

EC 826380			PN 2597108
27MAY83			

**10SR Disk Entry MAP**

MAP 9700-1

**5360 Systems Unit**

PAGE 1 OF 11

**ENTRY POINTS**

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
0105	A	1	001
0114	A	1	001
0115	A	1	001
0116	A	1	001
0199	A	1	001

**EXIT POINTS**

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
11	052	0101	A
2	003	0101	C
2	007	0101	C
4	018	0199	A
2	006	0300	A
6	022	0300	A
7	026	0395	A
4	013	0397	A
8	037	0397	A
9	039	0397	A
9	042	0397	A
10	045	0397	A
10	047	0397	A
11	050	0397	A
7	031	0397	A

**001****(Entry Point A)****\*\*\* Notice \*\*\***

When the covers are open and the disk drives are in the open position, Radio Frequency Interference (RFI) may cause intermittent failures on the disk drives. All system covers must be in place and closed before system check out if RFI is suspected.

- Select mode 1.
- Press the System Reset key.
- Select mode E.
- Enter FF00.
- Insert DIAG21/41 or magazine M1.
- Press the Load key.
- Wait approximately 45 seconds for the CSIPL to complete.

(Step 001 continues)

**MAP DESCRIPTION:**

The MAP is the Disk Entry MAP. It instructs the CE/CSR in isolating solid, media and intermittent errors.

**START CONDITIONS:**

Symptoms indicated that the disk is the failing area. CSIPL from diskette has completed without error.

**FRUs PARTIALLY TESTED:**

None

(Step 001 continues)

**10SR Disk Entry MAP**

MAP 9700-2

**5360 Systems Unit**

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(Step 001 continued)

(Step 001 continued)

Note 1: When the CSIPL sequence completes, the system available light will be on and the console will display the DCP main menu.

Is the DCP main menu displayed on the system console (see note 1)?

Y N

002

CSIPL must complete before this MAP can be used.  
Did CSIPL from diskette complete without error before this attempt?

Y N

003

Go To Map 0101, Entry Point C.

004

The symptoms are changing. This may indicate an intermittent problem or something has changed in the hardware.

- Repeat the sequence in step 001 several times to determine if there is an intermittent problem.

Did the CSIPL complete without errors on all attempts?

Y N

005

Did the CSIPL fail on all attempts?

Y N

006

The problem appears to be intermittent. Go to the intermittent MAP.

Go To Map 0300, Entry Point A.

007

Go To Map 0101, Entry Point C.

008

Go to Page 3, Step 009, Entry Point B.

30Jun86 PN 2596192

EC 842375 PEC 826487

MAP 9700-2

A  
2

**10SR Disk Entry MAP**

MAP 9700-3

**5360 Systems Unit**

PAGE 3 OF 11

009

**(Entry Point B)**

- Select MDI MAPs and press enter.
- Select disk and press enter (see note 2).
- Follow the instructions of the MDI MAPs. The MDI MAPs may send you to MAP 9730 to isolate the problem.

- When the MAPs complete, or when the MDI MAPs or MAP 9730 isolates the failure, return to this step.

**Did the MDI MAPs or MAP 9730 identify a failure?**

Y N

010

**While running the MDIs, was a message displayed informing you that an error had been detected but could not be isolated and the MDIs were returning to the Good Machine Path (see note 3)?**

Y N

011

The MDIs did not detect any problems. The problem may be intermittent (see note 4).

**Do you suspect an intermittent problem?**

Y N

012

**(Entry Point BB)**

- Check for a possible magnetic media problem. PUMP utility will be used (MIM 01-730).
- Return to the DCP Main Menu (cmd 7).
- Select Utilities.
- Select Disk Utilities.
- Select Pack Analysis.
- Select disk drive (see note 5).
- Select Fast Analysis.
- Select output device for error and information messages.

(Step 012 continues)

Note 2: Any drive you suspect to be failing should be selected first. MDIs should be run for all drives in the system or until a problem is found.

Note 3: If and when this message is displayed, press 'Enter' to permit the MDI tests to complete.

Note 4: Suspect an intermittent problem if any procedure, performed more than once under the same conditions, generated different results.

Note 5: Any drive you suspect to be failing should be analyzed first. If a failing drive is not known, start with drive A.

Analysis will take approximately 4 minutes to complete, but will not complete if an unrecoverable error or a hardware error occurs.

8 7 7  
B C D

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MAP 9700-3

**10SR Disk Entry MAP**

MAP 9700-4

**5360 Systems Unit**

PAGE 4 OF 11

(Step 012 continued)

**Did Analysis complete 100% and display a screen that says Analysis is complete?**

Y N

**013**

Go To Map 0397, Entry Point A.

**014**

- Check the summary for the following:
  - Uncorrectable ECC errors
  - No record found errors.

**Do either of these have errors listed?**

Y N

**015**

- If there are any inverted ECC errors listed, inform the customer that after the system is verified to be running correctly, he needs to run BUILD utility to recover data.

**Have all disk drives been analyzed?**

Y N

**016**

- Run analysis in the next disk drive.
- Go to Page 3, Step 012, Entry Point BB.

**017**

**Is the problem with the system a failure to CSIPL from disk?**

Y N

**018**

Disk MDIs run without error.  
There are no magnetic media errors.  
CSIPL from disk works correctly.  
An intermittent problem is not suspected.

It appears that the disk drive(s) and the associated attachments are working correctly.

Go To Map 0199, Entry Point A.

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EC 842375 PEC 826487

MAP 9700-4

7 5  
E F

F  
4

## 10SR Disk Entry MAP

MAP 9700-5

### 5360 Systems Unit

PAGE 5 OF 11

019

CSIPL data on the disk may be bad.

- Use the CUSTOMIZE utility to load the C/S library on the disk again (MIM 01-840).

- After CUSTOMIZE is complete, perform the following:

- Select mode 1.
- Press the System Reset key.
- Select mode 0.
- Enter FF00.
- Press the Load key.
- Wait approximately 45 seconds for the CSIPL to complete.

- Verify that CUSTOMIZE has corrected disk CSIPL problem by attempting a CSIPL from disk.

Is the SSP sign-on screen displayed?

Y N

020

Correctable ECC errors in the control store CSIPL data can cause CSIPL from disk to fail.

- Check disk drive A analysis results for correctable ECC errors on cylinders 0000 to 0005.

Were there any correctable ECC errors in this range?

Y N

021

Customer may have to load SSP again

---or---

Bad card:

A-A2C2

---or---

A-A2E2

---or---

A-A2J2.

- Exchange cards (one at a time) or instruct customer to load SSP.
- Verify that the system is fixed by attempting a CSIPL from disk (as in step above).

(Step 021 continues)

7 6  
G H

30Jun86

PN 2596192

EC 842375

PEC 826487

MAP 9700-5

**10SR Disk Entry MAP**

**5360 Systems Unit**

PAGE 6 OF 11

(Step 021 continued)

**Did any of the above items correct the CSIPL problem?**

**Y N**

**022**

**Go To Map 0300, Entry Point A.**

**023**

**Go to Page 11, Step 051, Entry Point F.**

**024**

- Use Sector Recover (recover data option) to force an alternative sector for those sectors that had correctable ECC errors.

CSIPL data on the disk may still be bad.

- Verify that CUSTOMIZE has corrected disk CSIPL problem by attempting a CSIPL from disk.

- Use CUSTOMIZE to recreate the C/S library on the disk (01-840).

- After CUSTOMIZE is complete, perform the following:

- Select mode 1.

- Press the System Reset key.

- Select mode 0.

- Enter FF00.

- Press the Load key.

- Wait about 45 seconds for the CSIPL to complete.

**Is the SSP sign-on screen displayed?**

**Y N**

Vertical lines for Y and N responses.

**5360 Systems Unit**

PAGE 7 OF 11

**025**

Customer may have to load SSP again

---or---

Bad card:

A-A2C2

---or---

A-A2E2

---or---

A-A2J2.

- Exchange cards (one at a time) or instruct customer to load SSP.

- Verify that the system is fixed by attempting a CS IPL from disk (as in step above).

**Did any of the above items correct the CS IPL problem?**

Y N

**026**

Go To Map 0395, Entry Point A.

