF.
Is the above message displayed?
Yes **No**

024

Continue at "MAP 0013: CSR Start" on page 013-1.

025

Continue at "MAP 0011: Quick Fix Exchange Chart" on page 011-1. Find the machine check and go to the indicated MAP. The machine check number is listed, in ascending numerical sequence, under the SC header in "MAP 0011: Quick Fix Exchange Chart."

026

(From step 002)
Is this a Model 011 or Model 013 printer?
Yes **No**

027

This is a Model 012 printer.
- Unplug the U-connector from the rear of the printer (MIM 800-1, "Locations").

Continue at Step 029.

028

(Step **028** continues)

028 (continued)
- Unplug the interface cable from the rear of the printer (MIM 800-1, "Locations").

Continue at Step 029.

029

(From steps 027 and 028)
- Power ON.

The power-on self test (POST) run.
- During the POST, observe the printer for forms, dot band, and ribbon movement.
- When the POST stops, wait one minute.

A **successful** POST completion by printer model is:

Model 011	The Ready LED is **ON** and the display is **READY**.
Model 012	The Attention LED is **ON** and the display is **28 LINE SYNCHRONIZATION LOST**.
Model 013	The Ready LED is **ON** and the display is **READY**.

Did the POST run successfully?
Yes **No**

030

Continue at Step 003 on page 010-1.

031

(From step 007)
Do you have a *customer reported failure* or a *known failing area* of the printer?
Yes **No**

032

Continue at "MAP 0013: CSR Start" on page 013-1.

033

If the reported failure is a status code or error code, continue at "MAP 0011: Quick Fix Exchange Chart" on page 011-1.
– or –
If the reported failure is a customer reported symptom. continue at "MAP 0012: Printer Area Failures" on page 012-1.

Notes

MAP 0011: Quick Fix Exchange Chart

The status codes are arranged in ascending numerical sequence under the SC header. Valid status codes are listed. Find the status code.

Exchange the **PROBABLE FRU** if it has not been exchanged, or continue at the indicated MAP.

SC	DISPLAY	PROBABLE FRU	GO TO
01	01 END OF FORMS		"MAP 0331: EOF Problems" on page 331-1
02	02 PAPER JAMMED		"MAP 0332: Forms Jam Problems" on page 332-1
03	03 FORMS THICKNESS CONTROL NOT SET		"MAP 0333: Platen Open Switch Problems" on page 333-1
04	04 RIBBON CHECK		"MAP 0340: Ribbon Drive" on page 340-1
05	05 BAND COVER NOT LOCKED		"MAP 0320: Dot Band Movement" on page 320-1
06	06 HOST SYSTEM REQUESTS OPERATOR ATTENTION	Operator information	"MAP 0500: Operator Panel" on page 500-1
07	07 INCORRECT PRINT ORDER	Operator information	"MAP 0500: Operator Panel" on page 500-1
08	08 HOLD PRINT ON FOR 10 MINUTES	Operator information	"MAP 0500: Operator Panel" on page 500-1
09	09 INCORRECT OPERATION	Operator information	"MAP 0500: Operator Panel" on page 500-1
0A	0A DATA CLEARED		"MAP 0400: Communications" on page 400-1
12	12 DOT BAND CLOGGED		"MAP 0320: Dot Band Movement" on page 320-1
13	13 CHARACTER CHECK	Operator information	"MAP 0500: Operator Panel" on page 500-1
14	14 RESTORE FUNCTION PENDING	Operator information	"MAP 0500: Operator Panel" on page 500-1
1F	1F CMOS CHECKSUM ERROR		"MAP 0500: Operator Panel" on page 500-1
23	23 COMMUNICATIONS CHECK		"MAP 0400: Communications" on page 400-1
24	24 COMMUNICATIONS CHECK		"MAP 0400: Communications" on page 400-1
25	25 COMMUNICATIONS CHECK		"MAP 0400: Communications" on page 400-1
26	26 COMMUNICATIONS CHECK		"MAP 0400: Communications" on page 400-1
26	26 LINE CHECK -- PARITY		"MAP 0400: Communications" on page 400-1

Figure 1 (Part 1 of 5). Quick Fix Exchange Chart

SC	DISPLAY	PROBABLE FRU	GO TO
27	27 COMMUNICATIONS CHECK		"MAP 0400: Communications" on page 400-1
27	27 UNIT ADDRESS CHECK		"MAP 0400: Communications" on page 400-1
28	28 COMMUNICATIONS CHECK		"MAP 0400: Communications" on page 400-1
28	28 LINE SYNCHRONIZATION LOST		"MAP 0400: Communications" on page 400-1
2F	2F DATA LOST	Operator information	"MAP 0500: Operator Panel" on page 500-1
31	31 END OF FORMS TIMEOUT		"MAP 0331: EOF Problems" on page 331-1
32	32 PAPER JAMMED TIMEOUT		"MAP 0332: Forms Jam Problems" on page 332-1
33	33 FORMS THICKNESS NOT SET TIMEOUT		"MAP 0333: Platen Open Switch Problems" on page 333-1
34	34 RIBBON CHECK TIMEOUT		"MAP 0340: Ribbon Drive" on page 340-1
35	35 BAND COVER NOT LOCKED TIMEOUT		"MAP 0320: Dot Band Movement" on page 320-1
3A	3A CANCEL PRINT	Operator information	"MAP 0500: Operator Panel" on page 500-1
3B	3B BUFFER REPRINT ACTIVE	Operator information	"MAP 0500: Operator Panel" on page 500-1
3B	3B BUFFER PRINT MODE	Operator information	"MAP 0500: Operator Panel" on page 500-1
3C	3C PA1 SELECTED	Operator information	"MAP 0500: Operator Panel" on page 500-1
3D	3D PA2 SELECTED	Operator information	"MAP 0500: Operator Panel" on page 500-1
3E	3E PRINTER IN SEND STATE	Operator information	"MAP 0500: Operator Panel" on page 500-1
40	MACHINE CHECK 40	Motor driver card	"MAP 0330: Machine Checks 40—4D" on page 330-1
41	MACHINE CHECK 41		"MAP 0330: Machine Checks 40—4D" on page 330-1
42	MACHINE CHECK 42		"MAP 0330: Machine Checks 40—4D" on page 330-1
43	MACHINE CHECK 43		"MAP 0330: Machine Checks 40—4D" on page 330-1
44	MACHINE CHECK 44	Forms motor	"MAP 0330: Machine Checks 40—4D" on page 330-1
45	MACHINE CHECK 45	System card	"MAP 0330: Machine Checks 40—4D" on page 330-1
46	MACHINE CHECK 46	System card	"MAP 0330: Machine Checks 40—4D" on page 330-1

Figure 1 (Part 2 of 5). Quick Fix Exchange Chart

SC	DISPLAY	PROBABLE FRU	GO TO
47	MACHINE CHECK 47	System card	"MAP 0330: Machine Checks 40—4D" on page 330-1
4A	MACHINE CHECK 4A		"MAP 0330: Machine Checks 40—4D" on page 330-1
4B	MACHINE CHECK 4B	System card	"MAP 0600: Power" on page 600-1
4C	MACHINE CHECK 4C	System card	"MAP 0330: Machine Checks 40—4D" on page 330-1
4D	MACHINE CHECK 4D		"MAP 0330: Machine Checks 40—4D" on page 330-1
51	MACHINE CHECK 51		"MAP 0370: Hammers" on page 370-1
53	MACHINE CHECK 53		"MAP 0370: Hammers" on page 370-1
55	MACHINE CHECK 55		"MAP 0370: Hammers" on page 370-1
57	MACHINE CHECK 57		"MAP 0370: Hammers" on page 370-1
59	MACHINE CHECK 59		"MAP 0370: Hammers" on page 370-1
5B	MACHINE CHECK 5B		"MAP 0370: Hammers" on page 370-1
5D	MACHINE CHECK 5D	System card	"MAP 0370: Hammers" on page 370-1
5E	MACHINE CHECK 5E		"MAP 0600: Power" on page 600-1
60	MACHINE CHECK 60		"MAP 0320: Dot Band Movement" on page 320-1
61	MACHINE CHECK 61		"MAP 0320: Dot Band Movement" on page 320-1
65	MACHINE CHECK 65		"MAP 0320: Dot Band Movement" on page 320-1
6C	MACHINE CHECK 6C		"MAP 0320: Dot Band Movement" on page 320-1
70	MACHINE CHECK 70	System card	
72	MACHINE CHECK 72	System card	
73	MACHINE CHECK 73	System card	
74	MACHINE CHECK 74		"MAP 0400: Communications" on page 400-1
75	MACHINE CHECK 75		"MAP 0400: Communications" on page 400-1
76	MACHINE CHECK 76	System card	
7C	MACHINE CHECK 7C		"MAP 0400: Communications" on page 400-1
7D	MACHINE CHECK 7D	System card	
7E	MACHINE CHECK 7E	System card	
7F	MACHINE CHECK 7F	System card	

Figure 1 (Part 3 of 5). Quick Fix Exchange Chart

SC	DISPLAY	PROBABLE FRU	GO TO
80	APPLICATION CHECK 80	Operator information	"MAP 0500: Operator Panel" on page 500-1
81	APPLICATION CHECK 81	Operator information	"MAP 0500: Operator Panel" on page 500-1
84	APPLICATION CHECK 84	Operator information	"MAP 0500: Operator Panel" on page 500-1
85	APPLICATION CHECK 85	Operator information	"MAP 0500: Operator Panel" on page 500-1
86	APPLICATION CHECK 86	Operator information	"MAP 0500: Operator Panel" on page 500-1
87	APPLICATION CHECK 87	Operator information	"MAP 0500: Operator Panel" on page 500-1
88	APPLICATION CHECK 88	Operator information	"MAP 0500: Operator Panel" on page 500-1
89	APPLICATION CHECK 89	Operator information	"MAP 0500: Operator Panel" on page 500-1
8A	APPLICATION CHECK 8A	Operator information	"MAP 0500: Operator Panel" on page 500-1
8B	APPLICATION CHECK 8B	Operator information	"MAP 0500: Operator Panel" on page 500-1
8C	APPLICATION CHECK 8C	Operator information	"MAP 0500: Operator Panel" on page 500-1
8D	APPLICATION CHECK 8D	Operator information	"MAP 0500: Operator Panel" on page 500-1
8E	APPLICATION CHECK 8E	Operator information	"MAP 0500: Operator Panel" on page 500-1
8F	APPLICATION CHECK 8F	Operator information	"MAP 0500: Operator Panel" on page 500-1
90	APPLICATION CHECK 90	Operator information	"MAP 0500: Operator Panel" on page 500-1
91	APPLICATION CHECK 91	Operator information	"MAP 0500: Operator Panel" on page 500-1
92	APPLICATION CHECK 92	Operator information	"MAP 0500: Operator Panel" on page 500-1
93	APPLICATION CHECK 93	Operator information	"MAP 0500: Operator Panel" on page 500-1
95	APPLICATION CHECK 95	Operator information	"MAP 0500: Operator Panel" on page 500-1
96	APPLICATION CHECK 96	Operator information	"MAP 0500: Operator Panel" on page 500-1
97	APPLICATION CHECK 97	Operator information	"MAP 0500: Operator Panel" on page 500-1
98	APPLICATION CHECK 98	Operator information	"MAP 0500: Operator Panel" on page 500-1
99	APPLICATION CHECK 99	Operator information	"MAP 0500: Operator Panel" on page 500-1
9A	APPLICATION CHECK 9A	Operator information	"MAP 0500: Operator Panel" on page 500-1
9B	APPLICATION CHECK 9B	Operator information	"MAP 0500: Operator Panel" on page 500-1
9C	APPLICATION CHECK 9C	Operator information	"MAP 0500: Operator Panel" on page 500-1

Figure 1 (Part 4 of 5). Quick Fix Exchange Chart

SC	DISPLAY	PROBABLE FRU	GO TO
9D	APPLICATION CHECK 9D	Operator information	"MAP 0500: Operator Panel" on page 500-1
A0	MACHINE CHECK A0	System card	
A1	MACHINE CHECK A1	System card	
A3	MACHINE CHECK A3	System card	
A4	MACHINE CHECK A4	System card	
A5	MACHINE CHECK A5	System card	
A6	MACHINE CHECK A6	System card	
A7	MACHINE CHECK A7	System card	
A8	MACHINE CHECK A8	System card	
A9	MACHINE CHECK A9	System card	
AB	MACHINE CHECK AB	System card	
AC	MACHINE CHECK AC	System card	
AD	MACHINE CHECK AD	System card	
AE	MACHINE CHECK AE	System card	
B5	MACHINE CHECK B5	System card	
B8	MACHINE CHECK B8		"MAP 0300: Symptom Index" on page 300-1
BA	MACHINE CHECK BA	System card	
BC	MACHINE CHECK BC		"MAP 0500: Operator Panel" on page 500-1
BF	MACHINE CHECK BF		"MAP 0400: Communications" on page 400-1
C0	MACHINE CHECK C0	System card	
C1	MACHINE CHECK C1	System card	
C2	MACHINE CHECK C2	System card	
C4	MACHINE CHECK C4		"MAP 0370: Hammers" on page 370-1
C5	MACHINE CHECK C5	System card	"MAP 0370: Hammers" on page 370-1
C7	MACHINE CHECK C7	System card	
C8	MACHINE CHECK C8	System card	
F0	APPLICATION CHECK F0	Operator information	"MAP 0500: Operator Panel" on page 500-1
F2	APPLICATION CHECK F2	Operator information	"MAP 0500: Operator Panel" on page 500-1
F4	APPLICATION CHECK F4	Operator information	"MAP 0500: Operator Panel" on page 500-1
F5	APPLICATION CHECK F5	Operator information	"MAP 0500: Operator Panel" on page 500-1
F6	APPLICATION CHECK F6	Operator information	"MAP 0500: Operator Panel" on page 500-1

Figure 1 (Part 5 of 5). Quick Fix Exchange Chart

Notes

MAP 0012: Printer Area Failures

Choose the condition that best describes your situation. Then go to the indicated place.

FAILURE or SYMPTOM	CONTINUE AT
Printing failures.	Figure 4 on page 300-6.
Forms drive or forms movement failures including automatic loading failures.	Figure 4 on page 300-6.
Communication failures.	"MAP 0400: Communications" on page 400-1.
Operator panel failures.	"MAP 0500: Operator Panel" on page 500-1.
Operator messages that will not clear.	"MAP 0500: Operator Panel" on page 500-1.
Power failures.	"MAP 0600: Power" on page 600-1.
FRU replacement does not fix the failure.	"MAP 0900: End of Call" on page 900-1.
The symptom or status code is not found or it is unknown.	"MAP 0013: CSR Start" on page 013-1.

Figure 2. Problem Area Failures

Notes

MAP 0013: CSR Start

001

– Ensure that:

- The coaxial interface cable (MIM 800-1, "Locations") is disconnected from the rear of the Model 011 printer.
- The U-connector (MIM 800-1, "Locations") is disconnected from the rear of the Model 012 printer.
- The serial or parallel interface cable (MIM 800-1, "Locations") is disconnected from the rear of the Model 013 printer.
- The power-on self test (POST) has been run.

A **successful** POST completion by printer model is:

Model 011	The Ready LED is **ON** and the display is **READY**.
Model 012	The Attention LED is **ON** and the display is **28 LINE SYNCHRONIZATION LOST**.
Model 013	The Ready LED is **ON** and the display is **READY**.

Did the POST run successfully?

Yes **No**

002

Continue at Step 037 on page 013-4.

003

– Ensure that the forms thickness lever (MIM 800-1, "Locations") is set correctly for the forms used.
– Look at the operator panel.
– Press and hold the **Test** key.

The LEDs will flash and the display is:

```
TEST MODE
ENTER TEST ID XX
```

(Step **003** continues)

003 (continued)

Did the LEDs flash and is the display as shown above?

Yes **No**

004

Continue at Step 034 on page 013-4.

005

– Release the **Test** key.

The **Test Key Test** runs and a printout is generated. See MIM 100-1, "Test Key Printout" for a description of the printout.

– If you do not get a **complete** Test Key Printout, answer this question **No**.

Did you get a *complete* Test Key Printout?

Yes **No**

006

Continue at Step 037 on page 013-4.

007

– Check the pattern printout section of your printout for horizontal and vertical registration problems.
– Compare your printout to the **Test Key Printout** (MIM 100-1, "Test Key Printout").

Is the registration O.K.?

Yes **No**

008

Continue at Figure 4 on page 300-6.

009

– Look at the ripple print patterns of **your** Test Key Printout. Check them for print quality problems.

(Step **009** continues)

009 (continued)
The following are some examples of print quality problems.

- Overprinting
- Misaligned printing
- Missing dots
- Bad spacing between characters
- Bad spacing between lines
- Smearing.

Is the print quality O.K.?
Yes **No**

010

Continue at Figure 4 on page 300-6.

011

– Press and hold the **Test** key.
– Press the following keys twice in the order specified below.

The alarm sounds as each key is pressed and the **XX** in the display changes to the alphanumeric character pressed.
– Look at the display.

```
TEST MODE
ENTER TEST ID XX
```

Key Pressed Twice	XX
0	0
1	11
2	22
3	33
4	44
A	AA
B	BB
5	55
6	66
7	77
8	88
9	99
C	CC
D	DD
E	EE

Did the alarm sound and did the display change to the correct alphanumeric character as each key is pressed?
Yes **No**

012

– Release the **Test** key.
Continue at "MAP 0500: Operator Panel" on page 500-1.

013

– Release the **Test** key.
– Run TEST 57 (Operator Panel LED/LCD Test). See MIM 700-1, "Selecting Tests."

Did TEST 57 (Operator Panel LED/LCD Test) run correctly?
Yes **No**

014

Continue at "MAP 0500: Operator Panel" on page 500-1.

015

– Select TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."

The illustration below shows how the beginning display appears when TEST 91 (Display Sensors) is selected.

```
LED: BAND,JAM,EOF,PLATEN
KEYS:0-60V,1-FAN,2-BAND
```

The LEDs are called LED1, LED2, LED3, and LED4. They are numbered from left to right as you view the operator panel. Thus BAND = LED1, JAM = LED2, EOF = LED3, and PLATEN = LED4.
– Observe LED2.
– Rotate the forms advance knob (MIM 800-1, "Locations") several times to advance the forms several inches.

LED2 changes state in an *ON – OFF – ON – OFF* sequence as the forms are advanced.
(Step **015** continues)

015 (continued)
Does LED2 change states as the forms are advanced?
Yes **No**

016

Continue at MAP 0332 step 019 on page 332-2.

017

- Observe LED4.
- Open and close the forms thickness lever (MIM 800-1, "Locations") several times.

The platen opens and closes and LED4 changes state.
Does LED4 change state as the forms thickness lever is opened and closed?
Yes **No**

018

Continue at "MAP 0333: Platen Open Switch Problems" on page 333-1.

019

- Open the forms thickness lever (MIM 800-1, "Locations").
- Open the paper release lever (MIM 800-1, "Locations").
- Remove the forms from the printer.
- Observe LED3.
- Partially insert and remove the forms into the printer.

LED3 changes state as the form is inserted and removed from the printer.
Does LED3 change state as the form is inserted and removed from the printer?
Yes **No**

020

Continue at MAP 0331 step 004 on page 331-1.

021

- Load forms into the printer.
- Close the forms thickness lever (MIM 800-1, "Locations").

(Step **021** continues)

021 (continued)
- Ensure that the paper release lever (MIM 800-1, "Locations") is closed.
- Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").

The message **RIBBON NOT SEATED** displays.
- Insert a piece of paper into the ribbon weld sensor (MIM 800-1, "Locations").

The message **RIBBON INSTALLED** displays.
- Insert and remove a piece of paper into the ribbon weld sensor several times.
- Ensure that the ribbon weld message changes as the paper is inserted into the sensor and removed.

Does the ribbon weld message change?
Yes **No**

022

- Remove the paper from the ribbon weld sensor.

Continue at MAP 0340 step 006 on page 340-1.

023

- Remove the paper from the ribbon weld sensor.
- Remove the band cover (MIM 800-1, "Locations").

The message **BAND COVER OPEN** displays.
Is the cover open message displayed?
Yes **No**

024

Continue at MAP 0320 step 005 on page 320-1.

025

- Press the **0** key.

Sixty volts is switched ON.
- Slowly and carefully rotate the band idler rotor (MIM 800-1, "Locations") until LED1 is blinking.

The band idler rotor has only to be turned slightly for LED1 to begin blinking.
- Insert a piece of paper into the band sensor (MIM 800-1, "Locations").

(Step **025** continues)

025 (continued)
LED1 is OFF.
– Remove the paper from the band sensor.
LED1 is blinking.
Did LED1 respond as written above?
Yes **No**

026

– Ensure that the paper is removed from the band sensor.
– Install the band cover.
– Install the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
Continue at MAP 0320 step 006 on page 320-1.

027

– Ensure that the paper is removed from the band sensor.
– Install the band cover.
– Install the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
– Press the **1** key.
The hammer blower is switched **ON**. Listen; you can hear it running.
Is the hammer blower running?
Yes **No**

028

Continue at "MAP 0610: Hammer Blower" on page 610-1.

029

– Press the **1** key.
The hammer blower is switched **OFF**.
– Press the **2** key.
The dot band runs.
Is the dot band running?
Yes **No**

030

Continue at MAP 0320 step 009 on page 320-1.

031

(Step 031 continues)

031 (continued)
– Press the **2** key.
The dot band stops running.
– Install the band cover (MIM 800-1, "Locations").
– Install the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
– Load forms.
– Press the **Test** key.
The **Test Key Test** runs and the Test Key Printout is generated.
– Wait for the test to complete.
A valid machine check is any hexadecimal number between 40 through 7F and A0 through CF.
Is a valid machine check displayed?
Yes **No**

032

Continue at Step 037.

033

Continue at the MAP indicated in "MAP 0011: Quick Fix Exchange Chart" on page 011-1 for that machine check.

034

(From step 004)
– Release the **Test** key.
Is the power supply fan running?
Yes **No**

035

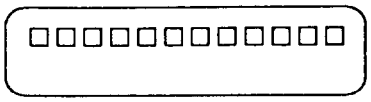
Continue at "MAP 0600: Power" on page 600-1.

036

Continue at "MAP 0500: Operator Panel" on page 500-1.

037

(From steps 002, 006, and 032)
– Look at the display.
The character fill symbol (□) fills the complete top line of the 24-character position, 2-line display.



The display is similar to the above pictorial representation and all four LEDs are on.

Are the above conditions met?

Yes **No**

038

Continue at Step 040.

039

Continue at "MAP 0600: Power" on page 600-1.

040

(From step 038)

– Look at the display.

```
01 END OF FORMS
```

```
31 END OF FORMS
   TIMEOUT
```

Is either of the above messages displayed?

Yes **No**

041

Continue at Step 043.

042

Continue at MAP 0331 step 004 on page 331-1.

043

(From step 041)

– Look at the display.

```
02 PAPER JAMMED
```

```
32 PAPER JAMMED
   TIMEOUT
```

Is either of the above messages displayed?

Yes **No**

044

Continue at Step 046.

045

Continue at MAP 0332 step 004 on page 332-1.

046

(From step 044)

– Look at the display.

```
03 FORMS THICKNESS
   CONTROL NOT SET
```

```
33 FORMS THICKNESS NOT
   SET TIMEOUT
```

Is either of the above messages displayed?

Yes **No**

047

Continue at Step 049.

048

Continue at "MAP 0333: Platen Open Switch Problems" on page 333-1.

049

(From step 047)

(Step 049 continues)

049 (continued)
– Look at the display.

```
04 RIBBON CHECK
```

```
34 RIBBON CHECK
   TIMEOUT
```

Is either of the above messages displayed?
Yes **No**

050
Continue at Step 052.

051
Continue at "MAP 0340: Ribbon Drive" on page 340-1.

052
(From step 050)
– Look at the display.

```
05 BAND COVER NOT LOCKED
```

```
35 BAND COVER NOT LOCKED
   TIMEOUT
```

Is either of the above messages displayed?
Yes **No**

053
Continue at Step 055.

054
Continue at MAP 0320 step 047 on page 320-5.

055
(From step 053)
– Look at the display.

```
12 DOT BAND CLOGGED
```

Is the above message displayed?
Yes **No**

056
Continue at Step 058.

057
Continue at MAP 0320 step 065 on page 320-7.

058
(From step 056)
– Look at the display.
The display representation below is blank.

```

```

Is the display *blank* while the printer will not run?
Yes **No**

059
Continue at Step 061.

060
Continue at "MAP 0600: Power" on page 600-1.

061
(From step 059)
– Ensure that the following conditions are met:

- The display is **blank**.
- At least one LED is ON.
- The forms did not move during the POST.

(Step 061 continues)

061 (continued)
Are all the above conditions met?
Yes **No**

062

Continue at Step 064.

063

Continue at "MAP 0600: Power" on page 600-1.

064

(From step 062)
– Ensure that the following conditions are met:

- The display is **blank**.
- At least one LED is ON.
- The forms moved during the POST.

Are all the above conditions met?
Yes **No**

065

Continue at Step 067.

066

Continue at "MAP 0500: Operator Panel" on page 500-1.

067

(From step 065)
Is the customer reported problem ribbon feed?
Yes **No**

068

Continue at Step 070.

069

Continue at "MAP 0340: Ribbon Drive" on page 340-1.

070

(From step 068)
(Step 070 continues)

070 (continued)
Is the customer reported problem printing without forms?
Yes **No**

071

Continue at Step 073.

072

Continue at MAP 0331 step 004 on page 331-1.

073

(From step 071)
Is the customer reported problem that the forms are not advancing?
Yes **No**

074

Continue at Step 076.

075

Continue at "MAP 0335: Forms Movement Problems" on page 335-1.

076

(From step 074)
Is the customer reported problem print quality?
Yes **No**

077

Continue at Step 079.

078

Continue at Figure 4 on page 300-6.

079

(From step 077)
Is the customer reported problem communications?
Yes **No**

080

(Step 080 continues)

080 (continued)
Continue at Step 082.

081

Continue at "MAP 0400: Communications" on page 400-1.

082

(From step 080)
Is the printer running the customer's jobs correctly?
Yes **No**

083

Continue at Step 087.

084

- Remove the forms from the printer.
- Look at the display.

```
01 END OF FORMS
```

The above message is displayed.
- Open the forms thickness lever (MIM 800-1, "Locations").

To open the lever, move it toward the rear of the printer.
- Lift both latches of the tractor assembly and push the assembly toward the rear of the printer.
- Ensure that the paper shield (MIM 800-1, "Locations") is closed.
- Ensure that the paper release lever (MIM 800-1, "Locations") is toward the rear of the printer.
- Insert the forms into the bottom of the printer.

After a momentary delay, the forms feed up into the printer.
Are the forms fed up into the printer?
Yes **No**

085

Continue at "MAP 0338: Autoload Problems" on page 338-1.

086

No trouble has been found with this printer. If you suspect that you have an intermittent failure, gather information about it and continue at "MAP 0800: Intermittent Problems" on page 800-1.

087

(From step 083)
- Run TEST 08 (Print Error Log). See MIM 700-1, "Selecting Tests."

Are any errors logged?
Yes **No**

088

No trouble is found with this printer. If you suspect that the problem is intermittent, continue at "MAP 0800: Intermittent Problems" on page 800-1.

089

Continue at "MAP 0100: How to Use the Error Log" on page 100-1.

MAP 0100: How to Use the Error Log

If you do not understand the **Test Key Printout**, the **Error Log**, and the information they contain, read the information below. Then continue at "MAP 0110: Error Log" on page 110-1. If you do understand the printouts, continue at "MAP 0110: Error Log" on page 110-1.

Test Key Test

Printouts resulting from pressing only the **Test** key are called the **Test Key Test**. See MIM 100-1, "Test Key Printout" for an example printout.

How to Run the Test Key Test

1. Ensure that the printer has 409 mm (16 inches) width paper installed.
2. Press the **2** key.
3. Press the **Test** key.
4. Wait one minute for the test to run and the printout to finish.

Test Key Printout Sections

1. Printer ID
   a. IBM copyright notice
   b. ROS IDs
   c. CRC information
2. Printer Options
   a. Primary Menu
   b. Secondary Menu
   c. Compatibility
3. Condensed Error Log
4. Pattern printouts
   a. Print quality printout samples
      1) Draft quality print
      2) Data processing quality print
      3) Near-letter quality print
   b. Pattern printouts
      1) Vertical pattern
      2) Horizontal pattern
      3) Alignment pattern

Error Log

How to Run the Error Log

1. Press the **2** key.
2. Press and hold the **Test** key.
3. Press the **8** key.
4. Release the **Test** key.
5. Wait for the error log printout to complete.

Error Log Sections

1. Sequential error log
2. Statistical error log

Sequential error log (ERRORLOG): This section contains 105 status codes. These are listed from the most recent to the oldest. The first 5 status codes are also listed under the **Condensed Error Log** section of the **Test Key Printout**. A sample portion of the **ERRORLOG** is below.

```
******  ERRORLOG   *******
#   SC  FRU1  FRU2  CNT  PID
00  03   FF    FF   02   11
01  02   FF    FF   01   11
02  C0   A0    00   02   FF
03  61   A0    00   19   00
04  C0   A0    00   02   FF
```

The columns in above portion of the **ERRORLOG** mean:

Column	Definition
#	The sequence number for this status code. This number is increased by one for each log entry.
SC	Status code.
FRU1	FRU identification code.
FRU2	FRU identification code.
CNT	Count of the times this status code occurred. It is the current count of times this error has happened. This count is increased each time the same status code and FRUs cause a log entry.
PID	This is the procedure identification number that was running when the status code was posted.

