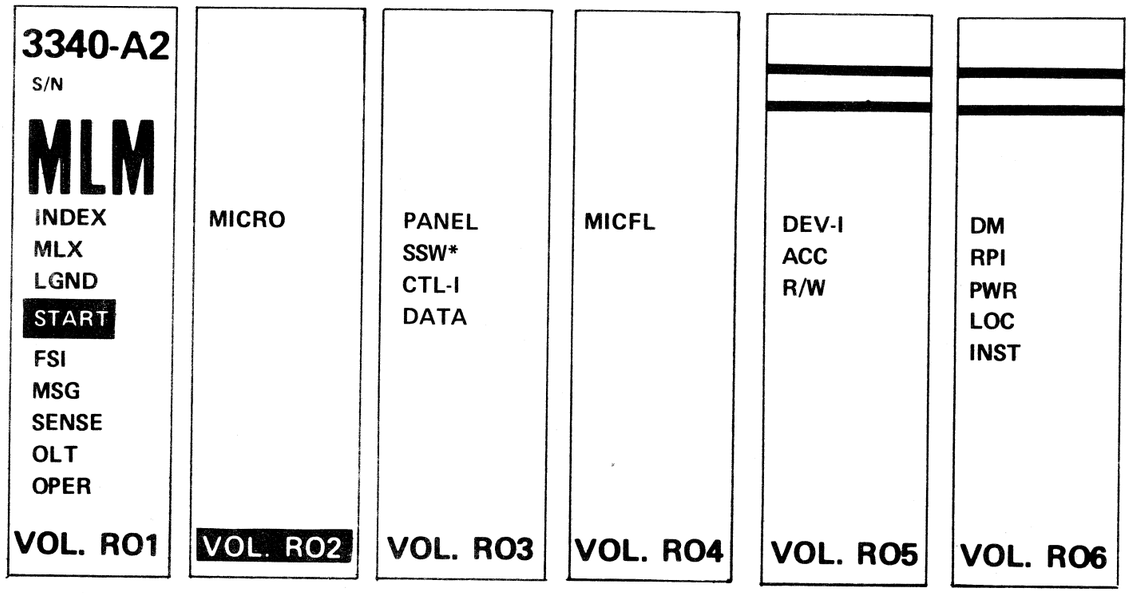
IBM Maintenance Library

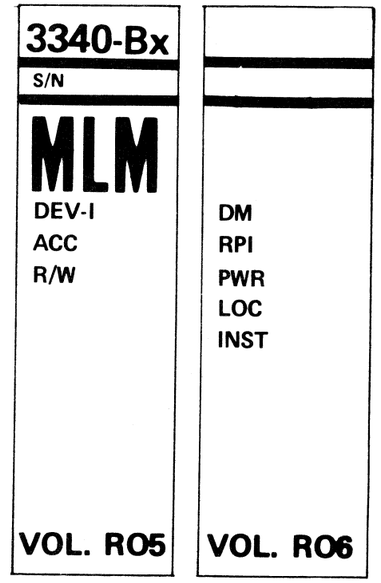
CONTROL MODULE



Volumes R01, 2, 3, and 4 accompany only Control Modules (A2).

** This section is only with Control Modules that have the string switch feature installed.*

SATELLITE MODULE



Volumes RO5 and RO6 accompany every Control Module (A2) and every Satellite Module (B1 or B2). (One set per serial numbered frame.) To ensure proper documentation level, use the volume that goes with the module you are working on.

3340 Disk Storage

BA0000	2747536	440203	440218	440224				
Seq. 1 of 2	Part No. ( )	2 Nov 73	5 Aug 74	15 Dec 75				

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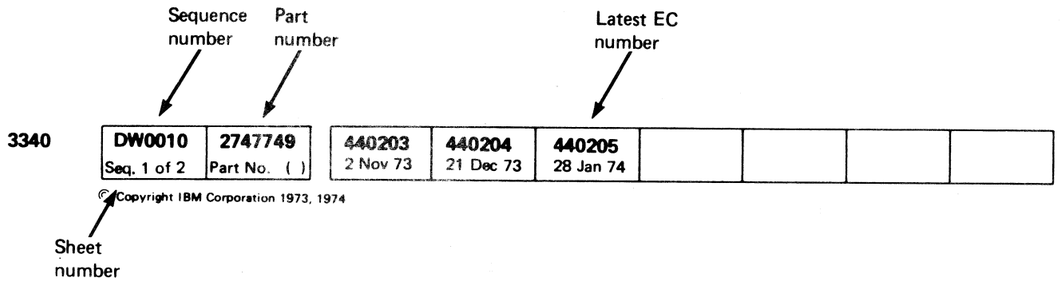
PREFACE