**027**

Go to Page 11, Step 051, Entry Point F.

**028**

Go to Page 11, Step 051, Entry Point F.

**029**

Go to Page 11, Step 051, Entry Point F.

**030**

Go to Page 9, Step 040, Entry Point D.

**031**

Go To Map 0397, Entry Point A.

**032**

The 10SR adapter card associated with the drive being tested when the message was generated, is bad.

1A-A2C2 (drive A)

1A-A2D2 (drive B)

1A-A2C4 (drive C)

1A-A2D4 (drive D).

Go to Page 8, Step 033, Entry Point C.



033

(Entry Point C)

- Correct the problem by exchanging the FRU(s) or performing other corrective action as indicated by the MDI tests.

- Perform fix and verify that the system is operating correctly.

- Run the disk MDI tests on the repaired drive.

Did the Good Machine Path complete without error?

Y N

034

Is the fix the same fix as before?

Y N

035

Go to Step 033, Entry Point C.

036

- Return to the DCP Main Menu (cmd 7).
- Use PUMP utility (MIM 01-730).
- Select Utilities.
- Select Disk Utilities.
- Select Pack Analysis.
- Select disk drive to be analyzed.
- Select Fast Analysis.
- Select output device.

- Check for media problems.

Did Analysis complete 100% and display a screen that says Analysis is complete.

Analysis will take approximately 4 minutes to complete, but will not complete if an unrecoverable error or a hardware error occurs.

Y N

037

Go To Map 0397, Entry Point A.

038

- Check the summary for the following:
  - Uncorrectable ECC errors
  - No record found errors.

Do either of these have errors listed?

Y N

**039**

- If there are any inverted ECC errors listed, inform the customer that after the system is verified to be running correctly, he needs to run BUILD utility to recover data.

Go To Map 0397, Entry Point A.

**040**

(Entry Point D)

Either disk initialization or sector recover may be used to correct the bad sectors.

Use sector recover if only a few errors were detected.

If many errors were detected, use disk initialization.

Do you want to use sector recover?

Y N

**041**

**CAUTION**

The data which is now on the disk will be changed to zero. Customer data may be destroyed.

- Return to DCP main menu (cmd 7).
- Use PUMP utility (MIM 01-730).
- Select Utilities.
- Select Disk Utilities.
- Select Pack Initialization.
- Select disk drive to be initialized.
- Enter INIT to start utility.
- Wait for initialization to complete.

Did initialization complete 100% and display a screen that says initialization is complete?

Y N

**042**

Go To Map 0397, Entry Point A.

**043**

Go to Page 10, Step 046, Entry Point E.

Initialization will take approximately 8 minutes to complete, but will not complete if a hardware error occurs.

P  
9

**10SR Disk Entry MAP**

MAP 9700-10

**5360 Systems Unit**

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044

**CAUTION**

Use of this utility may destroy some customer data.

- If there are any inverted ECC errors listed, inform the customer that after the system is verified to be running correctly, he needs to run BUILD utility to recover data.
- Return to DCP main menu (cmd 7).
- Use PUMP utility (MIM 01-730).
- Select utilities.
- Select disk utilities.
- Select sector recover.
- Perform sector recover on bad data records detected by analysis.

**Could the bad data be corrected?**

Y N

045

Go To Map 0397, Entry Point A.

046

(Entry Point E)

- Run disk analysis again to verify magnetic media problems have been corrected.

**Did Analysis complete 100% and display a screen that says Analysis is complete?**

Y N

047

Go To Map 0397, Entry Point A.

048

- Check the summary for the following:
  - Uncorrectable ECC errors
  - No record found errors.

**Did either of these have errors listed?**

Y N

| |  
| |  
| |  
| |

1 1  
Q R

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EC 842375

PEC 826487

MAP 9700-10

L Q R  
8 1 1  
0 0 0

**10SR Disk Entry MAP**

MAP 9700-11

**5360 Systems Unit**

PAGE 11 OF 11

**049**

Go to Step 051, Entry Point F.

**050**

Go To Map 0397, Entry Point A.

**051**

(Entry Point F)

- Perform CS IPL as a customer would.

- Select mode 1.
- Press the System Reset key.
- Select mode 0.
- Enter 0000.
- Press the Load key.
- Wait for the CS IPL to complete.

Does the SSP sign-on screen appear?

Y N

**052**

You have fixed one problem but the machine still does not operate correctly.

- Go to the first entry point of the MAPs and use the error symptoms that exist on the machine now to aid you in isolating another problem.

Go To Map 0101, Entry Point A.

**053**

- Return the system to the system operator.

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EC 842375

PEC 826487

MAP 9700-11

**10SR HARDMAP**

MAP 9730-1

**5360 Systems Unit**

PAGE 1 OF 28

**ENTRY POINTS**

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
A331	GH	14	084
A336	C	4	011
A336	NA	22	138
A336	NB	23	147
A339	MA	20	122
A341	WA	25	155
A344	A	2	001
A345	G	6	027
A351	GH	14	084
A351	GJ	18	111
A355	WC	27	164
A355	WD	28	171
A363	GA	8	045
A363	GB	8	050
A363	GC	9	055
A363	GD	9	060
A363	GE	10	065
A363	GF	11	068
A363	GG	13	075
A370	E	5	019
A370	MC	21	135
A372	BN	7	042
A373	A	2	001
A373	B	3	008
A373	D	4	016
A373	F	5	024

**EXIT POINTS**

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
16	101	0599	D
19	115	0599	D

**10SR HARDMAP**  
**5360 Systems Unit**  
PAGE 2 OF 28

MAP 9730-2

**001**

**(Entry Point A)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

The suspected failing FRUs are:

Location	FRU Name
	VCM driver assembly
HDA	
J3 to J5 cable	
VCM magnet	

The following steps may be used to isolate the failure:

- Power off.
- Disconnect the smaller of the two voice coil connectors from the HDA (MIM 97-430).
- Measure for continuity from the disconnected wire to J3-7 (MIM 97-230).

Is the continuity OK?

Y N

**002**

- Remove the plastic cover and disconnect the VCM magnet coil connectors (MIM 97-430).
- Measure the continuity between the terminals on the VCM magnet.

Is the continuity OK?

Y N

**003**

- Exchange the VCM magnet (MIM 97-350, 97-352).

**MAP DESCRIPTION:**

This MAP is for FRU isolation on the 10SR disk drive that requires the system to be powered off.

**FRUs PARTIALLY TESTED:**

10SR - A1 board  
10SR - A1A3  
10SR - A1A4  
10SR - A1A5  
10SR - A1B2  
10SR - A1C2  
10SR - A1D2  
10SR - A1E2  
10SR - A1E5  
10SR - W1B1  
10SR - HDA  
10SR - VCM driver assembly  
10SR - Brake assembly  
10SR - J3 to J5 cable  
10SR - Drive motor  
10SR - VCM magnet  
10SR - Top card connector Y  
10SR - Drive belt

3 3  
A B

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EC 842375 PEC 842350  
MAP 9730-2

A B  
2 2

**10SR HARDMAP**  
**5360 Systems Unit**

MAP 9730-3

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**004**

The J3 to J5 cable is failing (MIM 97-230).  
The head/disk assembly must be removed to install  
new cable (MIM 97-330).

**005**

- Disconnect the large voice coil connector from the HDA.
- Measure the continuity from the disconnected wire to J3-1 (MIM 97-430).

Is the continuity OK?

Y N

**006**

The J3 to J5 cable is failing (MIM 97-230).  
The head/disk assembly must be removed to install  
new cable (MIM 97-330).

**007**

- Reconnect the voice coil connectors to the HDA.
- The VCM driver assembly is failing (MIM 97-390,  
97-392).  
---or---  
The head/disk assembly is failing (MIM 97-330,  
97-332).

**008**

**(Entry Point B)**

All CE/CSR actions specified by the following steps of  
this MAP are to be performed on the failing 10SR disk  
drive unit:

- Power off.
- Disconnect J1 from the VCM driver assembly and  
test the cable for continuity between the following  
points (FLD GE900) (MIM 97-230):  
A1E5D04 to J1B07 (- retract carriage drive)  
A1E5D05 to J1B03 (+ power amp drive in)  
A1E5D06 to J1B09 (+ current sense in)

Is the continuity OK?

