IBM Maintenance Library

4234 Printer
Maintenance Analysis Procedures

SC31-3013-2

Second Edition (February 1987)

| This major revision obsoletes SC31-3013-1. Changes the text and
| illustrations are indicated by a vertical line to the left of the change.

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PREFACE/INTRODUCTION

MAPS (Maintenance Analysis Procedures)

1. These MAPS are designed for two purposes.
   A. To aid in diagnosing printer failures.
   B. As an aid in learning diagnostic procedures.

2. Suggested steps for using MAPS:

   A. Discuss machine symptoms with the operator (if possible).

   B. Make a quick visual check for defects (loose or broken parts, unplugged connectors, forms jams, etc.). Although these MAPS are an aid in finding many visual problems, a visual check may more quickly identify problem areas.

   C. THE NORMAL PLACE TO START IN THESE MAPS IS THE CE START MAP. It will direct you to a FRU or another MAP determined by your symptoms. If you bypass the Start MAP, and start with another MAP selected because of the machine failure, you may be using the wrong MAP. The questions in that MAP may not refer to your problem and may direct you to a wrong solution.

   D. Although these MAPS are an aid in finding most problems, occasionally questions or instructions may be misunderstood. If a MAP leads you to a wrong solution, it is a good idea to start over again in the MAPS, reading each step very carefully. If after going through the MAPS a second time, there is still no solution to the problem, the machine may have two inter-related problems. Use other diagnostic techniques, or call your Support Structure for aid.

3. Basic MAP information:

A. A MAP will aid you in finding a problem by asking questions about machine symptoms. Each question is written so that it can be answered YES or NO. If you answer YES to a question you will always follow the Left-hand trace under the question. A NO answer always goes to the next step on the page or follows the Right-hand trace to another page.

B. There are two columns in the 4234 Printer MAPS. The Left-hand column is called the Command Column and gives instructions, asks questions, or indicates the solution to a problem. The solution may be provided in detail (example: a particular open connector) or in less detail (example: a voltage which should be supplied to a component is missing). In the second case you are expected to use the Wiring Diagrams in the MIM to find the cause of the missing voltage.

C. The Right hand column in the MAP is also usually used for a Command Column, but it may be used for Supporting Information. It may indicate where a component is located, or tell you why a particular question is being asked. Until you become familiar with these MAPS you are advised to read the Supporting Information each time it appears.

D. At the beginning of each MAP there is an Entry/Exit Table which specifies the page and step number of any Entry/Exits. It can be used to find Entry points within a MAP.

E. When the MAP directs you to use the Maintenance Information Manual, you will see a note in the form (MI 600-1). This means 'See Maintenance Information, Section 600, page 1'. Page 1 of each MIM section is an index page to all of the procedures covered by that section of the manual. MIM sections numbers correspond to the associated MAP numbers. For example 'Power' is covered in MAP 0600 and in MIM section 600.

PREFACE/INTRODUCTION

INTRODUCTION

The following material covers some safety requirements, and has information on voltage, ground, and continuity readings. Unless you are very familiar with these MAPS you are advised to read this information before going to the Start MAP 0010.

NOTE: Specific information on how to enter and use the printer diagnostic functions is found in Section 700 of the MIM.

DANGER

Always unplug the Printer before servicing an AC voltage, exchanging the Power Supply, Power Switch or AC cable.

CAUTION

To prevent damage to the Logic Cards, the machine should be switched OFF before disconnecting or connecting any cards or connectors.

1. VOLTAGE READINGS
   A. Every time a voltage reading is requested in these MAPS, the readings are to be taken with the Volt-Ohm Meter or the Digital Volt Meter, unless stated differently. If a different Meter is used in a W.T. Country, that country is responsible to check the readings with their Meter and make a conversion table if necessary. All A.C. voltages and the +32vdc must be plus or minus 10% and the remaining D.C. voltages plus or minus 5% to be considered good. Unless stated differently, all connectors should be connected normally when a voltage reading is taken.
   B. When a 'Line Voltage' measurement is called for, the voltage on U.S. machines should be between 103 and 127 vac. On World Trade machines the voltage will be different by country.

2. 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 as good. Continuity readings may be used to check grounds, however be certain to measure to a known good ground point using the X1 or lowest ohms scale and check for 0 ohms.

DANGER

Always remove power before taking a continuity reading.

3. CONTINUITY READINGS

When taking continuity readings, be certain no back circuits affect the reading. If necessary unplug connectors, etc. 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.

START/END OF CALL PROCEDURE

1. Contact the operator and discuss the operation of the machine. Attempt to duplicate and solve all identified problems (use Start MAP 0010 if possible).

2. Check (if possible) to see if any recent EC's or Service calls have any relationship to the current problem.

3. If a failure symptom or pattern appears, use this symptom and go to the CE Start MAP or the applicable fix MAP.

4. If no failures have been found, use the Test Key Printouts, and/or try to identify the specific Customer application that failed. The problem may be an incorrect operator procedure.

5. If a solid failure symptom is not known, or the reported problem does not match the failure symptom, the following procedure can be used as a check out procedure. This procedure can also be used on installation and after repairs have been completed. If at any time during this procedure, a failure symptom is identified, use this symptom and go to the Start MAP or the applicable fix MAP.

Perform the following procedures one at a time, checking for failure symptoms or patterns.

NOTE: These procedures may be repeated until the problems are resolved.

6. Press and hold the Test Key. Check that all LED's and Status Display Segments are ON.

7. Release the Test Key and allow the Test Key Tests to run. As the test is running, carefully observe the printer for any forms, ribbon or dot band movement problems.

8. Use the Test Log Printout and analyze the results for problem areas. This is the best guide to areas with intermittent problems.

9. If no problem is found and symptoms cannot be repeated, instruct the operator to make a list of conditions observed or procedures used if future problems occur.

The following lists of Status Codes and the associated area of the printer are for you, the Service Representative, to cut out and carry with you. This will give you the area of the machine that may be failing and an indication of the FRUs to take with you on a service call when a customer reports a particular Status code.

Four lists are provided, take only one and leave the rest for others.

STATUS CODE	4234 PRINTER PROBLEM AREA
01	END-OF-FORMS
02	PAPER JAM
03	PLATEN SWITCH
05	BAND COVER SWITCH
36,CE	EMITTER OR BAND DRIVE
41,42	HAMMERS
47	FORMS CARD OR DRIVE
48,50	HAMMER CARDS OR COILS
51	HAMMER CARD 1
52	HAMMER CARD 2
57	EMITTER CHECK
58,CF	POWER SUPPLY
A0,AA	SYSTEM OR EPROM CARD
A1	HAMMER CARD 1
A2	HAMMER CARD 2
A7	FORMS CARD
A9	SENSOR CARD
AC	COMMUNICATION CARD MOD. 2
AC	SYSTEM CARD MOD 1
AE	OP. PANEL OR CABLE
C1,C2,C3	HAMMER BLOCK 1,2, OR 3
C4,C5,C6	HAMMER PROBLEMS
C7	FORMS MOTOR
Ex,Fx	SYSTEM OR EPROM CARD

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36,CE	EMITTER OR BAND DRIVE
41,42	HAMMERS
47	FORMS CARD OR DRIVE
48,50	HAMMER CARDS OR COILS
51	HAMMER CARD 1
52	HAMMER CARD 2
57	EMITTER CHECK
58,CF	POWER SUPPLY
A0,AA	SYSTEM OR EPROM CARD
A1	HAMMER CARD 1
A2	HAMMER CARD 2
A7	FORMS CARD
A9	SENSOR CARD
AC	COMMUNICATION CARD MOD. 2
AC	SYSTEM CARD MOD 1
AE	OP. PANEL OR CABLE
C1,C2,C3	HAMMER BLOCK 1,2, OR 3
C4,C5,C6	HAMMER PROBLEMS
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Ex,Fx	SYSTEM OR EPROM CARD

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51	HAMMER CARD 1
52	HAMMER CARD 2
57	EMITTER CHECK
58,CF	POWER SUPPLY
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A2	HAMMER CARD 2
A7	FORMS CARD
A9	SENSOR CARD
AC	COMMUNICATION CARD MOD. 2
AC	SYSTEM CARD MOD 1
AE	OP. PANEL OR CABLE
C1,C2,C3	HAMMER BLOCK 1,2, OR 3
C4,C5,C6	HAMMER PROBLEMS
C7	FORMS MOTOR
Ex.Fx	SYSTEM OR EPROM CARD

START MAP

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ENTRY POINTS

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

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
8	050	0100	A
9	069	0100	A
9	071	0100	A
8	059	0300	A
7	045	0300	A
8	047	0300	A
9	070	0300	A
6	032	0320	A
5	018	0500	A
6	031	0500	A
6	030	0500	A
6	029	0500	A
6	028	0500	A
8	054	0600	A

001
(ENTRY POINT A)

S T A R T H E R E

N O T E: 1. SC refers to the Status Code in the Status Display
2. A Valid Status Code is two readable alphanumeric characters in the Display.
3. Unknown Symptoms or if unsure of problem, use SITUATION 2

SITUATION 1

For any of the following:
1. Valid Status Code.
2. Customer Reported Status code.

GO TO PAGE 2 MAP FIX-FRU EXCHANGE CHARTS

SITUATION 2

For any of the following:
1. No Status Code
2. Invalid Status Code

GO TO PAGE 4 ENTRY POINT D

SITUATION 3

For Customer Reported Failure, or Suspected Failing Area

GO TO PAGE 3 ENTRY POINT C.

(Step 001 continues)

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(Step 001 continued)
(ENTRY POINT B)
USE THESE CHARTS FOR VALID STATUS CODES AND SOLID CUSTOMER REPORTED PROBLEMS.
REMEMBER THAT TURNING POWER OFF OR RUNNING THE TEST KEY TESTS WILL DESTROY THE CONTENTS OF THE ERROR LOG AREA.

BEFORE EXCHANGING ANY FRU, RESEAT ALL ASSOCIATED CABLES AND CARDS, AND RECHECK SYMPTOMS.

INFORMATION MESSAGES

GO TO MAP 0500

STAT CODE	OPER MSG
06	OP
|	|
09	OP
0A	OP
13	OP
14	OP
21	OP
22	OP
27	OP
28	OP
59	OP
60	OP
61	OP
62	OP
63	CEOP
99	CEOP

STAT CODE	OPER MSG
*88	NOTE 2

GO TO MAP 0300

STAT CODE	OPER MSG
01	OP
02	OP
03	OP
04	OP
05	OP
12	OP
31	OP
32	OP
33	OP
34	OP
35	OP
81	CEOP
82	CEOP
83	CEOP
84	CEOP
85	CEOP

STAT CODE	OPER MSG
*89	NOTE 1

MAP FIX-FRU EXCHANGE CHART

STAT CODE	QUICK FIX PROBABLE FRU	GOTO MAP
36		0320
37,38	SYSTEM CARD	
39		0600
41		0370
42		0370
43,46	SYSTEM CARD	
47		0330
48		0370
49		0340
50		0370
51	HAMMER CD 1	0370
52	HAMMER CD 2	0370
53,56	SYSTEM CARD	
57		0320
58		0600
86-87	SYSTEM CARD	
88-89	SEE NOTES BELOW	
90-96	SYSTEM CARD	0500
97	OP PANEL	0500

MAP FIX-FRU EXCHANGE CHART

STAT CODE	QUICK FIX PROBABLE FRU	GOTO MAP
A0	SYSTEM CARD	0500
A1	HAMMER CARD 1	0375
A2	HAMMER CARD 2	0375
A7	FORMS CARD	0330
A9	EMITTER CARD	0320
AA	SYS CARD, RAM	
AC	COMM CD MOD 2	0450
AC	SYS CD MOD 1	0400
AE	PANEL/CABLE	0500
C1	HAM ASM. 1	0380
C2	HAM ASM. 2	0380
C3	HAM ASM. 3	0380
C4		0385
C5		0385
C6		0385
C7	FORMS MOTOR	0330
CE		0300
CF		0600
EX	SYSTEM CARD	0500
FX	SYSTEM CARD	0500

NOTE 1: IF SC=89, PRESS TEST KEY. USE SC POSTED BY TEST. IF TEST WILL NOT RUN (DISPLAY BLANK) THEN EXCHANGE SYSTEM CARD A2 AND EPROM CARD C2 IF PRESENT.
NOTE 2: IF SC=88, **GO TO PAGE 4 ENTRY POINT D.**

NOTE 3: IF YOU CHANGE A FRU AND DO NOT SOLVE THE PROBLEM, RUN 'TEST KEY TESTS' THEN USE THE INDICATED MAP -OR- **GO TO PAGE 4 ENTRY POINT D.**
(Step 001 continues)

(Step 001 continued)

(ENTRY POINT C)
PRINTER AREA FAILURES.
CUSTOMER REPORTED FAILURES.

NOTE 1: These MAPS frequently use the term 'SC'.
SC is an abbreviation for Status Code.

PRINTING failure .....
GO TO MAP 0300, ENTRY POINT A.

FORMS (including AUTO-LOAD) failure...
GO TO MAP 0300, ENTRY POINT A.

COMMUNICATIONS failure .....
Mod. 1 GO TO MAP 0400, ENTRY POINT A.
Mod. 2 GO TO MAP 0450, ENTRY POINT A.

OP PANEL failure .....
GO TO MAP 0500, ENTRY POINT A.

OPERATOR MESSAGE THAT WILL NOT CLEAR..
GO TO MAP 0500, ENTRY POINT A.

POWER failure.....
GO TO MAP 0600, ENTRY POINT A.

FRU REPLACEMENT does not fix failure ..
GO TO MAP 0900, ENTRY POINT A.

SYMPTOM or SC not found or unknown....
Continue with this MAP:

GO TO PAGE 4, STEP 002, ENTRY POINT D.

NOTE 2:
Reading the Op Panel LEDS

1. OP Panel LEDs are as shown below:

   * 0 0 * * * * *
   * = ON 0 = OFF

2. LEDS are read as 2 groups of 4 whose values are as follows:
   8 4 2 1 8 4 2 1
3. Each group represents one HEX character.
4. The above pattern is read as 9F

NOTE 3:

When diagnosing intermittent problems, the printer should be in a 'Hold Print' or 'Offline' status to prevent the Host system from sending data to be printed.
A safer way is to unplug the internal communication cable from the logic board at 01A-A1A2 (Model 1) or 01A-A1B4 (Model 2) and use the Diagnostic Procedures.
Unplugging the Twinax connectors on a Model 2 is not recommended because this will isolate the rest of the loop from the Host.
Be aware that if no error is on the printer and the communication cable is unplugged, that an SC 28 will occur. This is normal because of the open cable connector.

002
(ENTRY POINT D)

NOTE: The 'Test Key Printouts' referred to in the following MAP steps, refers to the printouts that occurs after the 'TEST' key is pressed and no other key is pressed. The customer was directed by the PDP's to perform this function if possible.

Refer to the (MI 700-1) , 'Test Key Tests'.
DID THE CUSTOMER OBTAIN A 'COMPLETE' LOG PRINTOUT?
Y N

003
IS THE PRINTER POWER SWITCH ON?
Y N

004
(ENTRY POINT E)

1. Power off the printer (if on).
2. Remove the Top and Power Covers (MI 000-1).
3. Unplug the Communications cable from the Printer Logic Board,
   (Mod 1 01A-A1A2, wire side.)
   (Mod 2 01A-A1B4, wire side.)
4. Power the printer on. Allow the printer to run the POWER ON Test (1 minute).
5. While the test is running, carefully observe the the printer for forms, dot band, and ribbon movement.

(Step 004 continues)

(Step 004 continued)
Wait for 1 minute after the test stops.

For Model 1 printers, a 'GOOD' test completion is: 'READY' LED 'ON'. SC=28, 1 minute after 'READY' comes on.
For Model 2 printers, a 'GOOD' test completion is: SC=28, with 'ATTENTION' LED 'ON'.

WAS TEST COMPLETION 'GOOD'?
Y N

005
(ENTRY POINT G)

'SC' 89, LEDS = 9F? (BAT DETECTED ERROR)
Y N

006
SC = 88 LEDS = FF? (CODE DID NOT START RUNNING)
Y N

007
SC=ANY OP OR CEOP CODE LISTED ON PAGE 2 OF THIS MAP?
Y N

008
IS THE OP PANEL COMPLETELY BLANK (NO LIGHTS) AND PRINTER WILL NOT RUN?
Y N

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START MAP

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009
'XX' means any hexadecimal character.
SC = BLANK, LEDS = XX AND NO FORM DRIVE MOVEMENT DURING THE POWER ON BAT?
Y N

010
SC = BLANK, LEDS = XX AND FORMS MOVED DURING POWER ON BAT?
Y N

011
SC = 21? (BAT RAN OK, LANGUAGE SWITCH SET WRONG)
Y N

012
SC = 12?
Y N

013
IS THIS A MODEL 2 PRINTER?
Y N

7 6 6 6
J K L M N P

N P

014
SC = 22? (BAT RAN OK, INVALID OP PANEL SCREEN SIZE SET)
Y N

015
SC = 27? (BAT RAN OK, SUBSYSTEM NOT READY)
Y N

016
SC = 28? (BAT RAN OK, POLL CHECK RECEIVED)
Y N

017
GO TO PAGE 6, STEP 025, ENTRY POINT F.

018
The Printer has received a Poll Check.
GO TO MAP 0500, ENTRY POINT A.

019
This indicates Subsystem not ready.
GO TO MAP 0500, ENTRY POINT A.

020
The Screen size setting for the attached display is inconsistent with the lines-per-inch and characters-per-inch settings of the printer.
GO TO MAP 0500, ENTRY POINT A.

021
SC = 22? (BAT RAN OK, INVALID OP PANEL ADDRESS SW. SETTING)
Y N

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022
SC = 27? (BAT RAN OK, UNIT ADDRESS NOT RECEIVED)?
Y N

023
SC = 28? (BAT RAN OK, LINE SYNC LOST)
Y N

024
SC = 0A? (BAT RAN OK, CLEAR COMMAND RECEIVED)
Y N

025
(ENTRY POINT F)
SC = ANY CODE LISTED IN THE TABLE AT THE BEGINNING (PAGE 2) OF THIS MAP?
Y N

026
MAP has not yet identified the failure. Use the 'Printer Area Failures' list.
GO TO PAGE 3, STEP 001,
ENTRY POINT C.

027
Choose the correct symptom code from the charts at the beginning of this MAP and go to the indicated MAP.

If the SC is an Operator or CE operator message, and the recovery procedures in the Customer's Problem Determination Procedures will not correct it,
GO TO MAP 0500, ENTRY POINT A.

028
The Printer has received a Clear Command.
GO TO MAP 0500, ENTRY POINT A.

029
The Printer has lost line synchronization.
GO TO MAP 0500, ENTRY POINT A.

030
The Printer has not received a valid Unit Address.
GO TO MAP 0500, ENTRY POINT A.

031
This indicates an invalid Op Panel Address Switch setting.
GO TO MAP 0500, ENTRY POINT A.

032
GO TO MAP 0320, ENTRY POINT A.

033
The OP Panel language switch is set incorrectly.
GO TO MAP 0500, ENTRY POINT A.

034
GO TO MAP 0500, ENTRY POINT A.

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035
GO TO MAP 0600, ENTRY POINT A.

036
GO TO MAP 0600, ENTRY POINT A.

037
Go To the MAP indicated by the Charts on page 2 of this MAP for that operator or CE Operator Ststud Code.

038
GO TO MAP 0600, ENTRY POINT A.

039
Press and hold the 'TEST' Key.
Observe the Op Panel Display and LEDS.
ARE ALL DISPLAY SEGMENTS AND LEDS 'ON' (SC=88,LEDS=FF)?
Y N

040
There appears to be an Operator Panel problem.
GO TO MAP 0500, ENTRY POINT A.

041
Press and release the 'Test' key.

Allow the machine to run the 'TEST KEY TESTS'. If the printer can not print the Test BAT will run automatically at this time.

The Printer will end the test key tests and display the SC in the Display.

Find the SC in the Charts on page 2 of this MAP and proceed as directed by the chart.
GO TO PAGE 2, STEP 001, ENTRY POINT B.

042
DO NOT POWER OFF FOR THIS STEP.
With the '28' in the Display plug the Communications cable to the Printer.
Model 1 - 01A-A1A2
Model 2 - 01A-A1B3
If the Display changes from 28 to blank, or some other Status code, the controller has made contact with this printer.
DID DISPLAY CHANGE OR GO BLANK?
Y N

043
Either the controller is not polling this terminal or the internal Communications cable and/or cards are failing.
For Model 1,
GO TO MAP 0400, ENTRY POINT A.
For Model 2,
GO TO MAP 0450, ENTRY POINT A.

044
The Controller has made contact with this printer.
The Communications link to this printer is OK.

To check the printer for Hammer/Emitter alignment, run Test 02 (MI 700-1). Refer to (MI 100-1) Test Key Tests Printouts.

NOTE: Many missing dots is usually a band tracking or alignment problem. Hammer alignment usually shows up as vertical, narrow white lines.

DOES TEST 02 RUN OK?
Y N

045
GO TO MAP 0300, ENTRY POINT A.

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046
To check the quality of the printing on this printer run Test 07, 'Ripple Print' printout. (MI 700-1) .

NOTE: The setting of the language switch, Print Quality Select and Page length switches on this Model printer determines which character set will be printed and the quality of the printed characters.

NOTE 2: If an SC '82' is posted by this test, answer this question 'NO'.
IS PRINT QUALITY OK?
Y N

047
GO TO MAP 0300, ENTRY POINT A.

048
Refer to the error log printout section of the Test Key Printout.
Refer to (MI 100-1).
ARE ANY ERRORS LOGGED?
Y N

049
No trouble has been found with this printer.

050
GO TO MAP 0100, ENTRY POINT A.

051
A Valid Status Code is any readable alphanumeric characters.
IS THERE A VALID SC CODE DISPLAYED?
Y N

052
Press and hold the 'TEST' Key.
Observe the Op Panel Display and LEDS.
ARE ALL DISPLAY SEGMENTS AND LEDS 'ON' (SC=88,LEDS=FF)?
Y N

053
IS THE POWER SUPPLY FAN RUNNING (AC POWER ON THE PRINTER)?
Y N

054
There appears to be a power problem.
GO TO MAP 0600, ENTRY POINT A.

055
There appears to be an Operator Panel problem.
GO TO MAP 0500, ENTRY POINT A.

056
Press and release the 'TEST' key. A printout should occur.
NOTE: If you do not get a completed 'Log printout' as explained in (MI 700-1) , answer this question 'NO'.
WERE YOU ABLE TO GET A 'COMPLETE'LOG PRINTOUT?
Y N

057
Wait for the Test Key Tests to complete.
WAS STATUS CODE '82' DISPLAYED BY TEST KEY TEST?
Y N

058
GO TO PAGE 4, STEP 004,
ENTRY POINT E.

059
GO TO MAP 0300, ENTRY POINT A.

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A V X 4 8 8 START MAP

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060
This printout will be used later in the MAP if no failure is detected when the Power On Tests are run.
GO TO PAGE 4, STEP 004, ENTRY POINT E.

061
GO TO PAGE 4, STEP 005, ENTRY POINT G.

062
IS THE PRINTER STILL POWERED ON?
Y N

063
GO TO PAGE 4, STEP 004, ENTRY POINT E.

064
IS THERE A STATUS CODE DISPLAYED NOW?
Y N

065
IS THE PRINTER RUNNING CORRECTLY (CUSTOMERS JOBS) ?
Y N

066
The following are 'some' examples of 'Print Quality' problems.

Overprinting
Misaligned Printing
Missing Printing (Dots)
Bad Spacing between characters/lines
Smearing
IS THERE A PRINT QUALITY PROBLEM?
Y N

A A
Y Z A B

Y Z A A
A B

067
Refer to the Test Switch Printout which the customer ran and look in the ERRORLOG.
ARE ANY ERRORS LOGGED (MI 100-1) ?
Y N

068
No trouble found with this printer. If you suspect that you have an intermittent failure, gather all available information about it and GO TO MAP 0800, ENTRY POINT A.