MAINTENANCE LIBRARY ORDERING PROCEDURE (IBM Internal)

Individual pages of the 3340 Maintenance Library can be ordered from the San Jose plant by using the *Wiring Diagram/Logic Page Request* (Order No. 120-1679). In the columns headed "Logic Page", enter the page identifier information: sequence number, sheet number, part number, and EC number. Groups of pages can be ordered by including a description (section, volume, etc.) and the machine serial number.

Example:



This manual was prepared by the IBM General Products Division, Product Publications, Department G24, San Jose, California 95193.

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SAFETY

CE SAFETY PRACTICES

All Customer Engineers are expected to take every safety precaution possible and observe the following safety practices while maintaining IBM equipment:

1. You should not work alone under hazardous conditions or around equipment with dangerous voltage. Always advise your manager if you MUST work alone.
2. Remove all power, ac and dc, when removing or assembling major components, working in immediate areas of power supplies, performing mechanical inspection of power supplies, or installing changes in machine circuitry.
3. After turning off wall box power switch, lock it in the Off position or tag it with a "Do Not Operate" tag, Form 229-1266. Pull power supply cord whenever possible.
4. When it is absolutely necessary to work on equipment having exposed operating mechanical parts or exposed live electrical circuitry anywhere in the machine, observe the following precautions:
   a. Another person familiar with power off controls must be in immediate vicinity.
   b. Do not wear rings, wrist watches, chains, bracelets, or metal cuff links.
   c. Use only insulated pliers and screwdrivers.
   d. Keep one hand in pocket.
   e. When using test instruments, be certain that controls are set correctly and that insulated probes of proper capacity are used.
   f. Avoid contacting ground potential (metal floor strips, machine frames, etc.). Use suitable rubber mats, purchased locally if necessary.
5. Wear safety glasses when:
   a. Using a hammer to drive pins, riveting, staking, etc.
   b. Power or hand drilling, reaming, grinding, etc.
   c. Using spring hooks, attaching springs.
   d. Soldering, wire cutting, removing steel bands.
   e. Cleaning parts with solvents, sprays, cleaners, chemicals, etc.
   f. Performing any other work that may be hazardous to your eyes. REMEMBER – THEY ARE YOUR EYES.
6. Follow special safety instructions when performing specialized tasks, such as handling cathode ray tubes and extremely high voltages. These instructions are outlined in CEMs and the safety portion of the maintenance manuals.
7. Do not use solvents, chemicals, greases, or oils that have not been approved by IBM.
8. Avoid using tools or test equipment that have not been approved by IBM.
9. Replace worn or broken tools and test equipment.
10. Lift by standing or pushing up with stronger leg muscles – this takes strain off back muscles. Do not lift any equipment or parts weighing over 60 pounds.
11. After maintenance, restore all safety devices, such as guards, shields, signs, and grounding wires.
12. Each Customer Engineer is responsible to be certain that no action on his part renders products unsafe or exposes customer personnel to hazards.
13. Place removed machine covers in a safe out-of-the-way place where no one can trip over them.
14. Ensure that all machine covers are in place before returning machine to customer.
15. Always place CE tool kit away from walk areas where no one can trip over it; for example, under desk or table.
16. Avoid touching moving mechanical parts when lubricating checking for play, etc.
17. When using stroboscope, do not touch ANYTHING – it may be moving.
18. Avoid wearing loose clothing that may be caught in machinery. Shirt sleeves must be left buttoned or rolled above the elbow.
19. Ties must be tucked in shirt or have a tie clasp (preferably nonconductive) approximately 3 inches from end. Tie chains are not recommended.
20. Before starting equipment, make certain fellow CEs and customer personnel are not in a hazardous position.
21. Maintain good housekeeping in area of machine while performing and after completing maintenance.