Y N

**009**

The HDA servo cable in board socket A1E5 is  
failing (MIM 97-220).

**010**

- Reconnect J1 to the VCM driver assembly (MIM  
97-230).
- The servo card in card socket A1D2 is failing (MIM  
97-220).  
---or---  
The VCM driver assembly is failing (MIM 97-390,  
97-392).

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EC 842375 PEC 842350

MAP 9730-3

**011**

**(Entry Point C)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Reference (FLD GE900) (MIM 97-230, 97-220) for the following steps:
- Power off.
- Disconnect J1 from the VCM driver assembly.
- Measure for continuity between A1E5B04 and J1-B10 (- motor relay).

**Is the continuity OK?**

**Y N**

**012**

- Reconnect J6 to the power control assembly (MIM 97-230).

The HDA servo cable in board socket A1E5 is failing (MIM 97-220).

**013**

- Disconnect J3 from the VCM driver assembly. Inspect for a broken or loose pin on J3-2.

**Is the pin OK in the cable connector.**

**Y N**

**014**

- Reconnect J6 to the power control assembly (MIM 97-230).

The J3 to J5 cable is failing (MIM 97-230).

The head/disk assembly must be removed to install new cable (MIM 97-330).

**015**

- Reconnect J6 to the power control assembly (MIM 97-230).

The VCM driver assembly is failing (MIM 97-390, 97-392).

**016**

**(Entry Point D)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Power off.
- Disconnect J1 from the VCM driver assembly and test the cable for continuity between the following points (FLD GE900) (MIM 97-230):
  - A1E5D04 to J1B07 (- retract carriage drive)
  - A1E5D05 to J1B03 (+ power amp drive in)
  - A1E5D06 to J1B09 (+ current sense in)

**Is the continuity OK?**

**Y N**

**017**

The HDA servo cable in board socket A1E5 is failing (MIM 97-220).

**018**

The VCM driver assembly is failing (MIM 97-390, 97-392).



**10SR HARDMAP**  
**5360 Systems Unit**

MAP 9730-5

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**019**

**(Entry Point E)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Use (MIM 97-220) for the following steps:
- Power off.
- Mark the top card connector Y to maintain its plugging arrangement, then remove the top card connector Y (MIM 97-220).
- Measure for continuity between the following points on card A1B2 (MIM 97-220):  
A1B2Y07 to A1B2Y08 (- sector counter out of sync).

**Is the continuity OK?**

**Y N**

**020**

The access control card in card socket A1B2 is failing (MIM 97-220).

**021**

- Measure for continuity between the following points on top card connector Y (MIM 97-220):  
A1B2Y07 to A1C2Y07  
A1B2Y08 to A1C2Y08

**Is the continuity OK?**

**Y N**

**022**

Top card connector Y is failing (MIM 97-220).

**023**

The data converter card in card socket A1C2 is failing (MIM 97-220).

**024**

**(Entry Point F)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Power off.
- Remove the J1 connector and test the cable for continuity between the following points (FLD GE900) (MIM 97-230):  
A1E5B11 to J1B08 (+12 Vdc)  
A1E5B13 to J1B06 (-12 Vdc)

**Is the continuity OK?**

**Y N**

**025**

The HDA servo cable in board socket A1E5 is failing (MIM 97-220).

**026**

The VCM driver assembly is failing (MIM 97-390, 97-392).

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MAP 9730-5

**10SR HARDMAP**  
**5360 Systems Unit**  
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**027**

**(Entry Point G)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

The suspected failing FRUs are:

Location	FRU Name
A1D2	Servo card
HDA	Head/disk assembly
A1E5	HDA servo cable
A1 board	

The following steps may be used to isolate the failure:

- Use (MIM 97-220) for the following steps:
- Power off.
- Disconnect cable A1E5.
- Measure the resistance between pins A1D2U11 (+ servo preamp) and A1D2U12 (- servo preamp).

**Is the resistance between 190 ohms and 240 ohms?**

**Y N**

**028**

- Reinstall the cable in board socket A1E5 (MIM 97-220).

The servo card in card socket A1D2 is failing (MIM 97-220).

**029**

- Measure the resistance between the following pins:  
Pin A1D2U11 (+ servo preamp) to A1D2U08  
Pin A1D2U12 (- servo preamp) to A1D2U08.

**Is the resistance between 95 ohms and 120 ohms?**

**Y N**

**030**

- Reinstall the cable in board socket A1E5 (MIM 97-220).

The servo card in card socket A1D2 is failing (MIM 97-220).

C

C

MAP 9730-6

**031**

- Reinstall the cable in board socket A1E5 (MIM 97-220).
- Remove the cable in the head/disk assembly socket W1A1 (MIM 97-235).
- Measure for continuity between the following points:  
Logic Board Cable  
A1E5B06 to W1A1B06 (-5 Vdc)  
A1E5D08 to W1A1B08 (ground)  
A1E5D08 to W1A1B09 (ground)  
A1E5D03 to W1A1D03 (+5 Vdc)

**Is the continuity OK?**

**Y N**

**032**

- Reinstall the cable in the head/disk assembly socket W1A1 (MIM 97-235).
- Remove cable from board socket A1E5. Inspect board socket A1E5 for bent or broken pins.

**Are the pins OK?**

**Y N**

**033**

- Reinstall the cable in the head/disk assembly socket W1A1 (MIM 97-235).  
A1 board is failing (MIM 97-220).

**034**

The HDA servo cable in board socket A1E5 is failing (MIM 97-220).

**035**

- Measure for continuity between the following points:  
Logic Board Cable  
A1D2U11 to W1A1B13 (+servo preamp)  
A1D2U12 to W1A1B12 (-servo preamp)

**Is the continuity OK?**

**Y N**

7 7  
D E

30JUN86 PN 2596193  
EC 842375 PEC 842350  
MAP 9730-6

**036**

- Measure for continuity on board net A1D2U11 to A1E5D11 (+ servo preamp).

Is the continuity OK?

Y N

**037**

- Reinstall the cable in the head/disk assembly socket W1A1 (MIM 97-235).

A1 board is failing (MIM 97-220).

**038**

- Measure for continuity on board net A1D2U12 to A1E5D12 (- servo preamp).

Is the continuity OK?

Y N

**039**

- Reinstall the cable in the head/disk assembly socket W1A1 (MIM 97-235).

A1 board is failing (MIM 97-220).

**040**

The HDA servo cable in board socket A1E5 is failing (MIM 97-220).

**041**

- Reinstall the cable in the head/disk assembly socket W1A1 (MIM 97-235).

The servo card in card socket A1D2 is failing (MIM 97-220).

---or---

The head/disk assembly is failing (MIM 97-330, 97-332).

**042**

(Entry Point BN)

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

The following nets may be failing (FLD GA950):

A1A4D04 to 1A-A2BxD04 (-control bus bit 0).

A1A4D05 to 1A-A2BxD05 (-control bus bit 1).

A1A4D06 to 1A-A2BxD06 (-control bus bit 2).

A1A4D09 to 1A-A2BxD09 (-control bus bit 4).

A1A4D10 to 1A-A2BxD10 (-control bus bit 5).

A1A4D12 to 1A-A2BxD12 (-control bus bit 7).

Note: X = 2 for Drive A, X = 3 for Drive B, X = 4 for Drive C, X = 5 for Drive D.

- Power off.

- Measure for continuity on the above nets on cable A1A4.

Is the continuity OK?

Y N

**043**

The control/tag cable in board socket location A1A4 is failing (MIM 97-220).

**044**

The access control card in card socket A1B2 is failing (MIM 97-220).

**10SR HARDMAP**  
**5360 Systems Unit**

MAP 9730-8

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**045**

**(Entry Point GA)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Reference (MIM 97-220, 97-235) for the following steps:
- Power off.
- Remove cable from head/disk assembly socket W1A2.
- Measure for continuity between logic board pin A1C2M05 and cable pin W1A2D10 (- select heads 4-7).

**Is the continuity OK?**

Y N

**046**

- Measure for continuity between logic board pin A1E2D10 and cable pin W1A2D10 (- select heads 4-7).