069
GO TO MAP 0100, ENTRY POINT A.

070
GO TO MAP 0300, ENTRY POINT A.

071
GO TO MAP 0100, ENTRY POINT A.

072
A complete Log Printout indicates that the problem is intermittent enough not to happen each time the Test Key Tests are run.
The Log Printout may be used later with MAP 0100 if necessary, however, since there is now a Status code,
GO TO PAGE 4, STEP 005, ENTRY POINT G.

ERROR LOG MAP

ENTRY POINTS

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

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
3	005	0320	A
3	006	0350	A
3	006	0900	A
4	012	0900	A
8	016	0900	A

001
(ENTRY POINT A)

If you are not familiar with the 'TEST KEY PRINTOUT' and the information it contains, read the following information carefully.
If you are knowledgeable about the printouts for this Printer, you may:
GO TO PAGE 3 STEP 001 ENTRY POINT B.

The Printouts and code that runs when the 'TEST' key is depressed is referred to as the 'TEST KEY TESTS'.

The 'TEST KEY TESTS' consists of the following:

1. LOG PRINTOUT
2. 'TEST' Basic Assurance Tests (BATS)
3. PATTERN PRINTOUTS
4. ADDITIONAL LOG PRINTOUT

(Step 001 continues)

***** NOTES *****

Pressing the 'TEST' Key causes the 'TEST KEY TESTS' to run.

It is assumed at this time that a 'TEST KEY TEST' has occurred and the result of that test is available.
Use one ran by the customer at the time of failure if possible.

(Step 001 continued)

This MAP diagnoses problems which place data in the 'LOG PRINTOUT', but are not currently on the machine.

Problems that are detected in the 'PATTERN PRINTOUTS' that do not post a SC, are addressed in this MAP but will be diagnosed in MAP 0350 and the MIM (MI 300-1), Print Quality.

Refer to a example 'LOG PRINTOUT' ————————>
(Also see MI 100-1 Test Log Printout.)

The 'LOG PRINTOUT' contains six lines of print named the 'ERRORLOG'(addresses 2BA0 through 2BF0). The errorlog data will be the portion of the printout this MAP is most concerned with.

The 'RAS1 LOG' is also used for problems which occur while the machine is running 'TEST KEY' or 'CE' functions or tests.

The portions of the printout titled PMA INFO, PRT INFO, IDS CRCS, AND MMIO are used primarily by Engineering for Code problems. Your support structure will direct you if their use becomes necessary.

This sample log shows how errors are logged and how to read the sample. Use the customer log and check for entries which indicate failures in the associated areas.

NOTE: If the Customer reports an intermittent problem in a particular area, use it instead of the order in which they appear in this MAP.

If a SC is displayed by the 'TEST BAT' or during the 'PATTERN PRINTOUTS', it is not considered an intermittent problem and will not be diagnosed in this MAP. Errors detected while printing the Test Printout will appear in the 'ADDITIONAL LOG PRINTOUT' at the end of the tests.

EXAMPLE 'LOG PRINTOUT'

```
**************** ERRORLOG ******************

      (   STATISTICAL COUNTERS    )
2BA0  00000000 00000000 00000000 00000000
2BB0  00000000 00000000 00000000 00000000
2BC0  00000000 00000000 00000000 00000000

      (   SEQUENCE     COUNTERS   )

      (   MACHINE    CHECKS       )
      <——— FIRST ——>  <——— LAST  ——>
2BD0  00000000 00000000 00000000 00000000

      (   PRINTER    PROBLEMS     )
      LAST————————————FIRST
2BE0  00000000 00000000 00000000 00000000

      ( COMMUNICATIONS PROBLEMS   )
      LAST————————————————————FIRST
2BF0  00000000 00000000 00000000 00000000

**************** RAS1 LOG ******************
0080  00000000 00000000 00000000 00000000
```

(Step 001 continues)

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(Step 001 continued)
(ENTRY POINT B)

***NOTE: HOW TO USE THE ERRORLOG ***

Carefully scan the first three (3) lines of data on the Customer Test Key Test printout (The ERRORLOG addresses 2BA0 through 2BCF).

Address 2BCE should contain '01' as a normal condition. Any other addresses which are NOT '00' contain counts of errors.
ARE THERE ANY NUMBERS IN THE FIRST 3 LINES OF THE ERRORLOG (OTHER THAN '01' IN 2BCE)?
Y N

002
Look at the last three (3) print lines of the Customer's 'ERRORLOG' (Adresses 2BD0 through 2BFF).
ARE ANY NUMBERS OTHER THAN '00' LOGGED?
Y N

003
Look at the Customer's 'RAS1 LOG' printout. Observe address 0080. This is the first byte of the 'RAS1 LOG'.
IS THE NUMBER '8X' (X=ANY CHARACTER)?
Y N

004
(ENTRY POINT C)

In the Customer 'Log Printout', note the value in location 2BCE.
2BCE = Count of dirty Home Emitters.
.The normal number here is 01.
.If an SC=12 is displayed in the Status Display, at the end of Test Key Tests or at power on the number will be invalid.
.'02 through 0b' means fewer lines-per-minute of output
(Step 004 continues)

(Step 004 continued)
(called loss of 'throughput').
.If the customer is having throughput problems, check this path.

(ANSWER 'NO' IF THROUGHPUT IS THE PROBLEM)
IS THE VALUE IN LOCATION 2BCE '01'?
Y N

005
Follow MAP 0320 as if you have SC=12.
GO TO MAP 0320, ENTRY POINT A.

006
If you have print quality problems indicated by the 'Pattern Printout' portion of the Test Key Printout,
GO TO MAP 0350, ENTRY POINT A.

If print quality is OK, no trouble has been found in the 'TEST KEY TESTS'.
GO TO MAP 0900, ENTRY POINT A.

007
GO TO PAGE 8, STEP 016, ENTRY POINT DE.

008
Errors logged in addresses 2BD0 through 2BFF are in sequence, as indicated in the 'EXAMPLE LOG PRINTOUT' illustration in this MAP. Refer to the chart below:

If errors are in	Go To	Entry Point
2BD0 through 2BDF	Page 4 Step	012 MC
2BE0 through 2BEF	Page 5 Step	013 PE
2BF0 through 2BFF	Page 7 Step	015 CE

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009
Look at the Customer's 'RAS1 LOG' printout. Observe address 0080. This is the first byte of the 'RAS1 LOG'.
IS THE NUMBER '8X' (X=ANY CHARACTER)?
Y N

010
GO TO PAGE 6, STEP 014, ENTRY POINT MF.

011
The '8x' in the first byte (0080) of the 'RAS1 LOG' indicates that the following four(4) bytes contain information about an error that occurred at Power On or during a 'Test Key Test'.
Refer to (MI 700-1) 'List of Diagnostic Status Codes and Additional Error Log Bytes' to understand the meaning of these four(4) bytes. Using the list in the MIM and the information at the following Entry Point, first try to solve the error found in the RAS1 LOG then return here and continue with the rest of the errors in the first 3 lines of the 'ERRORLOG'.

First
GO TO PAGE 8, STEP 016, ENTRY POINT DE.

Then
GO TO PAGE 6, STEP 014, ENTRY POINT MF.

012
(ENTRY POINT MC)

MCPC ERROR

Errors of this type can be caused by:

1. ELECTRICAL NOISE
   Ensure all grounding on the printer is correct. (MI 800-1). Also check for sources of electrical noise generation in the area, i.e. Radio Transmitters, industrial equipment, etc.. Suggest moving the printer if necessary.
2. DEFECTIVE RAM OR ROS
   Run Test 52. If good, exchange System Card (MI 800-1).
3. LOOSE CARDS OR CABLE CONNECTIONS
4. MICRO CODE FAILURE

Check items 1, 2 and 3. If no trouble can be found,

Exchange the SYSTEM CARD
On Model 2 exchange the Communications Card (see note)

NOTE: (On Model 2 Printers, the Communications Card can cause a Machine Check with a SC of '94'.

NOTE 2: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.

GO TO MAP 0900, ENTRY POINT A.

013
(ENTRY POINT PE)

PRINTER ERROR

Refer to the chart below. The last error is designated with a 'xx'. 'yy' is the number of times in a row that 'xx' occurred. Refer to the Test Key printout and note the number at 'xx'.

PRINTER ERRORS		
2BE0	xxyy0000 00000000 00000000 00000000	
	LAST ———————————————	FIRST

Use the 'xx' value (Status Code) not the address and go to the following Entry Point.
GO TO PAGE 9, STEP 017, ENTRY POINT PM.

014
(ENTRY POINT MF)

MOST FREQUENT ERROR

Refer to the Chart at right ——————————>

Read the information below the chart then return here if throughput (SC=12) is not the problem.

Pick the counter in your Statistical counter area that has the largest value.

If more than one type of error is logged, take them in order of highest count first and continue until all have have been addressed.

Go to the Entry Point indicated below and perform the action indicated for each error logged. Return to the Entry Point below after each error is corrected until all have been addressed.

GO TO PAGE 9, STEP 017, ENTRY POINT PM.

SAMPLE STATISTICAL COUNTERS

	0-1-2-3	4-5-6-7	8-9-A-B	C-D-E-F
2BA0	00000000	00000000	00000000	00000000
2BB0	00000000	00000000	00000000	00000000
2BC0	00000000	00000000	00000000	0000xxyy

Counters start at location X'2BA0' and end at location x'2BCD'.

This is a total of 48 counters, 16 in each line of print. Not all are used. (MI 100-1) Statistical Errorlog.

The number that appear at (xx) represent the number of home emitter slots on the band that are dirty. (1 is normal)

If an SC = 12 is displayed, the number will not be a valid indication of the number of dirty slots.
(yy) is unusable data.
If (xx) is either '00' or greater than '01', the Dot Band is dirty and throughput (number of lines per minute) may be effected.
If throughput is the problem you are concerned with (SC=12)
GO TO PAGE 3 ENTRY POINT C.

If throughput is NOT the problem continue with this step.

015
(ENTRY POINT CE)

COMMUNICATIONS ERROR

COAXIAL (Model 1)

SC Code '28' is posted 2 minutes after the POR BAT ends if a POLL from the controller is not received. Only one entry is made when the lack of POLL is detected. Once code '28' is removed by receipt of a poll, it will not return until the next time the printer is powered off and on.

SC code '23' can be caused by:
- The Controller not polling this printer.
- The Cable from the Coax connector to the back of the board, or an open Coax cable.

SC Code '27' is posted when the communications between the printer and the Controller is stopped after initial contact is made. SC '27' can be caused by the controller getting too busy to talk to this printer.

TWINAXIAL (Model 2)

SC code '28' is posted four times for each second that the controller is not on line with the printer. The Log entries (2BF0 through 2BFF) will reach x'FF', increment to the next address and start counting again. A total of 8 entries of x'FF' entries can be made.
SC code '28' can be caused by:
- The Controller not polling this printer.
- The Communications Attachment Card.
- The Cable from the Twinax connectors to the back of the board, or an open Twinax cable.

SC code '27' is posted if the address of this printer is not received every second. This code can only be posted if the controller is on line but not sending this printers address.

016
(ENTRY POINT DE)
DIAGNOSTIC ERROR

The information in locations '0081 - 008F' are status codes and/or information about status codes to be used for FRU Isolation. (Refer to (MI 700-1) List of Diagnostic Status Codes) Use the code in location 0081 and perform the indicted checks. Reseat cables and cards and/or exchange parts as necessary.

SC	MEANING	CHECK	MIM
81	PAPER EOF	End-of-Form sensor	300-1
82	PAPER JAM	Paper Jam sensor	300-1
83	PLATEN OPEN	Platen Switch	300-1
85	COVER OPEN	Band Cover Switch	300-1
A0	SYSTEM CARD	System Card/EPROM Card	800-1
A1	HAMMER CARD 1	Hammer Driver Card 1	800-1
A2	HAMMER CARD 2	Hammer Driver Card 2	800-1
A7	FORMS CHECK	Forms Driver Card	800-1
A9	EMITTER CHECK	Sensor Card	800-1
AA	RAM CHECK	Exchange System Card	800-1
AC	COMM ERROR	Model 1 - System Card	800-1
		Model 2 - Comm Card	800-1
AE	OP PANEL	Operator Panel	500-1
C1	HAMMER BLOCK 1	Hammer Block 1	300-1
C2	HAMMER BLOCK 2	Hammer Block 2	300-1
C3	HAMMER BLOCK 3	Hammer Block 3	300-1
C4	OPEN COIL ?	Swap Hammer Card 1 and 2	
C5	SHORTED COIL?	Swap Hammer Card 1 and 2	
C6	POWER FAILURE	Power Supply	600-1
C7	FORMS CABLE	Forms Motor	300-1
CE	EMITTER CHECK	Emitter Sensor	300-1
		Dot Band	300-1
		Sensor Card	800-1
CF	POWER FAILURE	Power Supply	600-1

After repairs are made,
GO TO MAP 0900, ENTRY POINT A.

017
(ENTRY POINT PM)

ERROR LOG ADDRESS	CONTAINS COUNT OF ERRORS	ERROR CODE MEANING	CAUSE/ACTION TO BE TAKEN FOR THE ERROR CODE YOU ARE NOW WORKING WITH	MIM REF.
2BA1	01	Out of Paper	- EOF Sensor Adjustment	300-1
2BA2	02	Paper Jam	- Paper Jam Sensor	300-1
			- Feed Rollers Binding	300-1
			- Feed Rolls not closing	300-1
2BA3	03	Platen Open	- Platen Switch	300-1
			- Platen Mechanism Binding	300-1
2BA4	05	Band Cover	- Band Cover Switch	300-1
			- Band Cover Actuating Tab	300-1
2BA8	50	Open Coil	- Use MAP 0390 then if	
			- necessary exchange following	
			- Hammer Driver Card 1	800-1
			- Hammer Driver Card 2	800-1
			- Hammer Driver Cables 1-4	300-1
			- Hammer Block 1	300-1
			- Hammer Block 2	300-1
			- Hammer Block 3	300-1
2BB0	36	Time Out	- Sensor Card	800-1
			- Dirty Dot Band	300-1
			- Emitter Sensor	300-1
2BB1	37	Form Error	- Form Motor Driver Card	800-1
			- Form Motor	300-1
2BB5	41	Parity Error	- Hammer Driver Card 1	800-1
2BB6	42	Parity Error	- Hammer Driver Card 2	800-1
2BB9	39	Slow Print	- Power Supply	600-1
2BBB	47	Forms Check	- Forms Driver Card	800-1
			- Forms Motor	300-1
			- 32V from Power Supply	600-1
			- System Card (unlikely)	800-1
2BBC	48	Shorted Hmr.	- Hammer Driver Card 1	800-1
			- Hammer Driver Card 2	800-1
			- Hammer Blocks/cables	300-1
2BBD	49	-	- Exchange System Card	800-1
2BBF	51	Pedestal Error	- Hammer Driver Card 1	800-1

(Step 017 continues)

(Step 017 continued)

ENTRY POINT PM (Continued...)

ERROR LOG ADDRESS	CONTAINS COUNT OF ERRORS	ERROR CODE MEANING	CAUSE/ACTION TO BE TAKEN FOR THE ERROR CODE YOU ARE NOW WORKING WITH	MIM
2BC0	52	- Pedestal Error	- Hammer Driver Card 2	800-1
2BC5	57	- Emitter Check	- Sensor Card	800-1
			- Dot Band Binding	300-1
2BC6	58	- 32V Power Failure	- Hammer Driver Card 1	800-1
			- Hammer Driver Card 2	800-1
			- Shorted Coils	300-1
			- Power Supply	600-1
2BCD	28	- Communication-	GO TO STEP 015 ENTRY POINT CE	
2BCE		- Dirty Dot Band	- GO TO STEP 004 ENTRY POINT C	

NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.

ENTRY POINT A

Review symptom list and use 'MAP Path' that best describes failure.
See (MI 300-1) Print Quality S.C. for Print Quality Examples.

PRINT SYMPTOMS	GO TO MAP	POSSIBLE FRU'S, (field replaceable units)
SC=01,31 or 81 w/forms loaded	0330	End-of-Forms sensor or wiring System Card A2
Forms loading Problems	0330	End-of-Forms Sensor, Platen Open Switch, Auto-load Clutch and assembly.
Forms Jams Problems	0330	Jams Sensor, Form Feeding mechanisms Mechanical portions of the paper path.
SC=02,32 or 82 If occurs at End-of-Forms	0330 ———>	Feed Rolls open, Paper Jam Sensor, Wiring, System Card A2 or Forms Drive Belt End-of-Forms Sensor or Wiring System Card A2
SC=03,33 or 83	0330	Platen Switch or wiring, System Card A2
SC=04,34 or 84	0340	System Card A2 or card in wrong location
Prints with Platen Lever open	0330	Platen Switch or wiring, System Card A2
SC=05,35 or 85	0340	Band Cover Open Switch or wiring, System Card A2, Band Cover Tab.
SC=12	0320	Dot Band Dirty, Emitter Card, Band Tracking
Prints with Cover open	0330	Band Cover Open Switch or wiring, System Card A2
SC=36	0320	System Card A2

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PRINT SYMPTOMS	GO TO MAP	POSSIBLE FRU'S, (field replaceable units)
SC=41 or 42	0370	Must use MAP to isolate
SC=47	0330	Must use MAP to isolate
SC=48	0370	Must use MAP to isolate
SC=49	0340	Must use MAP to isolate
SC=50	0370	Must use MAP to isolate
SC=51 or A1	0370	Hammer Driver Card 1 E2
SC=52 or A2	0370	Hammer Driver Card 2 F2
SC=57 or CE	320	Band Drive Motor, Pulsed Sensor Card C4 Emitter Sensor, Dot Band, Band Drive system, Relay
SC=A7	0330	Forms Driver Card G2
SC=A8	0340	Card installed in wrong location.
SC=C1,C2 or C3	0370	Hammer Assembly 1, 2 or 3 respectively Possible Bad Hammer Driver Card—Use MAP
SC=C4	0370	Undetermined Open Coil indication Must use MAP to isolate
SC=C5	0370	Must use MAP to isolate
SC=C6	0370	Must use MAP to isolate
SC=C7	0330	Forms Motor
SC=C8	0340	System Card

PRINT SYMPTOMS	GO TO MAP	POSSIBLE FRU'S, (field replaceable units)
Print Quality Problems - All Print Quality Modes	0350	See (MI 300-1) for Print Quality Examples.
Light Print	0340	Ribbon Drive Motor, Ribbon Cartridge , Platen-to-Hammer Gap, Band condition/tracking
Print Errors Missing Dots or No Dots	0350	Dot Band, Hammer Blocks, Platen Gap, Hammer Driver Cards E2 and J2 or Worn Ribbon
Registration Problems	0350 ——>	See (MI 300-1) for examples of Horizontal and Vertical Character Alignment. Perform Print Quality S.C.
Losing (*——>) Characters or Printing same Character twice.	Mod. 1 0400 Mod. 2 0450	* This means single characters occasionally, On Line-not large blocks of characters. Model 1 System Card A2 Model 2 Communication or Tailgate card
Prints Wrong Character	0500	Check Language Switch Setting Op-Panel System Card or EPROM Card
Prints slow	0350	Dirty Band, Forms Motor, System Card A2 Forms Driver Card G2, Pulsed Sensor Card
Poor vertical character alignment	0330	Form drive belt, belt tension, Motor pulley, Worn tractor pins or excessive tension on forms.

PRINT SYMPTOMS	GO TO MAP	POSSIBLE FRU'S, (field replaceable units)
Forms Movement/ Auto-load	0330	Forms Feed Motor, Forms Driver Card G2, EOF Sensor, Platen Switch, Forms Feed Tractor Assembly,
Indexing Failures	0330	Forms Feed Belt or OP Panel Page Length Switch
Horizontal Character Alignment	0330	Dot Band Motor Pulleys and belts, Band Drive Wheels or Emitter Sensor
Ribbon Drive Motor turns continuous	---->	Relay, the relay wiring or System Card A2
Intermittent	0800	-USE WHEN THERE IS NO SOLID SYMPTOM.
End	0900	

EMITTER MAP

ENTRY POINTS

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

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	009	0010	A
11	077	0800	A

001
(ENTRY POINT A)

This MAP diagnoses failures causing the following SC codes:

SC=CE SC=A9
SC=12 SC=36 SC=57
LOG Printout '2BCE' not equal to '01'.

FRU LIST
Dot Band mechanical drive system
Emitter Sensor
Sensor card

ALSO
Customer's Dot Band
(Supply item.)

DOES THE SC=36 or 57?
Y N

002
(ENTRY POINT C)
DOES THE SC=CE?
Y N

003
DOES THE SC=A9?
Y N

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004
NOTE: If you came here from MAP 0100 with address '2BCE' not equal to '01', answer this question 'YES'.

IS THE PROBLEM SC=12'S THAT OCCUR WHEN PRINTER POWER IS FIRST SWITCHED ON?
Y N

005
ARE YOU HERE BECAUSE OF CUSTOMER REPORTED PROBLEMS, OR INTERMITTENT '57' STATUS CODES?
Y N

006
Run test 75, see (MI 700-1) Selecting Tests, if needed.
DID THE MACHINE STOP WITH SC = CE?
Y N

007
IS ANY ERROR CODE IN THE DISPLAY?
Y N

008
No trouble found with the Emitter Sensor. If the problem is intermittent, clean the Dot band, Ribbon shield, and Sensor as per the Operating Instructions. Especially check for mechanical problems that could cause the Dot Band speed to vary. (MI 300-1) Band Drive Service check. If problem still occurs intermittently, you may choose to exchange FRU's in the order indicated by the particular failure, from the 'FRU LIST' at the beginning of this MAP.

009
Return to the Start MAP, 0010 with the SC you now have and diagnose the failure.
GO TO MAP 0010, ENTRY POINT A.

010
GO TO PAGE 4, STEP 024,
ENTRY POINT B.

011
GO TO PAGE 11, STEP 077, ENTRY POINT F.

012
NOTE: Read the following before continuing.

The Emitter Sensor circuits are working partially or the SC posted would be '36' rather than '12'.

The '12' is posted when the logic gets indications that there are numerous dirty or obstructed emitter slots on the Dot band.

Ensure that the Dot band and Sensor are clean and free of obstructions. (MI 300-1) Band Drive Service Check.
Power off and on several times allowing the Power On Test to complete each time, until the failure returns or you feel that it is eliminated.
IS THE PROBLEM SOLVED?
Y N

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013
Power Off the printer.
Check the Emitter Sensor (SENS) connector and connector 01A-A1C4 for loose, dirty or intermittent connections.
(MI 800-1 Wiring Diagrams) - Control Cable).
ARE THE CONNECTORS OK?
Y N

014
Repair or replace as necessary.
GO TO MAP 0900, ENTRY POINT A.

015
Check the Dot band, Band Guide and the Band support bearings for wear and correct tracking of the Band. If the Band is tracking too high, the sensor may fail to read the timing slots on the band. (MI 300-1) Band Drive Service Check.
IS THE DOT BAND, GUIDE AND BEARINGS OK?
Y N

016
Perform the Band Drive Service check. (MI 300-1). Repair or exchange the Dot band or bearings as necessary.
GO TO MAP 0900, ENTRY POINT A.

017
Power Off the printer.
Exchange the Emitter Sensor assembly. (MI 300-1).
GO TO MAP 0900, ENTRY POINT A.

018
GO TO MAP 0900, ENTRY POINT A.

019
With the 'A9' in the Display, press and release the 'Cancel Print' Key two times.
DOES THE SC NOW EQUAL '50'?
Y N

020
Power Off the printer.
Exchange the Sensor Card.
01A-A1C4 (MI 800-1 Locations)

Power On the printer.
Recheck the symptoms
If the problem still occurs, power off and exchange the System Card 01A-A1A2. (MI 800-1 Locations)
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
GO TO MAP 0900, ENTRY POINT A.