Knowing safety rules is not enough.
An unsafe act will inevitably lead to an accident.
Use good judgment - eliminate unsafe acts.

ARTIFICIAL RESPIRATION

General Considerations

1. Start Immediately – Seconds Count
   Do not move victim unless absolutely necessary to remove from danger. Do not wait or look for help or stop to loosen clothing, warm the victim, or apply stimulants.
2. Check Mouth for Obstructions
   Remove foreign objects.
3. After victim is breathing by himself or when help is available:
   a. Loosen clothing.
   b. Place victim on his side.
   c. Keep victim warm.
4. Remain in Position
   After victim revives, be ready to resume respiration if necessary.
5. Call a Doctor
   Have someone summon medical aid.
6. Don't Give Up
   Continue without interruption until victim is breathing without help or is certainly dead.

Rescue Breathing for Adults

1. Place victim on back; lift neck and tilt head way back. (Quickly remove any noticeable food or objects from mouth.)

2. Pinch nose closed; make airtight seal around victim's mouth with your mouth; and forcefully breathe into victim until chest rises (expands).

3. Continue breathing for the victim 12 times per minute WITHOUT STOPPING.
4. If chest does not rise (expand), roll victim onto side and pound firmly between shoulder blades to remove blocking material. Also, try lifting jaw higher with your fingers. Resume rescue breathing.

MICRODIAGNOSTIC ERROR STOP INFORMATION

Note: The following known diagnostic problems have been identified. Some may appear as intermittent stops. Take the action indicated below until the EC indicated for your system or systems has been installed. File these pages in the front of the MICRO section in the MLM for future reference.

ERROR STOP CODE	SYSTEMS AFFECTED					DESCRIPTION AND ACTION	PROJECTED FIX Machine or System Area Affected and Projected EC Number					
	115	125	135	ISC	3333-2		3340	Sys/115	Sys/125	Sys/135	Sys with ISC	3333-2
A107	X	X				Stops due to program erroneously checking for Data Module Loaded. Load data module and continue. If data module will not load, run routine AC to analyze load problem.		Disk EC 364217	Disk EC 364087			
A202	X	X				Stops due to program erroneously checking for On Line. Be sure a data module is loaded and routine A1 runs error free. If data module will not load, run routine AC to analyze problem.		Disk EC 364217	Disk EC 364087			
A207	X	X				Stops due to program erroneously checking for Data Module Loaded. Load data module and continue. If data module will not load, run routine AC to analyze load problem.		Disk EC 364217	Disk EC 364087			
A242	X	X	X	X	X	All drives in CE Mode cause this error. Reset CE Mode on ready drive by pressing Attention pushbutton.	Will not change					
A385	X	X	X	X	X	Sometimes intermittent and follows the data module due to differences in windage bias. *Do not return the data module on the basis of this stop alone.* Functional operation is not affected.		Disk EC XXXXXX	Disk EC XXXXXX	Disk EC XXXXXX	Disk EC XXXXXX	Disk EC XXXXXX
A552	X	X	X			If RPS feature (A1G2 card) is not installed — ignore this stop.		Disk EC 364215	Disk EC 364083	Disk EC XXXXXX		
A557	X	X	X	X	X	If machine is at EC level 442903 or REA 13-54845 and microdiagnostic disk is at a lower EC level than shown at the right, a false error stop will occur.		Disk EC 364215	Disk EC 364083	Disk EC 143005	Disk EC 440234	Disk EC 440234
A553 A554			X			This is a false Sector Compare if Sys/135 microdiagnostic disk is at EC 143011 or above and 3340 hardware is below EC 442903. A false Sector Compare also occurs if Sys/135 microdiagnostic disk is below EC 143011 and 3340 hardware is at or above EC 442903.						