**Is the continuity OK?**

Y N

**047**

The HDA data cable between board socket A1E2 and head/disk assembly socket W1A2 has failed (MIM 97-220, 97-235).

**048**

Board net A1C2M05 to A1E2D10 (- select heads 4-7 has failed.

- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).

A1 board is failing (MIM 97-220).

**049**

- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).
- Before exchanging the HDA, run initialize/analyze. Failing ID's will appear as a failed head/disk assembly. The head/disk assembly is failing (MIM 97-330, 97-332).

**050**

**(Entry Point GB)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Reference (MIM 97-220, 97-235) for the following steps:
- Power off.
- Remove cable from head/disk assembly socket W1A2.
- Measure for continuity between logic board pin A1C2M03 and cable pin W1A2B08 (- select heads 8-11).

**Is the continuity OK?**

Y N

**051**

- Measure for continuity between logic board pin A1E2B08 and cable pin W1A2B08 (- select heads 8-11).

**Is the continuity OK?**

Y N

**052**

The HDA data cable between board socket A1E2 and head/disk assembly socket W1A2 has failed (MIM 97-220, 97-235).

**053**

Board net A1C2M03 to A1E2B08 (- select heads 8-11) has failed.

- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).

A1 board is failing (MIM 97-220).

**054**

- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).
- Before exchanging the HDA, run initialize/analyze. Failing ID's will appear as a failed head/disk assembly. The head/disk assembly is failing (MIM 97-330, 97-332).

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**055**

**(Entry Point GC)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Reference (MIM 97-220, 97-235) for the following steps:
- Power off.
- Remove cable from head/disk assembly socket W1A2.
- Measure for continuity between logic board pin A1C2P02 and cable pin W1A2B10 (- select heads 12,13).

Is the continuity OK?

Y N

**056**

- Measure for continuity between logic board pin A1E2B10 and cable pin W1A2B10 (- select heads 12,13).

Is the continuity OK?

Y N

**057**

The HDA data cable between board socket A1E2 and head/disk assembly socket W1A2 has failed (MIM 97-220, 97-235).

**058**

Board net A1C2P02 to A1E2B10 (- select heads 12,13) has failed.

- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).

A1 board is failing (MIM 97-220).

**059**

- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).

- Before exchanging the HDA, run initialize/analyze. Failing ID's will appear as a failed head/disk assembly. The head/disk assembly is failing (MIM 97-330, 97-332).

**060**

**(Entry Point GD)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Reference (MIM 97-220, 97-235) for the following steps:
- Power off.
- Remove cable from head/disk assembly socket W1A2.

- Measure for continuity between the following points:

Logic Board		Cable.	
A1E2D03	to	W1A2D03	(+5 Vdc)
A1E2D04	to	W1A2D04	(+5 Vdc)
A1E2B04	to	W1A2B04	(+5 Vdc)

Is the continuity OK?

Y N

**061**

The HDA data cable between board socket A1E2 and head/disk assembly socket W1A2 has failed (MIM 97-220, 97-235).

**062**

- Reinstall cable W1A2.
- Press the Power key (power on).
- Measure the voltage on the following pins:  
A1E2D03 (+5 Vdc)  
A1E2D04 (+5 Vdc)  
A1E2B04 (+5 Vdc)

Is +5 Vdc on every pin?

Y N

**063**

- Power off.
  - Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).
- A1 board is failing (MIM 97-220).

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MAP 9730-9

**064**

- Power off.
  - Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).
  - Before exchanging the HDA, run initialize/analyze.
- Failing ID's will appear as a failed head/disk assembly. The head/disk assembly is failing (MIM 97-330, 97-332).

**065****(Entry Point GE)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Reference (MIM 97-220) for the following steps:
- Power off.
- Mark the top card connector Y to maintain its plugging arrangement, then remove the top card connector Y (MIM 97-220).
- Measure for continuity between the following points on top card connector Y (MIM 97-220):
- Power off.
- Mark the top card connector Y to maintain its plugging arrangement, then remove the top card connector Y (MIM 97-220).
- Measure for continuity between the following points on top card connector Y (MIM 97-220):  
A1B2Y30 to A1C2Y30 (+ brake applied)

**Is the continuity OK?**

**Y N**

**066**

Top card connector Y is failing (MIM 97-220).

**067**

The access control card in card socket A1B2 is failing (MIM 97-220).

**068**

**(Entry Point GF)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Reference (MIM 97-220, 97-235) for the following steps:
- Power off.
- Remove cable from head/disk assembly socket W1A2.
- Measure for continuity between logic board pin A1C2P05 and cable pin W1A2B03 (- select heads 0-3).

**Is the continuity OK?**

Y N

**069**

- Measure for continuity between logic board pin A1E2B03 and cable pin W1A2B03 (- select heads 0-3).

**Is the continuity OK?**

Y N

**070**

The HDA data cable between board socket A1E2 and head/disk assembly socket W1A2 has failed (MIM 97-220, 97-235).

**071**

Board net A1C2P05 to A1E2B03 (- select heads 0-3 has failed.

- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).

A1 board is failing (MIM 97-220).

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**072**

- Measure for continuity between the following points:

Logic Board		Cable
A1E2B11	to	W1A2B11 (+AE status)
A1E2D03	to	W1A2D03 (+5 Vdc)
A1E2D04	to	W1A2D04 (+5 Vdc)
A1E2B04	to	W1A2B04 (+5 Vdc)

Is the continuity OK?

Y N

**073**

The HDA data cable between board socket A1E2 and head/disk assembly socket W1A2 has failed (MIM 97-220, 97-235).

**074**

The head/disk assembly is failing (MIM 97-330, 97-332).

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MAP 9730-12



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**075**

**(Entry Point GG)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Reference (MIM 97-220, 97-235) for the following steps:
- Power off.
- Remove cable from head/disk assembly socket W1A2.
- Measure for continuity between logic board pin A1C2M02 and cable pin W1A2D12 (- select upper heads).

**Is the continuity OK?**

**Y N**

**076**

- Measure for continuity between logic board pin A1E2D12 and cable pin W1A2D12 (- select upper heads).

**Is the continuity OK?**

**Y N**

**077**

The HDA data cable between board socket A1E2 and head/disk assembly socket W1A2 has failed (MIM 97-220, 97-235).

**078**

Board net A1C2M02 and A1E2D12 has failed.  
- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).  
A1 board is failing (MIM 97-220).

**079**

- Measure for continuity between logic board pin A1C2M04 and cable pin W1A2D05 (- select inner heads).

**Is the continuity OK?**

**Y N**

H J

H J

MAP 9730-13

**080**

- Measure for continuity between logic board pin A1E2D05 and cable pin W1A2D05 (- select inner heads).

**Is the continuity OK?**

**Y N**

**081**

The HDA data cable between board socket A1E2 and head/disk assembly socket W1A2 has failed (MIM 97-220, 97-235).

**082**

Board net A1C2M04 and A1E2D05 has failed.  
- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).  
A1 board is failing (MIM 97-220).

**083**

- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).
- Before exchanging the HDA, run initialize/analyze. Failing ID's will appear as a failed head/disk assembly. The head/disk assembly is failing (MIM 97-330, 97-332).

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EC 842375 PEC 842350

MAP 9730-13

**084**

**(Entry Point GH)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

The suspected failing FRUs are:

- | Location | FRU Name            |
|----------|---------------------|
| A1C2     | Data converter card |
| W1B1     | Data channel card   |
| HDA      | Head/disk assembly  |
| A1A3     | Dedicated cable     |
|          | Others              |

The following steps may be used to isolate the failure:

- Reference (MIM 97-220) for the following steps:
- Probe the following:

Up Light: Off  
 Down Light: On

A1A3B10 (- R/W data bit 1).

**Are the lights OK?**

Y N

**085**

- Power off.
- Remove card from the head/disk assembly socket W1B1.
- Measure for continuity between logic board pin A1C2B09 (+ R/W data) and head/disk assembly card socket pin W1B1J02 (MIM 97-220, 97-235).

**Is the continuity OK?**

Y N

**086**

- Remove cable from the head/disk assembly socket W1A2.
- Measure for continuity between logic board pin A1C2B09 and cable pin W1A2B09 (+ R/W data).