021
Remove the Top and Power Covers (MI 000-1).
With the CE meter and using any D08 pin as ground, ensure that +5V is getting to the Sensor Card at 01A-A1C4D03 and C4J03.
IS THE +5V TO THE CARD OK?
Y N

022
Use the Wiring Diagrams (MI 800-1 Wiring Diagrams) to trace the missing voltage.
Repair or replace as necessary.
GO TO MAP 0900, ENTRY POINT A.

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023
Reseat the Sensor Card (01A-A1C4) and recheck the symptoms. If the problem still exists, exchange the Sensor Card 01A-A1C4 (MI 800-1 Locations).
GO TO MAP 0900, ENTRY POINT A.

024
(ENTRY POINT B)
With SC=CE, press and release the 'Cancel Print' Key two times.
The Display will change and show a secondary code.
DOES THE SC NOW EQUAL '51' OR '52'?
Y N

025
DOES THE SC=50?
Y N

026
DOES THE SC=73?
Y N

027
The SC must equal '74'. Emitter Check when printing.
Power Off the printer.
Exchange the Sensor Card 01A-A1-C4. (MI 800-1 Locations)
GO TO MAP 0900, ENTRY POINT A.

028
Home and Print Emitters failed to come on when they should have.
1. Remove the Ribbon.
2. Remove the Dot Band Cover.
3. Replace the Ribbon and close the Forms thickness lever.
4. Select Test 55 (MI 700-1). Selecting Tests.
5. Press Key 'D' until SC = A1 and then release.
6. Observe the Band and Ribbon carefully.

IS THE BAND MOTOR RUNNING?
Y N

029
Power Off the printer.
Exchange the System Card 01A-A1A2. (MI 800-1 Locations).
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
GO TO MAP 0900, ENTRY POINT A.

030
Observe the Band while it is running.

CAUTION

DO NOT TOUCH THE MOVING BAND.
Look for incorrect band tracking, slippage, binding of the Idler Pulley. (MI 300-1) (Band Drive Service Check).
IS THE BAND RUNNING OK?
Y N

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031
Perform the Band Drive Service Check (MI 300-1).
To verify repairs:
Select Test 07 (MI 700-1). Selecting Tests. When printing starts, press and release key '6'. This will cause the test to run until cancel print is pressed or an error occurs.
If an error occurs, restart in the MAPS/MIM as necessary.
If no errors,
GO TO MAP 0900, ENTRY POINT A.

032
GO TO PAGE 6, STEP 040, ENTRY POINT D.

033
Observe the Dot band with Power still on the machine.
IS THE DOT BAND MOTOR RUNNING CONTINUOUSLY?
Y N

034
The logic detected the Dot band running when it should not be. The most likely cause is an intermittent short on the signal line to the Relay which tells the Motor to run. (01A-A1D4B02 on the cable.)
1. Power Off the printer. Remove the Top and Power Covers (MI 000-1).
2. Check the wiring from the Relay to the Logic Board for shorts to ground. See Control Cable (MI 800-1 Wiring Diagrams)
3. If no short can be found look for intermittent connections in the Control cable (SENS Conn.) and reseat the Sensor Card and System card. (MI 800-1 Locations).

035
Power Off the printer.
Remove the Power Cover (MI 000-1).

NOTE! FOR WORLD TRADE MODEL 1, THE EPROM CARD MUST BE IN 01A-A1B2.
Unplug the System Card 01A-A1A2 and EPROM Card 01A-A1B2 or C2 if present.
Power On the printer.
IS THE BAND MOTOR RUNNING NOW?
Y N

036
Power Off the printer.
Check and reseat all of the Top Card Crossovers and also reseat the System Card 01A-A1A2.
Recheck the symptoms
If the Band still runs continuously,
Exchange the System Card 01A-A1A2 and if one is installed also exchange the EPROM Card 01A-A1B2 or C2. -NOTE! FOR WORLD TRADE MODEL 1, THE EPROM CARD MUST BE IN 01A-A1B2.- (MI 800 locations). NOTE 2: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
GO TO MAP 0900, ENTRY POINT A.

037
There is a short to ground in the signal line to the Relay that turns on the Band Motor (01A-A1D4B02 on the cable, (MI 800-1 Wiring Diagrams) - AC Cable), or the Relay is defective. (MI 600-1).
Repair or replace as necessary.
GO TO MAP 0900, ENTRY POINT A.

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038
1. Remove the Ribbon.
2. Remove the Band Drive Cover.
3. Replace the Ribbon but not the Band Drive Cover.
4. Select Test 55. (MI 700-1) Selecting Tests.
5. Press Key 'D' until SC = A1 and then release.

Observe the Band and Ribbon carefully.
IS THE BAND RUNNING?
Y N

039
IS THE RIBBON MOTOR RUNNING?
Y N

040
(ENTRY POINT D)
Power Off the printer.
Remove the Top and Power Supply covers. (MI 000-1)
NOTE: SET METER TO READ AT LEAST +10VDC.

Remove the relay cover. (MI 600-1) Relay

DANGER

AC POWER IS PRESENT ON THE RELAY WITH POWER ON.
Measure the voltage from logic ground (any D08 pin) to terminal 4 on the Relay.(MI 600-1) Relay, (MI 800-1 Wiring Diagrams) AC cable)
IS THE VOLTAGE LESS THAN 0.2 VDC?
Y N

041
The Relay is not receiving a signal to turn on the Drive Motors.
1. Power Off the printer.
2. Check the continuity of the wire from Relay terminal 4 to 01A-A1D4B02 on the connector (D02 on the logic board). Check also connector and card seating (MI 800-1 Locations).
3. If the Continuity and seating are good, Exchange the System Card 01A-A1A2 and if one is installed also exchange the EPROM Card 01A-A1B2 or C2. -NOTE! FOR WORLD TRADE MODEL 1, THE EPROM CARD MUST BE IN 01A-A1B2.- (MI 800 locations). NOTE 2: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
4. If the continuity is bad, Repair or replace as necessary. (MI 800-1 Wiring Diagrams) - Control Cable.

GO TO MAP 0900, ENTRY POINT A.

042

DANGER

AC POWER IS PRESENT ON THE RELAY.
Measure the voltage at terminal 3 on the Relay. (MI 800-1 Wiring Diagrams) - Control Cable.
IS THE VOLTAGE +4.5 VDC OR MORE?
Y N

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043
+5vdc is not being supplied to the Relay from connector 01A-A1D4. See (MI 800-1 Wiring Diagrams) - Control Cable.
Power Off the printer.
Unplug connector 01A-A1D4.
Measure the continuity of D4D02 on the connector to Terminal 3 on the Relay.

If continuity is bad, exchange the Control Cable.
If continuity is good, check the connection to terminal 3 and the pin on the board at 01A-A1D4B02 for damage and good contact.
Restore the machine and recheck the symptom.
If the same problem still exists, the Logic Board is defective. (MI 500-1)

044

DANGER

AC POWER IS PRESENT ON THE RELAY.

CAUTION

CHANGE YOUR METER FROM DC TO AC VOLTS AND SET IT TO READ LINE VOLTAGE.
You should still be in Test 55 with Key 'D' selected.
Measure for Line voltage at Relay terminal 1.
IS LINE VOLTAGE PRESENT?
Y N

045
There is an open wire in the AC Distribution to the Relay. Power Off the printer.
Repair or replace as necessary. (MI 800-1 Wiring Diagrams) - AC wiring.
GO TO MAP 0900, ENTRY POINT A.

046

DANGER

AC POWER IS PRESENT ON THE RELAY.

CAUTION

ENSURE YOUR METER IS SET FOR AC VOLTS AND SET TO READ LINE VOLTAGE.
You should still be in Test 55 with Key 'D' selected.
Measure for Line voltage at Relay terminal 2.
IS LINE VOLTAGE PRESENT?
Y N

047
Power Off the printer.
The Relay is defective. Exchange it. (MI 600-1) Relay.
GO TO MAP 0900, ENTRY POINT A.

048
There is an open circuit in the AC Distribution from the Relay terminal 2 to the Band and Ribbon Drive Motor connectors.
Power Off the printer. Repair or replace as necessary. (MI 800-1 Wiring Diagrams) AC Cable.
GO TO MAP 0900, ENTRY POINT A.

049
Observe the Band Drive carefully.
IS THE BAND MOTOR RUNNING EVEN IF THE BAND IS NOT MOVING?
Y N

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050
There is an open in the AC Distribution to the Band Motor or the Motor and/or its Capacitor are bad.
1. Power Off the printer.
2. Remove the Op. Panel and Op. Panel Stiffener (MI 500-1) to gain access to the Band Motor and its wiring.
3. Check the continuity of the Wiring to the Motor (MI 300-1) and (MI 800-1 Wiring Diagrams). Also ensure a good connection between the Motor and capacitor.
4. If no trouble is found with the wiring, exchange the Band Motor and capacitor (MI 300-1).

GO TO MAP 0900, ENTRY POINT A.

051
Since the Band Motor is running but the Band is not moving, the problem is mechanical. Insure that the Dot band is correctly installed. Also check that the Band Tension lever is correctly positioned. (MI 300-1). Perform the Band Drive Service Check (MI 300-1).
Repair or replace as necessary.
GO TO MAP 0900, ENTRY POINT A.

052
Observe the Band very carefully.
IS THE BAND RUNNING WITHOUT SLIPPAGE OR BINDS?
Y N

053
Check the Band Drive for loose set screws, loose drive belts or other mechanical problems. (MI 300-1) Band Drive Service Check.

054
Read the following carefully.
1. Was the customer's Status Code '39', before running the Test Key Test?
2. Has the customer reported intermittent SC '39's?
3. If you have a Test Key Printout, are there any SC '39' errors logged (any count in address 2BB0)?

DID YOU ANSWER YES TO ANY OF THE ABOVE?
Y N

055
NOTE: You should still be in Test 55 with Key 'D' selected and the Band still running

CAUTION
DO NOT TOUCH THE MOVING DOT BAND

Observe LED number 4.
IS LED NUMBER 4 BLINKING?
Y N

056
CAUTION
DO NOT TOUCH THE MOVING DOT BAND

1. Ensure that the Dot Band is tracking properly, touching the support bearings next to the Emitter Sensor on the right side of the print mechanism.
2. Also make certain that the band is in the slot correctly, and is between the cleaning brushes and touching the oiler.
3. Clean the Emitter Sensor assembly if dirty (Operating Instructions).

IS THE BAND TRACKING OK?
Y N

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057
Perform those parts of the Band Drive Service Check (MI 300-1) that are necessary to correct this problem.
GO TO MAP 0900, ENTRY POINT A.

058
Replace the Band Drive Cover and Ribbon, then
GO TO STEP 059, ENTRY POINT E.

059
(ENTRY POINT E)
1. Power Off the printer.
2. Check the Sensor cable (SENS Connector) and 01A-A1C4 connectors for marginal connections. Unplugging and reseating is recommended. (MI 800-1 Locations)

NOTE:If your secondary SC was 52, carefully check pin 3 on the SENS connector for opens.

3. Power On the printer.
4. After the POR Test completes (LEDS = 9F) press and release the 'TEST' key to do a printout.

DID THE PRINTER FAIL WITH SC=CE OR A9?
Y N

060
The problem was a bad connection in the cable.
GO TO MAP 0900, ENTRY POINT A.

061
Power Off the printer.
Exchange the Sensor Card 01A-A1C4. (MI 800-1 Locations).
Recheck the symptoms
DID THE PRINTER FAIL WITH SC=CE OR A9?
Y N

062
Problem was a bad Sensor card.
GO TO MAP 0900, ENTRY POINT A.

063
The card you just removed is probably good and should be replaced in the machine before ending this service call.
Power Off the printer.
Check each wire in the Sensor Cable (SENS Connector) to 01A-A1C4, very carefully for both opens or shorts to ground.

(MI 800-1 Wiring Diagrams) - Control Cable.
IS THE CABLE OK (NO OPENS OR SHORTS)?
Y N

064
Exchange the Control Cable. (MI 600-1).

065
Insure that none of the following points are grounded by checking continuity to any D08 pin on the Logic board.
01A-A1A2M12
01A-A1G2B12
01A-A1G4B12
01A-A1C4D02

GOOD-means not grounded.
ARE ALL POINTS GOOD?
Y N

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066
The ground must be removed. Do the following:
(MI 800-1 Locations)
Remove the cards from
01A-A1A2 (SYSTEM CARD)
01A-A1G4 (FORMS CARD)
01A-A1C4 (SENSOR CARD)

Check for the short to ground again at the following points:
01A-A1A2M12
01A-A1G2B12
01A-A1G4B12
01A-A1C4D02
IS A SHORT TO GROUND STILL PRESENT ON ANY POINT?
Y N

067
One of the cards you removed contains the short. Monitor for continuity to ground on any one of the grounded pins, and reinstall the cards one at a time until the short returns.
When the short returns the last card installed is defective. Exchange it. (MI 800-1 Locations)
GO TO MAP 0900, ENTRY POINT A.

068
The short is on the Logic Board (MI 500-1). Exchange it if short cannot be located and removed.
GO TO MAP 0900, ENTRY POINT A.

069
Power Off the printer.
Exchange the Emitter Sensor Assembly. (MI 300-1).
Restore the printer.
Power On the printer.
After the POR Test completes press and release the 'TEST' key to run the Test Key Tests.
DID THE PRINTER FAIL WITH SC=CE OR A9?
Y N

070
GO TO MAP 0900, ENTRY POINT A.

071
Power Off the printer.
Exchange the System Card 01A-A1A2 and if one is installed also exchange the EPROM Card 01A-A1B2 or C2. -NOTE! FOR WORLD TRADE MODEL 1, THE EPROM CARD MUST BE IN 01A-A1B2.- (MI 800 locations). NOTE 2: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
GO TO MAP 0900, ENTRY POINT A.

072
SC '39' is a power supply problem. Do the following:

1. Power Off the printer.
2. Unplug connector 01A-A1D5 from the logic board (it comes from the power supply).
3. Check the connectors for loose, pushed back, bent or broken pins or wires. Especially the pin on the connectors at D5B11. Also check the pins on the board at D5D11 and C4D07 for damage.
4. If a problem is located, correct as

(Step 072 continues)

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(Step 072 continued)
necessary and recheck the symptoms.
5. If no problem with the connector has been found, reconnect the connector.
6. Power On the printer.
7. After the Power on Bat completes, run 'TEST 07' several times. (You may want to run in 'loop until error' mode. (MI 700-1) - Test Looping Options).

DID PRINTER FAIL WITH SC=39?
Y N

073
The Problem appears to have been a bad connection If the problem returns at some later date, or when the power supply is hot, you may wish to replace the power supply.
GO TO MAP 0900, ENTRY POINT A.

074
Exchange the Power Supply. (MI 600-1).
GO TO MAP 0900, ENTRY POINT A.

075
Press and release the 'Test Key'.
Allow the machine to run the 'Test Key Tests'.
Check the Log printout for completeness. (MI 100-1) - Test Key Test Printout.

IS THE LOG PRINTOUT COMPLETE?
Y N

076
GO TO PAGE 1, STEP 002, ENTRY POINT C.

077
(ENTRY POINT F)
Since the 'TEST Key Tests' completed successfully the cause of the '36' or '57' error is no longer on the machine and the problem is intermittent.

Do the following in the order listed. Recheck the symptoms after each step and stop when the problem is solved.

Power Off the printer.
1. Analyze the printout for information about the 36 or 57 error. (MI 100-1).
2. Clean the Dot band Emitter slots and the Sensor. (MI 300-1) - Band Drive Service Check and Operating Instructions.
3. Clean, adjust or replace as necessary, the Band Cleaning Brushes. (MI 300-1).
4. Ensure that the Emitter Sensor is firmly mounted and not loose or slanted. 57 errors can result.
5. Check, adjust or exchange the Band Oiler Assembly. (MI 300-1).
6. Perform the Band Drive Service Check. (MI 300-1).
   NOTE: Mechanical problems with the Band drive can cause Dot band speed variations, especially when printing heavy patterns. Intermittent '57' codes can result.
7. Reseat the Sensor Card 01A-A1C4. (MI 800-1 Locations)
   Recheck the Symptoms, exchange card if necessary. Sensor Card 01A-A1C4. (MI 800-1 Locations).
8. Check the Emitter Sensor connector and connector 01A-A1C4 for intermittent connections.
9. If the problem still exists see the Intermittent Problems Map for other options.

GO TO MAP 0800, ENTRY POINT A.

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ENTRY POINTS

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

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
6	044	0100	A

001
(ENTRY POINT A)

ARE YOU HERE BECAUSE OF A CUSTOMER REPORTED AUTOLOAD PROBLEM?
Y N

002
DO YOU HAVE ONE OF THE STATUS CODES LISTED AT THE RIGHT?
Y N

This MAP diagnoses failures causing the following Status Codes:

Status Code = 01, 31, or 81 End of Forms
Status Code = 02, 32, or 82 Forms Jam
Status Code = 03, 33, or 83 Platen Open
Status Code = 47, A7, or C7 Forms movement

Also: Mechanical Form Movement Problems

•FRU LIST

Form Driver Card
Form Motor
Form Tractor Assembly
Jam Sensor
System Card
EOF Sensor
Platen Switch
Auto-Load Clutch
Control Cable

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PEC———

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003
DOES THE PRINTER PRINT WITH NO FORMS LOADED?
Y N

004
IS THE PROBLEM FORMS JAMS?
Y N

005
IS THE PROBLEM INCORRECT FORMS MOVEMENT, OR INCORRECT SPACING BETWEEN PRINT LINES?
Y N

006
IS THE PROBLEM WITH PRINT OR FORMS REGISTRATION?
Y N

007
IS THE PROBLEM WITH FORMS STACKING?
Y N

008
No problems have been found in the Forms area. Return to START MAP 0010, and re-examine the symptoms of this problem.

009
(ENTRY POINT F)
Damaged or improperly aligned holes in the forms can cause several types of forms problems.
1. Check the Form Tractor Drive pins for wear and damage.
2. Check the tractor assembly for proper positioning (MI 300-1)

ARE TRACTORS OK?
Y N

010
Exchange the Tractor assembly.
(MI 300-1)
GO TO MAP 0900, ENTRY POINT A.

011
Ensure that the forms supply is properly aligned, so that forms may be fed properly through the printer.

1. Remove the Printer top cover and check the forms guides for damage and proper alignment and position.
2. Check the form guides that are located on the top cover and the power cover. Ensure that the form path is not obstructed.

ARE THE FORM GUIDES OK?
Y N

012
Repair or Exchange as necessary.
(MI 000-1, Top and Power cover)
GO TO MAP 0900, ENTRY POINT A.

013
1. Perform the Stacker Assembly portion of the Forms Feeding Service Check (MI 300-1).
2. When you replace the Top Cover, ensure that it sets properly on the base, and that the mounting screws are tightened, and that the form guides do not block the forms path.

GO TO MAP 0900, ENTRY POINT A.

014
IS THE PROBLEM VERTICAL REGISTRATION?
Y N

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015
Horizonal reg. problem. Tractors, correct CPI etc.
(MI 300-1, Band Drive Service Check)

016
Vertical reg. problem. Tractors, correct LPI etc.
Perform the Forms Feeding Service Check (MI 300-1). Also check that the dot-band is installed correctly. (MI 300-1, Dot-Band drive).

017
Select Test 70 (MI 700-1, Selecting Tests).
DID A 'C7' STATUS CODE OCCUR DURING THIS TEST?
Y N

018
DOES THE FORMS MOTOR RUN SMOOTHLY WITHOUT DRAG OR HESITATION?
Y N

019
1. Powar Off the printer.
2. Perform the Forms Feeding Service Check. (MI 300-1)
3. Check the Forms Driver Motor for binds by rotating the motor shaft manually using the feed knob.

DOES THE THE MOTOR SHAFT TURN FREELY WITHOUT BINDS?
Y N

020
CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Exchange the Forms Motor. (MI 300-1)
GO TO MAP 0900, ENTRY POINT A.

021
CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

1. Power Off the printer. Remove the Top and Power Covers (MI 000-1).
2. Unplug the Forms Motor Cable connector from 01A-A1G3.
3. Inspect it for loose or pushed back pins.
4. If damaged, repair or exchange as necessary.
5. If no problem is found, reseat the cable connector at 01A-A1G3.
6. Power on the printer and observe the forms motor while the BAT test is running. (The Forms motor should operate for a short time during the BAT test)

DOES THE FORMS MOTOR RUN SMOOTHLY NOW?
Y N

022
DOES THE SC = 82?
Y N

023
CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Exchange the forms motor. (MI 300-1)
GO TO MAP 0900, ENTRY POINT A.

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PEC

024

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Exchange the system card. If the problem is still present, exchange the Forms driver card. (MI 800-1 Locations)
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.

GO TO MAP 0900, ENTRY POINT A.

025

The problem was a loose connection in the forms motor cable.
GO TO MAP 0900, ENTRY POINT A.

026

Perform the AutoLoad portion of the Form Feeding Service checks. (MI 300-1)
ARE AUTOLOAD CHECKS OK?
Y N

027

Repair or Exchange as necessary.
GO TO MAP 0900, ENTRY POINT A.

028

Perform the Tractor Assembly portion of the Forms Feeding Service Check (MI 300-1), and check for loose drive train.
IS THE TRACTOR ASSEMBLY AND DRIVE OK?
Y N

029

Refer to MI 300-1, Tractor assembly.
Repair or Exchange as necessary.
GO TO MAP 0900, ENTRY POINT A.

030

1. Check the forms path for binds or obstructions which could block the forms path.
2. Check that the position of the tension knob is set to correspond to the thickness of forms being used.

GO TO MAP 0900, ENTRY POINT A.

031

GO TO PAGE 6, STEP 050,
ENTRY POINT E.

032

1. Check the forms guides that are attached to the top cover and also to the power cover, and ensure that the forms have sufficient clearance to feed between them.
2. Do those portions of the Forms Feeding Service Check that relate to the type of form jams the printer is having. (MI 300-1)

GO TO MAP 0900, ENTRY POINT A.

033

1. Select Test 55. (MI 700-1, Selecting Tests)
2. Press and release key 'A'. Status Code should = AF.
3. Remove forms from the printer, and ensure that the EOF sensor arm is not operated.
4. Observe LED number 6. (LED 6 should be ON if forms are not loaded in the printer.)

IS LED NUMBER 6 ON?
Y N

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PEC

034
1. Power Off the printer..
2. Unplug connector 01A-A1D4 from the Logic Board.
3. Power On the printer..
4. Select Test 55. (MI 700-1, Selecting Tests)
5. Press and release key 'A'. Status Code should = AF.
6. Observe LED number 6 again.

IS LED NUMBER 6 ON NOW?
Y N

035

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

1. Power Off the printer..
2. Check the EOF sensor cable connector at 01A-A1D4 for proper seating and pushed back or bent pins.
3. If the connector is OK, replace the System Card at 01A-A1A2.

NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.

GO TO MAP 0900, ENTRY POINT A.

036
The EOF sensor or wiring is shorted, or the sensor arm is jammed or sticking.
(MI 300-1)
Repair or Exchange as necessary.
GO TO MAP 0900, ENTRY POINT A.

037
The EOF sensor and its circuitry are working. The problem may be intermittent.

1. With the printer still in Test 55 and the 'A' key activated, LED number 6 should come ON each time forms are removed from the EOF sensor and go OFF when forms are present.
2. If the response is erratic, ensure that all EOF sensor connections and the system card at 01A-A1A2 is properly seated, and also check the EOF sensor mounting and adjustment. (MI 300-1).
3. If the problem returns, exchange the EOF sensor (MI 300-1).

GO TO MAP 0900, ENTRY POINT A.

038
DOES THE SC = 01,02,03,31,32,33,81,82,83?
Y N

039
DOES THE SC = A7?
Y N

040
DOES THE SC = C7?
Y N

041
DOES THE SC = 47?
Y N

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PEC

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042
Status Codes of C7 or A7 are the only valid codes displayed during the Test Key Tests after a 'Status Code 47' has occurred. Any other Status Code indicates the problem has changed. Return to the Start MAP and use the Status Code or symptom you now have.
GO TO MAP 0900, ENTRY POINT A.