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MICRODIAGNOSTIC ERROR STOP INFORMATION

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ERROR STOP CODE	SYSTEMS AFFECTED					DESCRIPTION AND ACTION	PROJECTED FIX Machine or System Area Affected and Projected EC Number					
	115	125	135	ISC	3330-2		3340	Sys/115	Sys/125	Sys/135	Sys with ISC	3330-2
A002	X	X				Stops due to program erroneously checking for On Line. Be sure routines A1 and A2 run error free with data module loaded. If data module will not load, run routine AC to analyze problem.		Disk EC 364217	Disk EC 364087			
A007	X	X				Stops due to program erroneously checking for Data Module Loaded. Load data module and continue. If data module will not load, run routine AC to analyze load problem.		Disk EC 364217	Disk EC 364087			
A004	X	X	X	X	X	Invalid error stop – ignore.		Disk EC 364217	Disk EC 364087	Disk EC 143005	Disk EC 440235	Disk EC 440235
Routine A7	X	X				Incorrect operation of A7 in adjustment mode ('A7', '10', '01', '00'). Suggest adjusting pot counter-clockwise (CCW) until A721 errors occur. Adjust the pot clockwise just enough to get rid of A721 errors. Then turn pot 1/2 additional turn in the same direction.		Disk EC XXXXXX	Disk EC XXXXXX			
A718	X	X	X	X	X	This error may occur if A1R2 or A1Q2 is changed and has not been adjusted on a drive that is not failing. Continue to adjust. If A1R2 or A1Q2 has not been changed, run Routines A6 and A8. Suspect some component value has changed in drive.	Will not change					
A835	X	X				Usually an intermittent false stop caused by marginal seek time constant. If adjusting servo (routine A7) or replacing specified cards does not correct the problem, consider this to be a false stop.		Disk EC 364217	Disk EC 364087			
ADB2 ADB6	X	X				Bytes 7 and 8 fail to log.		Disk EC 364090	Disk EC 364090			

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MICRODIAGNOSTIC ERROR STOP INFORMATION

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ERROR STOP CODE	SYSTEMS AFFECTED					DESCRIPTION AND ACTION	PROJECTED FIX Machine or System Area Affected and Projected EC Number					
	115	125	135	ISC	3330-2		3340	Sys/115	Sys/125	Sys/135	Sys with ISC	3330-2
AC09	X	X				Look at message byte 4 to determine correct microdiagnostic error. If bit 2 = 0, error AC11 bit 6 = 0, error AC12 bit 3 = 1, error AC13 bit 4 = 0, error AC14 bit 5 = 0, error AC15 If none of the above, look at message byte 3. If bit 0 = 1, error AC16 bit 0 = 0, error AC17 If none of the above, AC09 is a valid error.		Disk EC 364217	Disk EC 364087			
AD28 AD38 AD58 AD68				X	X	May get false "Gap XX out of tolerance" stops due to incorrect timer values. Ignore these stops if message bytes 2 and 3 following error stop are within the ranges indicated below: AD28 Gap G1 length out of tolerance. Acceptable bytes 2 and 3 range is '0072" thru '0079". AD38 Extended G1 Gap out of tolerance. Acceptable bytes 2 and 3 range is '00FD' thru '010D'. AD58 Gap G2 out of tolerance. Acceptable bytes 2 and 3 range is '0048' thru '004F'. AD68 Gap G3 out of tolerance. Acceptable bytes 2 and 3 range is '004C' thru '0052'.					Basic Disk (W/O Fixed Head Feature) P/N 2747980 EC 440235 Plus REA 13-60813 or EC 440236 FHF Disk P/N 2747985 EC 441251 Plus REA 13-60814 or EC 441252	Basic Disk (W/O Fixed Head Feature) P/N 2747980 EC 440235 Plus REA 13-60813 or EC 440236 FHF Disk P/N 2747985 EC 441251 Plus REA 13-60814 or EC 441252
AD86	X	X	X	X	X	Write Gate on with index pulse. Timing from index pulse to index pulse can be a maximum of 10.4 milliseconds. Write Gate is on to 10.3 milliseconds. If motor is at maximum specification, Write Gate drops 100 microseconds too soon and a false error stop occurs.		Disk EC 364217	Disk EC 364087	Disk EC 143005	Disk EC 440234	Disk EC 440234 MLM Ec 440210
AF00	X	X				Wrong error stop displayed. This is error AF4C.		Disk EC 364217	Disk EC 364087			

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MICRODIAGNOSTIC ERROR STOP INFORMATION

Note: The following known diagnostic problems have been identified. Some may appear as intermittent stops. Take the action indicated below until the EC indicated for your system or systems has been installed. File these pages in the front of the MICRO section in the MLM for future reference.