**Is the continuity OK?**

Y N

1 1 1 1  
 7 5 5 5  
 K L M N

Note: If a cable extender (MIM 01-030) is available, it may be used for the following probing or continuity check or voltage checks:

L M N  
1 1 1  
4 4 4

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**087**

- Measure for continuity between logic board pin A1E2B09 and cable pin W1A2B09 (+ R/W data).

Is the continuity OK?

Y N

**088**

- Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).  
The HDA data cable between board socket A1E2 and head/disk assembly socket W1A2 has failed (MIM 97-220, 97-235).

**089**

Board net A1C2B09 to A1E2B09 (- R/W data) has failed.  
- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).  
- Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).  
A1 board is failing (MIM 97-220).

**090**

The head/disk assembly is failing (MIM 97-330, 97-332).

**091**

- Measure for continuity between logic board pin A1C2D09 (- R/W data) and head/disk assembly card socket pin W1B1G02.

Is the continuity OK?

Y N

**092**

- Remove cable from head/disk assembly socket W1A2.  
- Measure for continuity between logic board pin A1C2D09 and cable pin W1A2D09 (- R/W data).

Is the continuity OK?

Y N

P Q R

P Q R

MAP 9730-15

**093**

- Measure for continuity between logic board pin A1E2D09 and cable pin W1A2D09 (- R/W data).

Is the continuity OK?

Y N

**094**

- Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).  
The HDA data cable between board socket A1E2 and head/disk assembly socket W1A2 has failed (MIM 97-220, 97-235).

**095**

Board net A1C2D09 to A1E2D09 (- R/W data) has failed.  
- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).  
- Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).  
A1 board is failing (MIM 97-220).

**096**

The head/disk assembly is failing (MIM 97-330, 97-332).

**097**

- Press the Power key (power on).  
- Measure the voltage on the following pins:  
Pin DC voltage range  
W1B1D03 between +4.5 to +5.5 Vdc  
W1B1J03 between +4.5 to +5.5 Vdc  
W1B1B13 between -4.5 to -5.5 Vdc

Are the voltage measurements correct?

Y N

1 1  
6 6  
S T

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**098**

- Power off.
  - Remove cable from head/disk assembly socket W1A2.
  - Press the Power key (power on).
  - Measure the voltage on the following cable pins:
- | Pin     | DC voltage range         |
|---------|--------------------------|
| W1A2D03 | between +4.5 to +5.5 Vdc |
| W1A2D04 | between +4.5 to +5.5 Vdc |
| W1A2B04 | between +4.5 to +5.5 Vdc |
| W1A2B05 | between -4.5 to -5.5 Vdc |
| W1A2B06 | between -4.5 to -5.5 Vdc |
| W1A2B07 | between -4.5 to -5.5 Vdc |

**Are the voltage measurements correct?**  
Y N

**099**

- Remove cable from board socket A1E2.
  - Measure the voltage on the following board pins:
- |         |                          |
|---------|--------------------------|
| A1E2D03 | between +4.5 to +5.5 Vdc |
| A1E2D04 | between +4.5 to +5.5 Vdc |
| A1E2B04 | between +4.5 to +5.5 Vdc |
| A1E2B05 | between -4.5 to -5.5 Vdc |
| A1E2B06 | between -4.5 to -5.5 Vdc |
| A1E2B07 | between -4.5 to -5.5 Vdc |

**Are the voltage measurements correct?**  
Y N

**100**

- Measure the voltage on the following board pins:
- |         |                          |
|---------|--------------------------|
| A1C2D03 | between +4.5 to +5.5 Vdc |
| A1C2B06 | between -4.5 to -5.5 Vdc |

**Are the voltage measurements correct?**  
Y N

**101**

- Power off.
- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).
- Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).

One or more of the DC voltages is failing.  
**Go To Map 0599, Entry Point D.**

U V W

S  
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5

MAP 9730-16

**102**

- Power off.
  - Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).
  - Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).
- A1 board is failing (MIM 97-220).

**103**

- Inspect the board cable socket side A1E2 for bent or broken pins.

**Are the pins OK?**

Y N

**104**

- Power off.
  - Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).
  - Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).
- A1 board is failing (MIM 97-220).

**105**

- Power off.
  - Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).
- The HDA data cable between board socket A1E2 and head/disk assembly socket W1A2 has failed (MIM 97-220, 97-235).

**106**

The head/disk assembly is failing (MIM 97-330, 97-332).

**107**

- Power off.
- The data channel card in head/disk assembly socket W1B1 is failing (MIM 97-215).

---or---

The data converter card in card socket A1C2 is failing (MIM 97-220).

K  
1  
4

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MAP 9730-17

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**108**

- Power off.
- Remove cable from board socket A1A3.
- Press the Power key (power on).
- Probe A1A3B10 (- R/W data bit 1).

Up Light: Off  
Down Light: On

**Are the lights OK?**

Y N

**109**

Net A1A3B10 (- R/W data bit 1) is down (FLD GA950).

- Power off.
- Reinstall the cable in board socket A1A3 (MIM 97-220).

The dedicated cable in board socket A1A3 is failing (MIM 97-220).

**110**

- Power off.
- Reinstall the cable in board socket A1A3 (MIM 97-220).

The data converter card in card socket A1C2 is failing (MIM 97-220).

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MAP 9730-17

111

**(Entry Point GJ)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

The suspected failing FRUs are:

Location	FRU Name
A1C2	Data converter card
W1B1	Data channel card
HDA	Head disk assembly
A1A3	Dedicated cable
	Others

The following steps may be used to isolate the failure:

- Reference (MIM 97-235) for the following steps:
- Power off.
- Remove card from head/disk assembly socket W1B1.
- Press the Power key (power on).
- Measure the voltage on the following pins:

Pin	DC voltage range
W1B1D03	between +4.5 to +5.5 Vdc
W1B1J03	between +4.5 to +5.5 Vdc
W1B1B13	between -4.5 to -5.5 Vdc
W1B1G13	between -4.5 to -5.5 Vdc

Are the voltage measurements correct?

Y N

112

- Power off.
- Remove cable from head/disk assembly socket W1A2.
- Press the Power key (power on).
- Measure the voltage on the following cable pins:

Pin	DC voltage range
W1A2D03	between +4.5 to +5.5 Vdc
W1A2D04	between +4.5 to +5.5 Vdc
W1A2B04	between +4.5 to +5.5 Vdc
W1A2B05	between -4.5 to -5.5 Vdc
W1A2B06	between -4.5 to -5.5 Vdc
W1A2B07	between -4.5 to -5.5 Vdc

Are the voltage measurements correct?

Y N

1 1 1  
9 9 9  
X Y Z

Note: If a cable extender (MIM 01-030) is available, it may be used for the following probing or continuity check or voltage checks:

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MAP 9730-18

Z  
1  
8

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113

- Remove cable from board socket A1E2.
- Measure the voltage on the following board pins:  
 A1E2D03 between +4.5 to +5.5 Vdc  
 A1E2D04 between +4.5 to +5.5 Vdc  
 A1E2B04 between +4.5 to +5.5 Vdc  
 A1E2B05 between -4.5 to -5.5 Vdc  
 A1E2B06 between -4.5 to -5.5 Vdc  
 A1E2B07 between -4.5 to -5.5 Vdc

**Are the voltage measurements correct?**

Y N

114

- Measure the voltage on the following board pins:  
 A1C2D03 between +4.5 to +5.5 Vdc  
 A1C2B06 between -4.5 to -5.5 Vdc

**Are the voltage measurements correct?**

Y N

115

- Power off.
- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).
- Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).

One or more of the DC voltages is failing.

**Go To Map 0599, Entry Point D.**

116

- Power off.
- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).
- Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).

A1 board is failing (MIM 97-220).

117

- Inspect the board cable socket side A1E2 for bent or broken pins.

**Are the pins OK?**

Y N

A A  
A B

MAP 9730-19

X Y A A  
1 1 A B  
8 8

118

- Power off.
  - Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).
  - Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).
- A1 board is failing (MIM 97-220).

119

- Power off.
- Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).

The HDA data cable between board socket A1E2 and head/disk assembly socket W1A2 has failed (MIM 97-220, 97-235).