043
Press and release the Test key, to run the Test Key Tests. (Wait approximately one minute for the printer to finish the tests.)
DID THE PRINTER FAIL? (SC=A7 OR SC=C7)
Y N

044
The problem is intermittent. Use the 'LOG PRINTOUT' you just ran and
GO TO MAP 0100, ENTRY POINT A.

045
DOES THE SC = C7?
Y N

046
DOES THE SC = A7?
Y N

047
Status Codes of C7 or A7 are the only valid codes displayed during the Test Key Tests after a 'Status Code 47' has occurred. Any other Status Code indicates the problem has changed. Return to the Start MAP and use the Status Code or symptom you now have.
GO TO MAP 0900, ENTRY POINT A.

048
GO TO PAGE 7, STEP 055, ENTRY POINT G.

049
GO TO STEP 050, ENTRY POINT E.

050
DANGER
HAZARDOUS VOLTAGE PRESENT

(ENTRY POINT E)
This indicates a Forms Motor or cable problem.

Check the Forms Motor Cable at 01A-A1G3 and the 32V connector at 01A-A1E3 for proper seating, and for loose or damaged pins.
IS FORMS MOTOR CABLE OK?
Y N

051
CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
If the cable cannot be easily repaired, (pushed back pins for example) exchange the Forms Motor and cable. (MI 300-1)
GO TO MAP 0900, ENTRY POINT A.

052
Disconnect and reseat the Forms Motor Cable.
Select Test '70' (MI 700-1, Selecting Tests).
DOES THE STATUS CODE = C7?
Y N

053
The failure was a bad cable connection or the problem is intermittent. If you suspect an intermittent problem, use the Intermittent Problems MAP, 0800, otherwise
GO TO MAP 0900, ENTRY POINT A.

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054

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Exchange the Forms Motor. (MI 300-1). If the problem reoccurs, exchange the Forms Driver card and then the System card, one at a time. (MI 800-1 Locations).
GO TO MAP 0900, ENTRY POINT A.

055
(ENTRY POINT G)
This indicates a problem with the Form Driver Card, Forms Motor, 32V Supply or System Card.
Press and Release the Cancel Print Key Two Times, to obtain further status information.
DOES THE SC=11?
Y N

056
DOES THE SC=93?
Y N

057
DOES THE SC=01?
Y N

058
1. Power the machine off, and remove the Forms Motor cable connector at 01A-A1G3.
2. Power the machine on, and observe the BAT Test.
3. The BAT TEST should indicate an error with 89 in the Status Display and 9F in the LED's.
4. Press and Release the Test Key to run the Test Key Tests. (Wait about one minute for the Test to complete).

(Step 058 continues)

(Step 058 continued)
DOES THE SC = C7?
Y N

059

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Exchange the System Card at 01A-A1A2 and if present the Eprom card at 01A-A1B2 or C2
NOTE! FOR WORLD TRADE MODEL 1, THE EPROM CARD MUST BE IN 01A-A1B2.
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
(MI 800-1, Locations).
GO TO MAP 0900, ENTRY POINT A.

060

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Exchange the Forms Motor.
(MI 300-1)
GO TO MAP 0900, ENTRY POINT A.

061

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Reseat or Exchange the Form Motor Driver Card at 01A-A1G2.
(MI 800-1 Locations)
GO TO MAP 0900, ENTRY POINT A.

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062

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Exchange the System Card at 01A-A1A2 and if present the Eprom card at 01A-A1B2 or C2.
NOTE! FOR WORLD TRADE MODEL 1, THE EPROM CARD MUST BE IN 01A-A1B2.
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
(MI 800-1, Locations).
GO TO MAP 0900, ENTRY POINT A.

063

DANGER

HAZARDOUS VOLTAGE PRESENT

Check the Forms Motor cable connector at 01A-A1G3 for a loose connection or bent pins.
IS THE CONNECTOR OK?
Y N

064
Repair or exchange as necessary. (MI 300-1)
GO TO MAP 0900, ENTRY POINT A.

065
Check the seating of the 32V power connector at 01A-A1E3. (MI 600-1 Power Supply)

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Exchange the Form Motor Driver Card at 01A-A1G2. (MI 800-1, Locations)

066
(ENTRY POINT B)
This Entry Point is for form failures that the printer operator cannot correct, or for failures that re-occur as the printer starts to print.
DOES THE SC = 01, 31, OR 81?
Y N

067
DOES THE SC = 02, 32, OR 82?
Y N

068
DOES THE SC = 03, 33, OR 83?
Y N

069
You are in the wrong area of the MAPS. Return to the Start MAP, 0010 and re-diagnose the failure.

070
(ENTRY POINT C)
1. Ensure the Platen is Closed (Printing position).
2. Select Test 55. (MI 700-1, Selecting Tests)
3. Press and release key 'B' - SC should = A0.
4. Observe LED number 4.

IS LED NUMBER 4 ON?
Y N

071
Open the Platen.
IS LED NUMBER 4 ON NOW?
Y N

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A K 8 FORMS MAP

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072
1. Power Off the printer..
2. Unplug connector 01A-A1D4 from the Logic Gate.
3. Power On the printer..
4. Allow the printer to run the POR Test - ignore any errors.
5. Select Test 55. (MI 700-1, Selecting Tests)
6. Press and Release key 'B'. SC should = A0.

IS LED NUMBER 4 ON?

Y N

073

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
The System card is not responding correctly to the Platen Switch inputs. Exchange the System Card at 01A-A1A2 and the Eprom card (if present) at 01A-A1B2 or C2.
NOTE! FOR WORLD TRADE MODEL 1, THE EPROM CARD MUST BE IN 01A-A1B2.
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
GO TO MAP 0900, ENTRY POINT A.

074
Check the mechanical operation of the Auto-load clutch lever. If it is sticking, it will keep the platen switch from transferring. (MI 330-1, Autoload Clutch)

IS THE AUTO-LOAD CLUTCH MECHANISM OK?

Y N

A L A M

A H A J A L A M 8 8

MAP 0330-9

075
See MI 300-1, Autoload Clutch, and repair or exchange the autoload mechanism as necessary.
GO TO MAP 0900, ENTRY POINT A.

076
The Platen Switch or wiring is shorted, and indicates that the switch is operated. (MI 300-1)
Repair or Exchange as necessary.
GO TO MAP 0900, ENTRY POINT A.

077

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

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

1. See MI 300-1, and reseat all switch connectors, Cable connector 01A-A1D4, System Card 01A-A1A2, and verify the platen switch is in good condition and in proper adjustment.
2. If the problem reoccurs, exchange the platen switch. (MI 300-1)

GO TO MAP 0900, ENTRY POINT A.

078

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

Check the control cable connector and wiring at 01A-A1D4. Check for an open wire in the cable between the platen switch and the 01A-A1D4 connector. (MI 800-1, Control cable wiring)
Repair or Exchange as necessary.
GO TO MAP 0900, ENTRY POINT A.

079
DOES THE 02, 32 OR 82 STATUS CODE OCCUR WITHOUT A FORMS JAM?
Y N

080
This is the normal indication of a form jam problem. If it is happening often, suspect forms path problems, and perform the Forms Feeding Service checks.
(MI 300-1)
GO TO MAP 0900, ENTRY POINT A.

081
Check that the form drive belt is in good condition and is adjusted correctly (MI 300-1, Forms drive belt)
IS THE FORM DRIVE BELT OK?
Y N

082
Exchange or adjust the form drive belt. (MI 300-1)
GO TO MAP 0900, ENTRY POINT A.

083
- Check that the pressure roll lever on the left side of the printer is positioned toward the rear (pressure rolls closed), and that the tension springs are attached on both ends of the pressure roll shaft. (MI 300-1, Forms pressure roll shaft)

- Check that the paper tension knob is set to the correct position for the thickness of forms being used.
ARE THE PRESSURE ROLLS CLOSED?
Y N

A A
N P

084
Close the Pressure rolls, and check for proper tension. The Pressure rolls should be held against the drive rolls by a small amount of spring tension. Restart again in this MAP if necessary.

085
1. Select Test 55. (MI 700-1, Selecting Tests)
2. Press and release key 'A'. SC should = AF.
3. Observe LED number 7 and manually advance the forms several inches.

The LED (No. 7) should change states in an ON-OFF-ON-OFF sequence as the forms are advanced through the printer.
DOES LED NUMBER 7 CHANGE STATES AS FORMS ARE ADVANCED?
Y N

086
CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

The Jam sensor is not working.
1. Check that the sensor cable connector and pins are seated properly at 01A-A1D4 on the logic board. (MI 800-1, wiring diagrams)
2. Remove the Print Mechanism (MI 300-1) and check the Jam sensor visually. Ensure that the Jam Sensor Assembly is properly positioned. (See MI 300-1)

IS THE SENSOR MECHANICALLY OK?
Y N

087
(MI 300-1)
Repair or Exchange as necessary.
MI 300-1, Jam sensor)
GO TO MAP 0900, ENTRY POINT A.

088

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Visually check and reseat the cable at 01A-A1D4, then use a meter to check the Jam Sensor cable for continuity. (MI 800-1, Control cable)

1. If continuity is good, exchange the jam sensor. (MI 300-1).
2. If continuity is bad, exchange the Jam Sensor control cable. (MI 600-1)

089

The Jam Sensor is working ok electrically. The problem is mechanical.

1. Exchange the Forms driver card and recheck the symptoms. If problem is still present:
2. Perform the Forms Feeding Service Check (MI 300-1), and check that forms can be fed easily by using the feed knob with power off.
3. Exchange the Forms drive motor and recheck the symptoms. If the problem is still present:
4. Put the Print Unit in the service position (MI 300-1), and check the jam sensor wheel and the jam sensor. Make certain that the jam sensor wheel turns properly and that it is in proper alignment with the jam sensor assembly. (MI 300-1)

GO TO MAP 0900, ENTRY POINT A.

090

(ENTRY POINT D)

Insure that forms are loaded in the printer.

1. Select Test 55. (MI 700-1, Selecting Tests)
2. Press and release key 'A'. SC should = AF.
3. Observe LED number 6.

IS LED NUMBER 6 ON WITH FORMS LOADED?

Y N

091

This is the normal condition.

1. Select Test 07 (MI 700-1, Selecting Tests).
2. When printing starts, press and release the '6'key.
3. Printing will continue until the Cancel Print key is presse.'.

DID THE 01 OR 81 STATUS CODE RETURN?

Y N

092

DANGER

HAZARDOUS VOLTAGE PRESENT

The problem is intermittent. Look for loose cables at 01A-A1D4 on the Logic board and at the EOF sensor.
Reseat the Forms Driver Card and the System Card and recheck your symptoms. If reseating does not solve the problem and you susspect the cards, exchange order would be Forms Driver first. (MI 800-1 Locations)
The problem could also be a loose or binding EOF sensor arm (MI 300-1)

GO TO MAP 0900, ENTRY POINT A.

093

1. Select Test 55. (MI 700-1, Selecting Tests)
2. Press and release key 'A'. SC should = AF.
3. Observe LED number 6.
4. Advance forms several times manually.

DID LED NUMBER 6 COME ON AT ANY TIME?

Y N

094

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

The EOF Sensor appears to be working correctly but the problem is still present.

1. Check for loose connections in the EOF cabling (MI 800-1, Control Cable).
2. Check the EOF sensor mounting and operation. (The Print unit must be put in the service position to see the EOF sensor)- (MI 300-1).
3. If no trouble is found, FRU replacement order is:

EOF sensor
EOF control cable
System card

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

GO TO MAP 0900, ENTRY POINT A.

095

There is an intermittent open in the EOF sensor or wiring (MI 800-1, Control Cable).
Repair, adjust or exchange as necessary.
GO TO MAP 0900, ENTRY POINT A.

096

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

The EOF sensor is defective, or the EOF wiring is open.

1. Power Off the printer..
2. Check that the connector and wiring at 01A-A1D4 is properly seated.
3. Put the Print unit in the service position. (MI 300-1).
4. Measure for continuity of the control cable at connector 01A-A1D4. (Refer to MI 800-1, Control cable).

Repair or Exchange as necessary.
GO TO MAP 0900, ENTRY POINT A.

097

Power off, wait 30 seconds, then power on., With POWER ON, PLATEN CLOSED, and NO FORMS LOADED, SC=01 (EOF), is a normal indication.
DOES THE SC = 01, 31, OR 81 WITH NO FORMS LOADED IN THE PRINTER?

Y N

098

(If SC=89, press and release the Test key and proceed with the Status Code displayed.
otherwise:
The EOF sensor arm is binding or the sensor is defective.
Repair or Exchange as necessary.
(MI 300-1, EOF sensor)
GO TO MAP 0900, ENTRY POINT A.

099

1. Ensure that the PLATEN IS OPEN, and the PAPER SHIELD IS CLOSED. (MI 800-1, Locations)
2. Ensure that the LOWER PRESSURE ROLLS ARE CLOSED. (MI 300-1)
3. Try to load forms to begin the Auto-load operation (MI 300-1).
4. Make sure that the forms are inserted far enough up into the forms guide to OPERATE THE EOF SENSOR.

DOES THE FORMS MOTOR START?

Y N

100

1. Ensure that NO FORMS are in the printer, and that the PLATEN IS OPEN.
2. Select Test 55. (MI 700-1, Selecting Tests)
3. Press and Release Key 'B'. SC should = A0.

IS LED NUMBER 4 ON?

Y N

101

The Platen switch has not opened or is defective. Visually check the Platen switch adjustment. (Open and close the Platen lever several times and observe the operation of the Platen switch. (MI 300-1).

GO TO PAGE 8, STEP 070, ENTRY POINT C.

102

The EOF sensor has not opened or is defective.

GO TO PAGE 11, STEP 090, ENTRY POINT D.

103

The Form Drive and Pressure rolls should turn and drive the paper upwards toward the form tractor area.

1. Remove the black plastic panel at the rear of the tractor assembly, and observe the Form Drive Roll shaft.(MI 300-1).
2. Try to load forms to begin the Auto-load operation and observe form movement.

DO THE FORM DRIVE ROLLS TURN?

Y N

104

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. (MI 300-1, Auto Load clutch)
Perform the Autoload Mechanism portion of the Forms Feeding Service Check. (MI 300-1)
Repair or Exchange as necessary.

GO TO MAP 0900. ENTRY POINT A.

105

Check the Form drive and Form pressure rolls for proper alignment and tension, and for wear or damage. (MI 300-1, Form Feed Service Check).

ARE THE FORM DRIVE AND PRESSURE ROLLS OK?

Y N

106

Repair or Exchange as necessary.
Perform the Autoload Assembly portion of the Forms Feed Service Check. (MI 300-1)

GO TO MAP 0900, ENTRY POINT A.

107

1. Check the form feeding path for any obstructions or interference which could cause form jams.
2. Check the Paper/Ribbon shield for obstructionz.
3. Perform the Forms Feeding service check (MI 300-1).

RIBBON MAP

ENTRY POINTS

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

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	011	0350	A

001
(ENTRY POINT A)

This MAP diagnoses failures causing the following Status codes:

SC=04 SC=34 SC=84
SC=05 SC=35 SC=85
SC=49 SC=A8 SC=C8

SC=05, 35, OR 85?
Y N

002
SC=04, 34, 84, 49, A8 OR C8?
Y N

003
IS THE PROBLEM RIBBON JAMS?
Y N

FRU LIST

Ribbon Cartridge (NOTE)
Ribbon Motor
Dot Band Cover
Dot Band Cover Switch
System Card
Control cable

NOTE: The Ribbon Cartridge is a customer supplied item

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4 3 3 2
A B C D

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004
IS THE PROBLEM INCORRECT OR NO RIBBON MOVEMENT?
Y N

005
IS THE PROBLEM LIGHT PRINTING?
Y N

006
No trouble has been found with the ribbon.
GO TO MAP 0900, ENTRY POINT A.

007
Ensure that the Platen Lever is closed, and is set to the proper position for the forms thickness being used.
DOES THE RIBBON MOVE WHEN THE MACHINE IS PRINTING?
Y N

008
GO TO STEP 013,
ENTRY POINT B.

009
Check that the ribbon cartridge is properly installed, and in good condition.
Check that the ribbon arms are positioned in the guide slots, so that the ribbon tracks properly.
IS THE RIBBON IN GOOD CONDITION?
Y N

010
Exchange the ribbon cartridge.
GO TO MAP 0900, ENTRY POINT A.

011
The Ribbon seems to be OK. If you still have a problem with 'Light Printing' go to the following MAP.
GO TO MAP 0350, ENTRY POINT A.

012
Ensure that the Platen Lever is closed and set to the proper position for the thickness of forms being used.
DOES THE RIBBON MOVE AT ALL WHEN PRINTING?
Y N

013
(ENTRY POINT B)
1. Remove the ribbon cartridge.
2. Select Test 55 (MI 700-1, Selecting Tests).
3. Press and Release Key 'D'. SC should = A1.

The Dot Band and Ribbon Motors should be running.
Observe the Ribbon Drive Shaft.
IS THE RIBBON DRIVE SHAFT TURNING?
Y N

014
The AC voltage to the Ribbon Motor from connector M2 is missing, or the Ribbon Motor is defective.

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

1. Power Off the printer.
2. Check for continuity between pin 1 on connector M2 and pin 1 on connectors M1 and M3. (MI 800-1, AC wiring)
3. Check for continuity between pin 3 on connector M2 and pin 3 on connectors M1 and M3. (MI 800-1, AC wiring)
4. If continuity is not measured at both

(Step 014 continues)

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(Step 014 continued)
the above checks, repair or exchange connector M2., If the continuity checks are OK, replace the Ribbon Motor. (MI 300-1)
GO TO MAP 0900, ENTRY POINT A.

015
The Ribbon Cartridge is bad. Exchange it.
GO TO MAP 0900, ENTRY POINT A.

016
Remove the Ribbon Cartridge from the printer. Check it carefully for binds or defective guide arms.
IS THE RIBBON CARTRIDGE OK?
Y N

017
Exchange the Ribbon Cartridge.
GO TO MAP 0900, ENTRY POINT A.

018

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
1. Check all AC connectors to the Ribbon Drive Motor for loose or intermittent connections.(MI 800-1, AC wiring)
2. Check the Ribbon/Paper shield for obstructions.
3. Check the Platen to Hammer gap adjustment. (MI 300-1, Platen adjustment); Perform this adjustment only if necessary.
4. If no problem is located and the failure reoccurs, exchange the Ribbon Motor. (MI 300-1).

GO TO MAP 0900, ENTRY POINT A.

019
Perform the Ribbon Service Check. (MI 300-1).
WAS A PROBLEM LOCATED DURING THE RIBBON SERVICE CHECK?
Y N

020
Check the Platen to Hammer gap adjustment (MI 300-1, Platen adjustment). Perform the adjustment only if necessary.
If the adjustment is OK, exchange the Ribbon Cartridge.
GO TO MAP 0900, ENTRY POINT A.

021
GO TO MAP 0900, ENTRY POINT A.

022
Visually Check Logic Board location 01A-A1G4.
IS A CARD INSTALLED IN THIS LOCATION?
Y N

023

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Replace the System Card, 01A-A1A2.
GO TO MAP 0900, ENTRY POINT A.

024

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Remove the Card. It was installed in the wrong location. See (MI 800-1 Locations) for the correct card locations.

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025
Ensure that the Dot Band Cover Tab (on the bottom front of the Dot Band Cover) is not damaged or broken, and that it fits into the slot in the print casting as the Band Cover is installed. (MI 800-1, Locations)
IS THE DOT BAND COVER TAB OK?
Y N

026
Repair or Exchange as necessary.
(MI 800-1, Locations)
GO TO MAP 0900, ENTRY POINT A.

027
Check the Control cable connector at 01A-A1D4, and the COVR connector (MI 800-1 Locations) for proper seating and good connection.
ARE CONNECTORS OK?
Y N

028
Reseat, repair, or exchange as necessary.
GO TO MAP 0900, ENTRY POINT A.

029
1. With the Dot Band Cover installed, Select Test 55 (MI 700-1, Selecting Tests).
2. Press and release key 'A'. SC should = AF.
3. Observe LED number 5.

IS LED NUMBER 5 ON?
Y N

030
In this question, 'SOLID' means a condition that occurs each time the machine attempts to print, or run a test.
IS THE SC = 05 A SOLID PROBLEM?
Y N

031
CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Check the continuity of the Dot Band Cover Switch wiring (MI 800-1, Control cable). If the continuity is good, and no intermittent connections can be found, replace the Dot Band Cover Switch. (MI 300-1). If the continuity is bad, Repair or Exchange as necessary..

032
CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Check the continuity of the Dot Band Cover Switch wiring to connector 01A-A1D4 (MI 800-1, Control cable). Also ensure that the connector is properly seated. If no problem is found, exchange the System Card 01A-A1A2.
GO TO MAP 0900, ENTRY POINT A.

033
1. Remove the Dot Band Cover.
2. Insert a nonconductive object (Narrowly folded paper etc.) into the slot in the casting, and transfer the Dot Band Cover switch.
3. Observe LED number 5 (With the printer still in Test 55 and the 'A' switch pressed and released).

DOES LED 5 GO OFF WHEN THE SWITCH IS TRANSFERRED?
Y N

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034
There is an open Dot Band Cover Switch or an open in the Control Cable wiring to the switch (MI 800-1, Control cable).
Repair or Exchange as necessary.
GO TO MAP 0900, ENTRY POINT A.

035
The Switch is out of adjustment or defective. (MI 300-1, Band cover switch).
Repair or Exchange as necessary.
GO TO MAP 0900, ENTRY POINT A.

PRINT QUALITY MAP

ENTRY POINTS

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

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
4	028	0330	A
3	018	0340	A
4	032	0340	A
4	027	0500	A

001
(ENTRY POINT A)
IS THE PROBLEM LIGHT PRINTING ON THE WHOLE LINE?
Y N

002
IS THE PROBLEM OVERPRINTING OR INCORRECT SPACING BETWEEN LINES?
Y N

003
IS THE PROBLEM MISSING DOTS?
Y N

004
IS PROBLEM VERTICAL REGISTRATION?
Y N

005
IS THE PROBLEM WITH SMEARED PRINTING?
Y N

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006
IS PROBLEM THAT THE PRINTER PRINTS TOO SLOW?
Y N

007
This question is asking about any of the following:
1. Missing characters or dropped characters in a print line.
2. Missing several characters together - can be on multiple print lines.

IS THE PROBLEM MISSING, SMEARED OR LIGHT PRINTED CHARACTERS?
Y N

008
The problem has not been identified.

009
DO YOU HAVE A PRINT QUALITY PROBLEM ON 'ONE' HAMMER BLOCK ONLY? (ONE OR MORE HAMMERS OR PRINT POSITIONS FAILING)
Y N

010
This is probably an obstruction in the printing area.
1. Open the Platen and the Forms Guide.
2. Visually check and ensure that nothing is caught on the Forms Guide, Hammer faces, Ribbon, or in the printing path.
3. Check for such items as torn paper, paper clips, etc.. Remove any foreign items found.
4. Restore the Printer.

GO TO MAP 0900, ENTRY POINT A.

011
The problem is mechanical.
Power off the printer, and look for the following.
1. Damaged hammers, obstructions to the hammers, loose or pushed back hammer coils in the hammer block assemblies. (You may wish to remove the Print Unit to gain better access to the hammer assemblies)
2. If no problem can be located, exchange the hammer block located at the failing position. (MI 300-1)

012
The most likely cause of slow printing is a dirty Dot Band or Emitter Sensor. Do the following in order listed, and stop when the problem is solved.

Power Off the printer.
1. Clean Dot Band and Emitter Sensor. (MI 300-1) - Band Drive Service Check.
2. Perform the Forms Feeding Service Check (MI 300-1)., Exchange the Forms Motor if necessary. (MI 300-1).
3. As a last resort, referring to (MI 800-1 Locations) and rechecking symptoms after each:
   Exchange the Sensor Card.
   Exchange the Form Driver Card.
   Exchange the System Card.

NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
GO TO MAP 0900, ENTRY POINT A.

013
Smeared printing may be caused by one or more of the following. Correct as necessary.

1. Dirty Dot Band - Clean if needed. (MI 300-1) - Band Drive Service Check.
2. Worn Ribbon or excessive ink in the ribbon. Suggest the customer replace if necessary.
3. Platen to Hammer adjustment to tight. (MI 300-1) Platen Assembly Adjustment. Adjust if needed.
4. Defective or dirty ribbon shield. Perform the Ribbon Service Check (MI 300-1). Use Ribbon MAP 0340 if needed.

014
Check for excessive drag on the forms.

Perform the Forms Feeding Service Check (MI 300-1).

Perform any necessary parts of the Band Drive Service Check (MI 300-1).
GO TO MAP 0900, ENTRY POINT A.

015
Check the Dot Band for missing print elements. (See Operator Guide or (MI 300-1) if needed.)
IS DOT BAND OK?
Y N

016
The Dot Band needs to be exchanged. This is a Customer supplied item.
Go To Map 0900, Entry Point A.

017
Check the ribbon for wear and adequate ink supply.
Also ensure that the ribbon is moving during printing. Run Test 07 see (MI 700-1) Selecting Tests if necessary.
IS RIBBON OK?
Y N

018
GO TO MAP 0340, ENTRY POINT A.

019
Select Test 70. (MI 700-1) Selecting Tests.
DID TEST STOP WITH A STATUS CODE DISPLAYED?
Y N

020
ARE ALL MISSING DOTS ON ONE HAMMER BLOCK?
Y N

021
Ensure all ground wires are installed and have good continuity to ground. (MI 800-1 Locations) Grounding.
ARE ALL GROUNDS OK?
Y N

022
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
GO TO PAGE 4, STEP 023,
ENTRY POINT B.

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023
(ENTRY POINT B)
Power Off the printer.
Check the Hammer to Platen Gap adjustment.(MI 300-1) Platen Assembly Adjustment.
IS THE CLEARANCE (GAP) CORRECT?
Y N

024
Perform the Hammer to Platen Gap Adjustment (MI 300-1) Platen Assembly Adjustment.
GO TO MAP 0900, ENTRY POINT A.

025
Remove the Print Mechanism and check all three Hammer Blocks for wear, damage or foreign material. Exchange Blocks if needed (MI 300-1).
GO TO MAP 0900, ENTRY POINT A.

026
Exchange the failing Hammer Block. (MI 300-1)
GO TO MAP 0900, ENTRY POINT A.

027
Return to the Start MAP 0010 with the Status Code you now have and begin again.
GO TO MAP 0500, ENTRY POINT A.

028
Probable Forms Movement problem.
GO TO MAP 0330, ENTRY POINT A.

029
Check the Forms Thickness Lever. Ensure that it is in the correct position for printing on the forms being used in this printer. See Operating Instructions.
Ensure that the lever is tight on the Platen shaft.
Make sure the Platen moves correctly as the lever is opened and closed.
IS THE FORMS THICKNESS LEVER POSITION OK?
Y N

030
Put the Forms Thickness Lever in the correct position and recheck the symptom.
GO TO MAP 0900, ENTRY POINT A.

031
Light Printing is most often caused by Ribbon problems.
HAVE YOU ALREADY USED 'RIBBON MAP' 0340 FOR THIS PROBLEM?
Y N

032
GO TO MAP 0340, ENTRY POINT A.

033
Power Off the printer.
Check the Dot Band for wear. Elements (Dots) should be well defined and not worn, missing or excessively deformed (flattened).
IS DOT BAND OK?
Y N

034
The Dot Band needs to be exchanged. This is a Customer supplied item.
GO TO MAP 0900, ENTRY POINT A.

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035
IS THE LIGHT PRINTING ON ONE HAMMER BLOCK ONLY?
Y N

036
Check the Platen to Hammer Gap adjustment. (MI 300-1) Platen Assembly Adjustment. If the Light Printing is on one side only, the gap adjustment may be off on one side.
IS CLEARANCE (GAP) OK?
Y N

037
Perform the Platen to Hammer Gap adjustment. (MI 300-1) Platen Assembly Adjustment.
GO TO MAP 0900, ENTRY POINT A.

038

Bad Dot Band tracking or worn or binding Band Registration Bearings can cause the Band to ride above or below the Hammers and cause Light Printing.
Often on the right of the form only.

Perform the following and recheck the symptom after each step. Stop when the problem is solved.

1. Check the Band Tracking. See the following note.
   Perform the Band Drive Service Check (MI 300-1) if needed.
2. Check the Band Registration Bearings (MI 300-1) Check for looseness, wear and binds.
   Exchange bearings if necessary. (MI 300-1).

(Step 038 continues)

(Step 038 continued)
3. Exchange the Band Guide if the problem is still not solved and you suspect that the Dot Band is still riding too high when printing. (MI 300-1).

039
The problem is most likely a mechanical problem with the Hammer block. If the light printing area covers approximately 5 print positions suspect a loose magnet in the Hammer Block.
Power off the printer, and look for the following.
1. Damaged hammers, obstructions to the hammers, loose or pushed back hammer coils in the hammer block assemblies. (You may wish to remove the Print Unit to gain better access to the hammer assemblies)
2. If no problem can be located, exchange the hammer block located at the failing position. (MI 300-1)

HAMMERS MAP

ENTRY POINTS

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

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
3	016	0100	A
2	014	0375	A
2	013	0380	A
2	012	0385	A
3	017	0390	A

001
(ENTRY POINT A)
DO YOU HAVE ONE OF THE STATUS CODES LISTED IN THE TABLE TO THE RIGHT?
Y N

002
DO YOU HAVE A PRINT QUALITY PROBLEM ON 'ONE' HAMMER BLOCK ONLY? (ONE OR MORE HAMMERS)
Y N

003
IS THE PROBLEM EXCESSIVE HAMMER WEAR?
Y N

004
Problem has not been identified. If you still feel that the hammers are a problem, check the Platen to Hammer Gap. (MI 300-1) Platen Assembly Adjustment. If you choose to exchange the Hammer block(s) see (MI 300-1) Hammer Block.

Status Codes covered in this MAP:

SC=41 SC=42
SC=48 SC=50 SC=51 SC=52
SC=A1 SC=A2
SC=C1 SC=C2 SC=C3
SC=C4 SC=C5 SC=C6

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2 2 2
A B C

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005
Power Off the printer.
1.This is usually caused by insufficient lubrication of the Dot Band. Check the band oiler for wear, adequate lubrication and correct adjustment. (MI 300-1)). Exchange the band oiler if necessary.

2. Check the Dot Band for wear. Exchange the worn Hammer Blocks and Dot Band if wear is bad enough to cause print quality problems or cause further damage to the Dot Band or Hammer Blocks. (MI 300-1).

3. Check the Hammer to Platen Gap adjustment (MI 300-1) Platen Assembly Adjustment.

006
Since no Status Codes are being displayed, there are no open or shorted coils. The problem is mechanical.
Power Off the printer.
Look for the following:

1. (You may wish to remove the Print Mechanism to gain access to the hammers) (MI 300-1).

2. Damaged Hammers, paper in path, alignment of hammers or loose or pushed back coils in the Hammer block asm.
3. If no problem can be located, exchange the failing Hammer Block. (MI 300-1).

007
IS THE STATUS CODE EITHER 41, 42, 48, 50, 51 OR 52?
Y N

008
GO TO STEP 010, ENTRY POINT B.

009
Press and release the test key to run the 'Test Key Tests'. If the printer still has a problem, a Status Code will be displayed.
DID YOU GET A 'COMPLETE' LOG PRINTOUT?
Y N

010
(ENTRY POINT B)

IS THE STATUS CODE A1 OR A2?
Y N

011
IS THE STATUS CODE C1, C2 OR C3?
Y N

012
The Status Code must be either C4, C5 or C6. If it is not C4, C5 or C6 you are in the wrong MAP. Return to the Start MAP to rediagnose the failure.

If the Status Code = C4, C5 or C6:
GO TO MAP 0385, ENTRY POINT A.

013
GO TO MAP 0380, ENTRY POINT A.

014
GO TO MAP 0375, ENTRY POINT A.

015
DID YOU ENTER THIS MAP WITH SC = 50?
Y N

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PEC———

F G
2 2

HAMMERS MAP

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016
A complete 'Log Printout' indicates that the problem is intermittent and not on the printer now. Use the Error Log MAP and the printout to solve this problem.
GO TO MAP 0100, ENTRY POINT A.

017
This indicates an 'open coil'. However since the Log Printout completed successfully, the problem is intermittent. Use the Open Coil MAP to try to resolve this failure.
GO TO MAP 0390, ENTRY POINT A.

ENTRY POINTS

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

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
3	014	0010	A
4	019	0010	A
4	021	0900	A

001
(ENTRY POINT A)

You are here with a Status Code of A1 or A2.

This MAP diagnoses failures causing the following Status Codes:

SC=A1 SC=A2

Ensure that the SC = A1 or A2.
Press the Cancel Print Key two times and observe the Status Display.

When instructed to exchange a card, first Power Off the Printer, reseat the card, Power On and recheck the symptom. If the error is still present exchange the failing card. Sometimes reseating the card will correct failures caused by marginal connections.

DID THE STATUS CODE CHANGE TO ANY OF THE FOLLOWING: 40, 74, 75 OR 97?
Y N

002
DOES THE SC=90 OR 93?
Y N

003
DOES THE SC=49?
Y N

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004
DOES THE SC=48?
Y N

005
The SC must = 4A.
1. Press the Cancel Print Key once more.
2. The SC will = A2 or A3.
DOES THE SC=A2?
Y N

006
The SC must = A3. This means an Upper Hammer Driver Parity error has occurred.
Press Cancel Print once more.
DOES THE SC=X1? (X=ANY HEX CHARACTER)
Y N

007
Hammer Driver Card 2 is defective. Perform Hammer coil service check (MI 300-1) before exchanging card. Exchange any bad Hammer block assembly (Blocks 2 or 3) 'BEFORE' exchanging the card. (MI 800-1 Locations).

008
Hammer Driver Card 1 is cefective. Perform Hammer coil service check (MI 300-1) before exchanging card. Exchange any bad Hammer block assembly (Blocks 1 or 2) 'BEFORE' exchanging the card. (MI 800-1 Locations).

009
A lower Hammer Driver parity error has occurred.
Press the Cancel Print Key again (one time).
DOES THE SC=X1?(X=ANY HEX CHARACTER)
Y N

010
Power Off the printer.
Hammer Driver Card 2 is defective.
Exchange it.(MI 800-1 Locations)
GO TO MAP 0900, ENTRY POINT A.

011
Power Off the printer.
Hammer Driver Card 1 is defective. Exchange it. (MI 800-1 Locations)
GO TO MAP 0900, ENTRY POINT A.

012
An open coil was detected but the machine could not determine which one.

There are 44 hammer coils numbered left to right. If the primary SC was A1, the open coil is from 01 to 22, (Hammer blocks 1 or 2). If the primary SC was A2, the open coil is from 23 to 44 (Hammer blocks 2 or 3).

These problems are usually caused by marginal connections in the Hammer cables at the coils. (MI 300-1) Hammer Cable Assembly.

1. Power Off the printer.
2. Inspect the Hammer Coil connectors for any partially unseated or misaligned connectors. If necessary, unplug and reseat the coil connectors.
   Also check for pushed back pins.

CAUTION
COILS ARE FRAGILE - USE CARE!

3. Restore all connectors and power on the printer. Allow the printer to run the Power On BATs.

BAT completes successfully if the SC=Blank or 28, and the 'READY' LED for Model 1, or 'ATTENTION' LED for Model 2, is on.
(Step 012 continues)

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(Step 012 continued)
DID POWER ON BATS COMPLETE OK?
Y N

013
Press the Cancel Print key two times (hold the key for about 2 seconds each depression).
DOES SC = A1 OR A2?
Y N

014
Return to the Start MAP with the Status Code now displayed and take the indicated action. The symptom has changed.
GO TO MAP 0010, ENTRY POINT A.

015
Hammer blocks are numbered 1, 2, 3 starting from the left.
If the SC= A1, the intermittent coil is located in Hammer blocks 1 or 2, if SC=A2, problem is with blocks 2 or 3. (MI 300-1)

The following is a suggested method for finding the failing coil position.

1. Remove the Band Safety Cover.

CAUTION

Do not touch the Dot Band while it is moving.

2. Select Test 80. (MI 700-1) Selecting Tests.
3. Press and hold key 5 while test 80 is running. This will cause the printer to print and ignore the 'open coil' indications.
4. While holding key 5 pressed, GENTLY flex the coil connectors and cables as the printer prints.

NOTE: You May have to run test 80 several times.
In this manner the marginal print position may fail and appear as one hammer that is not printing correctly and thus identify the failing coil position.

Perform the Hammer Coil Service Check (MI 300-1) and exchange the failing Hammer block, Hammer Cable Assembly or Hammer Drive Card as necessary.
(MI 300-1), (MI 800-1 Locations).
GO TO MAP 0900, ENTRY POINT A.

016
The problem was a marginal connection.
GO TO MAP 0900, ENTRY POINT A.

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PEC———

017
The most likely cause of this failure is a defective or unseated Hammer Driver Card 2 (01A-A1J2).
1. Power Off the printer. Remove the Top and Power Covers (MI 000-1).
   If the card is unseated, reseat and recheck the symptoms. If card is well seated, do the following:
2. Exchange Hammer Driver Card 2 (01A-A1J2). (MI 800-1 Locations)
3. Power On the printer., Allow Power On BAT to complete.

NOTE: A 'GOOD' BAT Test completion for Model 1 is: SC=BLANK, with 'READY' LED 'ON'.
For Model 2 SC=BLANK, with 'ATTENTION' LED 'ON'.

IMPORTANT - IF YOU HAVE THE COMMUNICATION CABLE(S) UNPLUGGED, THE SC WILL EQUAL 28 RATHER THAN BLANK WITHIN ONE MINUTE OF POWER ON.
WAS BAT COMPLETION 'GOOD'?
Y N

018
Press the TEST Key and allow the test to run.
DID THE TEST STOP WITH SC=A2?
Y N

019
The symptom has changed. Return to the Start MAP and begin again with this new symptom.
GO TO MAP 0010, ENTRY POINT A.

020
The Hammer Driver Card has been eliminated as the cause of this failure, therefore Hammer Coil number 44 or its wiring is shorted. Perform the Hammer Coil Check (MI 300-1) on Coil position 44.
1. If the coil is shorted, exchange Hammer Block Assembly 3. (MI 300-1).
2. If the coil is good, exchange the Hammer Cable Assembly (MI 300-1).

NOTE: The Hammer Driver Card you removed in the previous step, may be good. You may wish to reinstall it, and verify its operation.

021
Problem Solved.
GO TO MAP 0900, ENTRY POINT A.

022
Power Off the printer.
If you entered this MAP with SC = A1, Hammer Driver Card 1 (01A-A1E2) is defective. Exchange it. (MI 800-1 Locations).

If you entered this MAP with SC = A2, Hammer Driver Card 2 (01A-A1J2) is defective. Exchange it. (MI 800-1 Locations).

Should this failure occur again when you power up, exchange the System Card 01A-A1A2.
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
GO TO MAP 0900, ENTRY POINT A.

023
If you have already exchanged a Hammer Driver card for this problem, answer this question YES and continue.

Power Off the printer.
If the Primary Status Code was A1, exchange Hammer Driver Card 1. 01A-A1E2.
If the Primary Status Code was A2, exchange Hammer Driver Card 2. 01A-A1J2.

Press and release the Test Key and allow the Test Key Tests to run.
DID THE A1 OR A2 ERROR RETURN?
Y N

024
Problem solved.
GO TO MAP 0900, ENTRY POINT A.

025
Power Off the printer.
Remove any Top card crossovers from the System Card at 01A-A1A2.

NOTE: IF NO CROSSOVERS ARE INSTALLED, ANSWER THIS QUESTION 'NO' AND CONTINUE.

Examine the Crossover for damage or corrosion that could cause bad connections.
Reseat the crossover and recheck the symptom.
IS THE PROBLEM SOLVED?
Y N

026
NOTE! FOR WORLD TRADE EPROM CARD MUST BE IN 01A-A1B2
IS THERE AN EPROM CARD INSTALLED EITHER IN LOCATION 01A-A1B2 OR C2?
Y N

027
If no problem can be found with the Top Card Crossovers (if any are installed), re-seat the System Card and recheck the symptom. If problem is not solved, exchange the System Card 01A-A1A2, and/or the Crossovers if necessary.

NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.

NOTE: If you exchanged the Hammer Driver Card in a previous step and did not solve this problem, the old card you removed is probably good. To save parts you may wish to reinstall the old Hammer Driver card and recheck your symptoms.
GO TO MAP 0900, ENTRY POINT A.

028
Power Off the printer.
Remove the EPROM card from the machine. If this is a Model '2', replace the Top Card Crossovers.
Power On the printer.
IS THE PROBLEM SOLVED?
Y N

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029
If no problem can be found with the Top Card Crossovers re-seat the System Card and recheck the symptom. If problem is not solved, exchange the System Card 01A-A1A2, and/or the Crossovers if necessary.
Remember to replace the EPROM card into the machine.
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
GO TO MAP 0900, ENTRY POINT A.

030
Exchange the EPROM Card 01A-A1B2 or C2 (MI 800-1 Locations).
NOTE! FOR WORLD TRADE EPROM CARD MUST BE IN 01A-A1B2
NOTE 2: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
GO TO MAP 0900, ENTRY POINT A.

031
The problem was a bad connection in the crossovers.
GO TO MAP 0900, ENTRY POINT A.

STATUS CODES C1, C2, AND C3

ENTRY POINTS

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

001
(ENTRY POINT A)

********** WARNING **********
When observing the Status Display, the letter 'b' is easily mistaken for a number '6'. Check carefully.

b =  6 = 

Read the note at the right.

This MAP diagnoses failures causing the following Status Codes:

SC=C1 SC=C2 SC=C3

NOTE: Status Codes of C1, C2 and C3 indicate problems with Hammer Blocks 1, 2 or 3 respectively, counting from left to right from the front of the printer. These Status Codes are posted by the diagnostics when problems with the coils are detected during BATs, either at Power On or from the Test Key Tests. Four (4) Bytes of information about the failure can be displayed in the Status Display by using the 'Cancel Print' key to 'step' through the 4 bytes.
The 4 bytes contain the following information (for C1, C2, and C3 errors only):

Byte 1 - Failing Hammer Block
Byte 2 - Type of failure
Byte 3 - Failing Coil position in Hex
Byte 4 - Hammer Driver Card affected.

The MAP will guide you on how to display these bytes and diagnose the failure.

(Step 001 continues)

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(Step 001 continued)
With C1, C2 or C3 in the Status Display, press and release the Cancel Print Key two times and observe that the Status Display changes on the second press of the Cancel Print key.
DOES THE SC=49?
Y N

002
DOES THE SC=48?
Y N

003
The SC must = 45.
1. Press and release Cancel Print Once more.
2. The number now in the Status Display is the number of the open coil in 'HEXADECIMAL' notation.

WRITE IT DOWN.
01 thru 0F = Hammer Block 1 (C1 Error)
(01 thru 15) Hammer Coil Position
10 thru 1E = Hammer Block 2 (C2 Error)
(16 thru 30) Hammer Coil Position
1F thru 2C = Hammer Block 3 (C3 Error)
(31 thru 44) Hammer Coil Position

3. Press and release Cancel Print once more.
4. The Status Display should now = 'Ax'. The 'x' is the number of the Hammer Driver Card which drives the defective coil position.

A1 = Hammer Driver Card 1. 01A-A1E2
A2 = Hammer Driver Card 2, 01A-A1J2. (MI 800-1 Locations)

5. Perform the Hammer Coil Service Check (MI 300-1).

NOTE: Look for a high resistance coil or connection across the coil. The resistance should be 5.4 ohms plus or minus 0.3 ohms.

(Step 003 continues)

(Step 003 continued)
6. To recheck the symptoms:
   A. Restore the machine by reconnecting all cables and reseat Hammer Driver cards. (MI 800-1 Locations).
   B. Power on the printer and allow the BAT to complete.
   C. Select Test 74 (MI 700-1) Selecting Tests.
7. If the C1, C2 or C3 Status Code returns, exchange the Hammer Driver Card. (MI 800-1 Locations).

8. Again recheck the symptoms by selecting Test 74 (MI 700-1) Selecting Tests.

If the C1, C2 or C3 Status Code returns, Exchange the Hammer Cables. (MI 300-1)

9. Ensure that the Hammer Cooling Blower is working. This can be done by holding your hand above the hammer assembly while the band and ribbon are running, or the printer is printing, and feeling the air flow.

If the Blower is not working, it will cause the coils to overheat and cause failures.
If the Blower is not working,
GO TO PAGE 4, STEP 006, ENTRY POINT B.
———OR———
If the blower is OK,
GO TO MAP 0900, ENTRY POINT A.

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PEC———

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004
SC = 48 - OPEN COIL.

1. Press and release Cancel Print Once more.
2. The number now in the Status Display is the number of the open coil in 'HEXADECIMAL' notation.

WRITE IT DOWN.
01 thru 0F = Hammer Block 1 (C1 Error)
(01 thru 15) Hammer Coil Position
10 thru 1E = Hammer Block 2 (C2 Error)
(16 thru 30) Hammer Coil Position
1F thru 2C = Hammer Block 3 (C3 Error)
(31 thru 44) Hammer Coil Position

3. Press and release Cancel Print once more.
4. The Status Display should now = 'Ax'. The 'x' is the number of the Hammer Driver Card which drives the defective coil.

A1 = Hammer Driver Card 1. 01A-A1E2
A2 = Hammer Driver Card 2, 01A-A1J2. (MI 800-1 Locations)

5. Perform Hammer Coil Service Check (MI 300-1)

A. Exchange any defective Hammer Assembly or Cable located during the check.
B. If Hammer Assemblies and Cables check good, exchange the Hammer Driver Card.

6. To verify repair:
   a. Restore all cables and connectors.
   b. Power on and allow the BAT to complete.
   c. If no errors are detected by the BAT, select Test 74 (MI 700-1) Selecting Tests.
      NOTE: If errors are detected by the BAT, begin again with the new Status Code in this MAP or in the Start MAP 0010 as necessary.
   d. If no C1 through C6 Status Codes are detected by test 74, the problem is

(Step 004 continues)

(Step 004 continued)
solved.

Ensure that the Hammer Cooling Blower is working. This can be done by holding your hand above the hammer assembly while the band and ribbon are running, or the printer is printing, and feeling the air flow.
If the Blower is not working, it will cause the coils to overheat and cause failures.
If the Blower is not working,
GO TO PAGE 4, STEP 006, ENTRY POINT B.
———OR———
If the blower is OK,
GO TO MAP 0900, ENTRY POINT A.

005
SC 49 - SHORTED COIL.

1. Press and release Cancel Print Once more.
2. The number now in the Status Display is the number of the shorted coil in 'HEXADECIMAL' notation.

WRITE IT DOWN.
01 thru 0F = Hammer Block 1 (C1 Error)
(01 thru 15) Decimal
10 thru 1E = Hammer Block 2 (C2 Error)
(16 thru 30) Decimal
1F thru 2C = Hammer Block 3 (C3 Error)
(31 thru 44) Decimal

3. Press and release Cancel Print once more.
4. The Status Display should now = 'Ax'. The 'x' is the number of the Hammer Driver Card which drives the defective coil.

A1 = Hammer Driver Card 1. 01A-A1E2
A2 = Card 2, 01A-A1J2. (MI 800-1 Locations).

5. Perform Hammer Coil Service Check (MI 300-1)

A. Exchange any defective Hammer Assembly or Cable located during the check.
B. If Hammer Assemblies and Cables check good,

(Step 005 continues)

(Step 005 continued)
exchange the Hammer Driver Card.