ERROR STOP CODE	SYSTEMS AFFECTED					DESCRIPTION AND ACTION	PROJECTED FIX Machine or System Area Affected and Projected EC Number					
	115	125	135	ISC	3830-2		3340	Sys/115	Sys/125	Sys/135	Sys with ISC	3830-2
AF1B AF9B	X	X	X	X	X	Not a false stop. This error(s) can be caused if the VFO/PLO cable is left plugged in at position A1B2 of the last machine. See MLM page INST 4 (EC 440219 or above).						
AF1B AFDB	X	X	X	X	X	If Check End byte bit 5 is on (no Sync Byte Found), run Routine AF, test 0E, to reformat the CE track. Routine B0 may also be used to reformat the CE track.	Will not change					
Routine B0	X	X	X			Not included on microdisk.		Disk EC 364091	Disk EC 364091	Disk EC 143005		
B110	X	X				"To" Cylinder address fails to log.		Disk EC 364217	Disk EC 364087			
B1F4				X	X	May get false indication of "No Sync Found in HA". If track has a skip displacement other than '00'. (Fixed Head feature microdisk only – P/N 2747985).					Disk EC 441251 Plus REA 13 60809 or Disk EC 441252	Disk EC 441251 Plus REA 13-60809 or Disk EC 441252
B2 Loop Incorrect				X	X	Routine B2 will not loop properly (option '06'). Program erroneously links into routine B1 and loops B1, not B2.					Disk EC 440235 Plus REA 13-60813 or Disk EC 440236	Disk EC 440235 Plus REA 13-60813 or Disk EC 440236
B307	X	X				Stops due to program erroneously checking for Data Module Loaded. Load data module and continue. If data module will not load, run routine AC to analyze load problem.		Disk EC 364217	Disk EC 364087			
Routine B4	X	X				Loading B4 from CE panel causes system to check stop if microdisk is below the level indicated.		Disk EC 364217	Disk EC 364087			
IOP Busy	X	X				Can occur if drive is made Ready while running ILT's in stand-alone mode. Do a System Reset and rerun ILT's.	Will not change					

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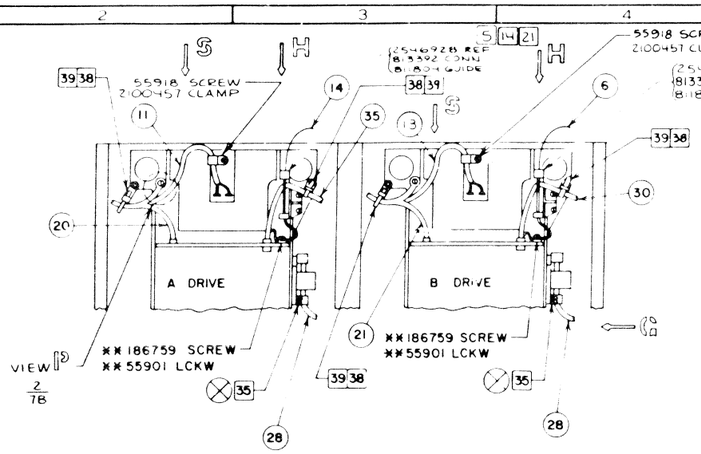
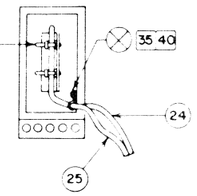
RELEASED FOR ASM	QTY	TECHNICAL APPROVAL			SYM	DATE	CHANGE NO.	SYM	DATE	CHANGE NO.	2744302
		ELEC				SEE	EC HISTORY		26JUL76	445178	DEVELOPMENT NO.
		METAL				9 JUN 75	445077				
		PLASTIC				29 JUL 75	445146				
						15 OCT 75	445142 B				
						13JAN76	445172				