Statistical error log (ERROR COUNT): This section contains the count of the times a status code occurred. A sample of the **ERROR COUNT** is below.

```
   *****  ERROR COUNT  ******

 #  0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
00 00 00 01 02 00 00 00 00 00 00 00 00 00 00 00 00
10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
20 00 00 00 00 00 00 00 13 13 00 00 00 00 00 00 00
30 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
40 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
50 00 00 00 08 00 00 00 00 00 01 00 00 00 00 00 00
60 00 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00
70 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
80 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
90 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
A0 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 00
B0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
C0 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
D0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

The **ERROR COUNT** section contains status code groupings. The list below shows the relationship of each row of the **ERROR COUNT** section to a printer area.

Row	SC Range	Contents or Printer Area
00	00 through 0F	Operator messages
10	10 through 1F	Operator messages
20	20 through 2F	Communication status codes
30	30 through 3F	Operator messages
40	40 through 4F	Form feed checks
50	50 through 5F	Hammer checks
60	60 through 6F	Emitter/Band checks
70	70 through 7F	Software checks
80	80 through 8F	Host application check messages
90	90 through 9F	Host application check messages
A0	A0 through AF	Machine checks
B0	B0 through BF	RAS checks
C0	C0 through CF	RAS checks
D0	D0 through DF	Reserved
E0	E0 through EF	Reserved
F0	F0 through FF	Host application check messages

If TEST 08 (Print Error Log) cannot be printed, the **Sequential error log (ERRORLOG)** can be displayed on the display. To do this, run TEST 53 (Display Error Log). See "Sequential error log (ERRORLOG)" on page 100-2 for an explanation of the displayed format.

FRU Identification Key

To identify a FRU called out in any test under the FRU1 or FRU2 headings, use the list below. For example, if a **C1** were called out, the FRU would be the **Operator panel cable**.

FRU ID	FRU Name	
00	The code has not identified any additional FRUs. Continue at "MAP 0011: Quick Fix Exchange Chart" on page 011-1.	
A0	System card	
A3	Attachment card	
A5	Motor driver card	
A7	Operator panel card	
AB	Hammer driver card	
B0	Band motor	
B1	Dot band	
B2	Band sensor	
B3	Power supply	
B5	Forms motor	
BA	Hammer block 1	Coil # 01 through 08
BB	Hammer block 2	Coil # 09 through 16
BC	Hammer block 3	Coil # 17 through 24
BD	Hammer block 4	Coil # 25 through 32
BE	Hammer block 5	Coil # 33 through 40
BF	Hammer block 6	Coil # 41 through 48
C1	Operator panel cable	
C2	Sensor cable	
C3	Logic cable	
C4	Motor driver cable	
C5	Hammer cable	
C6	Hammer cable	
C7	Power cable	
FF	The code can not identify the failing FRU. Continue at "MAP 0011: Quick Fix Exchange Chart" on page 011-1.	

MAP 0110: Error Log

001

– Scan the data in addresses 00 through 0F in the *statistical error log* section of TEST 08 (Print Error Log).

Are any hexadecimal numbers in addresses 00 through 0F?

Yes **No**

002

Continue at Step 004.

003

This range of errors (00 through 0F) are operator messages. Only counters in positions 02 through 05 are used.

– Start with the largest value in your counter. Resolve the problems one at a time in descending value order.

High counts in locations 02 through 05 may suggest intermittent problems.

If the error is on the machine now, continue at "MAP 0010: Start of Call" on page 010-1.

– or –

If the error is intermittent, continue at "MAP 0800: Intermittent Problems" on page 800-1.

004

(From step 002)

– Scan the data in addresses 10 through 1F in the *statistical error log* section of TEST 08 (Print Error Log).

Are any hexadecimal numbers in addresses 10 through 1F?

Yes **No**

005

Continue at Step 007.

006

This range of errors (10 through 1F) are operator messages. Only counters in positions 12 and 1F are used.

– Start with the largest value in your counter. Resolve the problems one at a time in descending value order.

A High count in locations 12 may suggest an intermittent problem. If the error is on the machine now, continue at "MAP 0010: Start of Call" on page 010-1.

If the error is intermittent, continue at "MAP 0800: Intermittent Problems" on page 800-1.

007

(From step 005)

– Scan the data in addresses 20 through 2F in the *statistical error log* section of TEST 08 (Print Error Log).

Are any hexadecimal numbers in addresses 20 through 2F?

Yes **No**

008

Continue at Step 010 on page 110-2.

009

These errors are associated with communication problems. The counters in positions 20 through 22 and 29 through 2E are not used in any of the attachment types. The hexadecimal number in these positions should be zero. Valid codes 23 through 28 and 2F depend on your attachment.

– Start with the largest value in your counter. Resolve the problems one at a time in descending value order.

If the error is on the machine now, continue at "MAP 0010: Start of Call" on page 010-1.

– or –

If the error is intermittent, continue at "MAP 0800: Intermittent Problems" on page 800-1.

010

(From step 008)

– Scan the data in addresses 30 through 3F data in the *statistical error log* section of TEST 08 (Print Error Log).

Are any hexadecimal numbers in addresses 30 through 3F?

Yes **No**

011

Continue at Step 015.

012

Are any hexadecimal numbers in addresses 30 through 35?

Yes **No**

013

This range of errors (36 through 3F) are operator messages. Only hexadecimal numbers in positions 3A, 3B, 3C, 3D, and 3E are used. These position describe machine status conditions or modes, such as cancel print mode active, or buffer print mode active, or printer in send state.

014

These errors are Model 011 timeouts.
If the counts in these addresses and the counts in the corresponding addresses 01 through 05 are high, then continue at "MAP 0800: Intermittent Problems" on page 800-1.

015

(From step 011)

– Scan the data in addresses 40 through 4F of the *statistical error log* section of TEST 08 (Print Error Log).

Are any hexadecimal numbers in addresses 40 through 4F?

Yes **No**

016

Continue at Step 018 on page 110-3.

017

This range of errors (40 through 4F) are form feed checks. The counters in positions 4E and 4F are not used. The hexadecimal number in these positions should be zero.

– Start with the largest value in your counter. Resolve the problems one at a time in descending value order.

If the error is on the machine now, continue at "MAP 0010: Start of Call" on page 010-1.

– or –

If the error is intermittent, continue at "MAP 0800: Intermittent Problems" on page 800-1.

018

(From step 016)

– Scan the data in addresses 50 through 5F of the *statistical error log* section of TEST 08 (Print Error Log).

Are any hexadecimal numbers in addresses 50 through 5F?

Yes **No**

019

Continue at Step 023.

020

Is there a hexadecimal number, other then zero, in address 5E?

Yes **No**

021

The counters in positions 50, 52, 54, 56, 58, 5A, 5C, and 5F are not used. The hexadecimal number in these positions should be zero.

– Start with the largest value in your counter. Resolve the problems one at a time in descending value order.

If the error is on the machine now, continue at "MAP 0010: Start of Call" on page 010-1.

– or –

If the error is intermittent, continue at "MAP 0800: Intermittent Problems" on page 800-1.

022

This is a 60 volt failure.

If the error is on the machine now, continue at "MAP 0010: Start of Call" on page 010-1.

– or –

If the error is intermittent, continue at "MAP 0800: Intermittent Problems" on page 800-1.

023

(From step 019)

– Scan the data in addresses 60 through 6F of the *statistical error log* section of TEST 08 (Print Error Log).

Are any hexadecimal numbers in addresses 60 through 6F?

Yes **No**

024

Continue at Step 026 on page 110-4.

025

This range of errors (60 through 6F) are emitter/band checks. Only counter position 60 through 63, 65, 6B, and 6C are used. The hexadecimal number in the other positions should be zero.

– Start with the largest value in your counter. Resolve the problems one at a time in descending value order.

If the error is on the machine now, continue at "MAP 0010: Start of Call" on page 010-1.

– or –

If the error is intermittent, continue at "MAP 0800: Intermittent Problems" on page 800-1.

026

(From step 024)

– Scan the data in addresses 70 through 7F of the *statistical error log* section of TEST 08 (Print Error Log).

Are any hexadecimal numbers in addresses 70 through 7F?

Yes **No**

027

Continue at Step 029.

028

This range of errors (70 through 7F) are software checks. The counters in positions 78 through 7B are not used. The hexadecimal number in these positions should be zero.

– Start with the largest value in your counter. Resolve the problems one at a time in descending value order.

If the error is on the machine now, continue at "MAP 0010: Start of Call" on page 010-1.

– or –

If the error is intermittent, continue at "MAP 0800: Intermittent Problems" on page 800-1.

029

(From step 027)

– Scan the data in addresses 80 through 9F of the *statistical error log* section of TEST 08 (Print Error Log).

Are any hexadecimal numbers in addresses 80 through 9F?

Yes **No**

030

Continue at Step 032.

031

These are application check messages. Have the operator contact the person responsible for the program. The problem is not the printer.

032

(From step 030)

– Scan the data in addresses A0 through CF of the *statistical error log* section of TEST 08 (Print Error Log).

Are any hexadecimal numbers in addresses A0 through CF?

Yes **No**

033

Data is in addresses F0 through FF of the *statistical error log* section of TEST 08 (Print Error Log). These are application check messages. Have the operator contact the person responsible for the program. The problem is not the printer.

034

This range of errors (A0 through CF) are processor or RAS checks. The counters in positions AF, BD through BC, C3, and C9 through EF are not used. The hexadecimal number in these positions should be zero.

– Start with the largest value in your counter. Resolve the problems one at a time in descending value order.

If the error is on the machine now, continue at "MAP 0010: Start of Call" on page 010-1.

– or –

If the error is intermittent, continue at "MAP 0800: Intermittent Problems" on page 800-1.

MAP 0300: Symptom Index

- Use these charts for valid status codes and for solid customer reported status codes.
- Before exchanging any FRU, reseat all its associated cables and cards. Then recheck the symptoms before exchanging the FRU.
- If you exchange a FRU and do not solve the problem, run the **Test Key Test**. See MIM 700-1, "Selecting Tests." Use the indicated MAP or continue at "MAP 0013: CSR Start" on page 013-1.

SC	DESCRIPTION	PROBABLE FRU	CONTINUE AT
01	End of forms. Out of paper.	End of form sensor System card Sensor cable	"MAP 0331: EOF Problems" on page 331-1.
02	Paper feed problem.	Feed rolls (open) Jam sensor Sensor cable System card Forms drive belt Interconnect board	"MAP 0332: Forms Jam Problems" on page 332-1.
03	Platen open.	Platen open switch Sensor cable System card	"MAP 0333: Platen Open Switch Problems" on page 333-1.
04	Ribbon problem.	Ribbon cartridge Ribbon weld sensor Ribbon drive belt Sensor cable System card	"MAP 0340: Ribbon Drive" on page 340-1.
05	Band cover problem.	Band cover (tab) Band cover switch Sensor cable System card	"MAP 0320: Dot Band Movement" on page 320-1.
12	Dot band emitter check.	Dirty dot band Band sensor Sensor cable System card Dot band tracking	"MAP 0320: Dot Band Movement" on page 320-1.
1F	CMOS checksum error.		"MAP 0500: Operator Panel" on page 500-1
23	Transmit buffer overrun.	Interface cable Signal cable Host Attachment card	"MAP 0400: Communications" on page 400-1.
24	Line parity error.	Interface cable Signal cable Host Attachment card	"MAP 0400: Communications" on page 400-1.
25	Line framing error.	Interface cable Signal cable Host Attachment card	"MAP 0400: Communications" on page 400-1.
26	Buffer parity error (Model 011).	Interface cable Signal cable Host Attachment card	"MAP 0400: Communications" on page 400-1.

Figure 3 (Part 1 of 5). Status Codes

SC	DESCRIPTION	PROBABLE FRU	CONTINUE AT
26	Line parity check (Model 012).		"MAP 0400: Communications" on page 400-1.
26	Receive buffer overrun (Model 013).	Interface cable Signal cable Host Attachment card	"MAP 0400: Communications" on page 400-1.
27	Subsystem not ready (Model 011).	Interface cable Signal cable Attachment card	"MAP 0400: Communications" on page 400-1.
27	Unit address check (Model 012).		"MAP 0400: Communications" on page 400-1.
27	Interface type pacing protocol mismatch (Model 013).	Attachment card System card Interconnect board	"MAP 0400: Communications" on page 400-1.
28	Poll check (Model 011).	Interface cable Signal cable Host Attachment card	"MAP 0400: Communications" on page 400-1.
28	Line synchronization lost or no polling (Model 012).		"MAP 0400: Communications" on page 400-1.
28	Link not established (RS232-C only).	Interface cable Signal cable Host.	"MAP 0400: Communications" on page 400-1.
31	End of forms timeout.	End of form sensor System card Sensor cable	"MAP 0331: EOF Problems" on page 331-1.
32	Paper jammed timeout.	Feed rolls (open) Jam sensor Sensor cable System card Forms drive belt.	"MAP 0332: Forms Jam Problems" on page 332-1.
33	Forms thickness timeout.	Platen open switch Sensor cable System card	"MAP 0333: Platen Open Switch Problems" on page 333-1.
34	Ribbon problem timeout.	Ribbon cartridge Ribbon weld sensor Ribbon drive belt Sensor cable System card	"MAP 0340: Ribbon Drive" on page 340-1.
35	Band cover not locked timeout.	Band cover (tab) Band cover switch Sensor cable System card	"MAP 0320: Dot Band Movement" on page 320-1.
40	Form feed driver overcurrent.	Motor driver card Forms motor System card Motor driver cable Interconnect board	"MAP 0330: Machine Checks 40—4D" on page 330-1.

Figure 3 (Part 2 of 5). Status Codes

SC	DESCRIPTION	PROBABLE FRU	CONTINUE AT
41	Form feed chop A error.	Motor driver card Forms motor System card Motor driver cable Interconnect board	"MAP 0330: Machine Checks 40—4D" on page 330-1.
42	Form feed chop B error.	Motor driver card Forms motor System card Motor driver cable Interconnect board	"MAP 0330: Machine Checks 40—4D" on page 330-1.
43	Form feed current sense A error.	Forms motor Motor driver card System card Motor driver cable Interconnect board	"MAP 0330: Machine Checks 40—4D" on page 330-1.
44	Form feed current sense B error.	Forms motor Motor driver card System card Motor driver cable Interconnect board	"MAP 0330: Machine Checks 40—4D" on page 330-1.
45	Form feed phase A error.	System card	"MAP 0330: Machine Checks 40—4D" on page 330-1.
46	Form feed phase B error.	System card	"MAP 0330: Machine Checks 40—4D" on page 330-1.
47	Form feed timeout.	System card	"MAP 0330: Machine Checks 40—4D" on page 330-1.
4A	Form feed phase read error.	Power supply Sixty volt distribution System card Motor driver card Interconnect board	"MAP 0330: Machine Checks 40—4D" on page 330-1.
4B	Form feed MMIO failure.	System card Motor driver card Power supply Logic cable Interconnect board	"MAP 0600: Power" on page 600-1.
4C	Forms feed interrupt failure.	System card	"MAP 0330: Machine Checks 40—4D" on page 330-1.
4D	Forms feed pedestal failure.	Motor driver card System card Interconnect board	"MAP 0330: Machine Checks 40—4D" on page 330-1.
51	Hammer driver PNP open.	Hammer driver card System card Interconnect board	"MAP 0370: Hammers" on page 370-1.
53	Hammer driver NPN open.	Hammer driver card System card Interconnect board	"MAP 0370: Hammers" on page 370-1.
55	Hammer coil bank open.	Hammer bank assembly Hammer cable Hammer driver card System card Interconnect board	"MAP 0370: Hammers" on page 370-1.

Figure 3 (Part 3 of 5). Status Codes

SC	DESCRIPTION	PROBABLE FRU	CONTINUE AT
55	Hammer coil bank open.	Hammer bank assembly Hammer cable Hammer driver card System card Interconnect board	"MAP 0370: Hammers" on page 370-1.
57	Hammer driver PNP shorted.	Hammer driver card System card Interconnect board	"MAP 0370: Hammers" on page 370-1.
59	Hammer driver NPN shorted.	Hammer driver card Hammer cable Hammer bank assembly System card Interconnect board	"MAP 0370: Hammers" on page 370-1.
5B	Hammer coil bank shorted.	Hammer driver card System card Interconnect board	"MAP 0370: Hammers" on page 370-1.
5D	Hammer protection error.	System card	"MAP 0370: Hammers" on page 370-1.
5E	60 volt failure.	Power supply Hammer blower relay Sixty volt distribution System card Attachment card Hammer driver card Interconnect board	"MAP 0600: Power" on page 600-1.
60	Band driver overcurrent.	Motor driver card System card Band motor Motor driver cable Interconnect board	"MAP 0320: Dot Band Movement" on page 320-1.
61	Band speed error.	Ribbon cartridge Band motor Motor driver card System card Band sensor Sensor cable Motor driver cable Band drive system Interconnect board	"MAP 0320: Dot Band Movement" on page 320-1.
65	Emitter check.	Band sensor Sensor cable System card	"MAP 0320: Dot Band Movement" on page 320-1.
6C	Phase lock loop sync check.	System card Motor driver card Interconnect board Band drive system	"MAP 0320: Dot Band Movement" on page 320-1.
70	PC command check.	System card	
72	IB control block check.	System card	
73	IB sequence check.	System card	
74	AC timeout.	Attachment card System card Interconnect board	"MAP 0400: Communications" on page 400-1.

Figure 3 (Part 4 of 5). Status Codes

SC	DESCRIPTION	PROBABLE FRU	CONTINUE AT
75	PC timeout.	System card Attachment card Interconnect board	"MAP 0400: Communications" on page 400-1.
76	MC timeout.	System card	
7C	AC software check.	System card Attachment card Interconnect board	"MAP 0400: Communications" on page 400-1.
7D	PC/RAS software check.	System card	
7E	MC software check.	System card	
7F	MS software check.	System card	
A0	DMA failure.	System card	
A1	DMA overrun.	System card	
A3	80186 DMA 1 timeout.	System card	
A4	Print timeout.	System card	
A5	80186 BUS error.	System card	
A6	80186 DRAM parity error.	System card	
A7	80186 acknowledge timeout.	System card	
A8	8096 ready timeout.	System card	
A9	Task interface DRAM parity error.	System card	
AB	80186 CMOS read/write failure.	System card	
AC	80186 DRAM read/write failure.	System card	
AD	80186 SRAM read/write failure.	System card	
AE	80186 timer failure.	System card	
B5	80186 processor check (engine test).	System card	
B8	Task interface check.	System card Attachment card Interconnect board	
BA	80186 SRAM check.	System card	
BC	Operator panel check.	Operator panel card Operator panel cable	"MAP 0500: Operator Panel" on page 500-1.
BF	Attachment card not installed.	Attachment card System card Interconnect board	"MAP 0400: Communications" on page 400-1.
C0	8096 processor check.	System card	
C1	8096 timer check.	System card	
C2	DMA/Serializer check.	System card Hammer driver card Interconnect board	
C4	Shift register check.	Hammer driver card System card Interconnect board	"MAP 0370: Hammers" on page 370-1.
C5	Hammer driver HSO check.	System card Hammer driver card Interconnect board	"MAP 0370: Hammers" on page 370-1.
C7	8096 SRAM check.	System card	
C8	8096 SRAM arbitration check.	System card	

Figure 3 (Part 5 of 5). Status Codes

Continue at Figure 4 on page 300-6.

PRINT SYMPTOMS	POSSIBLE FRUs	CONTINUE AT
Forms loading problems.	End of form sensor Platen open switch Autoload clutch and assembly	"MAP 0330: Machine Checks 40—4D" on page 330-1.
Forms jams problems.	Jam sensor Form feeding mechanisms Mechanical portions of the paper path	"MAP 0330: Machine Checks 40—4D" on page 330-1.
Forms movement/autoload.	Forms motor Motor driver card End of form sensor Platen open switch Forms feed tractor assembly	"MAP 0330: Machine Checks 40—4D" on page 330-1.
Prints with the forms thickness lever open.	Platen open switch or wiring System card	"MAP 0330: Machine Checks 40—4D" on page 330-1.
Prints with the band cover open.	Band cover switch or wiring System card	"MAP 0330: Machine Checks 40—4D" on page 330-1.
Print quality problems.	See (MIM 300-1, "Print Quality Samples") for Print Quality Examples.	"MAP 0350: Print Quality Problems" on page 350-1.
Light print.	Ribbon cartridge Ribbon drive system Platen-to-hammer gap Band condition/tracking	"MAP 0340: Ribbon Drive" on page 340-1.
Print errors missing dots or no dots.	Worn ribbon Dot band Hammer bank assembly Platen-to-hammer gap Hammer driver card	"MAP 0350: Print Quality Problems" on page 350-1.
Registration problems.	See (MIM 300-1, "Print Quality Samples") for examples of horizontal and vertical character alignment. Do the print quality service check (MIM 300-1, "Print Quality Service Check").	"MAP 0337: Registration Problems" on page 337-1.

Figure 4 (Part 1 of 2). Printer Symptoms

PRINT SYMPTOMS	POSSIBLE FRUs	CONTINUE AT
Losing (*– – >) characters or printing same character twice.	* This means occasional single characters, On Line, not large blocks of characters. Attachment card	"MAP 0400: Communications" on page 400-1.
Prints wrong character.	Check language setting Operator panel card System card	"MAP 0500: Operator Panel" on page 500-1.
Prints slow.	Dirty Dot band Forms motor System card Motor driver card	"MAP 0350: Print Quality Problems" on page 350-1.
Poor vertical character alignment.	Form drive belt Belt tension Motor pulley Worn tractor pins Excessive tension on forms	"MAP 0330: Machine Checks 40–4D" on page 330-1.
Indexing failures.	Form drive belt Operator panel page length setting	"MAP 0330: Machine Checks 40–4D" on page 330-1.
Horizontal character alignment.	Band drive rotor Band sensor	"MAP 0330: Machine Checks 40–4D" on page 330-1.
Intermittent.	USE WHEN THERE IS NO SOLID SYMPTOM.	"MAP 0800: Intermittent Problems" on page 800-1.
End.		"MAP 0900: End of Call" on page 900-1.

Figure 4 (Part 2 of 2). Printer Symptoms

Notes

MAP 0320: Dot Band Movement

001

Are you here because TEST 91 (Display Sensors) failed?

Yes **No**

002

Continue at Step 047 on page 320-5.

003

You should be in TEST 91 (Display Sensors).

Did the band cover switch fail TEST 91 (Display Sensors)?

Yes **No**

004

Continue at Step 006.

005

(From MAP 0013 step 024 on page 013-3)

– Leave TEST 91. See MIM 700-1, "Selecting Tests."

Continue at Step 049 on page 320-5.

006

(From MAP 0013 step 026 on page 013-4)
(From step 004)

Did the band sensor fail TEST 91 (Display Sensors)?

Yes **No**

007

Continue at Step 009.

008

Continue at Step 149 on page 320-13.

009

(From MAP 0013 step 030 on page 013-4)
(From step 007)
(Step **009** continues)

009 (continued)

Did the dot band run during TEST 91 (Display Sensors)?

Yes **No**

010

Continue at Step 012.

011

– Leave TEST 91 (Display Sensors).

See MIM 700-1, "Selecting Tests."

Continue at Step 047 on page 320-5.

012

(From MAP 0340 step 024 on page 340-3)
(From step 010)

– Press the **2** key.

The band is turned off. **BAND OFF** displays.

– Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
– Remove the band cover (MIM 800-1, "Locations").
– Replace the ribbon cartridge (MIM 300-1, "Ribbon Cartridge") but not the band cover.
– Press the **2** key.

The band is turned on. **BAND ON** displays.

CAUTION:
Do not touch the moving dot band.

– Observe the dot band.

Is the dot band running?

Yes **No**

013

Continue at Step 019 on page 320-2.

014

– Observe the dot band very carefully.

Is the dot band running without slippage or binds?

Yes **No**

015

(Step **015** continues)

015 (continued)
Continue at Step 085 on page 320-8.

016

Was the customer reported status code **MACHINE CHECK A4?**

— or —

Has the customer reported intermittent **MACHINE CHECK A4's?**

— or —

If you have an ERROR LOG, are any **A4** errors logged in the statistical error log section of TEST 08 (Print Error Log)?

Did you answer yes to any of the above?
Yes **No**

017

Continue at Step 033 on page 320-3.

018

Exchange the system card (MIM 500-1, "System Card"). Continue at "MAP 0900: End of Call" on page 900-1.

019

(From step 013)
You are in TEST 91.
- Press the **2** key.

BAND OFF displays.
- Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
- Press the **2** key.

BAND ON displays.

CAUTION:
Do not touch the moving dot band.

Is the dot band running without binding now?
Yes **No**

020

Continue at Step 022.

021

(Step **021** continues)

021 (continued)
The gears in the ribbon cartridge are bound. Inform the customer that the ribbon cartridge is defective and must be exchanged. This is a customer supplied item. Continue at "MAP 0900: End of Call" on page 900-1.

022

(From step 020)
- Observe the band drive carefully.

Is the band motor running even if the band is not moving?
Yes **No**

023

Continue at Step 027.

024

The problem is mechanical.
- Ensure that the dot band is installed correctly (MIM 300-1, "Dot Band").
- Ensure that the band release lever (MIM 800-1, "Locations") is set correctly.

Are the above O.K.?
Yes **No**

025

Install the dot band (MIM 300-1, "Dot Band") correctly and set the band release lever (MIM 800-1, "Locations"). Continue at "MAP 0900: End of Call" on page 900-1.

026

Do the band drive service checks (MIM 300-1, "Band Drive Service Checks").

When the problem is corrected continue at "MAP 0900: End of Call" on page 900-1.

027

(From step 023)
- Disconnect the red lead (+) from the band motor (MIM 800-1, "Locations").

(Step **027** continues)

027 (continued)
- Measure for +60 V dc.

FROM	TO	VOLTAGE
Red lead	FRAME GND	+60 V dc

Is +60 V dc present?
Yes **No**

028

Continue at Step 030.

029

Exchange the band motor (MIM 300-1, "Band Drive Motor"). Continue at "MAP 0900: End of Call" on page 900-1.

030

(From step 028)
- Power OFF.
- Disconnect the motor driver cable connector A1 from 01A-B1A1.

See MIM 800-1, "Locations."
- Disconnect both leads from the band motor (MIM 800-1, "Locations").
- Check the continuity of the motor driver cable.

See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
A1-11	Blue lead	0 ohms
A1-15	Red lead	0 ohms

Is the continuity O.K.?
Yes **No**

031

Exchange one at a time:

- Band motor filter (MIM 300-1, "Band Drive Motor Filter")
- Motor driver cable (MIM 300-1, "Motor Driver Cable").

Continue at "MAP 0900: End of Call" on page 900-1.

032

Exchange the motor driver card (MIM 500-1, "Motor Driver Card"). Continue at "MAP 0900: End of Call" on page 900-1.

033

(From step 017)
You should still be in TEST 91 (Display Sensors) and the dot band is running.

CAUTION:
Do not touch the moving dot band.

Is LED1 blinking?
Yes **No**

034

Continue at Step 036.

035

Continue at Step 038 on page 320-4.

036

(From step 034)

CAUTION:
Do not touch the moving dot band.

- To ensure that the dot band is tracking properly, check the following adjustments:

1. Idler rotor adjustment (MIM 300-1, "Band Tracking Adjustments")
2. Band sensor adjustment (MIM 300-1, "Band Tracking Adjustments").

Are the adjustments O.K.?
Yes **No**

037

Do the band tracking adjustments (MIM 300-1, "Band Tracking Adjustments"). Continue at "MAP 0900: End of Call" on page 900-1.

038

(From step 035)
- Power OFF.
- Replace the band cover (MIM 800-1, "Locations").
- Replace the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
- Remove the top cover (MIM 300-1, "Top Cover").
- Remove the power cover (MIM 300-1, "Power Cover").
- Check sensor cable connectors D2 and BAND SENS for marginal connections (MIM 800-1, "Locations").
- Power ON.
- Wait for the POST to complete.
- Run TEST 75 (Band Drive Test).

See MIM 700-1, "Selecting Tests."

Did the printer fail TEST 75 (Band Drive Test)?

Yes **No**

039

The problem was a bad connection. Continue at "MAP 0900: End of Call" on page 900-1.

040

- Power OFF.
- Exchange the system card (MIM 500-1, "System Card").
- Power ON.
- Wait for the POST to complete.
- Run TEST 75 (Band Drive Test).

See MIM 700-1, "Selecting Tests."

Did the printer fail TEST 75 (Band Drive Test)?

Yes **No**

041

The problem was a defective system card. Continue at "MAP 0900: End of Call" on page 900-1.

042

- Power OFF.

CAUTION:
Disconnect the power cord before servicing the printer.

- Replace the system card (MIM 500-1, "System Card"). This card is good.
- Disconnect the sensor cable at connectors 01A-E1D2 and BAND SENS (MIM 800-1, "Locations").
- Check the continuity of the sensor cable between the BAND SENS and D2 connectors.

(Step **042** continues)

042 (continued)

See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
D2-17	BAND SENS-4	0 ohms
D2-18	BAND SENS-1	0 ohms
D2-19	BAND SENS-5	0 ohms
D2-20	BAND SENS-3	0 ohms

Is the continuity O.K.?

Yes **No**

043

Exchange the sensor cable (MIM 300-1, "Sensor Cable"). Continue at "MAP 0900: End of Call" on page 900-1.

044

- Connect sensor cable connector D2 to the system card at 01A-E1D2 (MIM 800-1, "Locations").
- Check the following pins between cable connector BAND SENS and FRAME GND for shorts. See MIM 800-1, "Card and Cable Connections."

None of the lines should be shorted to ground.

FROM	TO
BAND SENS-1	FRAME GND
BAND SENS-4	FRAME GND
BAND SENS-5	FRAME GND

Is the cable O.K.?

Yes **No**

045

Exchange the sensor cable (MIM 300-1, "Sensor Cable"). Continue at "MAP 0900: End of Call" on page 900-1.

046

Exchange the system card (MIM 500-1, "System Card"). Continue at "MAP 0900: End of Call" on page 900-1.

047

(From MAP 0013 step 054 on page 013-6)
(From steps 002 and 011)
– Look at the display.