6. To verify repair:
   a. Restore all cables and connectors.
   b. Power on and allow the BAT to complete.
   c. If no errors are detected by the BAT, select Test 74 (MI 700-1) Selecting Tests.
      NOTE: If errors are detected by the BAT, begin again with the new Status Code in this MAP or the Start MAP 0010 as necessary.
   d. If no C1 through C6 Status Codes are detected by test 74, the problem is solved.

Ensure that the Hammer Cooling Blower is working. This can be done by holding your hand above the hammer assembly while the band and ribbon are running, or the printer is printing, and feeling the air flow.

NOTE; If the C1, C2, or C3 Status Code is still displayed, the Band will not run and there will be no air flow.
If this is the case, Select Test '55', then press and release Key 'D' to run the Band and turn the Blower on.

If the Blower is not working it will cause the coils to overheat and cause failures.
If the Blower is not working,
GO TO STEP 006, ENTRY POINT B.
———OR———
If the blower is OK,
GO TO MAP 0900, ENTRY POINT A.

006
(ENTRY POINT B)
You are here because the Hammer Cooling Blower is not working.
Power Off the printer.

UNPLUG THE POWER CORD FROM THE WALL OUTLET

See (MI 800-1 Wiring Diagrams) AC Wiring and measure the continuity from connector M3 pins 1, 2 and 3 to connector M1 pins 1, 2 and 3 respectively.
Also check for pushed back pins or loose connectors.
IS CONTINUITY GOOD ON ALL 3 PINS?
Y N

007
Repair the bad wire or connector if possible, otherwise replace the AC Cable. (MI 600-1) and (MI 800-1 Wiring Diagrams) AC Wiring.

008
Exchange the Hammer Cooling Blower. (MI 600-1)

STATUS CODES C4, C5 OR C6

ENTRY POINTS

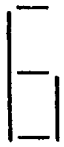
FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
ALL	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	010	0380	A

001
(ENTRY POINT A)

********** WARNING **********
When observing the Status display, the letter 'b' is easily mistaken for a number '6'. Check carefully.

b =  6 = 

You are here with an Status Code of either C4, C5 or C6.
DOES THE SC = C4?
Y N

002
DOES THE SC = C5?
Y N

003
The SC must = C6. In this case it indicates that the Power Supply is defective.

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Exchange the Power Supply. (MI 600-1).
GO TO MAP 0900, ENTRY POINT A.

This MAP diagnoses failures causing the following Status Codes:

SC=C4 SC=C5 SC=C6

FRU LIST

Hammer Blocks
Hammer Cables
Hammer Driver Cards
Power Supply

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3 2
A B

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004
C5 indicates that one of the Hammer Coils was still drawing current after the normal firing was completed.
Some data about this failure is in the machine and must be obtained and recorded for possible use later in this MAP. Proceed as follows, doing the steps in order.

1. Select Test 55 (MI 700-1) Selecting Tests.
2. Press and release Key 'C'. The Status Display should = '10' and the LEDs should be flashing '0F'.
3. You must now increment the '10' in the Display to '1A'. To do this, press and hold key '4' and the Status Display will increment upward. Release key 4 when the Status Display = 1A.
4. Observe the LEDs. Using a '1' for on and '0' for off, record their contents on the line below.

— — — — — — — —
0 1 2 3 4 5 6 7

5. This information will be used if you answer the this question NO.

6. Select Test 74 (MI 700-1) Selecting Tests.

DID THE PRINTER STOP WITH EITHER C1, C2, OR C3 IN THE STATUS DISPLAY?
Y N

005
Look at the information about the LEDs that you wrote down in the previous step.
WERE BOTH LEDS 6 AND 7 'ON' (1)?
Y N

006
WAS LED 6 'ON' (1) AND 7 'OFF' (0)?
Y N

007
LED 7 'ON' and 6 'OFF' means that Hammer Driver Card 1 (01A-A1E2) is defective.
Power Off the printer.
Exchange Hammer Driver Card 1.
(MI 800-1 Locations)
GO TO MAP 0900, ENTRY POINT A.

008
LED 6 'ON' and 7 'OFF' means that Hammer Driver Card 2 (01A-A1J2) is defective.
Power Off the printer.
Exchange Hammer Driver Card 2.
(MI 800-1 Locations)
GO TO MAP 0900, ENTRY POINT A.

009
Power Off the printer.
Unplug the Printer.
Exchange the Power Supply. (MI 600-1) Power Supply.
GO TO MAP 0900, ENTRY POINT A.

010
Leave the Status Code displayed as it is now.
GO TO MAP 0380, ENTRY POINT A.

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PEC———

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0'1
A 'C4' Status Code indicates that there was an open coil indication but the diagnostic can not tell which coil is failing.

Press and release the Cancel Print Key two times. The Status Code should change to either '75' or'76'.
DOES THE SC=76?
Y N

012
The SC must = 75.
1.Press and release Cancel Print once more.
2.The SC should = A2. This is a memory address.(F=A2)
3.Press and release Cancel Print once more.
4.The SC should = either A1 or A2. This is the number of the Hammer Driver card which is driving the defective coil position.
5. A1=Hammer Driver card 1. Location 01A-A1E2.
6. A2=Hammer Driver card 2. Location 01A-A1J2.
IS THE LAST STATUS CODE 'A1'?
Y N

013
The SC must = 'A2'. This means that the failing coil position is from hammer number 23 to 44. (Hammer Blocks 2 and 3) This is the right half of the Hammer Block assembly as view from the front of the printer.
Perform the Hammer Coil Service Check on these coils. (MI 300-1).

014
This means that the failing coil position is from hammer number 01 to 22. (Hammer Blocks 1 and 2) This is the left half of the Hammer Block assembly as view from the front of the printer.
Perform the Hammer Coil Service Check on these coils. (MI 300-1).

015
Perform the Hammer Coil Service Check. Exchange any defective Hammer Blocks. (MI 300-1).
GO TO MAP 0900, ENTRY POINT A.

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PEC———

IBM 4234 PRINTER

STATUS CODE 50 - INTERMITTENT OPEN COIL

ENTRY POINTS

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

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	001	0100	A

001
(ENTRY POINT A)

****** PROCEDURE ONE ******

Read and do the following:
An open coil was detected, but the printer could not determine which one.

There are 44 hammer coils numbered left to right.

Status Codes of 50 (while printing), C4, A1 or A2 (from the Test Key Test) with a Secondary code of 48 when Cancel Print is pressed after the Test Key Test stops, may all be the result of intermittent Open Coil indications.
You may only have a Status Code of 50 and a count in the 'Test Key Log Printout'.

These problems are usually caused by marginal connections in the Hammer cables at the coils. (MI 300-1)

1. Power Off the printer.
2. Remove the Hammer Safety Cover. (MI 300-1) Hammer Cables.
3. Inspect the Hammer Coil connectors for any partially unseated or misaligned connectors. If necessary, unplug and reseat the coil connectors.
   Also check for pushed back pins.

(Step 001 continues)

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(Step 001 continued)

CAUTION

COILS ARE FRAGILE - USE CARE!

4. Restore all connectors and power on the printer. Allow the printer to run the Power On BATs.

BAT completes successfully if the SC=Blank or 28, and the 'READY' LED for Model 1, or 'ATTENTION' LED for Model 2, is on.

If the problem returns or still exists after doing the above procedure, the following is a suggested method for finding the failing coil position.

Proceed to procedure two.

****** PROCEDURE TWO ******

A. Do the following:
   1. Remove the ribbon (MI 300-1).
   2. Remove the Band Cover (MI 300-1).
   3. Replace the ribbon.
   4. Close the Forms Thickness Lever.

CAUTION

Do not touch the Dot Band while it is moving.

B. Select Test 80. (MI 700-1) Selecting Tests.
C. Press and hold key 5 while test 80 is running. This will cause the printer to print and ignore the 'open coil' indications.
D. While holding key 5 pressed, GENTLY flex the coil connectors and cables as the printer prints.

NOTE: You may have to run test 80 several times.
In this manner the marginal print position may fail and appear as one hammer that is not printing correctly and thus identify the
(Step 001 continues)

(Step 001 continued)
failing coil position.

Perform the Hammer Coil Service Check (MI 300-1) and exchange the failing Hammer block, Hammer Cable Assembly or Hammer Drive Card as necessary.
(MI 300-1 and 800-1 locations).

If problem is resolved,
GO TO MAP 0900, ENTRY POINT A.

If problem is still not resolved, use the SC = 50 and
GO TO MAP 0100, ENTRY POINT A.

COMMUNICATIONS COAXIAL-(MOD 1)

ENTRY POINTS

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

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
3	018	0100	A
2	009	0300	A
2	005	0800	A

001
(ENTRY POINT A)

This MAP is for Model 1 communication failures. If this is a Model 2 printer, Go To Map 0450, Entry Point A.

****
Read the note 1 at the right.
****

ENSURE THAT THE COMMUNICATION COAX CABLE FROM THE HOST SYSTEM IS ATTACHED TO THE PRINTER.

Press and release the TEST Key and let the printer run the Test Key Tests.

NOTE: The test is complete when the LEDs display '9F'.
DID THE TEST COMPLETE WITH SC = 28?
Y N

4
A

2
B

This MAP diagnoses failures causing the following Status Codes:

SC=27 SC=28 SC=AC

NOTE 1.
The communications adapter on model 1 machines is located on the System Card (01A-A1A2). The interface to the coax communications line is via a small cable which plugs into the logic gate at 01A-A1A2 wire side. Therefore the only FRUs for communication problems is this cable and the System Card.

Communications problems can develop from intermittent connections in the cables or from a bad ground for the sig.al. Check for thes first before exchanging any FRU. (MI 400-1).

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002
DOES THE SC = 27?
Y N

003
DOES THE SC = AC?
Y N

004
IS THE PROBLEM WITH INCORRECT DATA BEING PRINTED?
Y N

005
No trouble found. If the problem is intermittent
GO TO MAP 0800, ENTRY POINT A.

006
IS THE LANGUAGE SELECT SWITCH SET CORRECTLY FOR THIS PRINTER (SEE OPERATOR GUIDE IF NEEDED)?
Y N

007
Set the Language switch to the correct setting and recheck your symptoms. Restart in the MAPS if necessary.

008
Carefully check the 'Pattern Printout' portion of printouts (MI 100-1) Test Key Test Printouts, for print quality problems that could be the source of the incorrect data being printed.
IS PRINT QUALITY OK?
Y N

009
GO TO MAP 0300, ENTRY POINT A.

010
Power Off the printer.
1. Remove the Top and Power Covers. (MI 000-1) .
2. Check the Coax attachment cable for bad connections. (MI 400-1) Cable Checks.

IS THE ATTACHMENT CABLE OK?
Y N

011
Unplug and reseat the cable, exchange the cable or take other action as necessary. (MI 800-1 Locations) .

012
Remove any Top card crossovers from the System Card at 01A-A1A2.

NOTE: If no crossovers are installed, answer this question 'NO' and continue.

Examine the Crossover for damage or corrosion that could cause bad connections.
Reseat the crossover and recheck the symptom.
DID THIS CORRECT THE PROBLEM?
Y N

013
NOTE! FOR WORLD TRADE MODEL 1, THE EPROM CARD MUST BE IN 01A-A1B2.
IS THERE AN EPROM CARD INSTALLED EITHER IN LOCATION 01A-A1B2 OR C2?
Y N

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014
If no problem can be found with the Top Card Crossovers (if any are installed), re-seat the System Card and recheck the symptom. If problem is not fixed, exchange the System Card 01A-A1A2, and/or the Crossovers if necessary.
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
GO TO MAP C900, ENTRY POINT A.

015
1. Power Off the Printer.
2. Reseat System Card 01A-A1A2 and EPROM Card in 01A-A1B2 OR C2 (present location).

NOTE! FOR WORLD TRADE MODEL 1, THE EPROM CARD MUST BE IN 01A-A1B2.

3. Replace the crossovers on the cards and recheck the symptoms.
4. If the problem is solved
GO TO MAP 0900, ENTRY POINT A.
5. If the problem still exists, FRU exchange order is:
   System Card
   EPROM Card
   Crossovers

NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.

NOTE 2: There is a possibility that the 'incorrect' data is being sent from the host if it is not causing any Status Codes.
GO TO MAP 0900, ENTRY POINT A.

016
The problem was a bad connection in the crossovers.
GO TO MAP 0900, ENTRY POINT A.

017
The Test Key Tests have detected a failure in the communications adapter on the System Card. Exchange the System Card (01A-A1A2). (MI 800-1 Locations)
GO TO MAP 0900, ENTRY POINT A.

018
This is a 'Subsystem not Ready' indication.
No Data is being received by the printer but the 'Poll' from the Host system is being received and recognized.
This is a normal indication that the printer is busy, or no data is being sent by the Host system. The '27' should last only a short time and be cleared by the system when the 'busy' condition goes away.
If the '27' Status Code is not cleared, use the Test Key Printouts and
GO TO MAP 0100, ENTRY POINT A.

019

This is an indication that the printer is ready but is receiving no communication of any kind from the Host.

Power Off the printer. Remove the Top and Power Covers (MI 000-1).

1. Check the internal Communications cable from the Coax connector to the Logic Board at 01A-A1A2 wire side, for open or loose connections. (MI 400-1) Cable checks.
2. Also check the coax to the printer for good connection.
3. If the internal Communications cable is good, the problem is most likely in the Coaxial cable or the Host system. There is a possibility that the System Card 01A-A1A2 is bad. (MI 800-1 Locations)

GO TO MAP 0900, ENTRY POINT A.

COMMUNICATIONS TWINAXIAL-(MOD 2)

ENTRY POINTS

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

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
3	010	0300	A
2	006	0800	A

001
(ENTRY POINT A)

This MAP is for Model 2 failures. If this is a Model 1 printer,
GO TO MAP 0400, ENTRY POINT A.

****
* Read notes 1 and 2 at the right. *
****

ENSURE THAT THE COMMUNICATION TWINAX CABLES FROM THE HOST ARE ATTACHED TO THE PRINTER.

(Step 001 continues)

This MAP diagnoses failures causing the following Status Codes:

SC=27 SC=28 SC=AC SC=0A

FRU LIST

TWINAXIAL Communications Card
Tailgate Connectors
Communications Cable
System Card

NOTE 1.
The communications adapter on model 2 machines is located on the Communications Card (01A-A1B2). This card interfaces to the SYSTEM Card (01A-A1A2) logic through top-card connectors. The interface to the twinax communications lines is via a small cable which connects 01A-A1B4 wire side on the logic board to the Twinaxial Connectors at the rear of the printer.

Communications problems can develop from intermittent connections in the cables or from a bad ground for the signal. Check for these first before exchanging any FRU. (See MI 400-1, Twinaxial Cable check)

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(Step 001 continued)
Press and release the TEST Key and let the printer run the Test Key Tests.
NOTE: The test is complete when the LEDs are displaying '9F'.

DID THE TEST COMPLETE WITH SC = 28?
Y N

002
DOES THE SC = 27?
Y N

003
DOES THE SC = AC?
Y N

004
DOES THE SC = 04?
Y N

005
IS THE PROBLEM WITH INCORRECT DATA BEING PRINTED?
Y N

006
With power off, check the communication cables for continuity, and visually check twinaxial connectors, cables and wiring for damage or burn marks. (MI 400-1)
If no trouble is found or the problem is intermittent
GO TO MAP 0800, ENTRY POINT A.

007
IS THE LANGUAGE SELECT SWITCH SET CORRECTLY FOR THIS PRINTER (SEE OPERATOR GUIDE IF NEEDED)?
Y N

4 3 3 3 3 3
A B C D E F

NOTE 2: If this printer is installed as the last device on the loop, it must have a Termination Plug connected to the unused Twinaxial connector on the rear of the printer. (See the Guide to Operations manual).

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008
Set the Language switch to the correct setting and recheck your symptoms. Restart in the MAPS if necessary.

009
Carefully check the 'Pattern Printout' portion of printouts (MI 100-1) Test Key Test Printout for print quality defects that could be the source of the incorrect data being printed.
IS PRINT QUALITY OK?
Y N

010
GO TO MAP 0300, ENTRY POINT A.

011
Check the internal communication cable for bad connections (MI 450-1) Cable Checks.
Unplug and reseat the Communication and System Cards.(MI 800-1 Locations) .
Ensure that the twinax cables are properly seated and that the ground connections are all tight. (MI 450-1) Cable checks.
Try to rerun the failing operation.
If problem still exsists, and no problem with the Host system can be determined, exchange the Communication Card. (MI 800-1 Locations)

012
SC = 0A means that a Clear Command was received from the Host. 0A is displayed only if the Host computer is receiving a 'Unit Not Available' indication from the printer.

Stop/Reset will clear the display, and Start/Restore should make the printer 'Ready'.

If a condition exists on the printer that requires further corrective action, it will be indicated in the Status Display.

013
The Test Key Tests have detected a failure in the communications adapter.
Power Off the printer. Remove the Top and Power Covers (MI 000-1).
Reseat and/or exchange the Communication Card.(01A-A1B2) (MI 800-1 Locations)
GO TO MAP 0900, ENTRY POINT A.

014
This is a 'Unit Address not Received indication.
Depending on controller attachment and/or system timing conditions, this may be a normal condition.

Check proper address switch setting and cable connections. Refer to 'Address Select Switches' in the Operating Instructions Volume 1, attached to the printer Top Cover and to (MI 800-1 Locations).
See the Site Preparation Guide and Customer Setup manuals if necessary, and ensure controller and printer are properly configured.
The Status Display is cleared when the proper address is received.

015

A Line Sync lost Status Code may be a normal condition.
This is an indication that the printer is ready but is receiving no communication of any kind from the Host.

Power Off the printer. Remove the Top and Power Covers (MI 000-1).
Check the internal Communications cables from the Twinax connectors to the Logic Board at 01A-A1B4 wire side, for open or loose connections.

If the internal Communications cables are good, the problem is most likely in the Twinaxial cables or the Host system.
Power On the printer.
Recheck the symptoms
If the problem still exists, there is a possibility that the Communication card is bad. (MI 800-1 Locations).

OPERATOR PANEL/LOGIC

ENTRY POINTS

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

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
4	017	0010	A
4	013	0010	A
6	031	0330	A
6	030	0340	A
6	029	0340	A
3	006	0600	A
8	040	0900	A

001
(ENTRY POINT A)

- If your problem is one of the Status Codes in the charts below, go to the indicated Entry Point or MAP for that Status Code.
- For Operator Panel problems, Invalid Status Codes incorrect lights with 'TEST' Key pressed, or the Printer will not run, DO NOT use the charts below, but continue with this MAP.

STATUS CODE	ENTRY POINT	PAGE NUMBER	STEP NUMBER
21	B	7	032
22	C	8	039
97	D	9	046
06,07	E	9	047
08,09	E	9	047
13,14	E	9	047
59-63	E	9	047
93,94	E	9	047
99	E	9	047
A0	A0	10	048
AE	AE	12	057
EX	EX	12	058
FX	FX	13	059

STATUS CODE	GO TO MAP	ENTRY POINT
27,28	Mod. 1 0400	A
0A,27,28	Mod. 2 0450	A

FRU LIST FOR MAP 0500

OP PANEL
OP PANEL CABLES
SYSTEM CARD
EPROM CARD IF PRESENT

(Step 001 continues)

(Step 001 continued)

NOTE:
The following note is for your information and requires action only if it describes your present problem.

If when the Test Key is pressed and released the Test Key Tests do not run but one of the CE Tests or a Customer Set-up function runs instead, then one of the Operator Panel keys is shorted or mechanically closed. Perform the Operator Panel Test (MI 700-1) and exchange the Op Panel Board (MI 500-1) if necessary.

If this is not the problem, continue with this MAP.

ARE YOU HERE BECAUSE AN OPERATOR STATUS CODE IS A SOLID PROBLEM OR ALWAYS REPEATS?
Y N

002
The following question is asking about only one switch to find an 'Open' switch condition that may have been reported by an operator.

ARE YOU HERE BECAUSE 'ONLY ONE' OF THE OPERATOR PANEL KEYS OR SWITCHES CAUSES NO RESPONSE WHEN ACTIVATED?
Y N

5 6 3
4 B C

003
1. The following steps are to find out if all of the Display Segments and LEDS will function correctly.
2. Press and hold the 'TEST' Key. This should turn on all Display Segments and Op. Panel LEDS.
   (SC should be '88', LEDS should be 'FF'.)

ARE ALL DISPLAY SEGMENTS AND LEDS 'ON'?
Y N

004
ARE ANY DISPLAY SEGMENTS AND LEDS 'ON'?
Y N

005
Power Off the printer.
Wait approximately 10 seconds.
Power On the printer.
Watch for Forms, Dot Band and Ribbon movement while waiting approximately two (2) minutes.
DID FORMS, RIBBON, OR DOT BAND MOVE?
Y N

006
GO TO MAP 0600, ENTRY POINT A.

007
Power Off the printer.
One of the Op. Panel cables is loose or the +5vdc is missing to the Op. Panel. Check connectors 01A-A1A5 and P4. See (MI 500-1) and (MI 800-1 Locations).
Remove the Op Panel and ensure the cables are properly seated by reseating them.
Ensure that +5vdc is present on the Op. Panel Circuit Board. (Small Connector on the Circuit Board). (MI 800-1, Locations)

NOTE: If +5vdc is missing from the Op. Panel, the Panel will be Blank with power (Step 007 continues)

(Step 007 continued)
'ON'.

If a problem is located, repair or exchange as necessary. See (MI 500-1).
If no problem with the cables can be found, exchange the Op. Panel Circuit Board. (MI 500-1).

008
With Test Key pressed, ALL Display segments and All LEDs should be on.
ARE ALL DISPLAY SEGMENTS AND LEDS 'ON' WHILE THE TEST KEY IS PRESSED?
Y N

009
1. Power Off the printer.
2. Reseat the Op Panel Cable at both the Op Panel and at 01A-A1A5. Also check the small +5vdc cable to the Op Panel for proper seating and reseat the connectors. (MI 500-1)
3. Check and reseat connector 01A-A1D5 on the logic Board and connector J4 (MI 800-1 Locations).
4. Ensure that the Status Display is seated firmly in its socket.
5. Recheck the symptom by powering on and allowing the Power On Test to complete.

WITH THE TEST KEY HELD PRESSED, ARE ALL DISPLAY SEGMENTS AND LEDS 'ON'?
Y N

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010
Press and hold the Test Key and observe the Display and LEDS.
If a number of 00 through 09 is in the Display, the corresponding key 0 through 9 is mechanically bad or shorted.

If LEDS are 'FA through FE', the corresponding key A through F is mechanically bad or shorted (MI 700-1) Operator Panel Test.

Exchange the Op. Panel Circuit Board if necessary. (MI 500-1) Circuit Board.
GO TO MAP 0900, ENTRY POINT A.

If any other LEDS are off (with Test Key pressed), or Display Segments are missing, the Op. Panel Circuit Board must be exchanged. (MI 500-1) Circuit Board
GO TO MAP 0900, ENTRY POINT A.

011
Problem was a bad cable connection.
GO TO MAP 0900, ENTRY POINT A.

012
IS THE PROBLEM OP. PANEL SWITCHES/KEYS THAT DO NOT WORK?
Y N

013
The MAP has not identified an Op. Panel failure. Go to Start MAP and rediagnose the symptoms.
GO TO MAP 0010, ENTRY POINT A.

014
1. Power Off the printer.
2. Reseat the Op Panel Cable at both ends. Op Panel and at 01A-A1A5. Also check the small +5vdc cable to the Op Panel for proper seating.
3. Power On the printer.
4. Recheck the symptom.
5. If switches/keys still do not work, perform the Operator Panel Test (MI 700-1).
6 If any Op. Panel Switch/key fails to operate correctly,

Power Off the printer.
Exchange Op Panel Circuit Board. (MI 500-1).
GO TO MAP 0900, ENTRY POINT A.