120

The head/disk assembly is failing (MIM 97-330, 97-332).

121

- Power off.
- The data channel card in head/disk assembly socket W1B1 is failing (MIM 97-215).

---or---

The data converter card in card socket A1C2 is failing (MIM 97-220).

---or---

The dedicated cable in board socket A1A3 is failing (FLD GA950) (MIM 97-220).

The nets to test are (FLD GA950).

1. A1A3B08 -R/W data bit 0
2. A1A3B10 -R/W data bit 1

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MAP 9730-19

122

(Entry Point MA)

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

The belt may be slipping.

- Power off.
- Inspect belt condition (MIM 97-215).

Is the belt OK?

Y N

123

The drive belt is failing (MIM 97-312).

124

- Perform brake assembly service check 2 (MIM 97-385).

Is the brake OK?

Y N

125

- Power off.

The thermal protect switch in the drive motor may have opened on this failure.

- If the drive motor has a thermal switch reset button, press the reset button.

It is the red pushbutton found on the side of the drive motor near the end opposite the pulley (MIM 97-215).

The brake assembly is failing (MIM 97-380, 97-382).

A  
C

126

- Power off.
- Disconnect the J6 connector (drive motor cable) from the power control assembly (MIM 97-230) to prevent the motor from starting if the power is turned on by accident.
- Inspect condition of pulleys.
- Inspect for:
  1. Correct size (MIM 97-420).
  2. Pulleys are not loose on shaft (MIM 97-215).

Are the pulleys OK?

Y N

127

- Repair the pulley.

---or---

The drive motor is failing (MIM 97-320, 97-322).

Note: Always exchange the motor start capacitor that is included with a new motor.

Note: Ensure that the new drive motor has the correct pulley installed. 60 Hz and 50 Hz pulleys are different size (MIM 97-420).

Note: Ensure that the new motor is correct for the system AC line voltage (220 Vac).

128

- Inspect drive motor mounting (MIM 97-215).
  1. Loose screws.
  2. Spring.

Is the drive motor mounting OK?

Y N

129

- Exchange failing item.

130

- Remove belt (MIM 97-310).
- Turn the drive motor pulley by hand.

Does the motor pulley turn without binding?

Y N

2 2  
1 1  
A A  
D E

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MAP 9730-20

A  
C



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**131**

The drive motor is failing (MIM 97-320, 97-322).

Note: Always exchange the motor start capacitor that is included with a new motor.

Note: Ensure that the new drive motor has the correct pulley installed. 60 Hz and 50 Hz pulleys are different size (MIM 97-420).

Note: Ensure that the new motor is correct for the system AC line voltage (220 Vac).

**132**

- Press the Power key (power on).
- Do not reinstall the belt.
- Do not reconnect J6.
  
- Install jumper A1E5B04 (- motor relay) to A1E5D08 (ground) to release the brake.
- Turn the head/disk assembly pulley by hand.

Is the head/disk assembly OK?

Y N

**133**

- Remove jumper A1E5B04 to ground.
- Power off.
- Reinstall the belt and belt guard (MIM 97-312).
- Reconnect J6 to the power control assembly (MIM 97-230).

The head/disk assembly is failing (MIM 97-330, 97-332).

**134**

- Remove jumper A1E5B04 to ground.
  - Power off.
  - Reinstall the belt and belt guard (MIM 97-312).
- The access control card in card socket A1B2 is failing (MIM 97-220).

**135****(Entry Point MC)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

A sector counter error was not sensed when the drive motor was stopped.

- Perform the brake assembly service check 1 (MIM 97-384).

Is the brake ok?

Y N

**136**

The brake assembly is failing (MIM 97-380, 97-382).

**137**

The access control card in card socket A1B2 is failing (MIM 97-220).

138

**(Entry Point NA)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Power off.
- Remove the drive belt (MIM 97-310).
- Turn the motor pulley by hand.

**Does the motor pulley turn without binding?**

Y N

139

The drive motor is failing (MIM 97-320, 97-322).

Note: Always exchange the motor start capacitor that is included with a new motor.

Note: Ensure that the new drive motor has the correct pulley installed. 60 Hz and 50 Hz pulleys are different size (MIM 97-420).

Note: Ensure that the new motor is correct for the system AC line voltage (220 Vac).

140

- Perform the following steps to measure the brake coil resistance:
  - Remove the two small terminals (black wires) from the brake.
  - Measure the resistance between a large terminal and a small terminal on the brake.

**Is the brake coil resistance between 140 and 200 ohms?**

Y N

141

- Reinstall the belt and belt guard (MIM 97-312).
- Reconnect J6 to the power control assembly (MIM 97-230).

The brake assembly is failing (MIM 97-380, 97-382).

A  
F

142

- Inspect the brake assembly for a broken brake shoe alignment guide (plastic) found between the brake shoe and brake coil.

**Is the plastic guide OK?**

Y N

143

- Reinstall the belt and belt guard (MIM 97-312).
- Reconnect J6 to the power control assembly (MIM 97-230).

The brake assembly is failing (MIM 97-380, 97-382).

144

- Reconnect the two wires to the brake assembly that were removed earlier.
- Perform brake assembly service check 2 (MIM 97-385).

**Does the HDA pulley turn freely now?**

Y N

145

- Reconnect J6 to the power control assembly (MIM 97-230).
- The head/disk assembly is failing (MIM 97-330, 97-332).

146

**Go to Page 23, Step 147, Entry Point NB.**

A  
F

**147**

**(Entry Point NB)**

- Power off.

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Reinstall the belt guard if it is removed (MIM 97-312).
- Reconnect J6 to the power control assembly if it is disconnected (MIM 97-230).

The thermal protect switch in the drive motor may have opened.

New disk drives have an automatic reset thermal switch and are identified by the warning label on the belt guard (MIM 97-215).

**Does the disk drive have the 'automatic reset' warning label on the belt guard?**

**Y N**

**148**

If the drive motor has a thermal switch reset button press the reset button. It is the red pushbutton located on the side of the drive motor near the end opposite the pulley (MIM 97-215).

**Go to Step 150, Entry Point NC.**

**149**

**Go to Step 150, Entry Point NC.**

**150**

**(Entry Point NC)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Press the Power key (power on).
- Observe the HDA (MIM 97-215).

**Is the disk turning?**

**Y N**

**151**

- Power off.

The failure may be caused by:

A motor start relay failure.

A motor start capacitor failure.

A motor winding or thermal switch failure.

The power control assembly is failing (MIM 97-410, 97-412).

---or---

The drive motor is failing (MIM 97-320, 97-322).

Note: Always exchange the motor start capacitor that is included with a new motor.

Note: Ensure that the new drive motor has the correct pulley installed. 60 Hz and 50 Hz pulleys are different size (MIM 97-420).

Note: Ensure that the new motor is correct for the system AC line voltage (220 Vac).

**152**

A thermal trip on the drive motor is suspected to be the cause of the drive motor problem.

- Power off.
  - Press the Power key (power on).
  - Select mode E.
  - Enter FFOO.
  - Insert DIAG21/41 or magazine M1.
  - Press the Load key.
  - Wait approximately 45 seconds for the CSIPL to complete.
  - Select option 4 (TU select) and press Enter.
  - Key '22' and press Enter.
  - Press Enter.
  - Select option 2 and press Enter.
- (Step 152 continues)

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MAP 9730-23

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MAP 9730-24

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(Step 152 continued)

- After 3 minutes observe the HDA.

**Is the disk turning now?**

**Y N**

**153**

- Power off.

The failure may be caused by:

A motor start relay failure.

A motor start capacitor failure.

A motor winding or thermal switch failure.

The power control assembly is failing (MIM 97-410, 97-412).

---or---

The drive motor is failing (MIM 97-320, 97-322).

Note: Always exchange the motor start capacitor that is included with a new motor.

Note: Ensure that the new drive motor has the correct pulley installed. 60 Hz and 50 Hz pulleys are different size (MIM 97-420).

Note: Ensure that the new motor is correct for the system AC line voltage (220 Vac).

**154**

The failure is intermittent and may occur again. Run the GMP several times.