```
05 BAND COVER NOT LOCKED
```

```
35 BAND COVER NOT LOCKED
   TIMEOUT
```

Are either of the above screens displayed?
Yes **No**

048

Continue at Step 065 on page 320-7.

049

(From step 005)
– Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
– Remove the band cover (MIM 800-1, "Locations").
– Ensure that the band cover tab is not damaged or broken.
The tab is attached to the underside of the band cover.
– Ensure that the band cover is properly installed and seated (MIM 800-1, "Locations").
Is the band cover O.K.?
Yes **No**

050

Exchange the band cover.
Continue at "MAP 0900: End of Call" on page 900-1.

051

– Check the BAND COVR connector for proper seating and a good connection.
See MIM 800-1, "Locations."
Is the seating and connection O.K.?
Yes **No**

052

Reseat or exchange the band cover switch (MIM 300-1, "Band Cover Switch").
Continue at "MAP 0900: End of Call" on page 900-1.

053

– Install the band cover.
– Ensure that the band cover tab fits into the slot in the band cover switch (MIM 800-1, "Locations").
– Install the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
– Set the forms thickness lever (MIM 800-1, "Locations") for the forms used.
– Press the **2** key.
– Press the **7** key.
– Look at the display.

```
05 BAND COVER NOT LOCKED
```

Is the above message displayed?
Yes **No**

054

The error is cleared. Continue at "MAP 0900: End of Call" on page 900-1.

055

– Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
– Remove the band cover (MIM 800-1, "Locations").
– Set the forms thickness lever (MIM 800-1, "Locations") for the forms used.
– Insert a nonconductor, for example, narrowly folded paper, into the slot in the band cover switch (MIM 800-1, "Locations").
The paper must be inserted deep enough to activate the switch.
– Press the **2** key.
– Press the **7** key.
– Look at the display.

```
05 BAND COVER NOT LOCKED
```

Is the above message displayed?
Yes **No**

056

– Remove the nonconductor from the slot in the band cover switch.
Exchange the band cover.
(Step **056** continues)

056 (continued)
Continue at "MAP 0900: End of Call" on page 900-1.

057

- Power OFF.
- Remove the nonconductor from the slot in the band cover switch.
- Disconnect the BAND COVR connector from the band cover switch (MIM 800-1, "Locations").
- Connect a jumper temporarily between BAND COVR-2 and BAND COVR-4 on the sensor cable connector.

See MIM 800-1, "Card and Cable Connections."

FROM	TO
BAND COVR-2	BAND COVR-4

- Power ON.
- Wait for the POST to complete.
- Look at the display.

```
05 BAND COVER NOT LOCKED
```

Is the above message displayed?
Yes **No**

058

- Power OFF.
- Remove the jumper.

Exchange the band cover switch (MIM 300-1, "Band Cover Switch").
Continue at "MAP 0900: End of Call" on page 900-1.

059

- Power OFF.
- Remove the jumper.
- Power ON.
- Wait for the POST to complete.
- Measure for +5 V dc at the sensor cable connector pins below.

See MIM 800-1, "Card and Cable Connections."

FROM	TO	VOLTS
BAND COVR-1	BAND COVR-4	+5 V dc
BAND COVR-2	BAND COVR-4	+5 V dc

Is the correct voltage present at all pins?
Yes **No**

060

Continue at Step 062.

061

Exchange the band cover switch (MIM 300-1, "Band Cover Switch").
Continue at "MAP 0900: End of Call" on page 900-1.

062

(From step 060)

- Power OFF.

CAUTION:
Disconnect the power cord before servicing the printer.

- Remove the top cover (MIM 300-1, "Top Cover").
- Remove the power cover (MIM 300-1, "Power Cover").
- Disconnect the sensor cable at connectors 01A-E1D2 and BAND COVR (MIM 800-1, "Locations").
- Check the continuity of the sensor cable between the BAND COVR and the D2 connectors.

See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
D2-21	BAND COVR-1	0 ohms
D2-23	BAND COVR-2	0 ohms
D2-24	BAND COVR-4	0 ohms

Is the continuity O.K.?
Yes **No**

063

Exchange the sensor cable (MIM 300-1, "Sensor Cable").
Continue at "MAP 0900: End of Call" on page 900-1.

064

Exchange the system card (MIM 500-1, "System Card"). Continue at "MAP 0900: End of Call" on page 900-1.

065

(From MAP 0013 step 057 on page 013-6)
(From step 048)
– Look at the display.

```
12 DOT BAND CLOGGED
```

Is the above message displayed?
Yes **No**

066
Continue at Step 118 on page 320-11.

067

– Power OFF.
– Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
– Remove the band cover (MIM 800-1, "Locations").
– Remove the dot band (MIM 300-1, "Dot Band").
– Ensure that the dot band and the band sensor are clean and free of debris.
– Clean the band oiler (MIM 800-1, "Locations").
– Install the dot band (MIM 300-1, "Dot Band").
– Install the band cover (MIM 800-1, "Locations").
– Install the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
– Set the forms thickness lever (MIM 800-1, "Locations") for the forms used.
– Power ON.
– Wait for the POST to complete.
– Look at the display.

```
12 DOT BAND CLOGGED
```

Is the above message displayed?
Yes **No**

068
The dot band had blocked timing slots or the band sensor was dirty. Continue at "MAP 0900: End of Call" on page 900-1.

069
(Step **069** continues)

069 (continued)
– Select TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."
Below is the initial TEST 91 (Display Sensors) display screen.

```
LED: BAND,JAM,EOF,PLATEN
KEYS:0-60V,1-FAN,2-BAND
```

The LEDs are called LED1, LED2, LED3, and LED4. They are numbered from left to right as you view the operator panel. Thus, BAND = LED1, JAM = LED2, EOF = LED3, and PLATEN = LED4.
– Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
– Remove the band cover (MIM 800-1, "Locations").
– Press the **0** key.
– Press the **2** key.
The dot band runs and **BAND ON** displays.
Is the dot band running?
Yes **No**

070
Continue at Step 074.

071
Is the band binding or slipping?
Yes **No**

072
Continue at Step 074.

073
Continue at Step 085 on page 320-8.

074
(From steps 070 and 072)
– Press the **2** key.
The dot band stops and **BAND OFF** displays.
– Slowly and carefully, manually rotate the idler rotor (MIM 800-1, "Locations") until LED1 is blinking.
The idler rotor has only to be turned slightly for LED1 to begin blinking.
Is LED1 blinking?
Yes **No**

075
(Step **075** continues)

075 (continued)
Continue at Step 149 on page 320-13.

076

- Power OFF.
- Remove the top cover (MIM 300-1, "Top Cover").
- Remove the power cover (MIM 300-1, "Power Cover").
- Check the BAND SENS and D2 connectors of the sensor cable for dirty, loose, or intermittent connections.

See MIM 800-1, "Locations."

Are the connectors O.K.?

Yes **No**

077

Repair or exchange as necessary. Continue at "MAP 0900: End of Call" on page 900-1.

078

- Check the dot band for wear or damage, such as bends, folds, cracks, and rolled over edges.

Is the dot band O.K.?

Yes **No**

079

Inform the customer that the dot band is defective and must be exchanged. This is a customer supplied item.

Continue at "MAP 0900: End of Call" on page 900-1.

080

- Check the oiler to dot band adjustment.

See MIM 300-1, "Band Oiler Assembly."

Is the adjustment O.K.?

Yes **No**

081

Adjust the oiler (MIM 300-1, "Band Oiler Assembly"). Continue at "MAP 0900: End of Call" on page 900-1.

082

- Check the drive and idler rotor (MIM 800-1, "Locations") flanges for wear.

(Step 082 continues)

082 (continued)

Are the drive and idler rotor flanges O.K.?

Yes **No**

083

Do the band drive service checks (MIM 300-1, "Band Drive Service Checks"). When the problem is corrected continue at "MAP 0900: End of Call" on page 900-1.

084

Exchange one at a time:

- Band sensor (MIM 300-1, "Dot Band Sensor")
- System card (MIM 500-1, "System Card").

Continue at "MAP 0900: End of Call" on page 900-1.

085

(From steps 015 and 073)

Is the dot band binding?

Yes **No**

086

Continue at Step 103 on page 320-10.

087

You are in TEST 91 and the dot band is running.

- Press the **2** key.

The dot band stops and **BAND OFF** displays.

- Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
- Remove the band cover.
- Press the **2** key.

The dot band runs and **BAND ON** displays.

CAUTION:
Do not touch the moving dot band.

Is the dot band running without binding now?

Yes **No**

088

Continue at Step 090 on page 320-9.

089

The gears in the ribbon cartridge are bound. Inform the customer that the ribbon cartridge is defective and must be exchanged. This is a customer supplied item. Continue at "MAP 0900: End of Call" on page 900-1.

090

(From step 088)
- Power OFF.
- Remove the dot band (MIM 300-1, "Dot Band").
- Ensure that the idler rotor (MIM 800-1, "Locations") spins freely without binding.

Does the idler rotor spin freely?

Yes **No**

091

- Place the print mechanism in the service position. See MIM 300-1, "Print Mechanism (Service Position)."
- Remove any debris from the pivot block or idler rotor shaft that could cause the bind (MIM 800-1, "Locations").
- Check the idler rotor shaft for damage such as wear or scouring.

If a cause for the bind cannot be found, exchange the pivot block (MIM 300-1, "Pivot/Idler Rotor Assembly") and do the band tracking adjustments (MIM 300-1, "Band Tracking Adjustments"). Continue at "MAP 0900: End of Call" on page 900-1.

092

- Rotate the drive rotor (MIM 800-1, "Locations").

Does the drive rotor bind?

Yes **No**

093

- Place the print mechanism in the service position. See MIM 300-1, "Print Mechanism (Service Position)."

Check the band path for the cause of the bind. See MIM 800-1, "Locations." The path includes the:

Paper shield
Band support plate
Ribbon shield
Band oiler
Band sensor.

Look for debris and worn or damaged parts. Continue at "MAP 0900: End of Call" on page 900-1.

094

- Place the print mechanism in the service position. See MIM 300-1, "Print Mechanism (Service Position)."

(Step **094** continues)

094 (continued)
- Remove the band motor (MIM 300-1, "Band Drive Motor").
- Ensure that the band drive gear is secured to the band motor shaft.
- Ensure that the band drive gear is not worn or damaged.
- Turn the band drive gear.

The motor should not bind.

Are the band drive gear and band motor O.K.?

Yes **No**

095

Exchange the band motor (MIM 300-1, "Band Drive Motor"). Continue at "MAP 0900: End of Call" on page 900-1.

096

- See MIM 800-1, "Locations" and MIM 300-1, "Band Drive Motor."
- Ensure that the washer is installed on the band drive idler gear.

The washer may be stuck to the band motor plate.
- Check the band drive idler gear for wear or damage (MIM 300-1, "Band Drive Motor").
- Ensure that the idler gear and washer are lubricated properly.

There should not be too little or too much grease applied.
- Turn the band drive idler gear.

The idler gear turns without binding.

Is the band drive idler gear O.K.?

Yes **No**

097

Exchange the band drive idler gear (MIM 300-1, "Band Drive Motor").

098

- Remove the band drive idler gear and the washer (MIM 800-1, "Locations").
- Ensure that the drive rotor gear is secured to the drive rotor shaft.

A key and set screw hold the gear to the shaft.
- Ensure that the drive rotor gear is not worn or damaged.
- Turn the drive rotor gear (MIM 800-1, "Locations").

The drive rotor rotates without resistance because the gear train is removed.

(Step **098** continues)

098 (continued)
Does the drive rotor turn without binding?
Yes **No**

099
Exchange the drive rotor (MIM 300-1, "Band Drive Rotor Assembly") and do the band tracking adjustments (MIM 300-1, "Band Tracking Adjustments"). Continue at "MAP 0900: End of Call" on page 900-1.

100
- Check the oiler to dot band adjustment (MIM 300-1, "Band Oiler Assembly").

Is the band oiler adjustment O.K.?
Yes **No**

101
Adjust the band oiler (MIM 300-1, "Band Oiler Assembly"). Continue at "MAP 0900: End of Call" on page 900-1.

102
Check the band path for the cause of the bind. See MIM 800-1, "Locations." The path includes the:

Paper shield
Band support plate
Ribbon shield.

Look for debris and worn or damaged parts. Continue at "MAP 0900: End of Call" on page 900-1.

103
(From step 086)
The band is slipping.
- Ensure that the band release lever set (MIM 800-1, "Locations") correctly.

Is the band release lever set correctly?
Yes **No**

104
Set the band release lever. Continue at "MAP 0900: End of Call" on page 900-1.

105
- Power OFF.
- Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
- Remove the dot band (MIM 300-1, "Dot Band").

(Step 105 continues)

105 (continued)
- Place the print mechanism in the service position. See MIM 300-1, "Print Mechanism (Service Position)."
- Ensure that the band release lever is secured to the casting by the screw (MIM 800-1, "Locations").

Is the band release lever secured?
Yes **No**

106
Tighten the screw that secures the band release lever (MIM 800-1, "Locations"). Continue at "MAP 0900: End of Call" on page 900-1.

107
- Ensure that the spring (MIM 800-1, "Locations") is installed.
- Ensure that the spring exerts tension on the band release lever.

If the spring is weak, the band can slip on the idler rotor.
Does the spring apply tension to the band release lever?
Yes **No**

108
Exchange the spring (MIM 300-1, "Pivot/Idler Rotor Assembly"). Continue at "MAP 0900: End of Call" on page 900-1.

109
- Remove the band motor (MIM 300-1, "Band Drive Motor").
- Ensure that the band drive gear is secured to the band motor shaft.
- Ensure that the gear is not worn or damaged.
- Turn the band drive gear.

The motor should not bind.
Are the band drive gear and band motor O.K.?
Yes **No**

110
Exchange the band motor (MIM 300-1, "Band Drive Motor"). Continue at "MAP 0900: End of Call" on page 900-1.

111
- See MIM 800-1, "Locations" and MIM 300-1, "Band Drive Motor."

(Step 111 continues)

111 (continued)
- Ensure that the washer is installed on the band drive idler gear.

The washer may be stuck to the band motor plate.
- Check the band drive idler gear for wear or damage.
- Ensure that the idler gear and washer are lubricated properly.

There should not be too little or too much grease applied.

Is band drive idler gear O.K.?

Yes **No**

No: 112

Install, lubricate, or exchange as necessary.
Continue at "MAP 0900: End of Call" on page 900-1.

Yes: 113

- Remove the band drive idler gear and the washer (MIM 800-1, "Locations").
- Ensure that the drive rotor gear is secured to the the drive rotor shaft.

A key and set screw hold the gear to the shaft.
- Ensure that the drive rotor gear is not worn or damaged.
- Turn the drive rotor gear (MIM 800-1, "Locations").

The drive rotor rotates without resistance because the gear train is removed.

Are the drive rotor gear O.K.?

Yes **No**

No: 114

Repair or exchange as necessary.
Continue at "MAP 0900: End of Call" on page 900-1.

Yes: 115

- Check the drive rotor assembly for excessive play.

Is the drive rotor assembly O.K.?

Yes **No**

No: 116

Exchange the drive rotor (MIM 300-1, "Band Drive Rotor Assembly") and do the band tracking adjustments (MIM 300-1, "Band Tracking Adjustments").
Continue at "MAP 0900: End of Call" on page 900-1.

Yes: 117

Exchange the dot band.

118

(From step 066)
- Look at the display.

```
MACHINE CHECK 60
```

Is the above message displayed?

Yes **No**

No: 119

Continue at Step 121.

Yes: 120

This is a band driver overcurrent check. Exchange, one at a time:

- Motor driver card (MIM 500-1, "Motor Driver Card")
- System card (MIM 500-1, "System Card")
- Band motor (MIM 300-1, "Band Drive Motor")
- Motor driver cable (MIM 300-1, "Motor Driver Cable")
- Interconnect board (MIM 500-1, "Interconnect Board").

Continue at "MAP 0900: End of Call" on page 900-1.

121

(From step 119)
- Look at the display.

```
MACHINE CHECK 61
```

Is the above message displayed?

Yes **No**

No: 122

Continue at Step 155 on page 320-14.

Yes: 123

The logic has detected a band speed error.
- Select TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."

(Step 123 continues)

123 (continued)
Below is the initial TEST 91 (Display Sensors) display screen.

```
LED: BAND,JAM,EOF,PLATEN
KEYS:0-60V,1-FAN,2-BAND
```

The LEDs are called LED1, LED2, LED3, and LED4. They are numbered from left to right as you view the operator panel. Thus, BAND = LED1, JAM = LED2, EOF = LED3, and PLATEN = LED4.
- Press the **0** key.

Sixty volts is switched on.
- Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
- Remove the band cover.
- Slowly and carefully, manually rotate the idler rotor until LED1 is blinking (MIM 800-1, "Locations").

The idler rotor has only to be turned slightly for LED1 to begin blinking.
- Insert a piece of paper into the band sensor (MIM 800-1, "Locations").

LED1 is OFF.
- Remove the paper from the band sensor.

LED1 is blinking.
Did LED1 respond as written above?
Yes **No**

124
Continue at Step 149 on page 320-13.

125
- Press the **2** key.

The band runs.
Does the dot band run?
Yes **No**

126
Continue at Step 128.

127
Exchange, one at a time:

- System card (MIM 500-1, "System Card")
- Band sensor (MIM 300-1, "Dot Band Sensor")
- Sensor cable (MIM 300-1, "Sensor Cable").

Continue at "MAP 0900: End of Call" on page 900-1.

128
(From step 126)
The problem may be the mechanical band drive system.
- Ensure that the band release lever (MIM 800-1, "Locations") is set correctly.

Is the band release lever set correctly?
Yes **No**

129
Set the band release lever.
Continue at "MAP 0900: End of Call" on page 900-1.

130
- Power OFF.
- Remove the dot band (MIM 300-1, "Dot Band").
- Place the print mechanism in the service position.

See (MIM 300-1, "Print Mechanism (Service Position)").
- Ensure that the band release lever is secured to the casting by the screw.

See MIM 800-1, "Locations."
Is the band release lever secured?
Yes **No**

131
Tighten the screw. Continue at "MAP 0900: End of Call" on page 900-1.

132
- Ensure that the spring is installed.

Is the spring installed?
Yes **No**

133
Install the spring. Continue at "MAP 0900: End of Call" on page 900-1.

134
- Ensure that the spring exerts tension on the band release lever.

Does the spring apply tension to the band release lever?
Yes **No**

135
Exchange the spring (MI 300-1).
Continue at "MAP 0900: End of Call" on page 900-1.

136

- Remove the band motor (MIM 300-1, "Band Drive Motor").
- Ensure that the band drive gear is secured to the motor shaft.

The band drive gear and the shaft should rotate together.

- Ensure that the band drive gear is not worn or damaged.

Is the band drive gear O.K.?

Yes **No**

137

Exchange the band motor (MIM 300-1, "Band Drive Motor"). Continue at "MAP 0900: End of Call" on page 900-1.

138

- Check the idler gear for wear or damage.

Is the band idler gear O.K.?

Yes **No**

139

Exchange the idler gear (MIM 300-1, "Band Drive Motor"). Continue at "MAP 0900: End of Call" on page 900-1.

140

- Ensure that the washer is installed on the idler gear.

Is the washer installed?

Yes **No**

141

Install and lubricate the washer. Continue at "MAP 0900: End of Call" on page 900-1.

142

- Ensure that the key and the drive rotor gear are tight on the drive rotor shaft. A set screw secures them.

Are the key and gear secure?

Yes **No**

143

Tighten the set screw. Continue at "MAP 0900: End of Call" on page 900-1.

144

(Step 144 continues)

144 (continued)

- Check the drive rotor gear for wear or damage.

Is the drive rotor gear O.K.?

Yes **No**

145

Exchange the drive rotor gear (MIM 300-1, "Band Drive Rotor Assembly") and do the band tracking adjustments (MIM 300-1, "Band Tracking Adjustments"). Continue at "MAP 0900: End of Call" on page 900-1.

146

- Check the drive rotor assembly for excessive play.
- Check that the drive rotor assembly spins freely without binding.

Is the drive rotor assembly O.K.?

Yes **No**

147

Exchange the casting. Continue at "MAP 0900: End of Call" on page 900-1.

148

Exchange, one at a time:

- Motor driver card (MIM 500-1, "Motor Driver Card")
- Band motor (MIM 300-1, "Band Drive Motor")
- Band motor filter (MIM 300-1, "Band Drive Motor Filter")
- Motor driver cable (MIM 300-1, "Motor Driver Cable").

Continue at "MAP 0900: End of Call" on page 900-1.

149

(From steps 008, 075, and 124)

- Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
- Disconnect the BAND SENS connector from the band sensor (MIM 800-1, "Locations").
- Measure for the following voltage at the sensor cable connector pins below.

See MIM 800-1, "Card and Cable Connections."

FROM	TO	VOLTS
BAND SENS-1	BAND SENS-3	+ 10.6 V dc
BAND SENS-4	BAND SENS-3	+ 5 V dc
BAND SENS-5	BAND SENS-3	+ 5 V dc

(Step 149 continues)

149 (continued)
Is the correct voltage present at all pins?
Yes **No**

150
Continue at Step 152.

151
Exchange the band sensor (MIM 300-1, "Dot Band Sensor").
Continue at "MAP 0900: End of Call" on page 900-1.

152
(From step 150)
– Power OFF.

CAUTION:
Disconnect the power cord before servicing the printer.

– Remove the top cover (MIM 300-1, "Top Cover").
– Remove the power cover (MIM 300-1, "Power Cover").
– Disconnect the sensor cable at connectors 01A-E1D2 and BAND SENS (MIM 800-1, "Locations").
– Check the continuity of the sensor cable between the BAND SENS and D2 connectors.

See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
D2-17	BAND SENS-4	0 ohms
D2-18	BAND SENS-1	0 ohms
D2-19	BAND SENS-5	0 ohms
D2-20	BAND SENS-3	0 ohms

Is the continuity O.K.?
Yes **No**

153
Exchange the sensor cable (MIM 300-1, "Sensor Cable").
Continue at "MAP 0900: End of Call" on page 900-1.

154
Exchange the system card (MIM 500-1, "System Card").
Continue at "MAP 0900: End of Call" on page 900-1.

155
(From step 122)
– Look at the display.

```
MACHINE CHECK 65
```

Is the above message displayed?
Yes **No**

156
Continue at Step 158.

157
The logic has detected an emitter check.
Exchange, one at a time:

- Band motor (MIM 300-1, "Band Drive Motor")
- System card (MIM 500-1, "System Card")
- Sensor cable (MIM 300-1, "Sensor Cable").

Continue at "MAP 0900: End of Call" on page 900-1.

158
(From step 156)
– Look at the display.

```
MACHINE CHECK 6C
```

Is the above message displayed?
Yes **No**

159
No trouble has been found with the band drive system. Return to "MAP 0010: Start of Call" and begin again.

160
The logic has detected a phase lock loop (PLL) error. Exchange, one at a time:

- System card (MIM 500-1, "System Card")
- Motor driver card (MIM 500-1, "Motor Driver Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

MAP 0330: Machine Checks 40—4D

This MAP fixes forms handling problems and *MACHINE CHECKs* 40 through 4D.

001

Are you here because of any *MACHINE CHECK* 40 through 4D?

Yes **No**

No → 002

Continue at Step 008 on page 330-2.

Yes → 003

For this **MACHINE CHECK**, did you press the **Enter** key and identify the FRUs?

— or —

Did you run TEST 53 (Display Error Log) and identify the FRUs? The FRUs are listed in the display as FRU1, FRU2, or MAP.

Did you answer YES to either of the above questions?

Yes **No**

No → 004

- Run TEST 53 (Display Error Log). See MIM 700-1, "Selecting Tests."
- Exchange the FRUs called out by TEST 53 (Display Error Log).

If the problem is solved, continue at "MAP 0900: End of Call" on page 900-1.

— or —

If the same problem still exists, continue at Step 007.

Yes → 005

Have you exchanged the FRUs identified by TEST 53 (Display Error Log) or the *Enter* key?

Yes **No**

No → 006

Exchange the FRUs.
If the problem is solved, continue at "MAP 0900: End of Call" on page 900-1.

— or —

If the same problem still exists, continue at Step 007.

007

(From steps 004 and 006)
Listed are MACHINE CHECKs and FRUs. Select the MACHINE CHECK that brought you to this MAP. Exchange any additional FRUs you have not already exchanged for this failure. Exchange the additional FRUs, one at a time, in the order listed. If the problem is not resolved, call your support structure for help.

SC	EXCHANGE FRUs or CONTINUE AT
40	A5 (Motor driver card) B5 (Forms motor) A0 (System card) C4 (Motor driver cable) Interconnect board.
41—42	A5 (Motor driver card) B5 (Forms motor) A0 (System card) C4 (Motor driver cable) Interconnect board.
43—44	B5 (Forms motor) A5 (Motor driver card) A0 (System card) C4 (Motor driver cable) Interconnect board.
45—47	A0 (System card).
4A	B3 (Power supply) Sixty volt distribution A0 (System card) A5 (Motor driver card) Interconnect board.
4B	"MAP 600: Power" on page 600-1.
4C	A0 (System card).
4D	A5 (Motor driver card) A0 (System card) Interconnect board.

008

(From step 002)
Choose the symptom that best describes your forms handling problem. Continue at the indicated MAP.

SYMPTOM EXPLANATION	CONTINUE AT
EOF problems.	"MAP 0331: EOF Problems" on page 331-1.
Forms/Paper jam problems.	"MAP 0332: Forms Jam Problems" on page 332-1.
Platen open switch problems.	"MAP 0333: Platen Open Switch Problems" on page 333-1.
Forms movement problems.	"MAP 0335: Forms Movement" on page 335-1.
Forms stacking problems.	"MAP 0336: Forms Stacking Problems" on page 336-1.
Print or forms registration problems.	"MAP 0337: Registration Problems" on page 337-1.
Autoload problems.	"MAP 0338: Autoload Problems" on page 338-1.
Prints without forms loaded.	"MAP 0339: Prints without Forms Loaded" on page 339-1.

MAP 0331: EOF Problems

Symptom Explanation	Conditions That Could Cause This Symptom
01 END OF FORMS 31 END OF FORMS TIMEOUT	• End of form sensor • System card • Sensor cable

001

01 END OF FORMS is the normal display if no paper is loaded.

Note: For an autoload problem, answer this question YES. For a **01 END OF FORMS** or **31 END OF FORMS TIMEOUT** condition that will not clear, answer this question NO.

Do you have an autoload problem?

Yes **No**

No → 002

Continue at Step 004.

Yes → 003

Continue at "MAP 0338: Autoload Problems" on page 338-1.

004

(From MAP 0013 step 020 on page 013-3)
(From MAP 0013 step 042 on page 013-5)
(From MAP 0013 step 072 on page 013-7)
(From MAP 0338 step 012 on page 338-2)
(From step 002)

- Ensure that forms are loaded.
- Run TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."

(Step **004** continues)

004 (continued)
Below is the initial TEST 91 (Display Sensors) display screen.