015
Release the Test Key.

Note: An invalid Status Code is one that is not in the FRU Charts on page 2 of the Start MAP, 0010, or a partial or unreadable character.
DOES THE DISPLAY INDICATE AN INVALID CODE?
Y N

016
ARE YOU HERE BECAUSE THE SC DID NOT CHANGE WHEN CANCEL PRINT WAS PRESSED?
Y N

017
No trouble found with the Operator panel.
Return to the Start MAP and begin again.
GO TO MAP 0010, ENTRY POINT A.

018
GO TO PAGE 12, STEP 057, ENTRY POINT AE.

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019
IS THE SC ANY OF THE FOLLOWING: 04, 84, A8 OR C8?
Y N

020
The problem must be partial characters or Display segments that are on solid. This is most likely caused by missing data bits to the Operator Panel. These data bits are generated on the system card and passed to the Op. Panel by the Op. Panel cable.
Power Off the printer. Remove the Top and Power Covers (MI 000-1).

1. Ensure that the Op. Panel cable (01A-A1A5 pin side) to the Op. Panel Circuit Board is seated correctly at both ends. Do this by unplugging and reseating. Also check for bent or damaged pins.
   1A. Also ensure that the cable connector at 01A-A1D5 (DC Voltage) is properly seated.
   NOTE: The Op Panel gets its +5 volts separately (through connector J4) from the rest of the printer. If DC voltages are missing from the logic board but not from the Op Panel, strange SC's and LED indications will result.
2. Check the System Card (01A-A1A2) and its Top Card connectors for bent or damaged pins and reseat both the System Card and the Top Card Connectors. (MI 800-1 Locations)

Power On the printer.
3. Recheck the symptoms. If the Invalid character problem still exists, power off and exchange the Op. Panel Circuit Board (MI 500-1).

Power On the printer.
(Step 020 continues)

(Step 020 continued)
4. Recheck the symptoms. If the problem still exists, Power Off the printer. and exchange the Op. Panel cable.
5. If the problem is still not resolved, there is a remote possibility that the System Card (01A-A1A2) is defective. (MI 800-1 Locations)

NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
GO TO MAP 0900, ENTRY POINT A.

021
Check Card location 01A-A1G4. (MI 800-1 Locations)
IS A CARD INSTALLED AT THIS LOCATION?
Y N

022
Exchange the System Card 01A-A1A2 and EPROM Card 01A-A1C2 or B2 if present (MI 800-1 Locations).
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
NOTE! FOR WORLD TRADE MODEL 1, THE EPROM CARD MUST BE IN 01A-A1B2.

023
Remove the card from 01A-A1G4 it is installed in the wrong location. (MI 800-1 Locations).
GO TO MAP 0900, ENTRY POINT A.

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024
This is most likely an 'Open' Key or Switch on the Operator Panel Circuit Board. Verify this by performing the Operator Panel Tests (MI 700-1).
If any key or switch does not respond, exchange the Op Panel Circuit Board.
GO TO MAP 0900, ENTRY POINT A.

025
The following questions will direct you to the correct MAP for failures that will not let Operator Messages clear normally. The Status Codes in the following questions must be solid problems or consistently repeating to be considered errors instead of normal Operator messages.
IS THE STATUS CODE ANY OF THE FOLLOWING:
01, 02, 03, 81, 82, OR 83?
Y N

026
DOES THE SC=04 OR 84?
Y N

027
DOES THE SC=05 OR 85?
Y N

028
Refer to the charts at the beginning of this MAP and go to the indicated MAP or Entry Point for your failing Status Code.

029
GO TO MAP 0340, ENTRY POINT A.

030
GO TO MAP 0340, ENTRY POINT A.

031
GO TO MAP 0330, ENTRY POINT A.

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032
(ENTRY POINT B)
SC=21 Language Select Switch Problem.
Refer to 'Language Select Switches in 'Operating Instructions', part 1 attached to the printer Top Cover.
IS THE LANGUAGE SELECT SWITCH SET TO ACCEPTABLE SETTING FOR THIS TYPE OR MODEL OF PRINTER?
Y N

033
Contact the Customer and see the Customer Operator Guide for the correct Language Switch Selection and set the switch correctly for this printer.
GO TO MAP 0900, ENTRY POINT A.

034
1. Select Test 55 (MI 700-1, Selecting Tests).
2. Use the following procedure to setup Address FFF2.
3. Press Key 3 to get a flashing 'F0' in the LEDS.
4. Press Key 4 one time to read the contents of the address FFF2 (Language Switch setting) in the LEDS.
5. Turn all Language Select Switches 'OFF' and observe the LEDS.

ARE ALL LEDS 'ON'?
Y N

035
The LEDS that are 'OFF' represent Language Select Switch positions that are shorted.
Power Off the printer.
Exchange Op Panel Circuit Board. (MI 500-1).
GO TO MAP 0900, ENTRY POINT A.

N

036
1. Turn the Language Select Switch positions to 'ON' one at a time.
2. Each switch should turn 'OFF' one of the LEDS.
3. Continue until all switch positions are in the 'ON' position.

ARE ALL OF THE LEDS NOW 'OFF'?
Y N

037
The LEDS that are 'ON' represent Language Select Switch positions that are open.
Power Off the printer.
Exchange Op Panel Circuit Board. (MI 500-1).
GO TO MAP 0900, ENTRY POINT A.

038
The switch and its associated circuits are OK.
Possible intermittent problem.
1. Power Off the printer. Remove the Top and Power Covers (MI 000-1).
2. Ensure that the Op. Panel cables are seated good by unplugging them and reseating the connectors. Also reseat the System and EPROM Cards (MI 800-1 Locations).
3. Power On the printer.
4. Recheck the symptoms
5. If the problem reoccurs:
6. Power Off the printer.

Exchange Op Panel Circuit Board. (MI 500-1).
GO TO MAP 0900, ENTRY POINT A.

039
(ENTRY POINT C)
SC=22 Invalid Screen Size indication.
Refer to the Screen Size set up procedure in the Operator Guide.
IS THE SWITCH SET CORRECTLY FOR THE DISPLAY ATTACHED TO THIS PRINTER?
Y N

040
Refer to the Screen Size setup procedure and set the switch correctly.
GO TO MAP 0900, ENTRY POINT A.

041
1. Select Test 55 (MI 700-1, Selecting Tests).
2. Use the following procedure to setup address FFF3.
3. Press Key 3 to get a flashing 'F0' in the LEDS.
4. Press Key 4 one time to read the contents of the address FFA3 (Screen Size setting) in the LEDS.
5. Turn all of the Screen Size Switch positions 'OFF' and observe the LEDS.

ARE ALL LEDS 'ON'?
Y N

042
The LEDS that are 'OFF' represent Screen Size Switch positions that are shorted.
Power Off the printer.
Exchange Op Panel Circuit Board. (MI 500-1).
GO TO MAP 0900, ENTRY POINT A.

043
1. Turn the Screen Size Switch positions to 'ON' one at a time.
2. Each switch should turn 'OFF' one of the LEDS.
3. Continue until all switch positions are in the 'ON' position.

ARE ALL OF THE LEDS NOW 'OFF'?
Y N

044
The LEDS that are 'ON' represent Screen Size Switch positions that are open.
Power Off the printer.
Exchange Op Panel Circuit Board. (MI 500-1).
GO TO MAP 0900, ENTRY POINT A.

045
The switch and its associated circuits are OK.
Possible intermittent problem.
1. Power Off the printer. Remove the Top and Power Covers (MI 000-1).
2. Ensure that the Op. Panel cables are seated good by unplugging them and reseating the connectors. Also reseat the System Card.
3. Power On the printer.
4. Recheck the symptoms
5. If the problem reoccurs:
6. Power Off the printer.

Exchange Op Panel Circuit Board. (MI 500-1).
GO TO MAP 0900, ENTRY POINT A.

046
(ENTRY POINT D)
SC 97 is an unexpected interrupt from the Op Panel.
This is probably an intermittent short on the Op panel switches/keys or wiring.
Check the Op. Panel cable for correct seating and for damaged or shorted pins. Reseat the cable and recheck the symptoms. If the '97' SC continues to happen exchange the Op. Panel Circuit Board (MI 500-1).

047
(ENTRY POINT E)
SC's 06, 07, 08, 09, 13, 59, 60, 61, 62, 63 and 99.
These Codes are controlled by the Host System. They should clear by a reset from the Host System. See (MI 700-1) Operator SC Codes.

Status Codes 93 or 94 are parity errors and normally are corrected by replacing the System Card and EPROM Card (If present).
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
However on a Model 2 (Twinax) printer Status Codes 93 or 94 may be caused by a defective Communication Card (01A-A1B2). If the System and/or EPROM cards have already been exchanged for this problem and this is a Model 2 printer exchange the Communications card (MI 800-1 Locations).

(Step 047 continues)

(Step 047 continued)
SC 14 means that a 'Restore' operation is pending after an 'Eject' operation. The 'Restore'must be performed before any other request will be accepted. (See Operating Instructions Part 2 attached to the Printer top cover.

If the SC=14 cannot be removed from the printer,
1. Perform the Operator Panel Tests (MI 700-1) to check the Start/Restore Key operation.
2. If the SC=14 still will not clear, exchange the System Card at 01A-A1A2. (MI 800-1 Locations).

NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
GO TO MAP 0900, ENTRY POINT A.

048
(ENTRY POINT A0)
An 'A0' error may occur if the printer is powered on immediately (less than 40 seconds) after being powered off.
WAS PRINTER POWERED ON IMMEDIATELY AFTER A POWER OFF?
Y N

049
Open wires or bad connections from the Power Supply at the connector in 01A-A1D5 pins B,8 or D11 will cause 'A0' errors.
1. Power Off the printer.
2. Unplug connector 01A-A1D5 and inspect it for damage or pushed back pins. Reseat the connector firmly.
3. Power On the printer. Allow the Power On BATs to run.
4. If the Power On BATs detect and error (SC=89, LEDs=9F) press and release Cancel Print one time to display the error Status code.

DID THE 'A0' ERROR RETURN?
Y N

050
If no error was posted, the problem was a bad connection and is solved, or it is intermittent. If the 'A0' returns, power off and exchange the System Card 01A-A1A2. (MI 800-1 Locations)
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
GO TO MAP 0900, ENTRY POINT A.

(Step 050 continues)

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(Step 050 continued)
If the Power On BATs posted any error other than 'A0', return to the Start MAP 0010, and begin again using the new Status code.

051
Power Off the printer.
Remove any Top card crossovers from the System Card at 01A-A1A2.

NOTE: If no crossovers are installed, answer this question 'NO' and continue.

Examine the Crossover for damage or corosion that could cause bad connections.
Reseat the System Card and EPROM Card if present. (MI 800-1 Locations).
Reseat the crossover and recheck the symptom.
IS THE PROBLEM FIXED?
Y N

052
NOTE! FOR WORLD TRADE MODEL 1, THE EPROM CARD MUST BE IN 01A-A1B2.

IS THERE AN EPROM CARD INSTALLED IN LOCATION 01A-A1C2 OR B2?
Y N

053
Check the Top Card Crossover for opens or shorts. If no problem can be found with the Top Card Crossovers (if any are installed), re-seat the System Card and recheck the symptom. If problem is not fixed, exchange the System Card 01A-A1A2, and/or the Crossovers if necessary.
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
GO TO MAP 0900, ENTRY POINT A.

054
Power Off the printer.
FRU Replacement order is:
EPROM Card if present.
System Card
Top Card Crossovers.
GO TO MAP 0900, ENTRY POINT A.

055
The problem was a bad connection in the crossovers.
GO TO MAP 0900, ENTRY POINT A.

056
Always allow the printer to be powered off for a minimum of 45 seconds before powering on again.

057
(ENTRY POINT AE)
Operator Panel or Cable Problems.

SC = AE indicates that one of the Op.Panel switches/keys i mechanically bad or shorted or there is a problem with the data buss lines between the Op. Panel and the Printer logic.

Press and hold the Test Key and observe the Display and LEDS.
If a number of 00 through 09 is in the Display, or LEDS are 'FA through FE', the corresponding Key switch 0 through 9 or A through E is mechanically bad or shorted.

Run the Operator Panel Tests (MI 700-1). If several of the switches do not operate the problem is most likely in the Op. Panel cable that contains the data buss.

Check the Op Panel cables (both ends) for connection and damage (MI 800-1, Locations). If cables are OK, exchange the Op. Panel Circuit Board. (MI 500-1)
GO TO MAP 0900, ENTRY POINT A.

058
(ENTRY POINT EX)
ROS Module in the wrong location.

This error indicates that one of the ROS modules is in the wrong location on the System Card. If you have just changed the System Card which had modules already installed, the modules on it were improperly installed. If you have had the modules off the card, or installed new modules, the module represented by the 'X' in the 'EX' error code is in the wrong location.
Replace the System Card 01A-A1A2. (MI 800-1, Locations).
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.

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059
(ENTRY POINT FX)
ROS Module CRC, MCPC.

The 'X' in the 'FX' Error code is the number of the ROS module which has been identified by the code as defective because of a machine check, program check or CRC check.
Power Off the printer.
Remove any Top card crossovers from the System Card at 01A-A1A2.

NOTE: If no crossovers are installed, answer this question 'NO' and continue.

Examine the Crossover for damage or corrosion that could cause bad connections.
Reseat the crossover and recheck the symptom.
IS THE PROBLEM FIXED?
Y N

060
NOTE! FOR WORLD TRADE MODEL 1, THE EPROM CARD MUST BE IN 01A-A1B2.

IS THERE AN EPROM CARD INSTALLED IN LOCATION 01A-A1C2 OR B2?
Y N

061
If no problem can be found with the Top Card Crossovers (if any are installed), re-seat the System Card and recheck the symptom. If problem is not fixed, exchange the System Card 01A-A1A2, and/or the Crossovers if necessary.
GO TO MAP 0900, ENTRY POINT A.

062
Power Off the printer.
Remove the EPROM card from the machine.
Ensure that all of the switches on the EPROM Card are set correctly (MI 500-1) EPROM Card.
Replace the EPROM Card in the printer.
Power On the printer.
Recheck the symptoms
IS THE PROBLEM FIXED?
Y N

063
Exchange the System Card 01A-A1A2 and also exchange the EPROM Card 01A-A1C2 or B2 -NOTE! FOR WORLD TRADE MODEL 1, THE EPROM CARD MUST BE IN 01A-A1B2.- (MI 800-1, locations). NOTE: When installing a Level 2 System Card no EPROM card may be left i either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
You may wish to exchange them one at a time, rechecking symptoms in between, and exchange only the failing card to minimize parts usage.
GO TO MAP 0900, ENTRY POINT A.

064
GO TO MAP 0900, ENTRY POINT A.

065
The problem was a bad connection in the crossovers.
GO TO MAP 0900, ENTRY POINT A.

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POWER MAP

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ENTRY POINTS

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

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
6	035	0010	A
8	052	0090	A
3	016	0500	A

001
(ENTRY POINT A)

This MAP diagnoses failures causing the following Status Codes:

SC=39 Power Supply problem
SC=58 Power Supply problem
SC=CF Voltage problem
SC=88 System Card problem

FRU LIST

Power Supply
On/Off Switch
AC Cable
Line Cord
System Card
Driver Card
Motor
Relay

IS THE PRINTER COMPLETELY INACTIVE (NO LIGHTS ON OR FANS RUNNING)?
Y N

002
SC = 58?
Y N

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6 6 2
A B C

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003
SC = CF?
Y N

004
SC = 39?
Y N

005
Does the Printer have the following symptom:
SC = 88, LEDS = FF, PRINTER WILL NOT RUN?
Y N

006
Does the Printer have the following symptom:
OPERATOR PANEL COMPLETELY BLANK, PRINTER WILL NOT RUN?
Y N

007
No Power problem has been found. Return to the Start Map 0010, and re-examine the symptoms relating to this problem.

008
Power Off the printer.
Wait approximately 30 seconds
Power On the printer.

Observe the Dot Band and forms carefully for approximately 1 minute, to allow time for the POR Test to run.
DID THE DOT BAND OR FORMS MOVE DURING THE POR TEST?
Y N

009

DANGER
HAZARDOUS VOLTAGE PRESENT

Ensure connector 01A-A1D5 is well seated, and that the pins are in good condition. Power off if necessary to check these conditions. With power on, recheck the symptoms.
Measure the voltage at 01A-D5D10 (D5B10 on the connector).
IS THE VOLTAGE +4.5 VDC OR MORE?
Y N

010

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Measure for continuity between 01A-D5D10 and D5D08

DO YOU HAVE CONTINUITY?
Y N

011
Power Off the printer.
The Power Supply is not providing a POR signal to start the POR TEST (BAT). Exchange the Power Supply. (MI 600-1, Power supply)
GO TO MAP 0900, ENTRY POINT A.

012

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

The POR signal at 01A-A1D5D10 is shorted to Ground. Repair or replace the Logic Board as necessary.(MI 500-1)
GO TO MAP 0900, ENTRY POINT A.

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013
Power Off the printer.
The System Card at 01A-A1A2 or the Eprom card (if present) at 01A-A1C2 or B2 is defective. Exchange them one at a time. (MI 800-1, Locations)
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.

014
IS THE OPERATOR PANEL STILL COMPLETELY BLANK?
Y N

015
The POR seems to have cleared the original problem. If the problem re-occurs, check for intermittent grounds on the 8.5V and 5.0V DC lines. (MI 800-1, Power supply)
GO TO MAP 0900, ENTRY POINT A.

016
There appears to be an Operator Panel Problem.
GO TO MAP 0500, ENTRY POINT A.

017
CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Perform the following:
1. Power Off the printer.
2. Check the DC cable at 01A-A1D5 for proper seating, loose or pushed back pins.
3. If present, reseat the Top card connectors, the System card, Communication card (Mod. 2), and the Eprom card. (MI 800-1, Card Locations) Recheck the symptoms.
4. Exchange the System Card at 01A-A1A2 and

(Step 017 continues)

(Step 017 continued)
   Eprom card (if present) at 01A-A1C2 or B2. Then recheck the symptoms.
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.
5. If the problem is still present, exchange the operator panel printed circuit board and the flat cable that connects at 01A-A1A5 on the logic board.
6. If problem is still present, exchange the Power Supply (MIM 600-1).

GO TO MAP 0900, ENTRY POINT A.

018
CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

This is probably a Power Supply problem. Replace the Power Supply. (MI 600-1).
GO TO MAP 0900, ENTRY POINT A.

019
(ENTRY POINT C)
SC = CF indicates a Power Supply, Cable and connector problem, or Hammer driver card problem.

DANGER
HAZARDOUS VOLTAGE PRESENT

1. Power off the Printer.
2. Carefully examine connectors 01A-A1E3 and 01A-A1D5 and ensure that they are properly seated and that all the pins are in good condition and are making proper connection.
3. Reseat both Hammer driver cards at 01A-A1E2 and 01A-A1J2.
4. Power on and recheck the symptoms. If the problem is still present, continue with the following steps.

(Step 019 continues)

(Step 019 continued)

5. Power off, and unplug connector 01A-A1E3 from the Logic board.
6. Power on and allow the printer to run the Power On (POR) tests.-Ignore any Status Code that is displayed.
7. Select Test '55' (MI 700-1, Selecting Tests).
8. Press and Release Key 'B' on the Op Panel.
9. Set the Meter to read more than 40 VDC.
10. Measure the voltage between the following pins on the logic board:, -01A-E3D02 (negative lead) -01A-E3B02 (positive lead).

IS THE VOLTAGE +28 VDC OR MORE?

Y N

020

DANGER

HAZARDOUS VOLTAGE PRESENT

1. Power off the printer.
2. Unplug connector 01A-A1D5 from the Logic Board.
3. Power on the printer.
4. Measure the voltages at the following pins ON THE UNPLUGGED 01A-A1D5 CABLE CONNECTOR with the negative meter lead to any logic board D08 pin. (MI 800-1, Logic board)

Test Point	Voltage/15V Scale
D5D08	+0.5vdc or less
D5B09	+2.5vdc or more
D5B10	+4.5vdc or more
D5D10	+4.5vdc or more

WERE ALL VOLTAGES OK?

Y N

021

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.

1. Inspect cable connector 01A-A1D5, for pushed back or loosened pins. If the connector is OK, replace the power supply. (MI 600-1).
2. If loosened pins are found, reseat them, reconnect all cables, power on the printer, and allow the POR test to complete. If the 'CF' Status Code is now corrected, the loose connector pin(s) were the problem.
3. If reseating loose pins or the connector does not correct the problem, replace the Power Supply.

GO TO MAP 0900, ENTRY POINT A.

022

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Replace the System Card at 01A-A1A2 and the Eprom card (if present) at 01A-A1C2 or B2.
GO TO MAP 0900, ENTRY POINT A.

023

DANGER

HAZARDOUS VOLTAGE PRESENT

1. Select Test 70. (MI 700-1, Selecting Tests)
2. Wait 30 to 40 seconds - disregard any Status Code.
3. Again measure the voltage from 01A-A1E3D02 to E3B02 as before.

IS THE VOLTAGE NOW LESS THAN 1 VDC?

Y N

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024

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

1. Power Off the printer.
2. Unplug connector 01A-A1D5 from the logic board. (MI 800-1 Locations).
3. Measure for continuity from 01A-D5B09 ON THE CABLE CONNECTOR to ground. (any D08 pin)

DO YOU MEASURE CONTINUITY?

Y N

025

Measure for continuity from 01A-A1D5D09 on the Logic Board to ground. (any D08 pin)

DO YOU MEASURE CONTINUITY?

Y N

026

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Exchange the System Card at 01A-A1A2 and the Eprom card (if present) at 01A-A1C2 or B2.
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.

027

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Unplug the System Card at 01A-A1A2.
Measure for continuity from 01A-A1D5D09 on the Logic Board to ground. (any D08 pin)

DO YOU MEASURE CONTINUITY?

Y N

028

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
Exchange the System Card at 01A-A1A2 and the Eprom card (if present) at 01A-A1C2 or B2.
NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.

029

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

01A-A1D5D09 on the Logic Board is shorted to ground. Locate the ground and remove it if possible. If the ground on 01A-A1D5D09 cannot be located, exchange the Logic Board.

GO TO MAP 0900, ENTRY POINT A.

030

The Power Supply cable is shorted to ground at 01A-A1D5B09 If the ground cannot be located, exchange the Power Supply.

GO TO MAP 0900, ENTRY POINT A.

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031
With no load, the Power Supply is turning on and off as it should. One of the Driver Cards is defective. Do the following:

1. See MI 800-1 for the location of the three Driver cards.
2. Power Off the printer.
3. Remove One Driver Card at a time.
4. Power On - Let the printer run the POR (BAT) Test.
5. Observe the Status Code. If it is still 'CF', repeat steps 1 through 5. Continue until the 'CF' changes to a different Status Code at the end of the POR (BAT) Test.
6. The last card you removed is defective. Exchange it.

GO TO MAP 0900, ENTRY POINT A.

032
SC=58 indicates a +32 Volt DC failure.

Press and Release the Test key to obtain a 'Test Key Printout'.
DOES THE SC NOW = CF?
Y N

033
IS ANY ERROR CONDITION ON THE PRINTER (SC=??)?
Y N

034
CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

There is an intermittent problem with the +32 Volts.

1. Check for loose or damaged cables and connectors at 01A-A1E2 and 01A-A1D5.
2. Use the Error Log MAP 0100 to interpret the 'TEST KEY PRINTOUT' that was just printed.

Probable FRU Order:

Power Supply
System Card
Eprom Card

3. If the problem returns, use the Intermittent Problems MAP, 0800, or:

035
Return to the Start MAP and diagnose the failure using the new Status Code.
GO TO MAP 0010, ENTRY POINT A.

036
GO TO PAGE 3, STEP 019, ENTRY POINT C.

037
Ensure that the power cord is connected at the wall outlet and at the printer power socket. Power On the printer.
IS THE POWER SUPPLY FAN RUNNING?
Y N

038
IS THERE ANY INDICATION THAT THE PRINTER HAS POWER?
Y N

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PEC———

039

DANGER
HAZARDOUS VOLTAGE PRESENT

1. Power Off the printer.
2. Unplug the Power Cord from the Wall Outlet.
3. Measure for correct AC Voltage at the Wall Outlet.