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MAP 9730-24

155

(Entry Point WA)

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Use (MIM 97-220, 97-235) for the following steps:
- Power off.
- Remove card from head/disk assembly socket W1B1.
- Measure for continuity between logic board pin A1C2B04 (- write gate) and head/disk assembly card socket pin W1B1D11.

Is the continuity OK?

Y N

156

- Remove cable from head/disk assembly socket W1A2.
- Measure for continuity between logic board pin A1C2B04 and cable pin W1A2D06 (- write gate).

Is the continuity OK?

Y N

157

- Measure for continuity between logic board pin A1E2D06 and cable pin W1A2D06 (- write gate).

Is the continuity OK?

Y N

158

- Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).
- The HDA data cable between board socket A1E2 and head/disk assembly socket W1A2 has failed (MIM 97-220, 97-235).

159

- Board net A1C2B04 to A1E2D06 is failing.
- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).
  - Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).
- A1 board is failing (MIM 97-220).

Note: If a cable extender (MIM 01-030) is available, it may be used for the following probing or continuity check or voltage checks:

2 2  
6 6  
A A  
G H

A A  
G H  
2 2  
5 5

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**160**

The head/disk assembly is failing (MIM 97-330, 97-332).

**161**

- Measure for continuity on card removed from head/disk assembly socket W1B1.
- Measure between pins W1B1B11 and W1B1D11 (- write gate) on the card.

Is the continuity OK?

Y N

**162**

The data channel card in head/disk assembly socket W1B1 is failing (MIM 97-215).

**163**

- Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).

The data converter card in card socket A1C2 is failing (MIM 97-220).

---or---

The data channel card in head/disk assembly socket W1B1 is failing (MIM 97-215).

---or---

- Before exchanging the HDA, run initialize/analyze. Failing ID's will appear as a failed head/disk assembly. The head/disk assembly is failing (MIM 97-330, 97-332).

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MAP 9730-26

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MAP 9730-27

**164**

**(Entry Point WC)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Reference (MIM 97-235) for the following steps:
- Power off.
- Remove card from head/disk assembly socket W1B1.
- Press the Power key (power on).
- Probe the following:

Up Light: Off  
Down Light: On

A1C2B04 (- write gate).

**Are the lights OK?**

Y N

**165**

- Probe the following:

Up Light: Off  
Down Light: On

W1B1B11 (-write gate) on the head/disk assembly.

**Are the lights OK?**

Y N

**166**

The data channel card in head/disk assembly socket W1B1 is failing (MIM 97-215).

**167**

- Power off.
- Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).

The head/disk assembly is failing (MIM 97-330, 97-332).

Note: If a cable extender (MIM 01-030) is available, it may be used for the following probing or continuity check or voltage checks:

**168**

- Power off.
- Remove cable from head/disk assembly socket W1A2.
- Press the Power key (power on).
- Probe the following:

Up Light: Off  
Down Light: On

A1C2B04 (- write gate).

Are the lights OK?

Y N

**169**

- Power off.
- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).
- Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).

The head/disk assembly is failing (MIM 97-330, 97-332).

**170**

- Power off.
- Reinstall the cable in the head/disk assembly socket W1A2 (MIM 97-235).
- Reinstall the card in the head/disk assembly socket W1B1 (MIM 97-235).

The data converter card in card socket A1C2 is failing (MIM 97-220).

**171**

**(Entry Point WD)**

All CE/CSR actions specified by the following steps of this MAP are to be performed on the failing 10SR disk drive unit:

- Probe the following:

Up Light: Off  
Down Light: On

A1C2G03 (- write gate return).

Are the lights OK?

Y N

**172**

- Net A1A3D05 (- write gate return) was sensed (FLD GA950).
- The dedicated cable in board socket A1A3 is failing (MIM 97-220).

**173**

- Power off.
- Remove the data converter card from A1C2.
- Press the Power key (power on).
- Probe the following:

Up Light: On  
Down Light: Off

A1C2G03 (-write gate return).

Are the lights OK?

Y N

**174**

- Reinstall the data converter card in A1C2.
- The dedicated cable in board socket A1A3 is failing (MIM 97-220).

**175**

The data converter card in card socket A1C2 is failing (MIM 97-220).



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MAP 9750-1

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**ENTRY POINTS**

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
0527	A	1	001
0535	A	1	001
0536	A	1	001
0538	A	1	001
0561	A	1	001
0561	B	6	040

**001**

**(Entry Point A)**

The following steps in this MAP must be used on the failing 10SR disk drive. The failing drive was identified by the MAP that sent you here.

- Disconnect J6 (MIM 97-230).
- Disconnect J2 (MIM 97-230).
- Press the Power key (power on).

**MAP DESCRIPTION:**

This MAP will isolate the FRU on the 10SR disk drive that is short circuiting a voltage.

**START CONDITIONS:**

The problem has been isolated to the 10SR disk drive or its voltage supply cable.

**FRUs PARTIALLY TESTED:**

- 10SR - A1 board
- 10SR - A1A5
- 10SR - A1B2
- 10SR - A1C2
- 10SR - A1D2
- 10SR - W1B1
- 10SR - A1E2
- 10SR - A1E5
- 10SR - DC voltage supply cable
- 10SR - AC voltage supply cable
- 10SR - HDA
- 10SR - VCM driver assembly
- 10SR - Power control assembly
- 10SR - Brake assembly
- 10SR - Carriage latch magnet
- 10SR - J3 to J5 cable
- 10SR - Drive motor
- 10SR - Fan

(Step 001 continues)

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MAP 9750-2

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(Step 001 continued)

**Does the machine power on?**

Y N

**002**

- Disconnect voltage connectors VC1, VC2, VC3, VC4, VC5 and VC6 from the 10SR A1 board (MIM 97-225).
- Press the Power key (power on).

**Does the machine power on?**

Y N

**003**

- Reconnect J2 (MIM 97-230).
  - Reconnect voltage connectors VC1, VC2, VC3, VC4, VC5 and VC6 on the 10SR A1 board (MIM 97-225).
  - Reconnect J6 (MIM 97-230).
- The DC supply cable to the disk drive is bad.

**004**

- Select mode 6.
- Press the Power key (power off).
- Reconnect J2 (MIM 97-230).
- Reconnect voltage connectors VC1, VC2, VC3, and VC4 on the 10SR A1 board (MIM 97-225).
- Press the Power key (power on).

**Does the machine power on?**

Y N

**005**

- Failure is the +5 volt or -5 volt net.
- Reconnect voltage connectors VC5 and VC6 on the 10SR A1 board (MIM 97-225).
  - Remove the following cards and cables from the 10SR A1 board (MIM 97-220):  
A1A5  
A1B2  
A1C2  
A1D2  
A1E2  
A1E5.
  - Press the Power key (power on).
- (Step 005 continues)

5 4  
A B

(Step 005 continued)

**Does the machine power on?**

Y N

**006**

- Reinstall all cards and cables on the 10SR A1 board (MIM 97-220).
  - Reinstall the X and Y top card connectors (MIM 97-220).
  - Reconnect J6 (MIM 97-230).
- The 10SR A1 board is bad.

**007**

- Select mode 6.
- Press the Power key (power off).
- Reinstall the following cards on the 10SR A1 board (MIM 97-220):  
A1A5  
A1B2  
A1C2  
A1D2.
- Reinstall the X and Y top card connectors (MIM 97-220).
- Press the Power key (power on).

**Does the machine power on?**

Y N

**008**

- Remove the following cards from the A1 board (MIM 97-220):  
A1A5  
A1D2.
- Press the Power key (power on).

**Does the machine power on?**

Y N

**009**

- Remove the A1B2 card from the 10SR A1 board (MIM 97-220).
- Press the Power key (power on).

**Does the machine power on?**

Y N

3 3 3 3  
C D E F

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MAP 9750-2

D 2  
E 2  
F 2

**10SR Power MAP**  
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**010**

- Reinstall all cards and cables on the 10SR A1 board (MIM 97-220).
  - Reinstall the X and Y top card connectors (MIM 97-220).
  - Reconnect J6 (MIM 97-230).
- The 10SR A1C2 card is bad.