```
LED: BAND,JAM,EOF,PLATEN
KEYS:0-60V,1-FAN,2-BAND
```

The LEDs are called LED1, LED2, LED3, and LED4. They are numbered from left to right as you view the operator panel. Thus, BAND = LED1, JAM = LED2, EOF = LED3, and PLATEN = LED4.

- Observe LED3.

Is LED3 on?

Yes **No**

No → 005

Continue at Step 013 on page 331-2.

Yes → 006

CAUTION:
Disconnect the power cord before servicing the printer.

- Power OFF.
- Remove the forms.
- Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
- Remove the band cover (MIM 800-1, "Locations").
- Remove the dot band (MIM 300-1, "Dot Band").

- Remove the top cover (MIM 300-1, "Top Cover").
- Remove the power cover (MIM 300-1, "Power Cover").
- Place the print mechanism in the service position. See MIM 300-1, "Print Mechanism (Service Position)."
- Check that sensor cable connector D2 is properly seated to the system card at 01A-E1D2. See MIM 800-1, "Card and Cable Connections."
- Check that the end of form sensor connector is properly seated to sensor cable connector EOF SENS (MIM 800-1, "Locations").

Are the cable connectors properly seated?

Yes **No**

007

Reseat the connectors.
Continue at "MAP 0900: End of Call" on page 900-1.

008

- Disconnect sensor cable connector D2 from 01A-E1D2 (MIM 800-1, "Locations").
- Disconnect the end of form sensor from sensor cable connector EOF SENS (MIM 800-1, "Locations").
- Measure for continuity at the following sensor cable connector pins. See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
D2-09	EOF SENS-4	0 ohms
D2-10	EOF SENS-3	0 ohms
D2-11	EOF SENS-5	0 ohms
D2-12	EOF SENS-1	0 ohms

Is the continuity O.K.?

Yes **No**

009

Exchange the sensor cable (MIM 300-1, "Sensor Cable"). Continue at "MAP 0900: End of Call" on page 900-1.

010

See MIM 800-1, "Locations."

- Ensure that the EOF lever arm is not missing, broken, or damaged.
- Ensure that the EOF lever spring is not missing or broken.
- Ensure that the EOF lever arm has spring tension.

Are the above O.K.?

Yes **No**

011

Exchange the EOF housing (MIM 300-1, "EOF Sensor").
Continue at "MAP 0900: End of Call" on page 900-1.

012

Exchange the end of form sensor (MIM 300-1, "EOF Sensor").
Continue at "MAP 0900: End of Call" on page 900-1.

013

(From step 005)

- Select TEST 92 (Loop on Selected Test) and loop on TEST 07 (Ripple Print).
- Set the count for 10.

See MIM 700-1, "Selecting Tests."

- Monitor the display.

```
01 END OF FORMS
```

(Step 013 continues)

013 (continued)
Did the above message display?
Yes **No**

014

DANGER

Hazardous voltage present.

The problem is intermittent. Check for loose cables on the system card and at the end of form sensor.
– or –
The problem is a loose or binding EOF lever arm. Exchange the end of form sensor housing (MIM 300-1, "EOF Sensor").

Continue at "MAP 0900: End of Call" on page 900-1.

015

– Run TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."

Below is the initial TEST 91 (Display Sensors) display screen.

```
LED: BAND,JAM,EOF,PLATEN
KEYS:0–60V,1–FAN,2–BAND
```

The LEDs are called LED1, LED2, LED3, and LED4. They are numbered from left to right as you view the operator panel. Thus, BAND = LED1, JAM = LED2, EOF = LED3, and PLATEN = LED4.
– Observe LED3.
– Manually advance forms several times.

Did LED3 come on?
Yes **No**

016

CAUTION:
Disconnect the power cord before servicing the printer.

– Check for loose connections in the EOF cabling (MIM 800-1, "Card and Cable Connections").
– Check the end of form sensor operation.
– Check that the end of form sensor is mounted correctly (MIM 300-1, "EOF Sensor").

If no trouble is found, exchange, one at a time:

- End of form sensor (MIM 300-1, "EOF Sensor")
- Sensor cable (MIM 300-1, "Sensor Cable")
- System card (MIM 500-1, "System Card").

Check for the failure after each FRU is exchanged until the problem is found.

Continue at "MAP 0900: End of Call" on page 900-1.

017

There is an intermittent open in the end of form sensor or its wiring. See MIM 800-1, "Card and Cable Connections." Repair, adjust, or exchange as necessary.

Continue at "MAP 0900: End of Call" on page 900-1.

Notes

MAP 0332: Forms Jam Problems

Symptom Explanation	Conditions That Could Cause This Symptom
02 PAPER JAMMED 32 PAPER JAMMED TIMEOUT	• Drive belts • Paper release lever • Pressure roll shaft tension springs • Jam sensor • Motor driver card • Forms motor • Sensor cable

001

Did TEST 91 (Display Sensors) fail?

Yes **No**

002

Continue at Step 004.

003

Continue at Step 019 on page 332-2.

004

(From MAP 0013 step 045 on page 013-5)
(From step 002)

– Look at the display.

```
02 PAPER JAMMED
```

```
32 PAPER JAMMED TIMEOUT
```

Are either of the above messages displayed when no jam has occurred?

Yes **No**

005

This is the normal indication of a form jam problem. If it is happening often, suspect forms path problems.

– Check that the forms guides are attached to the top and to the power covers to ensure that the forms have enough clearance to feed between them (MIM 800-1, "Locations").
– Do those portions of the Forms Feeding Service Check that relate to the type of form jam the printer is having.

See MIM 300-1, "Forms Feeding Service Check."

006

– Run TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."

Below is the initial display for TEST 91 (Display Sensors).

```
LED: BAND,JAM,EOF,PLATEN
KEYS:0-60V,1-FAN,2-BAND
```

The LEDs are called LED1, LED2, LED3, and LED4. They are numbered from left to right as you view the operator panel. Thus, BAND = LED1, JAM = LED2, EOF = LED3, and PLATEN = LED4.

– Observe LED2.
– Manually advance the forms several inches.

LED2 will change state in an *ON – OFF – ON – OFF* sequence as the forms are advanced.

Does LED2 change states as forms are advanced?

Yes **No**

007

Continue at Step 019 on page 332-2.

008

– Remove the forms drive safety cover (MIM 800-1, "Locations").
– Ensure that the form drive and the autoload clutch belts (MIM 800-1, "Locations") are installed and in good condition.

(Step 008 continues)

008 (continued)
Are the belts O.K.?
Yes **No**

009

Exchange the form drive or the autoload clutch belt (MIM 300-1, "Autoload Clutch and Forms Drive Belts"). Continue at "MAP 0900: End of Call" on page 900-1.

010

- Ensure that the forms drive motor pulley is not worn, damaged, or missing (MIM 800-1, "Locations").
- Ensure that the forms drive motor pulley is secured to the motor shaft (MIM 800-1, "Locations"). The set screw(s) should be tight.

Is the drive motor pulley O.K.?
Yes **No**

011

Tighten or exchange the forms drive motor pulley (MIM 300-1, "Forms Drive Motor").

Continue at "MAP 0900: End of Call" on page 900-1.

012

- Ensure that the form drive and autoload clutch belts are correctly adjusted. See MIM 300-1, "Autoload Clutch and Forms Drive Belts."

Are the belts adjusted correctly?
Yes **No**

013

Adjust the belts (MIM 300-1, "Autoload Clutch and Forms Drive Belts"). Continue at "MAP 0900: End of Call" on page 900-1.

014

- Check that the paper release lever (MIM 800-1, "Locations") is set to the rear of the printer. The pressure rolls are closed.

Are the pressure rolls closed?
Yes **No**

015

Set the paper release lever (MIM 800-1, "Locations"). Continue at "MAP 0900: End of Call" on page 900-1.

016

- Check for the proper tension between the pressure rolls and the drive rolls (MIM 800-1, "Locations").

The pressure rolls should be held against the drive rolls by a small amount of spring tension.
Is the tension between the rolls O.K.?
Yes **No**

017

Install or exchange the springs (MIM 800-1, "Locations").
The springs are attached to the rear forms guide plate (MIM 800-1, "Locations"). Continue at "MAP 0900: End of Call" on page 900-1.

018

Since there is no form jam and the jam sensor is working O.K., the failure is that the forms drive does not move the forms properly.

- Exchange the motor driver card (MIM 500-1, "Motor Driver Card").
- Recheck the symptoms. If the problem is still present:
  1. Do the Form Feeding Service Check (MIM 300-1, "Forms Feeding Service Check").
  2. With the power off, ensure that forms can be easily fed using the forms advance knob (MIM 800-1, "Locations").
- Recheck the symptoms. If the problem is still present:
- Exchange the forms motor (MIM 300-1, "Forms Drive Motor").
- Recheck the symptoms. If the problem is still present:
  1. Put the print mechanism in the service position. See MIM 300-1, "Print Mechanism (Service Position)."
  2. Check the jam wheel and the jam sensor (MIM 800-1, "Locations"). Make certain that the jam wheel turns properly and that they are in proper alignment with the jam sensor assembly. See MIM 300-1, "Jam Sensor."
- When the problem is solved, continue at "MAP 0900: End of Call" on page 900-1.

019

(From MAP 0013 step 016 on page 013-3)
(From steps 003 and 007)
- Power OFF.

(Step **019** continues)

019 (continued)
- Remove the forms drive safety cover (MIM 800-1, "Locations").
- Ensure that the forms advance knob (MIM 800-1, "Locations") is secured to the tractor shaft. The set screw(s) should be tight.

Is the forms advance knob secured?
Yes **No**

020

Tighten the set screw(s).
Continue at "MAP 0900: End of Call" on page 900-1.

021

- Ensure that the forms drive belt (MIM 800-1, "Locations") is not missing, broken, damaged, or stretched.

Is the forms drive belt O.K.?
Yes **No**

022

Exchange the forms drive belt (MIM 300-1, "Autoload Clutch and Forms Drive Belts").
Continue at "MAP 0900: End of Call" on page 900-1.

023

- Ensure that the forms drive motor pulley is secured to the forms motor shaft.

The set screw(s) should be tight.
Is the forms drive motor pulley secured?
Yes **No**

024

Tighten the set screw(s).
Continue at "MAP 0900: End of Call" on page 900-1.

025

- Check the forms drive belt adjustment (MIM 300-1, "Autoload Clutch and Forms Drive Belts").

Is the forms drive belt adjustment O.K.?
Yes **No**

026

Adjust the forms drive belt (MIM 300-1, "Autoload Clutch and Forms Drive Belts").
Continue at "MAP 0900: End of Call" on page 900-1.

027

- Check that the autoload clutch drive belt (MIM 800-1, "Locations") is not missing, broken, damaged, or stretched.

Is the autoload clutch drive belt O.K.?
Yes **No**

028

Adjust the autoload clutch drive belt (MIM 300-1, "Autoload Clutch and Forms Drive Belts").
Continue at "MAP 0900: End of Call" on page 900-1.

029

- Check the autoload clutch assembly for missing, damaged, worn, or loose parts. See MIM 800-1, "Locations." The assembly includes the:
  - Autoload pin
  - Autoload coupling
  - Autoload spring
  - Retaining clip
  - Washer
  - Autoload drive wheel.

Is the autoload clutch assembly O.K.?
Yes **No**

030

Tighten or exchange as necessary.
Continue at "MAP 0900: End of Call" on page 900-1.

031

- Check the autoload clutch drive belt adjustment (MIM 300-1, "Autoload Clutch and Forms Drive Belts").

Is the autoload clutch drive belt O.K.?
Yes **No**

032

Adjust the autoload clutch drive belt (MIM 300-1, "Autoload Clutch and Forms Drive Belts"). Continue at "MAP 0900: End of Call" on page 900-1.

033

- Place the print mechanism in the service position. See MIM 300-1, "Print Mechanism (Service Position)."
- Find the forms drive roll shaft (MIM 800-1, "Locations").

(Step **033** continues)

033 (continued)
- Rotate the forms advance knob (MIM 800-1, "Locations").

The forms drive roll shaft will turn in only one direction.

Does the shaft turn in only one direction as the forms advance knob is rotated?

Yes **No**

034

Exchange the autoload clutch assembly (MIM 300-1, "Autoload Clutch"). Continue at "MAP 0900: End of Call" on page 900-1.

035

- Find the forms pressure roll shaft assembly (MIM 800-1, "Locations").
- Ensure that the paper release lever is secured to the shaft (MIM 300-1, "Forms Pressure Roll Shaft").

The screw should be tight.

Is the paper release lever secured to the shaft?

Yes **No**

036

Tighten the screw.
Continue at "MAP 0900: End of Call" on page 900-1.

037

- Ensure that the springs that apply force to the pressure roll shaft are not missing, incorrectly installed, or damaged.
- Ensure that the springs apply enough force to the pressure roll shaft to keep the rolls in contact with the rolls of the drive roll shaft when the forms release lever is set toward the rear of the printer.

Are the springs O.K.?

Yes **No**

038

Exchange the springs. Continue at "MAP 0900: End of Call" on page 900-1.

039

- Ensure that the jam wheel assembly is secured to the form pressure roll shaft and centered in the jam sensor. See MIM 300-1, "Forms Pressure Roll Shaft."

The screw should be tight.
- Ensure that the jam wheel spins freely on the forms pressure roll shaft.

(Step 039 continues)

039 (continued)

Is the jam wheel centered in the sensor?

Yes **No**

040

Center the jam wheel.
Continue at "MAP 0900: End of Call" on page 900-1.

041

Is the jam wheel assembly secured to the forms pressure roll shaft?

Yes **No**

042

Secure the jam wheel assembly.
Continue at "MAP 0900: End of Call" on page 900-1.

043

Does the jam wheel spin freely on the forms pressure roll shaft?

Yes **No**

044

Exchange the jam wheel assembly (MIM 300-1, "Forms Pressure Roll Shaft").
Continue at "MAP 0900: End of Call" on page 900-1.

045

- Check that the wheel on the jam wheel assembly is not worn.

Is the wheel O.K.?

Yes **No**

046

Exchange the jam wheel assembly (MIM 300-1, "Forms Pressure Roll Shaft").
Continue at "MAP 0900: End of Call" on page 900-1.

047

- Check that the forms pressure roll shaft is not binding (MIM 300-1, "Forms Pressure Roll Shaft").

Is the forms pressure roll shaft O.K.?

Yes **No**

048

Exchange the forms pressure roll shaft (MIM 300-1, "Forms Pressure Roll Shaft").

(Step 048 continues)

048 (continued)
Continue at "MAP 0900: End of Call" on page 900-1.

049

CAUTION:
Disconnect the power cord before servicing the printer.

- Power OFF.
- Visually check and reseat the sensor cable (MIM 800-1, "Locations").
- Disconnect sensor cable connector D2 from 01A-E1D2 (MIM 800-1, "Locations").
- Disconnect the jam sensor from sensor cable connector JAM DET (MIM 800-1, "Locations").
- Measure for continuity at the following pins on the sensor cable.

See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
D2-5	JAM DET-4	0 ohms
D2-6	JAM DET-3	0 ohms
D2-7	JAM DET-5	0 ohms
D2-8	JAM DET-1	0 ohms

Is the continuity O.K.?
Yes **No**

050

Exchange the sensor cable (MIM 300-1, "Sensor Cable"). Continue at "MAP 0900: End of Call" on page 900-1.

051

Exchange, one at a time:

- Jam sensor (MIM 300-1, "Jam Sensor")
- System card (MIM 500-1, "System Card").

Continue at "MAP 0900: End of Call" on page 900-1.

Notes

MAP 0333: Platen Open Switch Problems

Symptom Explanation	Conditions That Could Cause This Symptom
03 FORMS THICKNESS CONTROL NOT SET 33 FORMS THICKNESS NOT SET TIMEOUT.	• Platen open switch • Sensor cable • System card • Autoload clutch mechanism

001

- Ensure that the forms thickness lever (MIM 800-1, "Locations") is set correctly for the forms used.
- Run TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."

Below is the initial display for TEST 91 (Display Sensors).

```
LED: BAND,JAM,EOF,PLATEN
KEYS:0-60V,1-FAN,2-BAND
```

The LEDs are called LED1, LED2, LED3, and LED4. They are numbered from left to right as you view the operator panel. Thus, BAND = LED1, JAM = LED2, EOF = LED3, and PLATEN = LED4.

- Observe LED4.

Is LED4 on?

Yes **No**

002

Continue at Step 010 on page 333-2.

003

- Power OFF.
- Remove the top cover (MIM 300-1, "Top Cover").
- Remove the power cover (MIM 300-1, "Power Cover").
- Remove the forms drive safety cover (MIM 800-1, "Locations").
- Check that sensor cable connector D2 is properly seated to 01A-E1D2 (MIM 800-1, "Locations").
- Check that the platen switch is properly seated to the sensor cable (MIM 800-1, "Locations").

Are the cable connectors properly seated?

Yes **No**

004

Reseat the connectors.
Continue at "MAP 0900: End of Call" on page 900-1.

005

- Check the autoload lever arm. Ensure that it is not broken, missing, or unseated.
- Check the platen switch. Ensure that the lever arm is not bent, broken, or missing.
- If the printer mechanism has been off or placed in the service position recently, ensure that it is properly mounted and against the stop pin in the right side frame. See MIM 300-1, "Print Mechanism (Removal)" and MIM 300-1, "Autoload Clutch."

Are all these things O.K.?

Yes **No**

006

Repair, adjust, or exchange as necessary. Continue at "MAP 0900: End of Call" on page 900-1.

007

- Disconnect sensor cable connector D2 from 01A-E1D2 (MIM 800-1, "Locations").
- Disconnect the platen switch from sensor cable connector PLAT OPEN (MIM 800-1, "Locations").
- Measure for continuity at the following pins on the sensor cable.

See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
D2-1	PLAT OPEN-2	0 ohms
D2-3	PLAT OPEN-3	0 ohms
D2-4	PLAT OPEN-5	0 ohms

Is the continuity O.K.?

Yes **No**

008

Exchange the sensor cable (MIM 300-1, "Sensor Cable"). Continue at "MAP 0900: End of Call" on page 900-1.

009

Exchange, one at a time:

- Platen switch (MIM 300-1, "Platen Switch").
- System card (MIM 500-1, "System Card").

Continue at "MAP 0900: End of Call" on page 900-1.

010

(From step 002)

- Open the forms thickness lever (MIM 800-1, "Locations").

Is LED4 on now?

Yes **No**

011

Continue at Step 013.

012

The platen switch and its circuitry are working. The problem may be intermittent.

- Power OFF.
- Reseat the platen switch to sensor cable connector PLAT OPEN (MIM 800-1, "Locations").
- Reseat sensor cable cable connector D2 to 01A-E1D2 (MIM 800-1, "Locations").
- Verify that the platen switch is in good condition.
- Verify that the platen switch is in in proper adjustment (MIM 300-1, "Platen Switch").

If the problem reoccurs, exchange the platen switch (MIM 300-1, "Platen Switch").

Continue at "MAP 0900: End of Call" on page 900-1.

013

(From step 011)

- Power OFF.
- Disconnect the platen switch from sensor cable connector PLAT OPEN (MIM 800-1, "Locations").
- Power ON.
- Allow the printer to run the POST. Ignore any errors.
- Run TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."

Below is the initial display for TEST 91 (Display Sensors).

```
LED: BAND,JAM,EOF,PLATEN
KEYS:0-60V,1-FAN,2-BAND
```

The LEDs are called LED1, LED2, LED3, and LED4. They are numbered from left to right as you view the operator panel. Thus, BAND = LED1, JAM = LED2, EOF = LED3, and PLATEN = LED4.

- Observe LED4.

Is LED4 on?

Yes **No**

014

- Power OFF.

Exchange the system card (MIM 500-1, "System Card").
Continue at "MAP 0900: End of Call" on page 900-1.

015

- Check the mechanical operation of the autoload clutch lever. See MIM 300-1, "Autoload Clutch."

If it is sticking, it will keep the platen switch from transferring.

Is the autoload clutch mechanism O.K.?

Yes **No**

016

Exchange the autoload clutch mechanism (MIM 300-1, "Autoload Clutch").
Continue at "MAP 0900: End of Call" on page 900-1.

017

Exchange the platen switch (MIM 300-1, "Platen Switch").
Continue at "MAP 0900: End of Call" on page 900-1.

Notes

MAP 0335: Forms Movement Problems

Symptom Explanation	Conditions That Could Cause This Symptom
Incorrect forms movement Incorrect spacing between print lines	• Forms motor • Mechanical drag or obstruction of the forms path • Mechanical loss of motion in the forms drive system

001

- Run TEST 07 (Ripple Print). See MIM 700-1, "Selecting Tests."
- Observe the operation of the forms motor (MIM 800-1, "Locations").

Does the forms motor run smoothly without drag or hesitation?

Yes **No**

002

Continue at Step 008.

003

- Do the autoload portion of the Form Feeding Service Check (MIM 300-1, "Forms Feeding Service Check").

Are autoload checks O.K.?

Yes **No**

004

Repair or exchange as necessary.
Continue at "MAP 0900: End of Call" on page 900-1.

005

- Do the tractor assembly portion of the Form Feeding Service Check (MIM 300-1, "Forms Feeding Service Check").
- Check for a loose drive train.

Are the tractor assembly and drive O.K.?

Yes **No**

006

- See MIM 300-1, "Tractor Assembly."

Repair or exchange as necessary.
(Step **006** continues)

006 (continued)
Continue at "MAP 0900: End of Call" on page 900-1.

007

Check the forms path for binds or obstructions which could block the forms path.

008

(From step 002)

- Power OFF.
- Do the Form Feeding Service Check (MIM 300-1, "Forms Feeding Service Check").
- Check the forms motor for binds by rotating the motor shaft manually, using the forms feed advance knob (MIM 800-1, "Locations").

Does the motor shaft turn freely without binds?

Yes **No**

009

- Power OFF.

Exchange the forms motor (MIM 300-1, "Forms Drive Motor").
Continue at "MAP 0900: End of Call" on page 900-1.

010

- Power OFF.
- Remove the top cover (MIM 300-1, "Top Cover").
- Remove the power cover (MIM 300-1, "Power Cover").
- Unplug the motor driver cable connector A1 from 01A-B1A1 (MIM 800-1, "Locations").
- Inspect the motor driver cable for loose, damaged, or pushed back pins.

(Step **010** continues)

010 (continued)
Is the motor driver cable O.K.?
Yes **No**

011

Repair or exchange the motor driver cable (MIM 300-1, "Motor Driver Cable").
Continue at "MAP 0900: End of Call" on page 900-1.

012

- Reseat the motor driver cable.
- Power ON.
- Observe the forms motor while the POST is running.

The forms motor should operate for a short time during the POST.
Does the forms motor run smoothly now?
Yes **No**

013

- Power OFF.

Exchange, one at a time:

- Forms motor (MIM 300-1, "Forms Drive Motor")
- System card (MIM 500-1, "System Card")
- Motor driver card (MIM 500-1, "Motor Driver Card").

Continue at "MAP 0900: End of Call" on page 900-1.

014

The problem was a loose connection in the motor driver cable.
Continue at "MAP 0900: End of Call" on page 900-1.

MAP 0336: Forms Stacking Problems

Symptom Explanation	Conditions That Could Cause This Symptom
Forms stacking problems.	• Forms guides • Tractor assembly

001

Damaged or improperly aligned holes in the forms can cause forms movement problems.

- Check the tractor drive pins for wear and damage (MIM 300-1, "Tractor").
- Check the tractor assembly for proper positioning. Refer to MIM 300-1, "Tractor Assembly."

Are tractors O.K.?

Yes **No**

002

Adjust or exchange the tractors (MIM 300-1, "Tractor") or tractor assembly (MIM 300-1, "Tractor Assembly").

Continue at "MAP 0900: End of Call" on page 900-1.

003

- Ensure that the forms supply is properly aligned so that forms may be fed properly through the printer.
- Remove the top cover (MIM 300-1, "Top Cover").
- Check the form guides for damage and proper alignment and position.
- Check that the form guides are located on the top cover and the power cover.
- Ensure that the form path is not obstructed.

Are the form guides O.K.?

Yes **No**

004

Repair or exchange as necessary. See MIM 300-1, "Top Cover" and MIM 300-1, "Power Cover."

Continue at "MAP 0900: End of Call" on page 900-1.

005

Do the stacker assembly portion of the Form Feeding Service Check (MIM 300-1, "Forms Feeding Service Check").

- When you replace the top cover (MIM 300-1, "Top Cover"), ensure that:
  - It sets properly on the base.
  - The mounting screws are tight.
  - The form guides do not obstruct the forms path.

Notes

MAP 0337: Registration Problems

Symptom Explanation	Conditions That Could Cause This Symptom
Vertical registration problems	• Tractors • Dot Band • Forms Feed Service Checks • Operator settings—Lines Per Inch (LPI)
Horizontal registration problems	• Tractors • Operator settings—Characters Per Inch (CPI)

001

Is the problem vertical registration?

Yes **No**

002

Horizontal registration problem.

1. Check the position of the tractors. Ensure that they are adjusted to position the forms correctly to the first print position. See the forms handling procedures in the *Principles of Operation*.
2. Ensure that the proper Characters per Inch (CPI) option is set. See the operating procedures in the *Principles of Operation*.
3. If print dots are being printed too close together causing vertical dark lines about three character spaces apart or there are vertical white lines at that spacing, adjust the band sensor. See MIM 300-1, "Band Tracking Adjustments."
4. Do the band drive service checks (MIM 300-1, "Band Drive Service Checks").

When the problem is corrected, continue at "MAP 0900: End of Call" on page 900-1.

003

Vertical registration problem.

1. Check the tractors for correct position. Also check that the tractor pins and belts are in good condition. Exchange the tractors if the pins or belts are worn or damaged (MIM 300-1, "Tractor").
2. Ensure that the proper Lines per Inch (LPI) option is set. See the operating procedures in the *Principles of Operation*.
3. Run TEST 83 (Print Horizontal Bars) and observe the printed lines. See MIM 700-1, "Selecting Tests." If the lines look ragged, broken, or saw-toothed, adjust the band tracking (MIM 300-1, "Band Tracking Adjustments").
4. Run TEST 83 (Print Horizontal Bars) again and check the print line. See MIM 700-1, "Selecting Tests."
5. Do the Form Feeding Service Checks (MIM 300-1, "Forms Feeding Service Check").

When the problem is corrected, continue at "MAP 0900: End of Call" on page 900-1.

Notes

MAP 0338: Autoload Problems

Symptom Explanation	Conditions That Could Cause This Symptom
Autoload problems	• Forms drive belt • Autoload clutch • Forms drive rolls • Forms pressure rolls • Obstructions of the forms path • Obstructions of the paper/ribbon shield • Platen open switch • EOF sensor

001

- Power OFF.
- Remove the forms.
- Set the forms thickness lever (MIM 800-1, "Locations") to the forms used.
- Power ON.
- Wait for the POST to complete.
- Look at the display.

```
01 END OF FORMS
```

Is the above message displayed?

Yes **No**

002

The end of form sensor is binding or defective. Repair or exchange it as necessary (MIM 300-1, "EOF Sensor"). Continue at "MAP 0900: End of Call" on page 900-1.

003

- Open the platen.
- Close the paper shield.
- Close the paper release lever (MIM 800-1, "Locations").
- Load forms to begin the autoload operation.

Make sure that the forms are inserted far enough up into the forms guide to operate the EOF sensor.

(Step **003** continues)

003 (continued)

Does the forms motor start?

Yes **No**

004

Continue at Step 010 on page 338-2.

005

The form drive and pressure rolls should turn and drive the paper upwards toward the form tractor area.

- Find the forms drive roll shaft (MIM 800-1, "Locations").
- Try to load forms to begin the autoload operation.
- The forms drive rolls should turn and grip the form, pulling it upward into the printer.

Do the form drive rolls turn?

Yes **No**

006

There is a mechanical loss of motion in the lower drive system. The forms drive belt is out of adjustment or defective **or** the autoload drive clutch assembly is defective. Perform the autoload mechanism portion of the Form Feeding Service Checks (MIM 300-1, "Forms Feeding Service Check"). Repair or exchange as necessary.

Continue at "MAP 0900: End of Call" on page 900-1.

007

– Check the forms drive and forms pressure rolls for proper alignment, tension, wear, or damage. See MIM 300-1, "Forms Feeding Service Check."

Are the forms drive and pressure rolls O.K.?

Yes **No**

008

Perform the autoload assembly portion of the Form Feeding Service Checks (MIM 300-1, "Forms Feeding Service Check"). Repair or exchange as necessary.

009

– Check the form feeding path for any obstructions or interference which could cause form jams.
– Check the paper/ribbon shield for obstructions.
– Perform the Form Feeding Service Check (MIM 300-1, "Forms Feeding Service Check").

010

(From step 004)

– Ensure that no forms are in the printer.
– Open the platen.
– Run TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."

Below is the initial TEST 91 (Display Sensors) display screen.

```
LED: BAND,JAM,EOF,PLATEN
KEYS:0-60V,1-FAN,2-BAND
```

The LEDs are called LED1, LED2, LED3, and LED4. They are numbered from left to right as you view the operator panel. Thus, BAND = LED1, JAM = LED2, EOF = LED3, and PLATEN = LED4.

– Observe LED4.

Is LED4 on?

Yes **No**

011

The platen switch has not opened or it is defective.

– Open and close the forms thickness lever several times and observe the operation of the platen switch. See MIM 800-1, "Locations."

If the platen switch is defective, exchange it (MIM 300-1, "Platen Switch").

Then continue at "MAP 0900: End of Call" on page 900-1.

– or –

If the switch looks good and no problem is found, continue at "MAP 0333: Platen Open Switch Problems" on page 333-1.

012

The EOF sensor has not opened or is defective. Continue at MAP 0331 step 004 on page 331-1.

MAP 0339: Prints without Forms Loaded

Symptom Explanation	Conditions That Could Cause This Symptom
Prints without forms loaded.	• End of form sensor • System card • Sensor cable

001

– Run TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."

Below is the initial TEST 91 (Display Sensors) display screen.