IS CORRECT AC VOLTAGE BEING SUPPLIED AT THE WALL OUTLET?
Y N

040
1. Unplug the Printer line cord from the wall outlet, and ask the customer to restore voltage to the wall outlet.
2. 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.
3. Discuss and correct this problem with the customer.
4. Reconnect the Printer to the wall outlet. Power On the printer.

DID THE VOLTAGE AT THE WALL OUTLET FAIL AGAIN?
Y N

041
GO TO MAP 0900, ENTRY POINT A.

042
Power Off the printer.
Unplug the printer power cord from the wall outlet.
Measure the line cord for continuity and shorts.

IS THE LINE CORD OK?
Y N

8 A
Y Z A

043
Replace the line cord.
GO TO MAP 0900, ENTRY POINT A.

044

DANGER
HAZARDOUS VOLTAGE PRESENT

1. Connect the Line Cord to the Wall Outlet.
2. Disconnect AC Connectors M1, M2, and M3 (MI 800-1 Wiring Diagrams).
3. Power On the printer.

DID THE VOLTAGE AT THE WALL OUTLET FAIL AGAIN?
Y N

045

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
The Hammer Blower, Band Drive Motor or Ribbon Drive Motor is shorting out the A Voltage.
1. Measure the continuity of M1, M2, and M3 (pins 1 and 3) to FRAME GROUND. (MI 800-1, AC wiring)
2. If any connector pin measures Continuity, replace th motor that is connected to it. (MI 800-1 Wiring Diagrams).
3. If no grounded connector can be found, unplug and then reconnect each motor connector one at a time, checking for the problem after each connector is unplugged. Exchange the defective motor.

GO TO MAP 0900, ENTRY POINT A.

046

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

1. Power Off the printer.
2. Disconnect AC Connector P2 from the Power Supply. (MI 800-1 Wiring Diagrams)
3. Measure for continuity from P2-08 to P2-09 and from P2-08 to Terminal 1 on the relay. (MI 800-1, Locations)

DO YOU HAVE CONTINUITY ON EITHER MEASUREMENT?

Y N

047

The absence of continuity indicates there are no grounds on the AC cable. The problem is in the Power Supply. Exchange it. (MI 600-1, Power supply)

GO TO MAP 0900, ENTRY POINT A.

048

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

There is a ground on the AC Cable or in the Relay.

1.Power Off the printer.
2. Disconnect the Wire from Relay Terminal 1. (MI 600-1, Relay)
3. Measure for continuity from the wire you removed to Ground. (P2-08).

DO YOU MEASURE CONTINUITY?

Y N

049

The Relay is defective. Exchange it.

GO TO MAP 0900, ENTRY POINT A.

050

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

1. The Wire from Terminal 1 of the Relay to P2-07 is Grounded. Repair or replace as necessary. (MI 800-1, AC wiring)
2. The Relay may also be defective because of the ground. If problems still exist replace the relay.

GO TO MAP 0900, ENTRY POINT A.

051

1. Unplug the Printer line cord from the wall outlet.
2. Measure the line cord for continuity and shorts.

IS THE LINE CORD OK?

Y N

052

Replace the line cord.

GO TO MAP 0090, ENTRY POINT A.

053

CAUTION

DISCONNECT LINE CORD BEFORE SERVICING

Check connector P2 on the power Supply for looseness or pushed back pins. (MI 800-1, Locations)

IS THE CONNECTOR OK?

Y N

054

Repair or Exchange as necessary.

GO TO MAP 0900, ENTRY POINT A.

055

1. Unplug the printer line cord from the wall outlet.
2. Unplug connector P2 from the Power Supply. (MI 600-1).
3. Turn on the Power Switch.
4. Measure continuity from P2-01 to P2-06 on the connector. (MI 800-1, AC wiring)
5. Measure continuity from P2-03 to P2-04 on the connector. (MI 800-1, AC wiring)

DID YOU MEASURE CONTINUITY FOR BOTH MEASUREMENTS?

Y N

056

Power Off the printer.
The Power Switch or its wiring is open. Repair or replace as necessary. (MI 600-1).
GO TO MAP 0900, ENTRY POINT A.

057

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

The Power Supply is defective. Exchange it. (MI 600-1)
GO TO MAP 0900, ENTRY POINT A.

058

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Power Off the printer.
The Power Supply Fan is defective. Replace the Power Supply. (MI 600-1, Power supply)
GO TO MAP 0900, ENTRY POINT A.

059

CAUTION
DISCONNECT LINE CORD BEFORE SERVICING

Probable FRU order is:
(Refer to MI 600-1)

- -Power Supply connector seating at 01A-A1D5 and A1E3
- -Power Supply
- -Relay or the wiring attached to it.

GO TO MAP 0900, ENTRY POINT A.

INTERMITTENT PROBLEMS

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
ALL	A	1	001
ALL	CI	2	006
ALL	GI	7	008
ALL	PC	3	007
ALL	SC	6	007

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	004	0010	A
2	005	0100	A

001
(ENTRY POINT A)

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 OBTAIN A TEST KEY PRINTOUT ASSOCIATED WITH THE REPORTED INTERMITTENT FAILURE?

Y N

IMPORTANT:

A Test Key Printout should be obtained by the printer Operator or the Service Representative immediately after a printer failure has occurred, or prior to powering off the printer. The printout will contain meaningful Status Code information.

Press and Release the TEST KEY to obtain a Test Key Printout. (The TEST takes about one minute to complete).

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PEC

2 2
A B

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002
Attempt to cause a printer failure by the following method:

1. Ensure that forms are properly loaded in the printer.
2. Select TEST 07 (MI 700-1, Selecting Tests).
3. Press and Release the '6' key when printing begins.
4. The Printer will print a Ripple pattern continuously.
5. Allow the TEST to print for several minutes.
6. Press and Release the Cancel Print key to stop the test.

DID THE PRINTER FAIL WITH A STATUS CODE, OR WITH ANY OTHER SYMPTOM DURING THE TEST?
Y N

003
Go to CHECK AND INSPECT.
GO TO STEP 006,
ENTRY POINT CI.

004
Use the STATUS CODE displayed, or the SYMPTOM, and go to the START MAP 0010, Step 001.
GO TO MAP 0010, ENTRY POINT A.

005
Use the Test Key Printout, and go to Test Log Printout.
GO TO MAP 0100, ENTRY POINT A.

006
(ENTRY POINT CI)
CHECK AND INSPECT

Remove the printer top cover and power cover (MI 000-1), and perform the following procedures and visual checks.

DANGER: HAZARDOUS VOLTAGE PRESENT

1. With power on, measure the following power supply voltages at connector locations 01A-A1D5 and 01A-A1E3 on the Logic Board 01A-A1. (MI 800-1, Power supply)

(+)	(-)	Volts +/-10%	RIPPLE LIMIT
D5B11	D5D08	+8.5 VDC	.2 VAC P-P
D5D03	D5D08	+5 VDC	.2 VAC P-P
D5B06	D5D08	-5 VDC	.2 VAC P-P
E3D02	E3D08	+32 VDC	———

2. With power on, measure the following additional test points on the Logic Board 01A-A1.

(+)	(-)	Volts +/-10%	RIPPLE LIMIT
G2D02	G2D08	+32 VDC	———
G2B06	G2D08	-5 VDC	.2 VAC P-P
G2D03	G2D08	+5 VDC	.2 VAC P-P
G2B11	G2D08	+8.5 VDC	.2 VAC P-P

NOTE: If a voltage checks BAD, power off, and look for loose 01A-A1D5 or 01A-A1E3 cable connectors. RESEAT ALL CABLE CONNECTORS and LOGIC CARDS, then recheck the voltages. If the voltage still checks BAD, replace the Power Supply.

(Step 006 continues)

(Step 006 continued)

3.Check for proper ground at wall outlet being used.

Inspect:
a.Printer cover grounding. (MI 800-1, Safety grounding)
b.Grounding of the form stand.
c.Check ground to D08 pins on Logic Board.
4.Check Logic Board for bent or broken pins, cold flow solder connections or burn spots caused by a short. (MI 800-1 Locations)
5.Review any available Test Key Printout for Printer errors and use MAP 0100 to interpret them. (MI 100-1, Statistical Error Log)

For additional information concerning specific PROBLEMS or SYMPTOMS:
GO TO ENTRY POINT "PC".

007
(ENTRY POINT PC)
PROBLEM CAUSES

FOR PRINT PROBLEMS/PRINT QUALITY PROBLEMS

Check for, or perform the following:
1.Damaged or dirty Dot Band or Print Emitter.
2.Proper position of the Platen Lever.
3.Defective Hammer Driver Cards (Swap to isolate Failures).
4.Ribbon Cartridge condition.
5.Ribbon movement when printing.
6.Ribbon moving up while printing.
7.Hammer Cables for continuity and proper seating.
8.Platen surface for wear.
9.Band Drive Service Check. (MI 300-1).
10.Hammer Coil Service Check. (MI 300-1).
11.Defective Hammer Block assembly.
12.Over Printing - (See Forms Movement Problems).

For additional information concerning these specific type of PROBLEMS:
GO TO MAP 0900, ENTRY POINT "C".

FOR DOT BAND MOVEMENT PROBLEMS

Check or perform the following:
1.Band Drive Service Check. (MI 300-1).
2.Band Drive Belt - for worn or missing teeth.
3.Band Drive Motor and Pulley for binds.
4.Band Drive Motor Pulleys for loose set screws.
5.Band Drive Belt tension mechanism for adjustment or wear.
6.Emitter Sensor Check (MI 300-1).
7.Band Idler Pulley for dirt, and binds.
8.Band guides and bearings for dirt, binds,
(Step 007 continues)

(Step 007 continued)
and wear. (MI 300-1)
9. Print Band Oiler and Cleaning brushes for dirt and wear. (MI 300-1)

For additional information concerning these specific type of PROBLEMS:
GO TO MAP 0900, ENTRY POINT "C".

FOR COMMUNICATION PROBLEMS

1. Attempt to determine that data is actually 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 the printer, then power on and allow the BAT test to run. If the SC=27 or 28, after the completion of the BAT test, the problem is probably External to the printer.
3. Refer to MI 400-1 (mod 1) and MI 450-1 (mod 2), and perform checks on communication connectors and internal cables.

FOR FORMS MOVEMENT PROBLEMS

Refer to MI 300-1 and perform the complete Forms Feeding Service Check.

For additional information concerning these specific type of PROBLEMS:
GO TO MAP 0900, ENTRY POINT "C".

FOR RANDOM AND/OR INTERMITTENT STATUS CODES

Consider EXCHANGING the following components, one at a time, then RECHECKING the problem or symptom.

1. Power Supply and Relay, one at a time.
2. Operator Panel Flat Cable.
3. System Card.

(Step 007 continues)

(Step 007 continued)
4. All other Logic cards, one at a time.
5. Hammer Cables (4), as one FRU.
6. Hammer Blocks (3), individually as needed.
7. Control Cable, Jam sensor and EOF sensor, one at a time.
8. Logic Board.

NOTE: When installing a Level 2 System Card no EPROM card may be left in either 01A-A1B2 or 01A-A1C2. EPROM Card (if present) must be removed and discarded with Level 1 System Card.

For additional information concerning specific intermittent Status Codes and problem causes: (Example: Intermittent Status Code = 50) Go To Entry Point "SC" in this Map. Then refer to Map 0900 Entry Point "C".

FOR ANY OTHER PROBLEM OR SYMPTOM SUCH AS:

1. Operator Panel problem.
2. Communication Problem.
3. Printer hangs or stops printing.

GO TO MAP 0900, ENTRY POINT "C".

(Step 007 continues)

(Step 007 continued)
(ENTRY POINT SC)
INTERMITTENT STATUS CODES
For specific and/or intermittent Status Codes, refer to the following charts.

SC	CAUSE	(*) ACTION to take
01	PAPER OUT - (EOF)	(*) Install Paper (*) Check EOF Sensor (MI 300-1)
02	PAPER JAM -	(*) Check Paper path (*) Check Jam Sensor (MI 300-1)
03	PLATEN OPEN -	(*) Close Platen (*) Check Platen swt. adjustment (MI 300-1)
05	PRINT BAND COVER -	(*) Install Cover (*) Check Band cover swt. adjustment (MI 300-1)
06	OPERATOR ALARM CODE -	Operational Message (*) no action
07	ORDER IN PCIA NOT VALID -	Operational Error (*) no action
08	PRINT HOLD TIME-OUT -	Operational Error (*) no action
09	OPERATOR ENTRY NOT VALID -	Operator Error (*) no action)

SC	CAUSE	(*) ACTION TO TAKE
21	LANGUAGE CODE NOT VALID -	(*) Set to correct language (*) Address Switch (MAP 0500-1)
22	STATION ADDRESS NOT VALID - MODEL 2 PRINTERS	(*) Set to correct address (*) Address Switch (MAP 0500-1)
22	SCREEN SIZE NOT VALID - MODEL 1 PRINTERS	(*) Set correct option (*) Compatibility Switch (*) (MAP 0500)
27	MODEL 1 - SUBSYSTEM NOT READY-	
27	MODEL 2 - UNIT ADDR. NOT RECEIVED	(*) Verify Controller is active
28	MODEL 1 - POLL CHECK -	
28	MODEL 2 - LINE SYNC LOST -	(*) Check Internal/External communication cables
31	TIME-OUT	(*) SEE SC=01 at left
32	TIME-OUT	(*) SEE SC=02 at left
33	TIME-OUT	(*) SEE SC=03 at left
35	TIME-OUT	(*) SEE SC=05 at left
59	CANCEL SELECTED -	Operational
60	BUFFER REPRINT -	Message
61	PA 1 SELECTED -	"
62	PA 2 SELECTED -	"
63	PRINT IN SEND MODE -	"
		(*) no action

GO TO MAP 0800, STEP 008, ENTRY POINT GI

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PEC———

008

(ENTRY POINT GI)
GENERAL REFERENCE INFORMATION

A.The following information refers to general maintenance procedures and may be helpful in locating intermittent failures:

1.Use the MAP FIX-FRU Exchange Chart located in the START MAP.
2.Use the Printer Symptom MAP 0300 for printer failure symptoms.
3.Obtain and Review Branch Office Retain System information relating to the failure.
4.Ensure that the Termination plug is properly installed if the printer is the last device on the loop. (Model 2 Only)
5.Examine any Test Key Printout obtained after a printer failure, and use MAP 0100 to analyze the error information.
6.Run the Ripple Print pattern continuously (as explained at the beginning of this Map, and observe printer operation.
7.Swap Communication Lines if possible.
8.Check with NSD Branch Office, Region, or Product Support Center personnel for assistance.
9.Check power supply grounding, and output voltages. (MI 800-1 Wiring Diagrams)
10.Observe and check connections, board wiring, terminals, cables, etc.
11.Swap cards or other hardware to isolate failures.
12.Gently Shake and vibrate hardware, cables and connectors.
13.If a reported failure CAN be duplicated, the problem could be machine microcode or customer operating procedures.
14.Verify proper Customer Problem Determination procedures.

(Step 008 continues)

(Step 008 continued)

B.Physical Environment Check:
1.Paper, dust, paper clips etc, in paper path or in machine.
2.Temperature or humidity as measured by a Temperature/Humidity Tester.*

C.Communication Line problems can cause random, intermittent failures that are very difficult to diagnose.

1.Test Key Printout (Error Log) may contain information that can be used in isolating communication failures.

D.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 locate because of their random failure patterns.

THE FOLLOWING TOOLS AND TEST EQUIPMENT MAY BE HELPFUL IN DIAGNOSING INTERMITTENT PROBLEMS:
1.Electrostatic Locating Tool*
2.Earth Tester (ground check)*
3.Electromagnetic Compatibility Simulator*
4.Recording Voltmeter*
5.DB Meter
6.Power Line Disturbance Tester*
7.Electrical Safety Analyzer*

*These are Branch Office or Region tools/test equipment. Review the Tools/Test Equipment NSD TSL for part numbers and description.

END MAP

PAGE 1 OF 6

ENTRY POINTS

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

001
(ENTRY POINT A)

Power Off.
At this time, the Printer should have all cards, cables and connectors, in their correct location.
Reinstall any cards, cables or connectors that were removed in preceding MAP procedures, and verify all other cards, cables and connectors are seated correctly.

Power On and observe the Printer.

WERE ANY ERRORS INDICATED DURING POWER ON BAT?
Y N

002
Select Test 07 (MI 700-1, Selecting Tests).
IS THERE ANY VISUAL SYMPTOM OF PRINTING ERRORS?
Y N

003
Install the Printer covers.
Return machine to customer configuration.
End of call.

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004
IS THIS YOUR FIRST TIME THROUGH THESE MAPS FOR THIS PROBLEM?
Y N

005
HAS DOT BAND AND/OR PRINTER RIBBON BEEN EXCHANGED?
Y N

006
Exchange DOT BAND AND RIBBON (MI 300-1).
Select Test 07 again.
IS PROBLEM SOLVED?
Y N

007
GO TO PAGE 3, STEP 014,
ENTRY POINT B.

008
Insure that all Cards and Connectors are properly installed.
Install Any Printer Covers Removed.
Return machine to customer configuration.
End of call.

009
GO TO PAGE 3, STEP 014,
ENTRY POINT B.

010
GO TO MAP 0300, ENTRY POINT A.

011
IS THIS YOUR FIRST TIME HERE FOR THIS PROBLEM?
Y N

012
GO TO PAGE 3, STEP 014, ENTRY POINT B.

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PEC

C END MAP
1

PAGE 2 OF 6

013
GO TO MAP 010, ENTRY POINT A.

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PEC————

014
(ENTRY POINT B)
==========

1. Power Off. See Note 1 at right.
2. Reseat all cards and cables and verify they are installed correctly.
3. Power On.
4. See (MI 800-1 Wiring Diagrams) and check voltages and grounds while Test 07 (Ripple Print) is running. (MI 700-1) Selecting Tests.

NOTE: If symptom is not known, Test 07 does not have to be running for voltage check. If voltages are OK, check again while Test 07 is running. See Notes 2 and 3 at right.

The following test points are located on the Logic Board 01A-A1. (MI 800-1, Power supply and wiring)

(+)	(-)	Volts +/-10%	RIPPLE LIMIT
G2D02	G2D08	+32 VDC	NO SPEC.
G2B06	G2D08	-5 VDC	.2 VAC
G2D03	G2D08	+5 VDC	.2 VAC
G2B11	G2D08	+8.5 VDC	.2 VAC

If any Voltage is failing,
GO TO MAP 0600, ENTRY POINT A.
WAS RIPPLE CHECK OK?
Y N

015
Power Off the printer. Remove the Top and Power Covers (MI 000-1).

DANGER

DISCONNECT LINE CORD BEFORE SERVICING
Exchange Power Supply. (MI 600-1).
GO TO PAGE 4, STEP 019, ENTRY POINT E.

DANGER

NOTE 1. DISCONNECT POWER CORD.
Ensure all Power Supply connectors are making connection by disconnecting and then reseating them.
Connect the Power Cord.

NOTE 2. Failing Capacitors, Open Diodes and open transformer windings inside the supply, will cause voltages to change under load. If Voltage changes during this test, the problem is most likely the Power supply but could be the voltage compensation circuits on the Forms Driver card.

NOTE 3. Ripple is the 'AC' present on a DC voltage line.
Intermittent failures of any part of the printer can be caused by ripple. Ripple is normally caused by loose connections in the Power Supply. (usually capacitors)

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PEC

END MAP

PAGE 4 OF 6

016
IS THIS YOUR FIRST TIME HERE FOR THIS PROBLEM?
Y N

017
GO TO PAGE 5, STEP 024, ENTRY POINT C.

018
GO TO MAP 0800, ENTRY POINT B.

019
(ENTRY POINT E)
Power On the printer.
Allow the Power On Tests to run.
Recheck the symptoms
(Press and release the Test Key and allow Test Key Tests to run.)

IS PROBLEM SOLVED?
Y N

020
DOES A REVIEW OF THE TEST KEY PRINTOUT INDICATE A PROBLEM? (MI 100-1, TEST KEY TEST PRINTOUT)
Y N

021
Contact your support structure.

022
GO TO MAP 0100, ENTRY POINT A.

023
Insure that all Cards and Connectors are properly installed.
Install Any Printer Covers Removed.
Return machine to customer configuration.
End of call.

024
(ENTRY POINT C)
Exchange one FRU at a time in the order shown:

If new FRU does not fix the problem, return original FRU to the machine.

NOTE! FOR WORLD TRADE MODEL 1, THE EPROM CARD MUST BE IN 01A-A1B2.

1. HANGS -
   - Exchange System Card A2 ..... (MI 800-LOC)
   - Exchange EPROM Card B2 or C2 ..... (MI 800-LOC)
   - Exchange System Card Top-card Conn..... (MI 800-LOC)
   - Exchange Operator Panel ..... (MI 500-1)
   - Exchange Operator Panel Cable..... (MI 500-1)
   - Exchange Power Supply ..... (MI 600-1)
   - Exchange Logic Board ..... (MI 600-1)

2. PRINTER PROBLEM - (Band and Band Drive)
   - Exchange Emitter Sensor ..... (MI 300-1)
   - Perform Band Drive Service Check..... (MI 300-1)
   - Exchange Band Idler Wheel and Flange... (MI 300-1)
   - Exchange Dot Band Drive Belts ..... (MI 300-1)
   - Exchange Band Drive Wheel ..... (MI 300-1)
   - Exchange Solid State Relay..... (MI 600-1)
   - Exchange Band Drive Motor ..... (MI 300-1)

3. PRINTER PROBLEM - (Hammers)
   - Exchange Print Hammer Assembly..... (MI 300-1)
   - Exchange Hammer Drive Cards .....(MI 800-LOC)
   - Exchange Hammer Cable Assembly..... (MI 300-1)
   - Exchange Blower Motor ..... (MI 600-1)

4. FORMS PROBLEMS -
   - Exchange Auto-load Assembly and Clutch. (MI 300-1)
   - Exchange EOF Sensor ..... (MI 300-1)
   - Exchange Forms Tractor Assembly ..... (MI 300-1)
   - Exchange Jam Sensor ..... (MI 300-1)
   - Exchange Paper Guides (ON COVERS)..... (MI 000-1)
   - Exchange Forms Card G2..... (MI 800-LOC)
   - Exchange Forms Motor ..... (MI 300-1)

(Step 024 continues)

(Step 024 continued)

5. RIBBON PROBLEMS -
   Exchange Ribbon Cartridge..... (MI 300-1)
   Exchange Ribbon Shield ..... (MI 300-1)
   Exchange Ribbon Motor ..... (MI 300-1)
6. OPERATOR PANEL -
   Exchange Operator Panel PC Board..... (MI 500-1)
   Exchange Operator Panel cable..... (MI 500-1)
   Exchange EPROM Card B2 or C2 ..... (MI 800-LOC)
   Exchange System Card A2..... (MI 800-LOC)

7. POWER PROBLEM -
   Exchange Power Supply..... (MI 600-1)
   Exchange Solid State Relay..... (MI 600-1)
   Exchange AC Cable ..... (MI 600-1)
   Exchange Line cord ..... (MI 600-1)

8. COMMUNICATIONS PROBLEM -
   Exchange COMM. Card B2 (Model 2 only).. (MI 800-LOC)
   Exchange System Card A2 (Models 1 and 2)(MI 800-LOC)
   Exchange EPROM Card B2 or C2 ..... (MI 800-LOC)
   Exchange Internal Comm. Cables .....(MI 800-LOC)
   Exchange Logic Board ..... (MI 600-1)

9. SC=86, 87, 93-96
   Exchange EPROM Card B2 or C2 ..... (MI 800-LOC)
   Exchange System Card A2 ..... (MI 800-LOC)

   NOTE: When installing a Level 2 System Card
   no EPROM card may be left in either
   01A-A1B2 or 01A-A1C2.
   EPROM Card (if present) must be removed and
   discarded with Level 1 System Card.

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

IBM 4234 Printer
Maintenance Analysis Procedures
SC31-3013-2

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