**011**

- Select mode 6.
  - Press the Power key (power off).
  - Reinstall all cards and cables on the 10SR A1 board (MIM 97-220).
  - Reinstall the X and Y top card connectors (MIM 97-220).
  - Reconnect J6 (MIM 97-230).
- The 10SR A1B2 card is bad.

**012**

- Select mode 6.
- Press the Power key (power off).
- Reinstall the A1D2 card on the 10SR A1 board (MIM 97-220).
- Press the Power key (power on).

**Does the machine power on?**

**Y N**

**013**

- Reinstall all cards and cables on the 10SR A1 board (MIM 97-220).
  - Reconnect J6 (MIM 97-230).
- The 10SR A1D2 card is bad.

**014**

- Select mode 6.
  - Press the Power key (power off).
  - Reinstall all cables on the 10SR A1 board (MIM 97-220).
  - Reconnect J6 (MIM 97-230).
- The 10SR A1A5 card is bad.

C 2

MAP 9750-3

**015**

- Select mode 6.
- Press the Power key (power off).
- Reinstall the A1E2 cable on the 10SR A1 board (MIM 97-220).
- Press the Power key (power on).

**Does the machine power on?**

**Y N**

**016**

- Remove the W1A2 cable on the 10SR W1 board (MIM 97-235).
- Press the Power key (power on).

**Does the machine power on?**

**Y N**

**017**

- Reinstall all cables on the 10SR A1 board (MIM 97-220).
  - Reinstall all cables on the 10SR W1 board (MIM 97-235).
  - Reconnect J6 (MIM 97-230).
- The 10SR A1E2 cable is bad.

**018**

- Select mode 6.
- Press the Power key (power off).
- Reinstall the W1A2 cable on the 10SR W1 board (MIM 97-235).
- Remove the W1B1 card from the 10SR W1 board (MIM 97-235).
- Press the Power key (power on).

**Does the machine power on?**

**Y N**

**019**

- Reinstall the A1E5 cable on the 10SR A1 board (MIM 97-220).
  - Reinstall the W1B1 cable on the 10SR W1 board (MIM 97-235).
  - Reconnect J6 (MIM 97-230).
- The HDA is bad.

4 4  
G H

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MAP 9750-3

**020**

- Select mode 6.
  - Press the Power key (power off).
  - Reinstall the A1E5 cable on the 10SR A1 board (MIM 97-220).
  - Reconnect J6 (MIM 97-230).
- The 10SR W1B1 card is bad.

**021**

- Select mode 6.
- Press the Power key (power off).
- Reinstall the A1E5 cable on the 10SR A1 board (MIM 97-220).
- Remove the W1A1 cable on the 10SR W1 board (MIM 97-235).
- Press the Power key (power on).

**Does the machine power on?**

**Y N**

**022**

- Reconnect J6 (MIM 97-230).
- The 10SR A1E5 cable is bad.

**023**

- Select mode 6.
  - Press the Power key (power off).
  - Reinstall all cables on the 10SR W1 board (MIM 97-235).
  - Reconnect J6 (MIM 97-230).
- The HDA is bad.

**024**

Failure is the +12 volt or -12 volt net.

- Select mode 6.
- Press the Power key (power off).
- Reconnect voltage connectors VC5 and VC6 on the 10SR A1 board (MIM 97-225).
- Remove the following card and cable from the 10SR A1 board (MIM 97-220):  
A1D2  
A1E5.
- Press the Power key (power on).

(Step 024 continues)

(Step 024 continued)

**Does the machine power on?**

**Y N**

**025**

- Reinstall all cards and cables on the 10SR A1 board (MIM 97-220).
  - Reconnect J6 (MIM 97-230).
- The 10SR A1 board is bad.

**026**

- Select mode 6.
- Press the Power key (power off).
- Reinstall the A1D2 card on the 10SR A1 board (MIM 97-220).
- Press the Power key (power on).

**Does the machine power on?**

**Y N**

**027**

- Reinstall all cables on the 10SR A1 board (MIM 97-220).
  - Reconnect J6 (MIM 97-230).
- The 10SR A1D2 card is bad.

**028**

- Select mode 6.
- Press the Power key (power off).
- Reinstall the A1E5 cable on the 10SR A1 board (MIM 97-220).
- Disconnect J1 (MIM 97-230).
- Press the Power key (power on).

**Does the machine power on?**

**Y N**

**029**

- Reconnect J1 (MIM 97-230).
  - Reconnect J6 (MIM 97-230).
- The 10SR A1E5 cable is bad.

A J  
2 4

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**030**

- Select mode 6.
  - Press the Power key (power off).
  - Reconnect J1 (MIM 97-230).
  - Reconnect J6 (MIM 97-230).
- The VCM driver assembly is bad.

**031**

- Select mode 6.
- Press the Power key (power off).
- Reconnect J2 (MIM 97-230).
- Disconnect the two wires from the brake assembly, which are part of the J3 to J5 cable. These are the two wires that come through a groove on the casting (reference figure and notes of MIM 97-386).
- Press the Power key (power on).

**Does the machine power on?**

Y N

**032**

- Disconnect J5 (MIM 97-230).
- Press the Power key (power on).

**Does the machine power on?**

Y N

**033**

- Reconnect J5 (MIM 97-230).
- Reconnect the two wires, which are part of the J3 to J5 cable, to the brake assembly (reference figure and notes of MIM 97-386).
- Disconnect J3 (MIM 97-230).
- Press the Power key (power on).

**Does the machine power on?**

Y N

**034**

- Reconnect J3 (MIM 97-230).
  - Reconnect J6 (MIM 97-230).
- The VCM driver assembly is bad.

K L M

MAP 9750-5

**035**

- Select mode 6.
  - Press the Power key (power off).
  - Reconnect J3 (MIM 97-230).
  - Reconnect J6 (MIM 97-230).
- The J3 to J5 cable is bad.

**036**

- Select mode 6.
  - Press the Power key (power off).
  - Reconnect J5 (MIM 97-230).
  - Reconnect the two wires, which are part of the J3 to J5 cable to the brake assembly (reference figure and notes of MIM 97-386).
  - Reconnect J6 (MIM 97-230).
- The power control assembly is bad.

**037**

- Select mode 6.
- Press the Power key (power off).
- Reconnect the two wires from the J3 to J5 cable to the brake assembly (reference figure and notes of MIM 97-386).
- Disconnect the two wires from the brake assembly that go to the carriage latch magnet. These are the two wires that go through a clamp on the HDA (reference figure and notes of MIM 97-386).
- Press the Power key (power on).

**Does the machine power on?**

Y N

**038**

- Reconnect the two wires from the carriage latch magnet to the brake assembly (reference figure and notes of MIM 97-386).
  - Reconnect J6 (MIM 97-230).
- The brake assembly is bad.

**039**

- Reconnect J6 (MIM 97-230).
- Carriage latch magnet is bad.

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N

MAP 9750-6

**040**

**(Entry Point B)**

The following steps in this MAP must be used on the failing 10SR disk drive. The failing drive was identified by the MAP that sent you here.

- Connect the meter from J4-1 to J4-2 (MIM 97-230).

**Does the meter read more than 100 kilohms?**

Y N

**041**

- Disconnect the 10SR fan connector (MIM 97-215).
- Connect the meter from J4-1 to J4-2 (MIM 97-230).

**Does the meter read more than 100 kilohms?**

Y N

**042**

- Disconnect J4 (MIM 97-230).
- Connect the meter from J4-1 to J4-2 on the cable.

**Does the meter read more than 100 kilohms?**

Y N

**043**

- Reconnect the fan connector (MIM 97-215).
  - Reconnect J4 (MIM 97-230).
- The AC supply cable to the 10SR disk drive is bad.

**044**

- Reconnect the fan connector (MIM 97-215).
  - Reconnect J4 (MIM 97-230).
- The power control assembly is bad.

**045**

The 10SR fan is bad.

**046**

- Disconnect J6 (MIM 97-230).
- Connect the meter on the drive motor cable from J6-1 to J6-2 and from J6-1 to J6-3 and from J6-1 to J6-4.

**Does the meter read more than 100 kilohms for all three measurements?**

Y N

**047**

- Reconnect J6 (MIM 97-230).
- The drive motor is bad.

**048**

- Reconnect J6 (MIM 97-230).
- The power control assembly is bad.

N

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