```
LED: BAND,JAM,EOF,PLATEN
KEYS:0-60V,1-FAN,2-BAND
```

The LEDs are called LED1, LED2, LED3, and LED4. They are numbered from left to right as you view operator panel. Thus, BAND = LED1, JAM = LED2, EOF = LED3, and PLATEN = LED4.

– Remove the forms from the printer.
– Observe LED3.

LED3 should be ON.

Is LED3 on?

Yes **No**

002

Continue at Step 004.

003

The end of form sensor and its circuitry are working. The problem may be intermittent. LED3 should come on each time the forms are removed from the end of form sensor and go off when forms are present. If the response is erratic:

1. Ensure that the end of form sensor connection is correctly mated with the sensor cable (MIM 800-1, "Locations").
2. Ensure that the end of form sensor is seated properly in its housing. See MIM 300-1, "EOF Sensor."
3. Ensure that the system card is properly seated.
4. Check the end of form sensor mounting.

If the problem returns, exchange the end of form sensor (MIM 300-1, "EOF Sensor").

004

(From step 002)

– Power OFF.
– Unplug the end of form sensor from sensor cable connector EOF SENS (MIM 800-1, "Locations").
– Power ON.
– Run TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."

Below is the initial TEST 91 (Display Sensors) display screen.

```
LED: BAND,JAM,EOF,PLATEN
KEYS:0-60V,1-FAN,2-BAND
```

The LEDs are called LED1, LED2, LED3, and LED4. They are numbered from left to right as you view operator panel. Thus, BAND=LED1, JAM=LED2, EOF=LED3, and PLATEN=LED4.

– Observe LED3.

Is LED3 on?

Yes **No**

005

– Power OFF.
– Check the sensor cable connector D2 at 01A-E1D2 for proper seating and pushed back or bent pins (MIM 800-1, "Locations").

If the connector is O.K., exchange the system card (MIM 500-1, "System Card").

006

The end of form sensor or wiring is shorted, or the sensor lever arm is jammed or sticking. See MIM 300-1, "EOF Sensor." Repair or exchange as necessary.

Continue at "MAP 0900: End of Call" on page 900-1.

MAP 0340: Ribbon Drive

Symptom Explanation	Conditions That Could Cause This Symptom
04 RIBBON CHECK 34 RIBBON CHECK TIMEOUT	• Ribbon weld sensor • Ribbon drive belt • System card • Sensor cable • Ribbon cartridge • +5 V distribution • Ribbon drive
Ribbon movement problems, ribbon jams, or light printing	• Ribbon cartridge • Damaged dot band • Ribbon drive.

001

– Look at the display.

```
04 RIBBON CHECK
```

```
34 RIBBON CHECK
   TIMEOUT
```

Is either of the above screens displayed?

Yes **No**

002

Continue at Step 009 on page 340-2.

003

– Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
– Run TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."
– Insert and remove an opaque nonconductor, for example, folded paper, into the ribbon weld sensor to break the beam of the sensor (MIM 800-1, "Locations").

The message will change as the opaque nonconductor is inserted into and removed from the ribbon weld sensor between:

RIBBON INSTALLED
RIBBON NOT SEATED.

– Observe the display.

Does the message change as the opaque nonconductor is inserted into and removed from the ribbon weld sensor?

Yes **No**

004

Continue at Step 006.

005

Continue at Step 009 on page 340-2.

006

(From MAP 0013 step 022 on page 013-3)
(From step 004)

– Power OFF.
– Remove the top cover (MIM 300-1, "Top Cover").
– Remove the power cover (MIM 300-1, "Power Cover").

– Disconnect sensor cable connectors RIB and D2 (MIM 800-1, "Locations").
– Measure between the following sensor cable pins for continuity.

See MIM 800-1, "Card and Cable Connections."

FROM	*TO*	*RESISTANCE*
D2-27	RIB-2	0 ohms
D2-28	RIB-3	0 ohms
D2-29	RIB-1	0 ohms
D2-30	RIB-5	0 ohms

Is the continuity O.K.?

Yes **No**

007

Exchange the sensor cable (MIM 300-1, "Sensor Cable").
Continue at "MAP 0900: End of Call" on page 900-1.

008

Exchange, one at a time:

- Ribbon weld sensor (MIM 300-1, "Ribbon Weld Sensor")
- System card (MIM 500-1, "System Card").

Continue at "MAP 0900: End of Call" on page 900-1.

009

(From steps 002 and 005)
Is the problem that the ribbon jams?

Yes **No**

010

Continue at Step 032 on page 340-4.

011

– Power OFF.
– Ensure that the forms thickness lever is set for forms used (MIM 800-1, "Locations").

(Step **011** continues)

011 (continued)
Is the lever set correctly?

Yes **No**

012

Set the forms thickness lever to the correct setting.
Continue at "MAP 0900: End of Call" on page 900-1.

013

– Ensure that the ribbon cartridge is seated on the ribbon drive shaft.
– Ensure that the ribbon cartridge is installed correctly (MIM 300-1, "Ribbon Cartridge").

Is the ribbon cartridge installed properly?

Yes **No**

014

Install the ribbon cartridge correctly (MIM 300-1, "Ribbon Cartridge").
Continue at "MAP 0900: End of Call" on page 900-1.

015

– Ensure that the ribbon cartridge guide arms are secured to the body of the ribbon cartridge.

The guide arms may separate from the cartridge during installation or removal of the cartridge.
Are the ribbon cartridge guide arms connected to the cartridge body?

Yes **No**

016

Snap the guide arms in place.
Continue at "MAP 0900: End of Call" on page 900-1.

017

– Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
– Turn the ribbon advance knob in the direction of the arrow on the cartridge case to determine that the ribbon feeds easily and smoothly.

(Step **017** continues)

017 (continued)
Does the ribbon advance knob move the ribbon?
Yes **No**

018

Inform the customer that the ribbon cartridge is defective and must be exchanged. This is a customer supply item.

019

- Check the ribbon for folds, damage, wear, snags, or rips.

Is the ribbon O.K.?
Yes **No**

020

Inform the customer that the ribbon cartridge is defective and must be exchanged. This is a customer supply item.

021

- Remove the band cover (MIM 800-1, "Locations").
- Remove the dot band (MIM 300-1, "Dot Band").
- Check the dot band for damaged chevrons (bent out of position) that could affect the condition of the ribbon.

Is the dot band O.K.?
Yes **No**

022

Inform the customer that the dot band is defective and must be exchanged. This is a customer supply item.

023

- Install the dot band (MIM 300-1, "Dot Band").
- Install the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
- Power ON.
- Wait for the POST to complete.
- Select TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."

(Step 023 continues)

023 (continued)
Below is the initial TEST 91 (Display Sensors) display screen.

```
LED: BAND,JAM,EOF,PLATEN
KEYS;0-60V,1-FAN,2-BAND
```

The LEDs are called LED1, LED2, LED3, and LED4. They are numbered from left to right as you view the operator panel. Thus, BAND = LED1, JAM = LED2, EOF = LED3, and PLATEN = LED4.

- Press the **0** key.
- Press the **2** key.

CAUTION:
Do not touch the moving dot band.

Does the band run?
Yes **No**

024

Continue at MAP 0320 step 012 on page 320-1.

025

CAUTION:
Do not touch the moving dot band.

Does the ribbon run?
Yes **No**

026

- Exit TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."

Continue at Step 054 on page 340-5.

027

- Power OFF.
- Ensure that there are no obstacles in the ribbon path.

Is the ribbon path clear?
Yes **No**

028

(Step 028 continues)

028 (continued)
Remove the obstacle.
Continue at "MAP 0900: End of Call" on page 900-1.

029

– Check the platen-to-hammer gap (MIM 300-1, "Platen Assembly Adjustments").

Is the adjustment correct?

Yes **No**

030

Do the platen-to-hammer gap adjustment (MIM 300-1, "Platen Assembly Adjustments"). Continue at "MAP 0900: End of Call" on page 900-1.

031

Inform the customer that the ribbon is defective and must be exchanged. This is a customer supplied item.

032

(From step 010)

Is the problem incorrect (or no) ribbon movement?

Yes **No**

033

Continue at Step 043 on page 340-5.

034

– Ensure that the forms thickness lever (MIM 800-1, "Locations") is closed and set to the proper position for the forms used.

Does the ribbon move at all when printing?

Yes **No**

035

Continue at Step 054 on page 340-5.

036

The ribbon is moving incorrectly.
(Step 036 continues)

036 (continued)
– Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
– Check the ribbon cartridge carefully for defective guide arms or a bind.

Is the ribbon cartridge O.K.?

Yes **No**

037

Inform the customer that the ribbon cartridge is defective and must be exchanged. This is a customer supplied item.

038

– Check the ribbon shield for any obstructions in the ribbon path.

Is the ribbon path O.K.?

Yes **No**

039

Remove the obstruction.
Continue at "MAP 0900: End of Call" on page 900-1.

040

– Check the platen-to-hammer gap adjustment (MIM 300-1, "Platen Assembly Adjustments").

Is the platen-to-hammer gap adjustment O.K.?

Yes **No**

041

Adjust the platen-to-hammer gap (MIM 300-1, "Platen Assembly Adjustments").

042

No problem is found. Continue at "MAP 0900: End of Call" on page 900-1.

043

(From step 033)

Is the problem light printing?

Yes **No**

044

No trouble has been found with the ribbon cartridge.

045

– Ensure that the forms thickness lever (MIM 800-1, "Locations") is set to the proper position for the forms used.

Is the lever set properly?

Yes **No**

046

Set the forms thickness lever (MIM 800-1, "Locations") correctly.

047

Does the ribbon move when the printer is printing?

Yes **No**

048

Continue at Step 054.

049

– Ensure that the ribbon cartridge is properly installed (MIM 300-1, "Ribbon Cartridge").

Is the ribbon cartridge installed correctly?

Yes **No**

050

Install the ribbon cartridge correctly (MIM 300-1, "Ribbon Cartridge").

051

– Ensure that the ribbon is not worn or damaged.

(Step **051** continues)

051 (continued)

Is the ribbon in good condition?

Yes **No**

052

Inform the customer that the ribbon cartridge is defective and must be exchanged. This is a customer supplied item.

053

The ribbon seems to be O.K. If you still have a problem with *light printing*, continue at "MAP 0350: Print Quality Problems" on page 350-1.

054

(From steps 026, 035, and 048)

– Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
– Remove the band cover (MIM 800-1, "Locations").
– Select TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."

Below is the initial TEST 91 (Display Sensors) display screen.

```
LED: BAND,JAM,EOF,PLATEN
KEYS;0-60V,1-FAN,2-BAND
```

The LEDs are called LED1, LED2, LED3, and LED4. They are numbered from left to right as you view the operator panel. Thus, BAND = LED1, JAM = LED2, EOF = LED3, and PLATEN = LED4.

– Press the **0** key.
– Press the **2** key.

CAUTION:
Do not touch the moving dot band.

– Observe the ribbon drive shaft.

The dot band and the ribbon drive shaft should be running.

(Step **054** continues)

054 (continued)
Is the ribbon drive shaft turning?
Yes **No**

055

Continue at Step 057.

056

– Power OFF.
Inform the customer that the ribbon cartridge is defective and must be exchanged. This is a customer supplied item.

057

(From step 055)
– Power OFF.
– Place the print mechanism in the service position. See MIM 300-1, "Print Mechanism (Service Position)."
– Find the ribbon drive system.
The ribbon drive system is on the underside of the print mechanism.
– Check the setscrews to ensure that the following pulleys are secured to their shafts. Also check that the pulleys are not missing, worn, or damaged. See MIM 800-1, "Locations."

Ribbon drive pulley
Ribbon idler pulley
Ribbon shaft pulley

Are the pulleys O.K.?
Yes **No**

058

Secure or exchange the pulleys as necessary. Continue at "MAP 0900: End of Call" on page 900-1.

059

– Check the ribbon drive belt for damage such as missing teeth, cuts, frays, or elongation.
(Step **059** continues)

059 (continued)
Is the drive belt O.K.?
Yes **No**

060

Exchange the ribbon drive belt (MIM 300-1, "Ribbon Drive Belt"). Continue at "MAP 0900: End of Call" on page 900-1.

061

– Check the ribbon drive belt adjustment (MIM 300-1, "Ribbon Drive Belt").
Is the belt adjusted correctly?
Yes **No**

062

Adjust the ribbon drive belt (MIM 300-1, "Ribbon Drive Belt"). Continue at "MAP 0900: End of Call" on page 900-1.

063

No trouble found.

MAP 0350: Print Quality Problems

Symptom Explanation	Conditions That Could Cause This Symptom
Print quality problems: • Light printing • Overprinting or incorrect line spacing problem • Missing dots • Vertical registration problem • Smeared printing	• Ribbon cartridge • Platen adjustment • Dot band • Hammer bank

001

Is the problem light printing on the complete line?

Yes **No**

002

Continue at Step 017 on page 350-2.

003

– Ensure that the forms thickness lever (MIM 800-1, "Locations") is in the correct position for the forms used.

Is the lever set correctly?

Yes **No**

004

Set the forms thickness lever.

005

– Ensure that the forms thickness lever is tight on the platen shaft.

The platen moves as the lever is opened and closed.

Is the forms thickness lever O.K.?

Yes **No**

006

Tighten the lever to the shaft.

007

Light printing is most often caused by ribbon problems.

(Step **007** continues)

007 (continued)

Have you already used MAP 0340: Ribbon Drive for this problem?

Yes **No**

008

Continue at "MAP 0340: Ribbon Drive" on page 340-1.

009

– Power OFF.
– Remove the ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
– Remove the band cover (MIM 800-1, "Locations").
– Remove the dot band (MIM 300-1, "Dot Band").
– Check the dot band for wear.

The print dots should be well defined. They should not be worn, missing, or flat.

Are the print dots on the dot band O.K.?

Yes **No**

010

Inform the customer that the dot band is defective. It must be exchanged. This is a customer supplied item.

011

(Step **011** continues)

011 (continued)
Is the light printing on one hammer block only?
Yes **No**

012

Continue at Step 014.

013

The problem is probably mechanical.
- Power OFF.
- Remove the top cover (MIM 300-1, "Top Cover").
- Place the print mechanism in the service position. See MIM 300-1, "Print Mechanism (Service Position)."
- Look for:
  - Damaged hammers
  - Obstruction to the hammers
  - Loose or pushed back hammer coils in the hammer block assemblies.

If no problem can be located, exchange the hammer bank (MIM 300-1, "Hammer Bank") if the printer has a linac (early level) hammer unit or exchange the hammer block (MIM 300-1, "Hammer Block") for a printer with a clicking (late level) hammer unit.

014

(From step 012)
If the light printing is on one side only, the platen-to-hammer gap adjustment may be off.
- Check the platen-to-hammer gap adjustment (MIM 300-1, "Platen Assembly Adjustments").

Is the adjustment O.K.?
Yes **No**

015

Do the platen-to-hammer gap adjustment (MIM 300-1, "Platen Assembly Adjustments").

016

Incorrect dot band tracking can cause the dot band to track above or below the hammers. This may cause light printing.

Do the following. Recheck the symptom after each step. Stop when the problem is solved.

1. Band drive service check (MIM 300-1, "Band Drive Service Checks").
2. Check the band tracking adjustment on MIM page 300-14.

If any mechanical damages are found, repair as needed.

017

(From step 002)
Is the problem overprinting or incorrect spacing between lines?
Yes **No**

018

Continue at Step 020.

019

This is probably a forms movement problem. Continue at "MAP 0330: Machine Checks 40—4D" on page 330-1.

020

(From step 018)
Is the problem missing dots?
Yes **No**

021

Continue at Step 040 on page 350-5.

022

- Check the dot band for missing print elements.

Is the dot band O.K.?
Yes **No**

023

The dot band needs to be exchanged. This is a customer supplied item.

024

Is there light printing or missing dots near the end positions of the block?

Yes **No**

025

Continue at Step 027.

026

- Check that the magnetic clips (clicking "late level" hammer unit only) are installed correctly.
- See MIM 300-71

027

(From step 025)

- Check the ribbon for wear and available ink supply.
- Ensure that the ribbon is moving during printing.
- Run TEST 07 (Ripple print). See MIM 700-1, "Selecting Tests."

Is the ribbon O.K.?

Yes **No**

028

Continue at "MAP 0340: Ribbon Drive" on page 340-1.

029

- Run TEST 07 (Ripple Print). See MIM 700-1, "Selecting Tests."

Did the test stop with a status code displayed?

Yes **No**

030

Continue at Step 032.

031

- With the status codes you now have, return to "MAP 0010: Start of Call" on page 010-1 and begin again.

032

(From step 030)

Are all missing dots on one hammer block?

Yes **No**

033

Continue at Step 035 on page 350-4.

034

Exchange the hammer bank (MIM 300-1, "Hammer Bank") if the printer has a linac (early level) hammer unit or exchange the hammer block (MIM 300-1, "Hammer Block") for a printer with a clicking (late level) hammer unit.

035

(From step 033)

- Ensure that all ground wires are installed and have good continuity to ground. See MIM 800-1, "Locations."

Are all grounds O.K.?

Yes **No**

036

- Connect or replace all loose or defective wires.

Electrostatic discharges may cause timing problems for the printer.

- Recheck the symptoms and, if problem still exists, continue at Step 037.

037

(From step 036)

- Power OFF.
- Remove the top cover (MIM 300-1, "Top Cover").
- Place the print mechanism in the service position. See MIM 300-1, "Print Mechanism (Service Position)."
- Check the platen-to-hammer gap adjustment (MIM 300-1, "Platen Assembly Adjustments").

Is the clearance (gap) correct?

Yes **No**

038

Do the platen-to-hammer gap adjustment (MIM 300-1, "Platen Assembly Adjustments").

039

- Remove the print mechanism (MIM 300-1, "Print Mechanism (Removal)").
- Check the hammer bank for wear, damage, or foreign material.

Exchange the hammer bank (MIM 300-1, "Hammer Bank") if the printer has a linac (early level) hammer unit or exchange the hammer block (MIM 300-1, "Hammer Block") for a printer with a clicking (late level) hammer unit.

040

(From step 021)

Is the problem with print registration?

Yes **No**

041

Continue at Step 043.

042

Continue at "MAP 0337: Registration Problems" on page 337-1.

043

(From step 041)

Is the problem with smeared printing?

Yes **No**

044

Continue at Step 046.

045

Smeared printing may be caused by one or more of the following. Correct as necessary.

1. Ensure that the forms thickness lever (MIM 800-1, "Locations") is in the correct position for the forms used.
2. Dirty dot band. Clean if needed.
3. A worn ribbon or excessive ink in the ribbon. Suggest the customer replace if necessary.
4. Platen-to-hammer gap adjustment too tight. Adjust if needed (MIM 300-1, "Platen Assembly Adjustments").
5. Defective or dirty ribbon shield. Do the ribbon service checks (MIM 300-1, "Ribbon Service Check").
6. The band guide is not seated correctly.

046

(From step 044)

(Step **046** continues)

046 (continued)

Is the problem that the printer prints too slowly?

Yes **No**

047

Continue at Step 049.

048

The most likely cause of slow printing is a dirty dot band or band sensor. Do the following in the order listed. Stop when the problem is solved.

1. Power OFF.
2. Clean dot band and band sensor.
3. Do the Form Feeding Service Checks (MIM 300-1, "Forms Feeding Service Check"). Exchange the forms motor if necessary (MIM 300-1, "Forms Drive Motor").
4. As a last solution, exchange, one at a time:
   - Motor driver card (MIM 500-1, "Motor Driver Card")
   - System card (MIM 500-1, "System Card").

049

(From step 047)

This question is asking about any of the following:

- Missing characters or dropped characters in a print line.
- Missing several characters together. The characters can be on multiple print lines.

Is the problem missing, smeared, or lightly printed characters?

Yes **No**

050

The problem has not been identified.

051

(Step **051** continues)

051 (continued)
Do you have a print quality problem on *one* hammer block only—one or more hammers or print positions failing?
Yes **No**

052

There is probably an obstruction in the printing area.
- Open the platen and the forms guide.
- Visually check and ensure that nothing is interfering with the forms guide, hammer faces, ribbon, or in the printing path.
- Check torn paper, paper clips, etc.. Remove any foreign material found.
- Restore the printer.

Continue at "MAP 0900: End of Call" on page 900-1.

053

The problem is mechanical.
- Power OFF.
- Look for damaged hammers, obstruction to the hammers, or loose or pushed back hammer coils in the hammer bank.

If no problem can be located, exchange the hammer bank (MIM 300-1, "Hammer Bank") if the printer has a linac (early level) hammer unit or exchange the hammer block (MIM 300-1, "Hammer Block") for a printer with a clicking (late level) hammer unit.

MAP 0370: Hammers

Symptom Explanation	Conditions That Could Cause This Symptom
MACHINE CHECK 51 MACHINE CHECK 53 MACHINE CHECK 57 MACHINE CHECK 5B MACHINE CHECK C4	• Hammer driver card • System card • Interconnect board
MACHINE CHECK 55 MACHINE CHECK 59	• Hammer cable • Hammer bank assembly • Hammer driver card • System card • Interconnect board
MACHINE CHECK C2	• System card • Interconnect board
MACHINE CHECK C5	• System card • Hammer driver card • Interconnect board

001

Do you have machine check: 51, 53, 55, 57, 59, 5B, C2, C4, or C5 displayed?

Yes **No**

002

Continue at Step 049 on page 370-7.

003

– Look at the display.

```
MACHINE CHECK 51
```

Is the above message displayed?

Yes **No**

004

Continue at Step 006.

005

The logic has detected an open PNP hammer driver.

Exchange, one at a time:

- Hammer driver card (MIM 500-1, "Hammer Driver Card")
- System card (MIM 500-1, "System Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

Continue at "MAP 0900: End of Call" on page 900-1.

006

(From step 004)

– Look at the display.

```
MACHINE CHECK 53
```

(Step **006** continues)

006 (continued)
Is the above message displayed?
Yes **No**

007

Continue at Step 009.

008

The logic has detected an open NPN hammer driver.
Exchange, one at a time:

- Hammer driver card (MIM 500-1, "Hammer Driver Card")
- System card (MIM 500-1, "System Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

Continue at "MAP 0900: End of Call" on page 900-1.

009

(From step 007)
– Look at the display.

```
MACHINE CHECK 55
```

Is the above message displayed?
Yes **No**

010

Continue at Step 019 on page 370-3.

011

The printer logic has detected an open hammer coil.
– Select TEST 53 (Display Error Log). See MIM 700-1, "Selecting Tests."
(Step **011** continues)

011 (continued)
The display is:

```
 # SC FRU1 FRU2 CNT PID
aa 55  BD   xx   yy  zz
```

where:

aa Sequence number
55 Status code
BD Hammer bank assembly
xx The coil line number in hexadecimal format
yy The count of this error in hexadecimal format
zz The procedure that was running when the error happened

– Record the coil number (xx). The number is in the display under the FRU2 header.
– Match this number with the coil line numbers. See MIM 800-1, "Card and Cable Connections."
– Power OFF.
– Remove the top cover (MIM 300-1, "Top Cover").
– Remove the power cover (MIM 300-1, "Power Cover").
– Disconnect the appropriate hammer cable connector, B1 or C1, from the hammer driver card (MIM 800-1, "Locations").

Coil line numbers X'01' through X'18' go to hammer cable connector C1. Coil line numbers X'19' through X'2E' go to hammer cable connector B1.

– Measure the resistance between the coil lines on the disconnected hammer cable connector. You wrote the number on a piece of paper.

The resistance between the coil lines should measure 2.3 to 2.7 ohms, (linac "early level" hammer unit) or measure 5.0 to 5.8 ohms (clicking "late level" hammer unit). For example, the resistance between hammer cable connector pins B1-3 and B1-4 (clicking "late level" hammer unit) is 5.4 ohms.

FROM	TO	RESISTANCE	LINE

| B1-3 B1-4 5.4 ohms Coil 1F

Is the resistance O.K.?
Yes No

012

Continue at Step 014.

013

Exchange, one at a time:

- Hammer driver card (MIM 500-1, "Hammer Driver Card")
- System card (MIM 500-1, "System Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

Continue at "MAP 0900: End of Call" on page 900-1.

014

(From step 012)
The line is open.
- Disconnect the appropriate hammer cable HB connector from the hammer bank (MIM 800-1, "Locations").
- Measure the resistance across the hammer bank coil lines that were indicated under the FRU2 header from the TEST 53 (Display Error Log) screen. You recorded the number.

| The resistance between the coil lines should measure 2.3 to 2.7 ohms, (linac "early level" hammer unit) or measure 5.0 to 5.8 ohms (clicking "late level" hammer unit). For example, the resistance between hammer cable connector pins B1-3 and B1-4 (clicking "late level" hammer unit) is 5.4 ohms.

| **FROM TO RESISTANCE LINE**
|
| HB1-1 HB1-2 5.4 ohms Coil 1F

| **Is the resistance O.K.?**
| **Yes No**

| 015

| Exchange the hammer bank. See (MIM 300-1, "Hammer Bank") (linac "early level" hammer unit).

| — or —
| Exchange the hammer block. See (MIM 300-1, "Hammer Block") (clicking "late level" hammer unit).
| Continue at "MAP 0900: End of Call" on page 900-1.

016

Both ends of the hammer cable should be disconnected now (at the hammer driver card and the hammer bank).
- Check the hammer cable for continuity. The coil lines were indicated under the FRU2 header from the TEST 53 (Display Error Log) screen. You recorded the number.

The resistance should measure 0 ohms. For example:

FROM	**TO**	**RESISTANCE**	**LINE NAME**
B1-3	HB1-B	0 ohms	−Coil 1F
B1-4	HB1-2	0 ohms	+Coil 1F

See MIM 800-1, "Card and Cable Connections."
Is the cable O.K.?
Yes No

017

Exchange the hammer cable (MIM 300-1, "Hammer Cable Assembly").
Continue at "MAP 0900: End of Call" on page 900-1.

018

Exchange the hammer driver card (MIM 500-1, "Hammer Driver Card").
Continue at "MAP 0900: End of Call" on page 900-1.

019

(From step 010)
- Look at the display.

```
MACHINE CHECK 57
```

Is the above message displayed?
Yes **No**

020

Continue at Step 022.

021

A shorted PNP hammer driver has been detected.
Exchange, one at a time:

- Hammer driver card (MIM 500-1, "Hammer Driver Card")
- System card (MIM 500-1, "System Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

Continue at "MAP 0900: End of Call" on page 900-1.

022

(From step 020)
– Look at the display.

```
MACHINE CHECK 59
```

Is the above message displayed?
Yes **No**

023

Continue at Step 037 on page 370-5.

024

– Remove the top cover (MIM 300-1, "Top Cover").
– Remove the power cover (MIM 300-1, "Power Cover").
– Look at the +12 V dc LED on the motor driver card (MIM 800-1, "Locations").
(Step **024** continues)

024 (continued)
Is the +12 V dc LED *ON*?
Yes **No**

025

Continue at "MAP 0600: Power" on page 600-1.

026

The printer logic has detected a shorted NPN hammer driver. However, the logic can not determine which line is causing the problem.
– Power OFF.
– Disconnect the hammer cable from connector 01A-C1B1. See MIM 800-1, "Locations."
– Power ON.
– Wait for the POST to complete.
– Look at the display.

```
MACHINE CHECK 59
```

Is the above message displayed?
Yes **No**

027

Continue at Step 031 on page 370-5.

028

– Power OFF.
– Disconnect the hammer cable from connector 01A-C1C1. See MIM 800-1, "Locations."
– Power ON.
– Wait for the POST to complete.
Do you have a *MACHINE CHECK 59*?
Yes **No**

029

Continue at Step 034 on page 370-5.

030

(Step **030** continues)

030 (continued)
Exchange, one at a time:

- Hammer driver card (MIM 500-1, "Hammer Driver Card")
- System card (MIM 500-1, "System Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

Continue at "MAP 0900: End of Call" on page 900-1.

031

(From step 027)
The hammer driver card and the coil lines associated with hammer cable connector C1 have been eliminated as possible causes for the short.

- Power OFF.
- Reconnect hammer cable connector B1 to 01A-C1B1.
- Disconnect cable connectors HB2 and HB3. See MIM 800-1, "Locations."
- Power ON.
- Wait for the POST to complete.

Do you have a *MACHINE CHECK 59*?
Yes **No**

032

Measure the coils in the clicking (late level) hammer unit to determine which hammer block to replace. The resistance between the coil pins should measure 5.0 to 5.8 ohms. For example, the resistance between connector pins HB1-1 and HB1-2 is 5.4 ohms. Resistance between coils and frame ground should be infinity.
– or –
Exchange the linac (early level) hammer bank (MIM 300-1, "Hammer Bank").
Continue at "MAP 0900: End of Call" on page 900-1.

033

Exchange the hammer cable (MIM 300-1, "Hammer Cable Assembly").
(Step **033** continues)

033 (continued)
Continue at "MAP 0900: End of Call" on page 900-1.

034

(From step 029)
The hammer driver card and the coil lines associated with hammer cable connector B1 have been eliminated as possible causes for the short.

- Power OFF.
- Reconnect hammer cable connector C1 to 01A-C1C1.
- Disconnect cable connectors HB1 and HB2. See MIM 800-1, "Locations."
- Power ON.
- Wait for the POST to complete.

Do you have a *MACHINE CHECK 59*?
Yes **No**

035

Measure the coils in the clicking (late level) hammer unit to determine which hammer block to replace. The resistance between the coil pins should measure 5.0 to 5.8 ohms. For example, the resistance between connector pins HB1-1 and HB1-2 is 5.4 ohms. Resistance between coils and frame ground should be infinity.
– or –
Exchange the linac (early level) hammer bank (MIM 300-1, "Hammer Bank").
Continue at "MAP 0900: End of Call" on page 900-1.

036

Exchange the hammer cable (MIM 300-1, "Hammer Cable Assembly").
Continue at "MAP 0900: End of Call" on page 900-1.

037

(From step 023)

- Look at the display.

MACHINE CHECK 5B

Is the above message displayed?

Yes **No**

038

Continue at Step 040.

039

A shorted hammer block has been detected. Exchange, one at a time:

- Hammer driver card (MIM 500-1, "Hammer Driver Card")
- System card (MIM 500-1, "System Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

Continue at "MAP 0900: End of Call" on page 900-1.

040

(From step 038)
– Look at the display.

MACHINE CHECK C2

Is the above message displayed?

Yes **No**

041

Continue at Step 043.

042

A DMA/Serializer Check is detected. Exchange, one at a time:

- System card (MIM 500-1, "System Card")

(Step **042** continues)

042 (continued)

- Interconnect board (MIM 500-1, "Interconnect Board").

Continue at "MAP 0900: End of Call" on page 900-1.

043

(From step 041)
– Look at the display.

MACHINE CHECK C4

Is the above message displayed?

Yes **No**

044

Continue at Step 046.

045

A shift register check has been detected. Exchange, one at a time:

- Hammer driver card (MIM 500-1, "Hammer Driver Card")
- System card (MIM 500-1, "System Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

Continue at "MAP 0900: End of Call" on page 900-1.

046

(From step 044)
– Look at the display.

MACHINE CHECK C5

(Step **046** continues)

046 (continued)
Is the above message displayed?
Yes **No**

047

Continue at "MAP 0900: End of Call" on page 900-1.

048

A hammer driver high speed output check has been detected.
Exchange, one at a time:

- System card (MIM 500-1, "System Card")
- Hammer driver card (MIM 500-1, "Hammer Driver Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

Continue at "MAP 0900: End of Call" on page 900-1.

049

(From step 002)
Do you have a print quality problem?
Yes **No**

050

Continue at Step 054.

051

Since no status codes are displayed, no open or shorted coils have been detected. Therefore, the problem is mechanical.
– Power OFF.
– Look for the following:

- Paper in the paper path
- Damaged hammers
- Loose or pushed back coils in the hammer bank
- Hammer alignment problem.

(Step **051** continues)

051 (continued)
Is every thing O.K.?
Yes **No**

052

Correct the problem.
– or –
Contact first level support for help.
When the problem is corrected, continue at "MAP 0900: End of Call" on page 900-1.

053

Exchange the hammer bank (MIM 300-1, "Hammer Bank") for the linac (early level) hammer unit or the hammer blocks (MIM 300-1, "Hammer Block") in the clicking (late level) hammer unit.
– or –
Contact first level support for help.
Continue at "MAP 0900: End of Call" on page 900-1.

054

(From step 050)
Is the problem excessive hammer wear?
Yes **No**

055

The problem has not been identified. If you still feel that the hammers are a problem check the platen-to-hammer gap (MIM 300-1, "Platen Assembly Adjustments").
Exchange the hammer bank (MIM 300-1, "Hammer Bank") for the linac (early level) hammer unit or the hammer blocks (MIM 300-1, "Hammer Block") in the clicking (late level) hammer unit.
– or –
Contact first level support for help.
Continue at "MAP 0900: End of Call" on page 900-1.

056

(Step **056** continues)

056 (continued)
– Power OFF.
This is usually caused by insufficient lubrication of the dot band.

- Check the band oiler for wear, for enough lubrication, and for its correct adjustment (MIM 300-1, "Band Oiler Assembly"). Exchange the band oiler if necessary (MIM 300-1, "Band Oiler Assembly").
- Check the dot band for wear. Exchange the worn hammer bank (MIM 300-1, "Hammer Bank") and the dot band if the wear is bad enough to cause print quality problems or further damage to the dot band.
- Check the platen-to-hammer gap adjustment (MIM 300-1, "Platen Assembly Adjustments").
- Check the band tracking adjustments (MIM 300-1, "Band Tracking Adjustments").

When the problem is corrected, continue at "MAP 0900: End of Call" on page 900-1.

MAP 0400: Communications

001

Is this a Model 011 printer?

Yes **No**

002

Continue at Step 004.

003

Continue at "MAP 0410: Communications—Model 011" on page 410-1.

004

(From step 002)

Is this a Model 012 printer?

Yes **No**

005

This must be a Model 013 printer.

Continue at "MAP 0470: Communications—Model 013" on page 470-1.

006

Continue at "MAP 0450: Communications—Model 012" on page 450-1.

Notes

MAP 0410: Communications—Model 011

Symptom Explanation	Conditions That Could Cause This Symptom
Communication problems	• Attachment card • Coaxial interface cable • Signal cable • Host
MACHINE CHECK 74 MACHINE CHECK 75 MACHINE CHECK 7C MACHINE CHECK BF	• Attachment card • System card • Interconnect board

001

– Ensure that the coaxial interface cable and the signal cable from the host are attached to the printer.
– Press and release the **Test** key.

The **Test Key Test** runs.

– Look at the display.

```
28 COMMUNICATIONS CHECK
```

Is the above message displayed?

Yes **No**

002

Continue at Step 012 on page 410-2.

003

This is an indication that the printer is receiving no communication from the host. However, the printer is ready.

– Power OFF.
– Ensure that the signal cable is locked into place on the coaxial interface cable.
– Ensure that the coaxial interface cable is locked into place on the attachment card.

Are the cables properly connected and locked into place?

Yes **No**

004

(Step **004** continues)

004 (continued)

Connect and/or lock the cables in place.

005

– Disconnect the cables.
– Check the condition of the cable connectors. Ensure that the center-pin is not bent, missing, pushed back, or damaged in any way.

Are the connectors O.K.?

Yes **No**

006

Exchange the coaxial interface cable.

– or –

The signal cable connector is defective. Inform the customer to have the connector repaired or exchanged. This cable is a customer supplied item.

007

– Check the host to find if it is powered off, hung, or disabled.

Is everything O.K. at the host?

Yes **No**

008

Inform the customer that the problem is external to the printer.

009

– Verify that the signal line from the host to the printer is not broken.

(Step **009** continues)

009 (continued)
Is the signal line O.K.?
Yes **No**

010

Inform the customer that the problem is the signal cable. This is a customer supplied item.

011

Exchange the attachment card (MIM 500-1, "Model (All) Attachment Card").

012

(From step 002)
– Look at the display.

```
27 COMMUNICATIONS CHECK
```

Is the above message displayed?
Yes **No**

013

Continue at Step 015.

014

This is a subsystem not ready indication. No data is being received by the printer. The poll from the host is being received and recognized. The printer is busy or no data is being sent by the host. The *27 COMMUNICATIONS CHECK* should last only a short time and then be cleared by the system when the busy condition goes away.

If the *27 COMMUNICATIONS CHECK* is not cleared, then check the coaxial interface cable.

015

(From step 013)
– Look at the display.

```
26 COMMUNICATIONS CHECK
```

Is the above message displayed?
Yes **No**

016

Continue at Step 024 on page 410-3.

017

This is a buffer parity check indication. The attachment card detected an error in the data being transmitted by the host.
– Check the coaxial interface cable.
Is the coaxial interface cable O.K.?
Yes **No**

018

Exchange the coaxial interface cable.

019

– Check the signal cable.
Is the signal cable O.K.?
Yes **No**

020

Inform the customer that the signal cable is defective. It must be repaired or exchanged. This is a customer supplied item.

021

Is the transmitted data O.K.?

Yes **No**

022

Inform the customer that the problem is external to the printer.

023

Exchange the attachment card (MIM 500-1, "Model (All) Attachment Card").

024

(From step 016)

– Look at the display.

```
MACHINE CHECK 74
```

Is the above message displayed?

Yes **No**

025

Continue at Step 027.

026

The printer logic has detected an attachment card to system card timeout.
Exchange one at a time:

- Attachment card (MIM 500-1, "Model (All) Attachment Card")
- System card (MIM 500-1, "System Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

027

(From step 025)

– Look at the display.

```
MACHINE CHECK 75
```

Is the above message displayed?

Yes **No**

028

Continue at Step 030 on page 410-4.

029

The printer logic has detected a system card to attachment card timeout.
Exchange one at a time:

- System card (MIM 500-1, "System Card")
- Attachment card (MIM 500-1, "Model (All) Attachment Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

030

(From step 028)
- Look at the display.

```
MACHINE CHECK 7C
```

Is the above message displayed?
Yes **No**

031

Continue at Step 033.

032

Exchange, one at a time:

- System card (MIM 500-1, "System Card")
- Attachment card (MIM 500-1, "Model (All) Attachment Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

033

(From step 031)
- Look at the display.

```
MACHINE CHECK BF
```

Is the above message displayed?
Yes **No**

034

Continue at Step 038.

035

- Power OFF.
- Remove the top cover (MIM 300-1, "Top Cover").
- Remove the power cover (MIM 300-1, "Power Cover").

(Step **035** continues)

035 (continued)
- Ensure that the attachment card is installed properly in position 01A-F1. See MIM 800-1, "Locations."

Is the attachment card installed?
Yes **No**

036

Install the attachment card (MIM 500-1, "Model (All) Attachment Card").

037

The printer logic is sensing that the attachment card is not installed.
Reseat the attachment card and recheck the symptoms (MIM 500-1, "Model (All) Attachment Card"). If the same failure is still present, exchange the following, one at a time:

- Attachment card (MIM 500-1, "Model (All) Attachment Card")
- System card (MIM 500-1, "System Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

038

(From step 034)
Is the problem that incorrect data is being printed?
Yes **No**

039

No trouble found. If the problem is intermittent continue at "MAP 0800: Intermittent Problems" on page 800-1.

040

- See Operating Instructions—Model 011.

Is the printed language option set correctly for this printer?

Yes **No**

041

Set the printed language option to the correct setting and recheck your symptoms. Restart in the MAPs if necessary.

042

- Carefully check the pattern printout portion of the Test Key Printout for any print quality problems that could be the source of the incorrect data being printed. See MIM 100-1, "Test Key Printout."

Is the print quality O.K.?

Yes **No**

043

Continue at "MAP 0300: Symptom Index" on page 300-1.

044

- Power OFF.
- Check the coaxial interface cable for a bad connection.
- Check the signal cable for a bad connection.

Are the cables O.K.?

Yes **No**

045

Unplug and reseat the cables, exchange the coaxial interface cable, or take other action as necessary.

046

Exchange the attachment card (MIM 500-1, "Model (All) Attachment Card").

Notes

MAP 0450: Communications—Model 012

Symptom Explanation	Conditions That Could Cause This Symptom
Communication problems	• Attachment card • U-connector (Twinaxial interface cable) • Signal cable • Host
MACHINE CHECK 74 MACHINE CHECK 75 MACHINE CHECK 7C MACHINE CHECK BF	• Attachment card • System card • Interconnect board

001

– Ensure that the U-connector and the signal cable from the host are attached to the printer.
– Press and release the **Test** key.

The **Test Key Test** runs.

– Look at the display.

```
28 COMMUNICATIONS CHECK
```

Is the above message displayed?

Yes **No**

002

Continue at Step 016 on page 450-2.

003

This is an indication that the printer is not receiving any communication from the host. The line synchronization has been lost (no polling). This may be a normal condition.

– Power OFF.
– Ensure that the signal cable is connected to the U-connector.
– Ensure that the U-connector is connected to the attachment card.

(Step **003** continues)

003 (continued)

Are the connections O.K.?

Yes **No**

004

Connect the signal cable, U-connector, and the printer.

005

– Disconnect the U-connector.
– Check the condition of the U-connector. Ensure that the pins are not bent, missing, pushed back, or damaged.

Are the connections O.K.?

Yes **No**

006

Exchange the U-connector.

007

– Measure the resistance of the U-connector.

The resistance should be 55 ohms between each center-pin and shield ground. The resistance between center-pins should be 110 ohms.

Is the resistance O.K.?

Yes **No**

008

Exchange the U-connector.

009

(Step **009** continues)

009 (continued)
- Check the condition of the signal cable connectors. Ensure that the pins are not bent, missing, pushed back, or damaged.

Are the connectors O.K.?

Yes **No**

010

The signal cable connectors are defective. Inform the customer to have the connectors repaired or exchanged. This is a customer supplied item.

011

- Check at the host to find if it is powered off, hung, or disabled.

Is everything O.K. at the host?

Yes **No**

012

Inform the customer that the problem is external to the printer.

013

- Verify that the circuit from the host is intact.

Is the circuit O.K.?

Yes **No**

014

Inform the customer that the problem is with the signal cable. This is a customer supplied item.

015

Exchange the attachment card (MIM 500-1, "Model (All) Attachment Card").

016

(From step 002)
- Look at the display.

```
27 UNIT ADDRESS CHECK
```

Is the above message displayed?

Yes **No**

017

Continue at Step 021.

018

This is a unit address not received indication. This may be a normal condition.
- Ensure that the correct printer address is set in the printer. See the *Operating Instructions—Model 012*.

Is the correct printer address set?

Yes **No**

019

Have the operator set the correct printer address.

020

If it is necessary, see the *Planning and Site Preparation Guide* and *Customer Setup Instructions* to ensure that the printer and host are properly configured. The display is cleared when the printer receives the proper address.

021

(From step 017)
- Look at the display.

```
MACHINE CHECK 74
```

Is the above message displayed?

Yes **No**

022

Continue at Step 024 on page 450-3.

023

The printer logic has detected an attachment card to system card timeout.
(Step 023 continues)

023 (continued)
Exchange, one at a time:

- Attachment card (MIM 500-1, "Model (All) Attachment Card")
- System card (MIM 500-1, "System Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

024

(From step 022)
– Look at the display.

```
MACHINE CHECK 75
```

Is the above message displayed?
Yes **No**

025

Continue at Step 027.

026

The printer logic has detected a system card to attachment card timeout.
Exchange, one at a time:

- System card (MIM 500-1, "System Card")
- Attachment card (MIM 500-1, "Model (All) Attachment Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

027

(From step 025)
– Look at the display.

```
MACHINE CHECK 7C
```

(Step **027** continues)

027 (continued)
Is the above message displayed?
Yes **No**

028

Continue at Step 030.

029

Exchange, one at a time:

- System card (MIM 500-1, "System Card")
- Attachment card (MIM 500-1, "Model (All) Attachment Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

030

(From step 028)
– Look at the display.

```
0A DATA CLEARED
```

Is the above message displayed?
Yes **No**

031

Continue at Step 033 on page 450-4.

032

A clear command was received from the host. The *0A DATA CLEARED* is displayed only if the host is receiving a unit not available indication from the printer. The **Stop/Reset** key will clear the display. The **Start/Restore** key should make the printer ready.

If a condition that requires further action exists on the printer, it will be indicated in the display.

033

(From step 031)

– Look at the display.

```
MACHINE CHECK BF
```

Is the above message displayed?

Yes **No**

034

Continue at Step 038.

035

– Power OFF.
– Remove the top cover (MIM 300-1, "Top Cover").
– Remove the power cover (MIM 300-1, "Power Cover").
– Ensure that the attachment card is properly installed in position 01A-F1. See MIM 800-1, "Locations."

Is the attachment card installed?

Yes **No**

036

Install the attachment card in position 01A-F1 (MIM 500-1, "Model (All) Attachment Card").

037

The printer logic is sensing that the attachment card is not installed.
Reseat the attachment card and recheck the symptoms (MIM 500-1, "Model (All) Attachment Card"). If the same failure is still present, exchange the following, one at a time:

- Attachment card (MIM 500-1, "Model (All) Attachment Card")
- System card (MIM 500-1, "System Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

038

(From step 034)

Is the problem with incorrect data being printed?

Yes **No**

039

No trouble found. If the the problem is intermittent, continue at "MAP 0800: Intermittent Problems" on page 800-1.

040

– See Operating Instructions—Model 012.

Is the printed language option set correctly for this printer?

Yes **No**

041

Set the printed language option to the correct setting and recheck your symptoms. Restart in the MAPs if necessary.

042

– Carefully check the pattern printout portion of the Test Key Printout for print quality problems that could be the source of the incorrect data being printed. See MIM 100-1, "Test Key Printout."

Is print quality O.K.?

Yes **No**

043

Continue at "MAP 0300: Symptom Index" on page 300-1.

044

– Check the U-connector and the signal cable for a bad connection.
– Reseat the communication and system cards (MIM 800-1, "Locations").
– Try to rerun the failing job.

If the problem still exists and no problem with the host can be determined, exchange the attachment card (MIM 500-1, "Model (All) Attachment Card").

MAP 0470: Communications—Model 013

Symptom Explanation	Conditions That Could Cause This Symptom
Communication problems	• Attachment card • Serial or Parallel interface cable • Signal cable • Host
MACHINE CHECK 74 MACHINE CHECK 75 MACHINE CHECK 7C MACHINE CHECK BF	• Attachment card • System card • Interconnect board

001

– Ensure that the serial or parallel interface cable and the signal cable from the host are attached to the printer.
– Press and release the **Test** key.

The **Test Key Test** run.

– Look at the display.

```
28 COMMUNICATIONS CHECK
```

Is the above message displayed?

Yes **No**

002

Continue at Step 014 on page 470-2.

003

This is an indication that the printer is receiving no communication from the host. However, the printer is ready.

– Power OFF.
– Ensure that the signal cable is locked into place on the serial or parallel interface cable.
– Ensure that the serial or parallel interface cable is locked into place on the attachment card.

(Step **003** continues)

003 (continued)

Are the cables properly connected and locked into place?

Yes **No**

004

Connect and lock the cables in place.

005

– Disconnect the serial or parallel interface cable.
– Check the condition of the serial or parallel cable connectors. Ensure that the pins are not bent, broken, pushed out of position, or damaged.

Are the interface cable connectors O.K.?

Yes **No**

006

Exchange the serial interface cable or the parallel interface cable.

007

– Disconnect the signal cable.
– Check the condition of the signal cable connector. Ensure that the pins are not bent, broken, pushed out of position, or damaged.

Is the signal connector O.K.?

Yes **No**

008

(Step **008** continues)

008 (continued)
Advise the customer to have the connector repaired or exchanged. This is a customer supplied item.

009

– Check at the host to find if it is powered off, hung, or disabled.

Is everything O.K. at the host?

Yes **No**

010

Inform the customer that the problem is external to the printer.

011

– Verify that the signal line from the host to the printer is not broken.

Is the signal line O.K.?

Yes **No**

012

Inform the customer that the problem is with the signal cable. This is a customer supplied item.

013

Exchange the attachment card (MIM 500-1, "Model (All) Attachment Card").

014

(From step 002)

– Look at the display.

```
27 COMMUNICATIONS CHECK
```

Is the above message displayed?

Yes **No**

015

Continue at Step 017.

016

This is a subsystem not ready indication. No data is being received by the printer. The poll from the host is being received and recognized. The printer is busy or no data is being sent by the host. The *27 COMMUNICATIONS CHECK* should last only a short time and then be cleared by the system when the busy condition goes away.
If the *27 COMMUNICATIONS CHECK* is not cleared, then check the signal cable.

017

(From step 015)

– Look at the display.

```
26 COMMUNICATIONS CHECK
```

Is the above message displayed?

Yes **No**

018

Continue at Step 026 on page 470-3.

019

This is a buffer parity check indication. The attachment card detected an error in the data being transmitted by the host.

– Check the serial interface cable or the parallel interface cable.

Is the interface cable O.K.?

Yes **No**

020

Exchange the serial interface cable or the parallel interface cable.

021

– Check the signal cable.

(Step **021** continues)

021 (continued)
Is the signal cable O.K.?
Yes **No**

022

Inform the customer that the signal cable is defective. It must be exchanged. This is a customer supplied item.

023

Is the transmitted data O.K.?
Yes **No**

024

Inform the customer that the problem is external to the printer.

025

Exchange the attachment card (MIM 500-1, "Model (All) Attachment Card").

026

(From step 018)
– Look at the display.

```
MACHINE CHECK 74
```

Is the above message displayed?
Yes **No**

027

Continue at Step 029.

028

The printer logic has detected an attachment card to system card timeout.
Exchange, one at a time:

- Attachment card (MIM 500-1, "Model (All) Attachment Card")
- System card (MIM 500-1, "System Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

029

(From step 027)
– Look at the display.

```
MACHINE CHECK 75
```

Is the above message displayed?
Yes **No**

030

Continue at Step 032 on page 470-4.

031

The printer logic has detected a system card to attachment card timeout.
Exchange, one at a time:

- System card (MIM 500-1, "System Card")
- Attachment card (MIM 500-1, "Model (All) Attachment Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

032

(From step 030)
– Look at the display.

```
MACHINE CHECK 7C
```

Is the above message displayed?
Yes **No**

033

Continue at Step 035.

034

Exchange, one at a time:

- System card (MIM 500-1, "System Card")
- Attachment card (MIM 500-1, "Model (All) Attachment Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

035

(From step 033)
– Look at the display.

```
MACHINE CHECK BF
```

Is the above message displayed?
Yes **No**

036

Continue at Step 040 on page 470-5.

037

– Power OFF.
– Remove the top cover (MIM 300-1, "Top Cover").
– Remove the power cover (MIM 300-1, "Power Cover").
(Step 037 continues)

037 (continued)
– Ensure that the attachment card is properly installed in position 01A-F1. See MIM 800-1, "Locations."
Is the attachment card installed?
Yes **No**

038

Install the attachment card in position 01A-F1 (MIM 500-1, "Model (All) Attachment Card").

039

The printer logic is sensing that the attachment card is not installed. Reseat the attachment card and recheck the symptoms (MIM 500-1, "Model (All) Attachment Card"). If the same failure is still present, exchange the following, one at a time:

- Attachment card (MIM 500-1, "Model (All) Attachment Card")
- System card (MIM 500-1, "System Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

040

(From step 036)

Is the problem with incorrect data being printed?

Yes **No**

041

No trouble found. If the problem is intermittent, continue at "MAP 0800: Intermittent Problems" on page 800-1.

042

Is the printed language option set correctly for this printer? (See the *Operating Instructions—Model 013*, if needed.)

Yes **No**

043

Set the printed language option to the correct setting and recheck your symptoms. Restart in the MAPs if necessary.

044

- Carefully check the pattern printout portion of the Test Key Printouts for any print quality problems that could be the source of the incorrect data being printed. See MIM 100-1, "Test Key Printout."

Is the print quality O.K.?

Yes **No**

045

Continue at "MAP 0300: Symptom Index" on page 300-1.

046

- Power OFF.
- Check the signal cable and the serial or parallel interface cable for a bad connection.

Are the cables O.K.?

Yes **No**

047

Unplug and reseat the cables, exchange the serial or parallel interface cable, or take other action as necessary.

048

Exchange the attachment card (MIM 500-1, "Model (All) Attachment Card").

Notes

MAP 0500: Operator Panel

Symptom Explanation	Conditions That Could Cause This Symptom
Operator panel display, keys, or LED problems.	• Operator panel card • Operator panel switch membrane • Operator panel cable • System card

001

Are you here because an operator status code is a solid problem or always present?

Yes **No**

002

Continue at Step 029 on page 500-3.

003

The status codes in the following questions must be solid problems or consistently repeating status codes to be considered errors instead of normal operator messages.

– Look at the display.

```
01 END OF FORMS
```

Is the above message displayed?

Yes **No**

004

Continue at Step 006.

005

Continue at "MAP 0331: EOF Problems" on page 331-1.

006

(From step 004)

– Look at the display.

```
02 PAPER JAMMED
```

Is the above message displayed?

Yes **No**

007

Continue at Step 009.

008

Continue at "MAP 0332: Forms Jam Problems" on page 332-1.

009

(From step 007)

– Look at the display.

```
03 FORM THICKNESS
   CONTROL NOT SET
```

Is the above message displayed?

Yes **No**

010

Continue at Step 012 on page 500-2.

011

(Step **011** continues)

011 (continued)
Continue at "MAP 0333: Platen Open Switch Problems" on page 333-1.

012

(From step 010)
– Look at the display.

```
04 RIBBON CHECK
```

Is the above message displayed?
Yes **No**

013
Continue at Step 015.

014
Continue at "MAP 0340: Ribbon Drive" on page 340-1.

015

(From step 013)
– Look at the display.

```
05 BAND COVER NOT LOCKED
```

Is the above message displayed?
Yes **No**

016
Continue at Step 018.

017
Continue at "MAP 0340: Ribbon Drive" on page 340-1.

018

(From step 016)
(Step **018** continues)

018 (continued)
– Look at the display.

```
1F CMOS CHECKSUM ERROR
```

Is the above message displayed?
Yes **No**

019
Continue at Step 021.

020
The printer option settings are different from what is stored in memory. This happens only at POWER ON.
Reset the option settings or press the **7** key.

021

(From step 019)
– Look at the display.

```
14 RESTORE FUNCTION
   PENDING
```

Is the above message displayed?
Yes **No**

022
Continue at Step 026 on page 500-3.

023
Forms were ejected from the printer. The **7** key must be pressed before any other function request will be accepted. See the *Operating Instructions—Model 011*.
– Press the **7** key.
Does the *14 RESTORE FUNCTION PENDING* message clear?
Yes **No**

024
(Step **024** continues)

024 (continued)
Continue at Step 029.

025

The restore function was pending.
Continue at "MAP 0900: End of Call" on page 900-1.

026

(From step 022)
– Look at this list of status codes:

CODE	DESCRIPTION
06	Host system requests operator attention.
07	Incorrect print order.
08	Hold print on for 10 minutes.
13	Graphics character check.
2F	Data lost.
3A	Cancel Print key active.
3B	Buffer reprint active or buffer print mode active.
3C	PA1 selected.
3D	PA2 selected.
3E	Printer in send state.

Are any of the above status codes displayed?
Yes **No**

027

Continue at Step 029.

028

These status codes are controlled by the host system. They should be cleared by a reset from the host system. See MIM 700-1, "Status Codes."
Continue at "MAP 0900: End of Call" on page 900-1.

029

(From steps 002, 024, and 027)
– Look at the display.
The display representation below is blank.

Is the above message displayed?
Yes **No**

030

Continue at Step 046 on page 500-4.

031

Is this a Model 011 or a Model 013 printer?
Yes **No**

032

Continue at Step 036.

033

Is the Ready LED *ON*?
Yes **No**

034

Exchange, one at a time:

- Operator panel card (MIM 500-1, "Operator Panel Card")
- Operator panel switch membrane (MIM 500-1, "Operator Panel Keypad").

Continue at "MAP 0900: End of Call" on page 900-1.

035

Continue at Step 038 on page 500-4.

036

(From step 032)
This is a Model 012 printer.
Is the Attention LED *ON*?
Yes **No**

037

Exchange, one at a time:

(Step **037** continues)

037 (continued)
- Operator panel card (MIM 500-1, "Operator Panel Card")
- Operator panel switch membrane (MIM 500-1, "Operator Panel Keypad").

Continue at "MAP 0900: End of Call" on page 900-1.

038

(From step 035)
- Remove the top cover (MIM 300-1, "Top Cover").
- Remove the power cover (MIM 300-1, "Power Cover").
- Look at the −12 V dc LED on the motor driver card (MIM 800-1, "Locations").

Is the −12 V dc LED *ON*?

Yes **No**

039

Continue at "MAP 0600: Power" on page 600-1.

040

- Power OFF.
- Remove the operator panel.
- Disconnect operator panel cable connector OP from the operator panel card (MIM 500-1, "Operator Panel Cable").
- Power ON.
- Wait one minute.
- Measure for −12 V dc at the following pins on operator panel cable connector OP.

FROM	TO	VOLTS
OP-07	FRAME GND	−12 V dc

Is −12 V dc present?

Yes **No**

041

Continue at Step 043.

042

Exchange the operator panel card (MIM 500-1, "Operator Panel Card").
(Step **042** continues)

042 (continued)
Continue at "MAP 0900: End of Call" on page 900-1.

043

(From step 041)
- Power OFF.
- Disconnect operator panel cable connector D1 from 01A-E1D1 (MIM 800-1, "Locations").
- Check the continuity of the following operator panel cable pins. See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
OP-01	01A-E1D1-01	0 ohms
OP-03	01A-E1D1-03	0 ohms
OP-07	01A-E1D1-07	0 ohms
OP-09	01A-E1D1-09	0 ohms
OP-11	01A-E1D1-11	0 ohms
OP-13	01A-E1D1-13	0 ohms
OP-19	01A-E1D1-19	0 ohms
OP-23	01A-E1D1-23	0 ohms
OP-26	01A-E1D1-26	0 ohms

Is the continuity O.K.?

Yes **No**

044

Exchange the operator panel cable (MIM 500-1, "Operator Panel Cable").
Continue at "MAP 0900: End of Call" on page 900-1.

045

Exchange the system card (MIM 500-1, "System Card").
Continue at "MAP 0900: End of Call" on page 900-1.

046

(From step 030)
- Look at the display.

The character fill symbol (□) fills the complete top line of the 24-character position, 2-line display.

□□□□□□□□□□□□

Is the above message displayed?

Yes **No**

047

Continue at Step 056 on page 500-6.

048

– Look at the 4 LEDs on the operator panel.

Are all four LEDs *ON*?

Yes **No**

049

Continue at Step 053.

050

– Power OFF.
– Remove the top cover (MIM 300-1, "Top Cover").
– Remove the power cover (MIM 300-1, "Power Cover").
– Remove the operator panel.
– Disconnect operator panel cable connector OP and D1 (MIM 800-1, "Locations").
– Check the continuity of the following operator panel cable pins. See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
OP-01	01A-E1D1-01	0 ohms
OP-02	01A-E1D1-02	0 ohms
OP-03	01A-E1D1-03	0 ohms
OP-09	01A-E1D1-09	0 ohms
OP-11	01A-E1D1-11	0 ohms
OP-12	01A-E1D1-12	0 ohms
OP-13	01A-E1D1-13	0 ohms
OP-19	01A-E1D1-19	0 ohms
OP-23	01A-E1D1-23	0 ohms
OP-26	01A-E1D1-26	0 ohms

(Step **050** continues)

050 (continued)

Is the continuity O.K.?

Yes **No**

051

Exchange the operator panel cable (MIM 500-1, "Operator Panel Cable"). Continue at "MAP 0900: End of Call" on page 900-1.

052

Exchange, one at a time:

- Operator panel card (MIM 500-1, "Operator Panel Card")
- System card (MIM 500-1, "System Card").

Continue at "MAP 0900: End of Call" on page 900-1.

053

(From step 049)

– Power OFF.
– Remove the top cover (MIM 300-1, "Top Cover").
– Remove the power cover (MIM 300-1, "Power Cover").
– Remove the operator panel.
– Disconnect operator panel cable connector OP and D1 (MIM 800-1, "Locations").
– Check the continuity of the following operator panel cable pins. See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
OP-01	01A-E1D1-01	0 ohms
OP-03	01A-E1D1-03	0 ohms
OP-08	01A-E1D1-08	0 ohms
OP-09	01A-E1D1-09	0 ohms
OP-11	01A-E1D1-11	0 ohms
OP-12	01A-E1D1-12	0 ohms
OP-13	01A-E1D1-13	0 ohms
OP-16	01A-E1D1-16	0 ohms
OP-17	01A-E1D1-17	0 ohms
OP-18	01A-E1D1-18	0 ohms
OP-19	01A-E1D1-19	0 ohms
OP-23	01A-E1D1-23	0 ohms
OP-26	01A-E1D1-26	0 ohms

(Step **053** continues)

053 (continued)
Is the continuity O.K.?
Yes **No**

054

Exchange the operator panel cable (MIM 500-1, "Operator Panel Cable"). Continue at "MAP 0900: End of Call" on page 900-1.

055

Exchange, one at a time:

- Operator panel card (MIM 500-1, "Operator Panel Card")
- System card (MIM 500-1, "System Card").

Continue at "MAP 0900: End of Call" on page 900-1.

056

(From step 047)
– Look at the display.
The displayed information is an incomprehensible message. An example is illustrated below.

```
V      MIKH$NM(KH**K(JK
(((($$$$$$$$!!!!!!!!!!(((
```

Is the displayed information incomprehensible?
Yes **No**

057

Continue at Step 061.

058

– Power OFF.
– Remove the top cover (MIM 300-1, "Top Cover").
– Remove the power cover (MIM 300-1, "Power Cover").
– Remove the operator panel.
– Disconnect operator panel cable connector OP and D1 (MIM 800-1, "Locations").
(Step **058** continues)

058 (continued)
– Check the continuity of the following operator panel cable pins. See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
OP-01	01A-E1D1-01	0 ohms
OP-03	01A-E1D1-03	0 ohms
OP-09	01A-E1D1-09	0 ohms
OP-11	01A-E1D1-11	0 ohms
OP-13	01A-E1D1-13	0 ohms
OP-19	01A-E1D1-19	0 ohms
OP-21	01A-E1D1-21	0 ohms
OP-22	01A-E1D1-22	0 ohms
OP-23	01A-E1D1-23	0 ohms
OP-24	01A-E1D1-24	0 ohms
OP-25	01A-E1D1-25	0 ohms
OP-26	01A-E1D1-26	0 ohms

Is the continuity O.K.?
Yes **No**

059

Exchange the operator panel cable (MIM 500-1, "Operator Panel Cable"). Continue at "MAP 0900: End of Call" on page 900-1.

060

Exchange, one at a time:

- Operator panel card (MIM 500-1, "Operator Panel Card")
- System card (MIM 500-1, "System Card").

Continue at "MAP 0900: End of Call" on page 900-1.

061

(From step 057)
– Press and hold the **Test** key.
– Look at the display.

```
09 INCORRECT OPERATION
```

(Step **061** continues)

061 (continued)
Is the above message displayed?
Yes **No**

062

Continue at Step 066.

063

- Power OFF.
- Remove the top cover (MIM 300-1, "Top Cover").
- Remove the power cover (MIM 300-1, "Power Cover").
- Remove the operator panel.
- Disconnect operator panel cable connector OP and D1 (MIM 800-1, "Locations").
- Check the continuity of the following operator panel cable pins. See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
OP-01	01A-E1D1-01	0 ohms
OP-03	01A-E1D1-03	0 ohms
OP-09	01A-E1D1-09	0 ohms
OP-11	01A-E1D1-11	0 ohms
OP-13	01A-E1D1-13	0 ohms
OP-14	01A-E1D1-14	0 ohms
OP-19	01A-E1D1-19	0 ohms
OP-23	01A-E1D1-23	0 ohms
OP-26	01A-E1D1-26	0 ohms

Is the continuity O.K.?
Yes **No**

064

Exchange the operator panel cable (MIM 500-1, "Operator Panel Cable"). Continue at "MAP 0900: End of Call" on page 900-1.

065

Exchange, one at a time:

- Operator panel card (MIM 500-1, "Operator Panel Card")
- System card (MIM 500-1, "System Card").

(Step **065** continues)

065 (continued)
Continue at "MAP 0900: End of Call" on page 900-1.

066

(From step 062)
Did all four LEDs remain *ON* during the POST?
Yes **No**

067

Continue at Step 069.

068

Exchange, one at a time:

- Operator panel card (MIM 500-1, "Operator Panel Card")
- Operator panel cable (MIM 500-1, "Operator Panel Cable")
- System card (MIM 500-1, "System Card").

Continue at "MAP 0900: End of Call" on page 900-1.

069

(From step 067)
- Press and hold the **Test** key.
- Press the following keys twice in the order specified.

The alarm will sound each time the key is pressed and the **XX** in the display will change to the alphanumeric character pressed.
(Step **069** continues)

069 (continued)
– Look at the display.

```
TEST MODE
ENTER TEST ID XX
```

Key Pressed Twice	XX
0	0
1	11
2	22
3	33
4	44
A	AA
B	BB
5	55
6	66
7	77
8	88
9	99
C	CC
D	DD
E	EE

Does the alarm sound and the display change to the indicated characters as each key is pressed?
Yes **No**

070

– Release the **Test** key.
Exchange, one at a time:

- Operator panel card (MIM 500-1, "Operator Panel Card")
- Operator panel switch membrane (MIM 500-1, "Operator Panel Keypad").

Continue at "MAP 0900: End of Call" on page 900-1.

071

The following steps are designed to find out if all the display character positions and the LEDs will act correctly.
– Run TEST 57 (Operator Panel LED/LCD Test). See MIM 700-1, "Selecting Tests."
(Step **071** continues)

071 (continued)
This test will flash all LEDs *ON* and turn on all display character positions.
Did the test run correctly?
Yes **No**

072

Continue at Step 085 on page 500-9.

073

– Look at the display.

```
APPLICATION CHECK XX
```

The **XX** represents any valid hexadecimal number between 80 through 9F and F0 through FF.
Is the above message displayed?
Yes **No**

074

Continue at Step 076.

075

You have a program problem. Have the operator contact the person responsible for the program.

The meaning of the *APPLICATION CHECK* is in the *Product and Programming Description* manual.

076

(From step 074)
– Look at the display.

```
MACHINE CHECK XX
```

The **XX** represents any valid hexadecimal number between 40 through 7F and A0 through CF.
(Step **076** continues)

076 (continued)
Is the above message displayed?
Yes **No**

077

Continue at Step 079.

078

Continue at "MAP 0010: Start of Call" on page 010-1.

079

(From step 077)
Is a status code from 01 through 3F displayed?
Yes **No**

080

Continue at Step 082.

081

Continue at "MAP 0010: Start of Call" on page 010-1.

082

(From step 080)
– Look at the display.

```
MACHINE CHECK BC
```

Is the above message displayed?
Yes **No**

083

No trouble found with the operator panel. Return to the Start MAP and begin again.

Continue at "MAP 0010: Start of Call" on page 010-1.

084

(Step 084 continues)

084 (continued)
Exchange, one at a time:

- Operator panel card (MIM 500-1, "Operator Panel Card")
- System card (MIM 500-1, "System Card")
- Operator panel cable (MIM 500-1, "Operator Panel Cable").

Continue at "MAP 0900: End of Call" on page 900-1.

085

(From step 072)
TEST 57 (Operator Panel LED/LCD Test) failed.
Did all four LEDs flash *ON*?
Yes **No**

086

Continue at Step 090 on page 500-10.

087

Did all character positions on both display lines change?
Yes **No**

088

Exchange, one at a time:

- Operator panel card (MIM 500-1, "Operator Panel Card")
- System card (MIM 500-1, "System Card")
- Operator panel cable (MIM 500-1, "Operator Panel Cable").

Continue at "MAP 0900: End of Call" on page 900-1.

089

The MAP has not identified an operator panel failure. Re-diagnose the symptoms.

Continue at "MAP 0010: Start of Call" on page 010-1.

090

(From step 086)
- Power OFF.
- Wait ten seconds.
- Power ON.
- Look for forms, dot band, and ribbon movement while the POST is running.

Did the forms, ribbon, or dot band move?

Yes **No**

091

Continue at "MAP 0600: Power" on page 600-1.

092

The operator panel cable is loose or the operator panel card is missing +5 V dc.
- Power OFF.
- Remove the top cover (MIM 300-1, "Top Cover").
- Remove the power cover (MIM 300-1, "Power Cover").
- Check cable connectors 01A-E1D1 and OP (MIM 800-1, "Locations").
- Remove the operator panel and ensure that the operator panel cable is properly seated.
- Check the operator panel cable connectors for missing, damaged, or pushed back pins.

Are the cable and connectors O.K.?

Yes **No**

093

Reseat or exchange:
- Operator panel cable (MIM 500-1, "Operator Panel Cable")
- Operator panel card (MIM 500-1, "Operator Panel Card")
- System card (MIM 500-1, "System Card").

Continue at "MAP 0900: End of Call" on page 900-1.

094

- Remove the operator panel.

(Step **094** continues)

094 (continued)
- Disconnect operator panel cable connector OP from the operator panel card (MIM 800-1, "Locations").
- Power ON.
- Measure for +5 V dc at the following operator panel cable pins:

FROM	TO	VOLTS
OP-05	FRAME GND	+5 V dc
OP-15	FRAME GND	+5 V dc

Is the correct voltage present at all pins?

Yes **No**

095

Continue at Step 097.

096

Exchange the operator panel card (MIM 500-1, "Operator Panel Card").
Continue at "MAP 0900: End of Call" on page 900-1.

097

(From step 095)
- Power OFF.
- Remove the Operator panel cable (MIM 500-1, "Operator Panel Cable").

(Step **097** continues)

097 (continued)

- Check the continuity of the following operator panel cable pins. See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
OP-01	01A-E1D1-01	0 ohms
OP-02	01A-E1D1-02	0 ohms
OP-03	01A-E1D1-03	0 ohms
OP-04	01A-E1D1-04	0 ohms
OP-05	01A-E1D1-05	0 ohms
OP-06	01A-E1D1-06	0 ohms
OP-07	01A-E1D1-07	0 ohms
OP-08	01A-E1D1-08	0 ohms
OP-09	01A-E1D1-09	0 ohms
OP-10	01A-E1D1-10	0 ohms
OP-11	01A-E1D1-11	0 ohms
OP-12	01A-E1D1-12	0 ohms
OP-13	01A-E1D1-13	0 ohms
OP-14	01A-E1D1-14	0 ohms
OP-15	01A-E1D1-15	0 ohms
OP-16	01A-E1D1-16	0 ohms
OP-17	01A-E1D1-17	0 ohms
OP-18	01A-E1D1-18	0 ohms
OP-19	01A-E1D1-19	0 ohms
OP-20	01A-E1D1-20	0 ohms
OP-21	01A-E1D1-21	0 ohms
OP-22	01A-E1D1-22	0 ohms
OP-23	01A-E1D1-23	0 ohms
OP-24	01A-E1D1-24	0 ohms
OP-25	01A-E1D1-25	0 ohms
OP-26	01A-E1D1-26	0 ohms

Is the continuity O.K.?

Yes **No**

098

Exchange the operator panel cable (MIM 500-1, "Operator Panel Cable").
Continue at "MAP 0900: End of Call" on page 900-1.

099

Exchange the system card (MIM 500-1, "System Card").
Continue at "MAP 0900: End of Call" on page 900-1.

Notes

MAP 0600: Power

Symptom Explanation	Conditions That Could Cause This Symptom
This MAP diagnoses power failures and those errors causing MACHINE CHECKs 4B, 59, and 5E.	• Power supply • ac cable • Power cord • System card • Motor driver card • Hammer blower • Hammer blower relay

Connectors with prefixes of **PS** in the MAPs are located on the power supply (MIM 800-1, "Locations"). Connectors with prefixes of **01A** are on the interconnect board (MIM 800-1, "Locations").

Note: Always ensure that the voltage selector switch on the printer power supply is set for the correct voltage range for the country in which it is installed. The voltage setting is printed on the side of the switch and is visible on the left side of the power supply.

001

Is the printer completely inactive, with no lights ON and no fans running?

Yes **No**

002

Continue at Step 005.

003

– Ensure that the power cord is connected at the wall outlet and at the printer power socket.

  Note: The power supply and its fan are located at the left rear corner of the printer.

– Power OFF.
– Wait one minute.
– Power ON.

(Step **003** continues)

003 (continued)

Is the power supply fan running?

Yes **No**

004

Continue at Step 091 on page 600-11.

005

(From step 002)

Are any lights or messages displayed on the operator panel?

Yes **No**

006

Continue at Step 068 on page 600-8.

007

– After the printer completes the power-on self tests (POST):

Is a MACHINE CHECK (SC=any code) displayed?

Yes **No**

008

Continue at Step 052 on page 600-7.

009

Look at the display.

```
MACHINE CHECK 5E
```

(Step **009** continues)

009 (continued)
Is the above message displayed?
Yes **No**

010

Continue at Step 042 on page 600-5

011

- Power OFF.
- Remove the top cover (MIM 300-1, "Top Cover").
- Remove the power cover (MIM 300-1, "Power Cover").
- Observe the +60 V LED. It is mounted at the top of the motor driver card (MIM 800-1, "Locations").
- Power ON.

Does the +60 V LED come ON at full intensity immediately?
Yes **No**

012

Continue at Step 018.

013

- Power OFF.
- Disconnect logic cable connector J1 from 01A-A1J1 on the interconnect board (MIM 800-1, "Locations").
- Measure the resistance of the logic cable between pin J1-21 and FRAME GND.

Logic cable connector P2 is still connected to the power supply.
See MIM 800-1, "Card and Cable Connections."

FROM **TO**

J1-21 FRAME GND

Do you measure less than three ohms to ground?
Yes **No**

014

Exchange the system card (MIM 500-1, "System Card").
Continue at "MAP 0900: End of Call" on page 900-1.

015

The 'TURN ON +60V' line is shorted to ground.

- Disconnect logic cable connector P2 from PS-J2 on the power supply (MIM 800-1, "Locations").
- Measure the continuity of the logic cable between pin P2-21 and the even numbered pins in the same connector.

See MIM 800-1, "Card and Cable Connections."

FROM **TO**

P2-02 P2-21
P2-04 P2-21
P2-06 P2-21
P2-08 P2-21
P2-10 P2-21
P2-12 P2-21
P2-14 P2-21
P2-16 P2-21
P2-18 P2-21
P2-20 P2-21
P2-22 P2-21
P2-24 P2-21
P2-26 P2-21

Do you measure continuity between the pins?
Yes **No**

016

Exchange the power supply (MIM 600-1, "Power Supply").
Continue at "MAP 0900: End of Call" on page 900-1.

017

Exchange the logic cable (MIM 600-1, "Logic Cable").
Continue at "MAP 0900: End of Call" on page 900-1.

018

(From step 012)

- Continue to observe the +60 V LED. It is mounted at the top of the motor driver card (MIM 800-1, "Locations").

(Step **018** continues)

018 (continued)
The LED should come on in 30 seconds or less from the time power is switched ON.
Does the +60 V LED come ON?
Yes **No**

019

Continue at Step 028 on page 600-4.

020

Note: You may power OFF and back ON, if necessary, to answer the following question. This question asks about the +60 V LED at the moment it comes on.

When the +60 V LED comes ON, is it the same intensity (brightness) as the other voltage LEDs near it?
Yes **No**

021

Continue at Step 025.

022

- Power OFF.
- Disconnect logic cable connectors P2 and J1 (MIM 800-1, "Locations").

Both ends of the logic cable are disconnected.
- Check the continuity of the logic cable between the pins below.

See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
J1-21	P2-21	0 ohms

Is continuity good?
Yes **No**

023

Exchange the logic cable (MIM 600-1, "Logic Cable").
Continue at "MAP 0900: End of Call" on page 900-1.

024

(Step 024 continues)

024 (continued)
- Exchange, one at a time:
  - Power supply (MIM 600-1, "Power Supply")
  - System card (MIM 500-1, "System Card").

Continue at "MAP 0900: End of Call" on page 900-1.

025

(From step 021)
- Power OFF.
- Disconnect the 60 volt cable from PS-P2 and 01A-A1J2 (MIM 800-1, "Locations").
- Check the 60 volt cable for damage, loose or pushed-back pins, and a proper connection.
- Measure the continuity of the 60 volt cable between the connector pins below.

See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
P3-1	J2-2	0 ohms
P3-2	J2-5	0 ohms
P3-3	J2-3	0 ohms
P3-4	J2-4	0 ohms

If the 60 volt cable is open or unplugged, or the power supply is not providing +60 volts to the interconnect board, the +60 V LED will come ON but will be dim.
Is the cable O.K.?
Yes **No**

026

Exchange the logic cable (MIM 600-1, "Logic Cable").
Continue at "MAP 0900: End of Call" on page 900-1.

027

Exchange the power supply (MIM 600-1, "Power Supply").
Continue at "MAP 0900: End of Call" on page 900-1.

028

(From step 019)
- Power OFF.
- Disconnect the logic cable from PS-P2 and 01A-A1J1.
- Check the logic cable for proper connections, damage, and loose or pushed-back pins.
- Measure the continuity of the logic cable between the connector pins below.

See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
J1-21	P2-21	0 ohms

Is the logic cable O.K.?
Yes **No**

029

Exchange the logic cable (MIM 600-1, "Logic Cable").
Continue at "MAP 0900: End of Call" on page 900-1.

030

- Disconnect 60 volt cable connector P3 from PS-J3 on the power supply (MIM 800-1, "Locations").
- Measure the resistance from pins P3-3 and P3-4 to ground on the unplugged cable connector.

See MIM 800-1, "Card and Cable Connections."

FROM	TO
P3-3	FRAME GND
P3-4	FRAME GND

Is the resistance less than three ohms to ground?
Yes **No**

031

Exchange, one at a time:

- Power supply (MIM 600-1, "Power Supply").
- System card (MIM 500-1, "System Card").

(Step **031** continues)

031 (continued)
Continue at "MAP 0900: End of Call" on page 900-1.

032

- Leave 60 volt cable connector P3 disconnected.
- Disconnect motor driver cable connector A1 from 01A-B1A1 at the top of the motor driver card (MIM 800-1, "Locations").
- Measure the resistance of the 60 volt cable connector pins P3-3 and P3-4 to ground.

See MIM 800-1, "Card and Cable Connections."

FROM	TO
P3-3	FRAME GND
P3-4	FRAME GND

Is the resistance less than three ohms to ground?
Yes **No**

033

There is a short to ground in the motor driver cable, or the band motor or band motor filter is defective. The +60 V to the band motor is from 01A-B1A1-15 to the red terminal on the band motor via the band motor filter.
- Check the wire for a short to ground. Exchange the motor driver cable (MIM 300-1, "Motor Driver Cable") if necessary.

If the motor driver cable is good, exchange, one at a time:

- Band motor (MIM 300-1, "Band Drive Motor")
- Band motor filter (MIM 300-1, "Band Drive Motor Filter").

Continue at "MAP 0900: End of Call" on page 900-1.

034

- Reconnect motor driver cable connector A1 to 01A-B1A1 at the top of the motor driver card (MIM 800-1, "Locations").

(Step **034** continues)

034 (continued)
- Disconnect logic cable connector J1 from 01A-A1J1 on the interconnect board (MIM 800-1, "Locations").
- Measure the resistance of the 60 volt cable connector pins P3-3 and P3-4 to ground.

See MIM 800-1, "Card and Cable Connections."

FROM	TO
P3-3	FRAME GND
P3-4	FRAME GND

Is the resistance less than three ohms to ground?

Yes **No**

035

Continue at Step 037.

036

Exchange the 60 volt cable.
Continue at "MAP 0900: End of Call" on page 900-1.

037

(From step 035)
- Reconnect logic cable connector J1 to 01A-A1J1 on the interconnect board (MIM 800-1, "Locations").
- Remove the motor driver card (MIM 500-1, "Motor Driver Card").
- Measure the resistance of the 60 volt cable connector pins P3-3 and P3-4 to ground.

See MIM 800-1, "Card and Cable Connections."

FROM	TO
P3-3	FRAME GND
P3-4	FRAME GND

Is the resistance less than three ohms to ground?

Yes **No**

038

Exchange the motor driver card (MIM 500-1, "Motor Driver Card").
(Step **038** continues)

038 (continued)
Continue at "MAP 0900: End of Call" on page 900-1.

039

- Reinstall the motor driver card (MIM 500-1, "Motor Driver Card").
- Remove the hammer driver card (MIM 500-1, "Hammer Driver Card").
- Measure the resistance of the 60 volt cable connector pins P3-3 and P3-4 to ground.

See MIM 800-1, "Card and Cable Connections."

FROM	TO
P3-3	FRAME GND
P3-4	FRAME GND

Is the resistance less than three ohms to ground?

Yes **No**

040

Exchange the hammer driver card (MIM 500-1, "Hammer Driver Card").
Continue at "MAP 0900: End of Call" on page 900-1.

041

Exchange the interconnect board (MIM 500-1, "Interconnect Board").
Continue at "MAP 0900: End of Call" on page 900-1.

042

(From step 010)
Look at the display.

```
MACHINE CHECK 4B
```

(Step **042** continues)

042 (continued)
Is the above message displayed?
Yes **No**

043

Continue at Step 047.

044

- Power OFF.
- Remove the top cover (MIM 300-1, "Top Cover").
- Remove the power cover (MIM 300-1, "Power Cover").
- Disconnect logic cable connector J1 from 01A-A1J1 on the interconnect board (MIM 800-1, "Locations").
- Measure the resistance of the logic cable between J1-19 and ground.

See MIM 800-1, "Card and Cable Connections."

FROM **TO**

J1-19 FRAME GND

Is the resistance less than three ohms to ground?
Yes **No**

045

Exchange, one at a time:

- System card (MIM 500-1, "System Card")
- Motor driver card (MIM 500-1, "Motor Driver Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

Continue at "MAP 0900: End of Call" on page 900-1.

046

The logic cable is shorted or the power supply is defective.
Check the logic cable for shorts or damage.
Exchange the logic cable (MIM 600-1, "Logic Cable") if necessary.
– or –
(Step **046** continues)

046 (continued)
If the logic cable is O.K., exchange the power supply (MIM 600-1, "Power Supply").
Continue at "MAP 0900: End of Call" on page 900-1.

047

(From step 043)
Look at the display.

```
MACHINE CHECK 59
```

Is the above message displayed?
Yes **No**

048

This is the wrong MAP for this failure.
Return to "MAP 0010: Start of Call" on page 010-1 and re-diagnose the failure.

049

- Power OFF.
- Remove the top cover (MIM 300-1, "Top Cover").
- Remove the power cover (MIM 300-1, "Power Cover").
- Observe the +12 V LED. It is mounted at the top of the motor driver card (MIM 800-1, "Locations").
- Power ON.

Does the +12 V LED come ON?
Yes **No**

050

The +12 V dc is missing to the interconnect board.

- Power OFF.
- See MIM 800-1, "Card and Cable Connections."
- Check for an open circuit from PS-P2-23 to 01A-A1J1-23.

If the continuity is good, exchange the power supply (MIM 600-1, "Power Supply").
(Step **050** continues)

050 (continued)
Continue at "MAP 0900: End of Call" on page 900-1.
– or –
If the continuity is bad, exchange the logic cable (MIM 600-1, "Logic Cable").
Continue at "MAP 0900: End of Call" on page 900-1.

051

Continue at "MAP 0370: Hammers" on page 370-1.

052

(From step 008)
Does the printer have the following symptoms: LEDs = all ON, display has all pels in the top print line ON, and printer will not run?
Yes **No**

053

Continue at Step 065 on page 600-8.

054

The logic is either hung or is missing a POR signal from the power supply.
- Power OFF.
- Disconnect logic cable connector P2 from PS-P2 on the power supply (MIM 800-1, "Locations").
- Measure the resistance of logic cable connector between pin P2-17 and FRAME GND.

See MIM 800-1, "Card and Cable Connections."

FROM	TO
P2-17	FRAME GND

Is the resistance less than three ohms?
Yes **No**

055

Continue at Step 062 on page 600-8.

056

(Step **056** continues)

056 (continued)
The POR signal is shorted to ground.
- Unplug the other end of the logic cable from 01A-A1J1.
- Measure for continuity between P2-17 and all the even numbered pins in the connector. They are all ground or return wires.

See MIM 800-1, "Card and Cable Connections."

FROM	TO
P2-02	P2-17
P2-04	P2-17
P2-06	P2-17
P2-08	P2-17
P2-10	P2-17
P2-12	P2-17
P2-14	P2-17
P2-16	P2-17
P2-18	P2-17
P2-20	P2-17
P2-22	P2-17
P2-24	P2-17
P2-26	P2-17

Is there continuity to any even pin?
Yes **No**

057

Continue at Step 059.

058

Exchange the logic cable (MIM 600-1, "Logic Cable").
Continue at "MAP 0900: End of Call" on page 900-1.

059

(From step 057)
- Reconnect logic cable connector P2 to PS-J1 on the power supply (MIM 800-1, "Locations").
- Measure the resistance of the logic cable between logic cable connector pin J1-17 and FRAME GND.

See MIM 800-1, "Card and Cable Connections."

FROM	TO
J1-17	FRAME GND

Is the resistance less than three ohms?
Yes **No**

060

Exchange, one at a time:

- System card (MIM 500-1, "System Card")
- Motor driver card (MIM 500-1, "Motor Driver Card")
- Hammer driver card (MIM 500-1, "Hammer Driver Card")
- Interconnect board (MIM 500-1, "Interconnect Board").

Continue at "MAP 0900: End of Call" on page 900-1.

061

Exchange the power supply (MIM 600-1, "Power Supply").
Continue at "MAP 0900: End of Call" on page 900-1.

062

(From step 055)
- Unplug the other end of the logic cable from 01A-A1J1 on the interconnect board (MIM 800-1, "Locations").
- Measure for continuity at the following logic cable pins.

See MIM 800-1, "Card and Cable Connections."

FROM	TO	RESISTANCE
P1-17	J1-17	0 ohms
P1-18	J1-18	0 ohms

Are the lines O.K.?
Yes **No**

063

Exchange the logic cable (MIM 600-1, "Logic Cable").
Continue at "MAP 0900: End of Call" on page 900-1.

064

(Step 064 continues)

064 (continued)
Exchange, one at a time:

- System card (MIM 500-1, "System Card")
- Power supply (MIM 600-1, "Power Supply").

Continue at "MAP 0900: End of Call" on page 900-1.

065

(From step 053)
Is the power supply fan running?
Yes **No**

066

CAUTION:
Disconnect the power cord before servicing the printer.

– Power OFF.
Exchange the power supply (MIM 600-1, "Power Supply").
Continue at "MAP 0900: End of Call" on page 900-1.

067

CAUTION:
Disconnect the power cord before servicing the printer.

The problem is no longer on the machine. Either this is the wrong MAP, or there is an intermittent problem with +60 volts.
- Check for loose or damaged cables and connectors at PS-P2, PS-P3 and 01A-A1J1 (MIM 800-1, "Locations").
- Look at the *Test Key Printout* for possible errors.

Probable FRU order:

1. Power supply
2. System card
3. Motor driver card
4. Hammer driver card.

– or –
If the problem returns, use "MAP 0800: Intermittent Problems" on page 800-1.

068

(From step 006)
- Power OFF.
- Wait for about 15 seconds.
- Watch the operator panel closely.
- Power ON.

Did unreadable characters flash in the display momentarily?

Yes **No**

069

Continue at Step 080 on page 600-10.

070

(From step 102)
There is a probable short to ground on either +12 or +5 V dc.
- Power OFF.
- Remove the top cover (MIM 300-1, "Top Cover").
- Remove the power cover (MIM 300-1, "Power Cover").
- Unplug logic cable connector P2 from PS-J2 on the power supply (MIM 800-1, "Locations").
- Measure the resistance between P2-01 and FRAME GND.

Is the resistance less than three ohms?

Yes **No**

071

Continue at Step 077 on page 600-10.

072

The +5 V dc is shorted to ground.
- Continue to monitor the resistance of P2-01 to FRAME GND.
- Unplug the sensor cable connector D2 from 01A-E2D2 on the system card (MIM 800-1, "Locations").

Is the resistance still less than three ohms?

Yes **No**

073

The +5 V dc to one of the sensors is shorted to ground.
(Step **073** continues)

073 (continued)
Reconnect the sensor cable to 01A-E1D2 and monitor the resistance from P2-01 to ground as you unplug sensor connectors, one at a time. See MIM 800-1, "Card and Cable Connections." When the short goes away, the last sensor unplugged is defective. Exchange it. If the short is still present with all the sensors unplugged, exchange the sensor cable (MIM 300-1, "Sensor Cable").

074

- Continue to monitor the resistance to ground of P2-01 on the logic cable.
- Unplug the operator panel cable connector D1 from 01A-E1D1 on the system card (MIM 800-1, "Locations").

Is the resistance less than three ohms?

Yes **No**

075

The operator panel or the operator panel cable has a short to ground. Exchange either the operator panel cable (MIM 500-1, "Operator Panel Cable") or the operator panel card (MIM 500-1, "Operator Panel Card") as necessary.
Continue at "MAP 0900: End of Call" on page 900-1.

076

+5 V dc is shorted to ground. It is used by all of the cards and switches.
- Continue to monitor the continuity from P2-01 to ground.
- Unplug the cards, one at a time.

When the short goes away, the last card you unplugged is defective and must be exchanged.
- or -
If the short still exists after all the cards have been unplugged from the interconnect board, the short is either in the interconnect board or the logic cable. Exchange the logic cable (MIM 600-1, "Logic Cable") or the interconnect board (MIM 500-1, "Interconnect Board"), as necessary, to eliminate the short.

077

(From step 071)

- Measure the resistance to ground of P2-23 on the logic cable (MIM 800-1, "Locations").

Is the resistance less than three ohms?

Yes **No**

078

Exchange the power supply (MIM 600-1, "Power Supply").
Continue at "MAP 0900: End of Call" on page 900-1.

079

The +12 V dc is shorted to ground. The +12 V is used by all of the cards except the attachment card.

- Continue to monitor the resistance to ground of P2-23 on the logic cable (MIM 800-1, "Locations").
- Unplug the cards, one at a time.

When the short goes away, the last card you unplugged is defective. Exchange it.
If the short still exists after all the cards have been unplugged from the interconnect board, the short is in either the interconnect board or the logic cable. Exchange the logic cable (MIM 600-1, "Logic Cable") or the interconnect board (MIM 500-1, "Interconnect Board"), as necessary, to eliminate the short.
Continue at "MAP 0900: End of Call" on page 900-1.

080

(From step 069)

Did the operator panel LEDs flash momentarily?

Yes **No**

081

Continue at Step 085 on page 600-11.

082

The −12 V distribution is probably shorted.

- Power OFF.

(Step 082 continues)

082 (continued)

- Remove the top cover (MIM 300-1, "Top Cover").
- Remove the power cover (MIM 300-1, "Power Cover").
- Unplug logic cable connector P2 from PS-P2 on the power supply (MIM 800-1, "Locations").
- Measure the resistance of the logic cable between connector pin P2-25 and FRAME GND.

See MIM 800-1, "Card and Cable Connections."

Is the resistance less than three ohms?

Yes **No**

083

This is probably an operator panel problem.
Continue at "MAP 0500: Operator Panel" on page 500-1.

084

The −12 V dc is shorted to ground. The −12 V is used by the interconnect board, system card, attachment card, and the operator panel.

- Continue to monitor the resistance of the logic cable between P2-25 and FRAME GND.
- Unplug the cards, one at a time.

When the short goes away, the last card you unplugged is defective. Exchange it.
If the short still exists after all the cards have been unplugged from the interconnect board, the short is in either the interconnect board or the logic cable. Exchange the logic cable (MIM 600-1, "Logic Cable") or the interconnect board (MIM 500-1, "Interconnect Board"), as necessary, to eliminate the short.

085

(From step 081)

– Power OFF.
– Remove the top cover (MIM 300-1, "Top Cover").
– Remove the power cover (MIM 300-1, "Power Cover").
– Look at the three voltage LEDs.

The LEDs are mounted at the top of the motor driver card (MIM 800-1, "Locations"). They are the +5, +12, and −12 indicators.

– Power ON.

Is the +5 V LED the only one of the three that is OFF?

Yes **No**

086

Continue at Step 088.

087

+5 V is missing.
Exchange the power supply (MIM 600-1, "Power Supply").
Continue at "MAP 0900: End of Call" on page 900-1.

088

(From step 086)

– Power OFF.
– Check the logic cable from PS-P2 to 01A-A1J1 for proper connection, damage, loose or pushed-pins.

Is the logic cable OK?

Yes **No**

089

Exchange the logic cable.
Continue at "MAP 0900: End of Call" on page 900-1.

090

Exchange the power supply (MIM 600-1, "Power Supply").
Continue at "MAP 0900: End of Call" on page 900-1.

091

(From step 004)

Is there any indication that the printer has power?

Yes **No**

092

Continue at Step 094.

093

CAUTION:
Disconnect the power cord before servicing the printer.

– Power OFF.

The power supply fan is defective.
Exchange the power supply (MIM 600-1, "Power Supply").
Continue at "MAP 0900: End of Call" on page 900-1.

094

(From step 092)

DANGER

Hazardous voltage present.

– Do the following:

1. Power OFF.
2. Unplug the power cord from the wall outlet.
3. Measure for correct ac voltage at the wall outlet.

Is the correct ac voltage being supplied at the wall outlet?

Yes **No**

095

Continue at Step 106 on page 600-12.

096

– Unplug the printer power cord from the wall outlet.

(Step 096 continues)

096 (continued)
- Measure the power cord for continuity and shorts.

Is the power cord OK?

Yes **No**

097

Exchange the power cord.
Continue at "MAP 0900: End of Call" on page 900-1.

098

CAUTION:
Ensure that the power cord is disconnected before you service the printer.

- Check connector P1 on the power supply for looseness or pushed back pins. See MIM 800-1, "Locations."

Is the connector OK?

Yes **No**

099

Repair or exchange the ac cable as necessary.
Continue at "MAP 0900: End of Call" on page 900-1.

100

- Power OFF.
- Reconnect PS-P1.
- Unplug connector PS-P2 from the power supply and place it where it will not short circuit to anything.
- Power ON.

Does the power supply fan run?

Yes **No**

101

Continue at Step 103.

102

Continue at Step 070 on page 600-9.

103

(From step 101)

CAUTION:
Ensure that the power cord is disconnected before you service the printer.

- Unplug connector P1 from the power supply (MIM 800-1, "Locations").
- Set the power switch to ON.
- Measure continuity from P1-01 to P1-03 on the connector. See MIM 800-1, "Card and Cable Connections."
- Measure continuity from P1-02 to P1-04 on the connector. See MIM 800-1, "Card and Cable Connections."

Did you measure good continuity on both wires?

Yes **No**

104

- Power OFF.

The power switch or its wiring is open.
Repair or exchange as necessary. See MIM 600-1, "AC Cable."
Continue at "MAP 0900: End of Call" on page 900-1.

105

CAUTION:
Ensure that the power cord is disconnected before servicing the printer.

The power supply (MIM 600-1, "Power Supply").
Continue at "MAP 0900: End of Call" on page 900-1.

106

(From step 095)
- Unplug the printer power cord from the wall outlet, and ask the customer to restore voltage to the wall outlet. If correct ac voltage does not remain at the wall outlet with the printer unplugged, there is a power distribution problem to the wall outlet.
- Discuss and correct this problem with the customer.

(Step **106** continues)

106 (continued)
- Reconnect the Printer to the wall outlet.
- Power ON.

Did the voltage at the wall outlet fail again?

Yes **No**

107

Problem solved.
Continue at "MAP 0900: End of Call" on page 900-1.

108

- Power OFF.
- Unplug the printer power cord from the wall outlet and the printer.
- Measure the power cord for continuity and shorts between wires.

Is the power cord OK?

Yes **No**

109

Exchange the power cord.
Continue at "MAP 0900: End of Call" on page 900-1.

110

DANGER

Hazardous voltage present.

- Connect the power cord to the printer and the wall outlet.
- Disconnect ac connector M1. See MIM 800-1, "Card and Cable Connections."
- Power ON.

Did the voltage at the wall outlet fail again?

Yes **No**

111

- Power OFF.

CAUTION:
Disconnect the power cord before you service the printer.

The Hammer blower motor is shorting out the ac voltage.
Exchange the Hammer blower.
Continue at "MAP 0900: End of Call" on page 900-1.

112

CAUTION:
Disconnect the power cord before servicing the printer.

- Power OFF.
- Disconnect ac connector P1 from the power supply. See MIM 800-1, "Card and Cable Connections."
- Measure for continuity from P1-06 to P1-09 and from P1-06 to Terminal 1 on the hammer blower relay. See MIM 800-1, "Card and Cable Connections."

Do you have continuity on either measurement?

Yes **No**

113

The absence of continuity shows that there are no grounds on the ac cable.
Exchange the power supply (MIM 600-1, "Power Supply").
Continue at "MAP 0900: End of Call" on page 900-1.

114

CAUTION:
Disconnect the power cord before you service the printer.

There is a ground on the ac cable or in the hammer blower relay.
(Step **114** continues)

114 (continued)
- Power OFF.
- Disconnect the wire from hammer blower relay Terminal 2 (MIM 800-1, "Card and Cable Connections").
- Measure for continuity from the wire you removed to ground (P1-06).

Do you measure continuity?

Yes **No**

115

- Disconnect the wire from hammer blower relay Terminal 1. Measure the continuity from the wire terminal to ground. If there is continuity, the wire from hammer blower relay Terminal 1 to ac connector M1 is shorted to ground (MIM 800-1, "Card and Cable Connections"). Repair or exchange the cable as necessary.

If there is no continuity to ground on the wire, exchange the hammer blower relay (MIM 600-1, "Relay (Solid State)").
Continue at "MAP 0900: End of Call" on page 900-1.

116

CAUTION:
Disconnect the power cord before servicing the printer.

The wire from Terminal 2 of the hammer blower relay to P1-09 is grounded. Repair or replace as necessary. See MIM 800-1, "Card and Cable Connections."

The hammer blower relay may also be defective because of the ground. If problems still exist exchange the hammer blower relay (MIM 600-1, "Relay (Solid State)").
Continue at "MAP 0900: End of Call" on page 900-1.

MAP 0610: Hammer Blower

Symptom Explanation	Conditions That Could Cause This Symptom
Hammer blower failure	• Hammer blower relay • Hammer blower • System card • Cable problem

001

You are here because the hammer blower is not working properly.

- Power OFF.
- Remove the top cover (MIM 300-1, "Top Cover").
- Remove the power cover (MIM 300-1, "Power Cover").
- Remove the cover from the hammer blower relay.

The relay is mounted on the power supply.

- Attach the positive lead of the CE meter to terminal 3 of the hammer blower relay.
- Attach the negative lead to ground.
- Set the the meter to read +5 V dc.

DANGER

Line voltage is present when the power cover is removed and printer power is ON.

- Ensure that you and the meter are clear of exposed terminals.
- Power ON.

Is +5 V dc present?

Yes **No**

002

- Power OFF.
- Measure the continuity of the wire from hammer blower relay terminal 3 to the system card connector 01A-E1D2-26.

If the continuity is good, exchange the system card (MIM 500-1, "System Card").

– or –

If the continuity is bad, exchange the sensor cable (MIM 300-1, "Sensor Cable").

When the problem is solved, continue at "MAP 0900: End of Call" on page 900-1.

003

- Power OFF.
- Move the meter lead from hammer blower relay terminal 3 to hammer blower relay terminal 4.

DANGER

Line voltage is present when the power cover is removed and printer power is ON.

- Power ON.
- Run TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."
- Monitor the meter.
- Press the **1** key.

The hammer blower is turned ON.

Did the voltage at hammer blower relay terminal 4 go to 0?

Yes **No**

004

Exchange the system card (MIM 500-1, "System Card").

Continue at "MAP 0900: End of Call" on page 900-1.

005

- Power OFF.
- Remove the meter lead from hammer blower relay terminal 4.
- Disconnect the wire from hammer blower relay terminal 2 and attach, it along with the wires that are on terminal 1, to hammer blower relay terminal 1.

DANGER

Line voltage is present when the power cover is removed and printer power is ON.

- Power ON.
- Run TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."
- Use the test and turn ON the FAN.

Does the hammer blower run?

Yes **No**

006

- Power OFF.
- Unplug the power cord.
- Check the continuity of the wires from power supply connector PS-P2 to hammer blower relay connector M1. See MIM 800-1, "Card and Cable Connections."
- Check the continuity of the wires from the hammer blower relay to connector M1. See MIM 800-1, "Card and Cable Connections."

If the continuity is good, exchange the hammer blower (MIM 600-1, "Blower").

– or –

If the continuity is bad, exchange the ac cable (MIM 600-1, "AC Cable").

When the problem is solved, continue at "MAP 0900: End of Call" on page 900-1.

007

Exchange the hammer blower relay (MIM 600-1, "Relay (Solid State)").
Continue at "MAP 0900: End of Call" on page 900-1.

MAP 0800: Intermittent Problems

A Test Key Printout should be obtained by the printer operator or the service representative immediately after a printer failure has occurred or before powering off the printer. The printout will contain important status code information. Press and release the **Test** key to get a Test Key Printout. The test takes about one minute to complete.

001

Intermittent problems and symptoms:
- Examine any printouts that the customer may have obtained.
- Question the customer about problem symptoms.
  1. What type of job was running?
  2. What status codes or symptoms occurred?

Do you have or can you get a Test Key or TEST 08 (Print Error Log) printout associated with the reported intermittent failure?

Yes **No**

002

Continue at Step 004.

003

Continue at "MAP 0100: How to Use the Error Log" on page 100-1.

004

(From step 002)
- Try to cause a printer failure by the following method:
  1. Ensure that forms are properly loaded in the printer.
  2. Select TEST 07 (Ripple Print). See MIM 700-1, "Selecting Tests." The printer will print a ripple pattern continuously.
  3. Allow the test to print for several minutes.
  4. Press and release the **Cancel Print** key to stop the test.

(Step **004** continues)

004 (continued)

Did the printer fail with a MACHINE CHECK, APPLICATION CHECK, status code, or any other symptom during the test?

Yes **No**

005

Continue at Step 007.

006

Use the message displayed or the symptom. Continue at "MAP 0010: Start of Call" on page 010-1.

007

(From step 005)
- If a failing symptom is known, you may select a test or series of tests (exercisers) from those in MIM 700-1, "Diagnostic Tests" and then using TEST 92 (Loop on Selected Test) loop on the selected tests.
- If a problem can be created, use the message displayed and continue at "MAP 0010: Start of Call" on page 010-1.

If a problem is not found by looping through the tests, then:

1. Power OFF.
2. Remove the top cover (MIM 300-1, "Top Cover") and power cover (MIM 300-1, "Power Cover") and do the following procedures and visual checks:
3. Check for proper ground at the wall outlet being used.
4. Ensure that all connectors and cards are reseated.

   Inspect:
   a. Printer cover grounding (MIM 800-1, "Safety Grounding and ESD Wiring)
   b. Grounding of the form stand.
5. Review any available Test Key Printout or Error Log Printout for printer errors and use "MAP 0100: How to Use the Error Log" on page 100-1 to interpret them.

For additional information about specific problems or symptoms, continue at Step 008 on page 800-2.

008

(From step 007)

- For print/print quality problems, check the following:

  1. Damaged or dirty dot band or band sensor.
  2. Proper position of the forms thickness lever.
  3. Defective hammer driver card.
  4. Ribbon cartridge condition.
  5. Ribbon movement when printing.
  6. Ribbon drive pulleys for loose set screws.
  7. Ribbon drive belt adjustment or wear.
  8. Hammer cables for continuity and proper seating.
  9. Platen surface for wear.
  10. Band drive service check (MIM 300-1, "Band Drive Service Checks").
  11. Hammer coil service check (MIM 300-1, "Hammer Coil Service Check").
  12. Defective hammer bank.
  13. Overprinting—see forms movement problems.

  For additional information about these specific type of problems, continue at MAP 0900 step 028 on page 900-4.

- For dot band movement problems, check or do the following:

  1. Band drive service check (MIM 300-1, "Band Drive Service Checks").
  2. Band drive motor and the band gear train for binds.
  3. Band sensor (MIM 300-1, "Dot Band Sensor").
  4. Idler rotor for dirt and binds.
  5. Band oiler for dirt and wear (MIM 300-1, "Band Oiler Assembly").

  For additional information about these specific type of problems, continue at MAP 0900 step 028 on page 900-4.

- For communication problems

  1. Try to determine that data is really being sent to the printer. Communication problems are frequently caused by problems that are external to the printer.
  2. Run the **Test Key Test** and keep the printout. Power OFF. Power ON. Allow the POST to run. If the SC=27 or 28 after the completion of the POST, the problem is probably external to the printer.

- For forms movement problems:

  1. Do the complete forms feeding service check (MIM 300-1, "Forms Feeding Service Check").

  For additional information about these specific type of problems, continue at MAP 0900 step 028 on page 900-4.

- For random and/intermittent status codes, consider exchanging the following FRUs one at a time. Then recheck the problem or symptom.

  1. Power supply (MIM 600-1, "Power Supply")
  2. Operator panel cable (MIM 500-1, "Operator Panel Cable")
  3. System card (MIM 500-1, "System Card")
  4. All other logic cards, one at a time
  5. Hammer cable (MIM 300-1, "Hammer Cable Assembly")
  6. Hammer bank assembly (MIM 300-1, "Hammer Bank")
  7. Sensor cable, Jam sensor, and EOF sensor, one at a time
  8. Interconnect board (MIM 500-1, "Interconnect Board").

  For additional information about specific intermittent status codes and problem causes for example, intermittent SC=03 continue at Step 009 on page 800-3. Then refer to MAP 0900 step 028 on page 900-4.

- For any other problem or symptom, such as:

  - Operator panel problem
  - Communication problem
  - Printer hangs or stops printing.

  Continue at MAP 0900 step 028 on page 900-4.

009

(From step 008)

For specific and/or intermittent status codes, refer to the following chart.

SC	CAUSE	ACTION TO TAKE
01	Paper out (EOF).	• Install paper. • Check EOF sensor (MIM 300-1, "EOF Sensor").
02	Paper jam.	• Check the paper path. • Check jam sensor (MIM 300-1, "Jam Sensor").
03	Platen open.	• Close the platen. • Check platen switch adjustment (MIM 300-1, "Platen Assembly Adjustments").
04	Ribbon check.	• Check the ribbon cartridge (MIM 300-1, "Ribbon Cartridge"). • Check the ribbon sensor (MIM 300-1, "Ribbon Weld Sensor").
05	Band cover.	• Install the band cover. • Check band cover switch (MIM 300-1, "Band Cover Switch").
06	Operator alarm code.	Operational message—no action.
07	Order in PCIA not valid.	Operational error—no action.
08	Print hold timeout.	Operational error—no action.
09	Operator entry not valid.	Operational error—no action.
27	Model 11 Subsystem not ready. Model 12 Unit address not received.	Verify that the controller is active.
28	Model 11—Poll check. Model 12—Line sync lost.	Check the communication cables.
31	Timeout.	See SC=01 above.
32	Timeout.	See SC=02 above.

SC	CAUSE	ACTION TO TAKE
33	Timeout.	See SC=03 above.
34	Timeout.	See SC=04 above.
35	Timeout.	See SC=05 above.
3A	Cancel selected.	Operational message—no action.
3B	Buffer reprint.	Operational message—no action.
3C	PA1 selected.	Operational message—no action.
3D	PA2 selected.	Operational message—no action.
3E	Printer in send mode.	Operational message—no action.

Continue at Step 010 on page 800-5.

010

(From step 009)
General Reference Information

1. The following information refers to general maintenance procedures. This information may be helpful in locating intermittent failures.
   a. Use "MAP 0011: Quick Fix Exchange Chart" on page 011-1.
   b. Use Figure 4 on page 300-6 for printer failure symptoms.
   c. Get and review the Branch Office Retain System information relating to the failure.
   d. Ensure that the U-connector is properly installed. (Model 012 only).
   e. Examine any Test Key or Error Log Printout obtained after a printer failure. Use "MAP 0100: How to Use the Error Log" on page 100-1 to analyze the error information.
   f. Run the ripple print pattern continuously (as explained at the beginning of this Map) and observe the printer's operation.
   g. Swap the communication lines if possible.
   h. Check the power supply grounding and output voltages. See MIM 800-1, "Card and Cable Connections."
   i. Observe and check connections, board wiring, terminals, cables, and so forth.
   j. Swap cards or other hardware to isolate the failures.
   k. Gently shake and vibrate the hardware, cables, and connectors.
   l. If a reported failure can be duplicated, the problem could be the machine microcode or the customer operating procedures.
   m. Verify the Customer Problem Determination procedures.
2. Physical Environment Check:
   a. Paper, dust, paper clips, and the like in the paper path or machine.
   b. Temperature or humidity as measured by a Temperature/Humidity tester.*
3. Communication line problems can cause random, intermittent failures that are very difficult to diagnose.
   a. The Test Key or Error Log Printouts may contain information that can be used in isolating communication failures.
4. Electromagnetic or customer power failures can cause intermittent problems and random failures. Problems caused by EMI (Electromagnetic Interference), RFI (Radio Frequency Interference), Electrostatic Discharge, and line noise are difficult to discover because of their random failure patterns.
5. The following tools and test equipment may be helpful in diagnosing intermittent problems:
   - Electrostatic Locating Tool*
   - Earth tester (ground check)*
   - Electromagnetic Compatibility Simulator*
   - Recording Volt Meter*
   - DB Meter
   - Power Line Disturbance tester*
   - Electrical Safety Analyzer*.

   *These are Branch Office or Region tools/test equipment. Review the Tools/Test Equipment NSD TSL for part numbers and description.

Notes

MAP 0900: End of Call

001

- Power OFF.
- Reinstall any cards, cables, or connectors that were removed in preceding MAP procedures.
- Verify that all other cards, cables, and connectors are seated correctly.
- Power ON.
- Observe the printer.
- Allow the POST to run to completion.

Did the POST run O.K.—no errors or MACHINE CHECKs?

Yes **No**

002

Continue at Step 025 on page 900-3.

003

- Select TEST 91 (Display Sensors). See MIM 700-1, "Selecting Tests."
- Press the **1** key to turn on the hammer blower.

Does the hammer blower run O.K.?

Yes **No**

004

If the hammer blower is not working, hammer coils may fail. Continue at "MAP 0600: Power" on page 600-1.

005

- Run the **Test Key Test**. See MIM 700-1, "Selecting Tests."
- Look at the print samples on the Test Key Printout.

Is print quality O.K.?

Yes **No**

006

Continue at Step 010.

007

- Review the Test Key Printout (MIM 100-1, "Test Key Printout").

(Step **007** continues)

007 (continued)

Does a review of the Test Key Printout suggest a problem?

Yes **No**

008

- Install the printer covers.
- Return machine to customer configuration.
- Run TEST 94 (Clear Error Log). See MIM 700-1, "Selecting Tests."

End of call.

009

Continue at "MAP 0100: How to Use the Error Log" on page 100-1.

010

(From step 006)

Have you been here once already for this problem?

Yes **No**

011

Continue at "MAP 0300: Symptom Index" on page 300-1.

012

Have you exchanged the dot band, the ribbon copy, or both?

Yes **No**

013

Continue at Step 022 on page 900-3.

014

(From steps 024 and 027)

- Power OFF.
- Disconnect the power cord.
- Disconnect and then reseat all power supply connectors to ensure that they are making connection.
- Connect the power cord.

(Step **014** continues)

014 (continued)
- Reseat all cards and cables and verify that they are installed correctly.
- Disconnect the logic cable at 01A-A1J1 on the interconnect board and ensure that it is not touching ground.
- Power ON.
- See MIM 800-1, "Card and Cable Connections," as needed to check voltages and grounds on the unplugged connector at the points listed below.

Failing capacitors, open diodes, and open transformer windings inside the supply, will cause voltages to change under load. If voltage changes during printing, the problem is most likely the power supply but could be the voltage compensation circuits on the motor driver card.

- The following test points are located on the unplugged logic cable connector J1.

FROM	TO	VOLTAGE
J1-01	J1-02	+5 V dc
J1-03	J1-04	+5 V dc
J1-05	J1-06	+5 V dc
J1-07	J1-08	+5 V dc
J1-09	J1-10	+5 V dc
J1-11	J1-12	+5 V dc
J1-13	J1-14	+5 V dc
J1-15	J1-16	+5 V dc
J1-23	J1-24	+12 V dc
J1-25	J1-26	−12 V dc

Is the voltage O.K.?

Yes **No**

015

- Power OFF.

Exchange the power supply (MIM 600-1, "Power Supply").
Continue at Step 019.

016

Is this your first time here for this problem?

Yes **No**

017

Continue at Step 028 on page 900-4.

018

Continue at "MAP 0800: Intermittent Problems" on page 800-1.

019

(From step 015)
- Power ON.
- Allow the POST to run.
- Recheck the symptoms.

Does the problem still exist?

Yes **No**

020

- Ensure that all cards and connectors are properly installed.
- Install any printer covers removed.
- Return the machine to customer configuration.
- Run TEST 94 (Clear Error Log). See MIM 700-1, "Selecting Tests."

End of call.

021

Continue at Step 028 on page 900-4.

022

(From step 013)

- Exchange the dot band (MIM 300-1, "Dot Band") and ribbon cartridge (MIM 300-1, "Ribbon Cartridge").
- Select TEST 07 (Ripple Print). See MIM 700-1, "Selecting Tests."

Does the problem still exist?

Yes **No**

023

- Ensure that all cards and connectors are properly installed.
- Install any printer covers removed.
- Return machine to customer configuration.
- Run TEST 94 (Clear Error Log). See MIM 700-1, "Selecting Tests."

End of call.

024

Continue at Step 014 on page 900-1.

025

(From step 002)

Have you been here once already for this problem?

Yes **No**

026

Continue at "MAP 0010: Start of Call" on page 010-1.

027

Continue at Step 014 on page 900-1.

028

(From MAP 0800 step 008 on page 800-2)
(From MAP 0800 step 008 on page 800-2)
(From MAP 0800 step 008 on page 800-2)
(From MAP 0800 step 008 on page 800-2)
(From MAP 0800 step 008 on page 800-2)
(From steps 017 and 021)

Exchange one FRU at a time in the order shown.
If the new FRU does not fix the problem, return
the original FRU to the machine.

PROBLEM DESCRIPTION	EXCHANGE FRU or DO PROCEDURE
Hangs	1. System card (MIM 500-1, "System Card") 2. Power supply (MIM 600-1, "Power Supply") 3. Interconnect board (MIM 500-1, "Interconnect Board")
Band and band drive	1. Band sensor (MIM 300-1, "Dot Band Sensor") 2. Band Drive Service Check (MIM 300-1, "Band Drive Service Checks") 3. Idler rotor (MIM 300-1, "Pivot/Idler Rotor Assembly") 4. Band drive gears (MIM 300-1, "Band Drive Motor") 5. Drive rotor (MIM 300-1, "Band Drive Rotor Assembly") 6. Band motor (MIM 300-1, "Band Drive Motor")
Hammers	1. Hammer bank assembly (MIM 300-1, "Hammer Bank") 2. Hammer driver card (MIM 500-1, "Hammer Driver Card") 3. Hammer cable (MIM 300-1, "Hammer Cable Assembly") 4. Power supply (MIM 600-1, "Power Supply")
Forms problems	1. Autoload assembly and clutch (MIM 300-1, "Autoload Clutch") 2. End of form sensor (MIM 300-1, "EOF Sensor") 3. Tractor assembly (MIM 300-1, "Tractor") 4. Jam sensor (MIM 300-1, "Jam Sensor") 5. Paper guides on covers (MIM 300-1, "Top Cover" and MIM 300-1, "Power Cover") 6. Motor driver card (MIM 500-1, "Motor Driver Card") 7. Forms motor (MIM 300-1, "Forms Drive Motor")
Ribbon problems	1. Ribbon cartridge (MIM 300-1, "Ribbon Cartridge") 2. Ribbon shield (MIM 800-1, "Locations") 3. Ribbon drive belt (MIM 300-1, "Ribbon Drive Belt") 4. Band motor (MIM 300-1, "Band Drive Motor")
Operator panel	1. Operator panel card (MIM 500-1, "Operator Panel Card") 2. Operator panel cable (MIM 500-1, "Operator Panel Cable") 3. System card (MIM 500-1, "System Card")

PROBLEM DESCRIPTION	EXCHANGE FRU or DO PROCEDURE
Power problem	1. Power supply (MIM 600-1, "Power Supply") 2. Hammer blower relay (MIM 600-1, "Relay (Solid State)") 3. AC cable (MIM 600-1, "AC Cable") 4. Power cord
Communication problem	1. Attachment card (MIM 500-1, "Model (All) Attachment Card") 2. System card (MIM 500-1, "System Card") 3. Interconnect board (MIM 500-1, "Interconnect Board")

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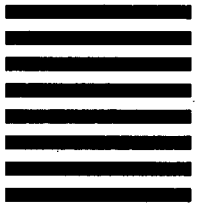

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