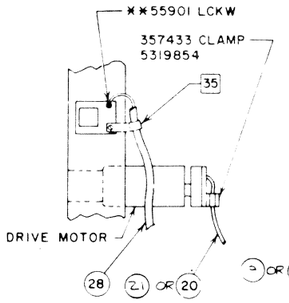
REFERENCE DRAWING

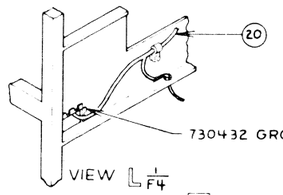
SHEET 1 OF 5

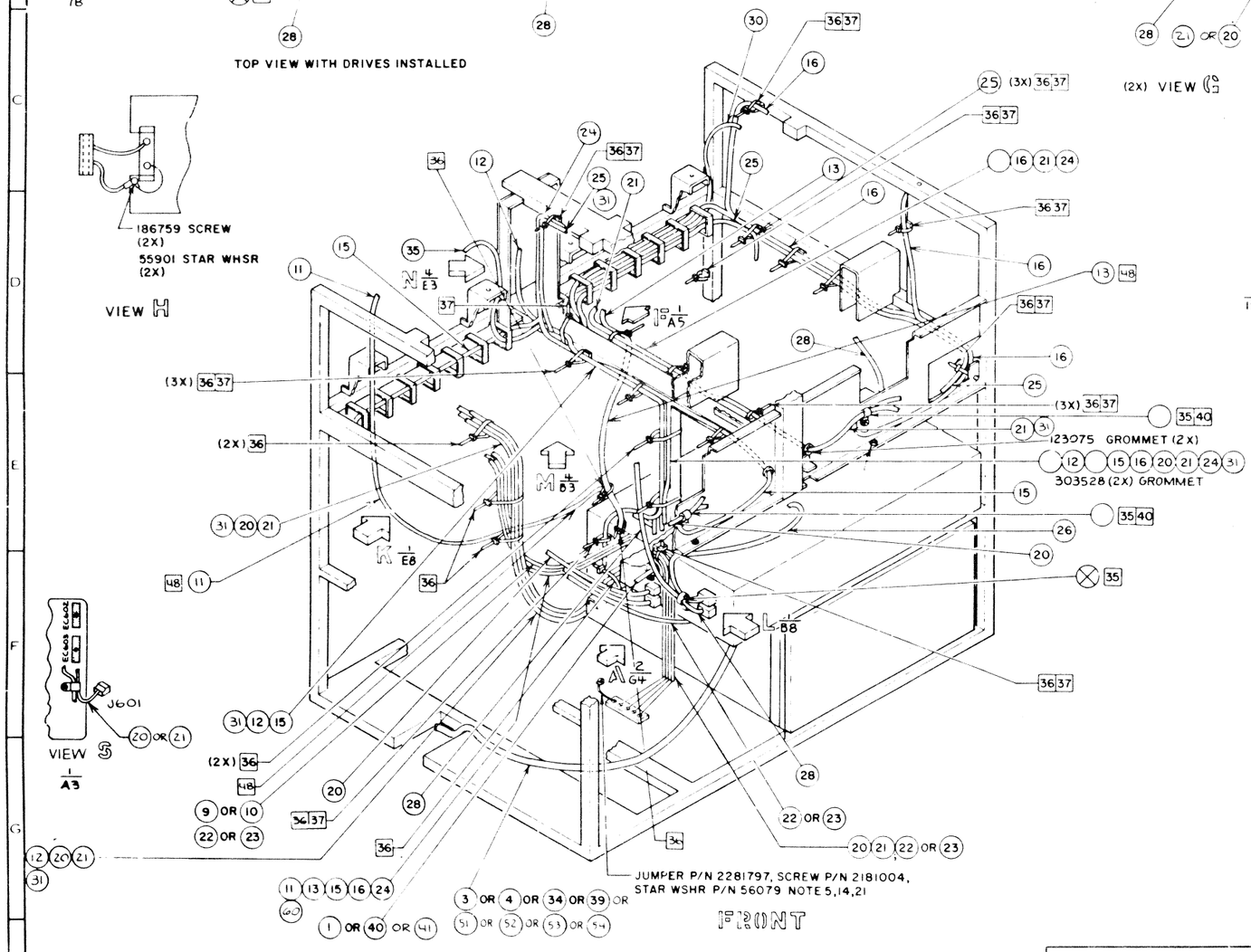
TOP VIEW WITH DRIVES INSTALLED

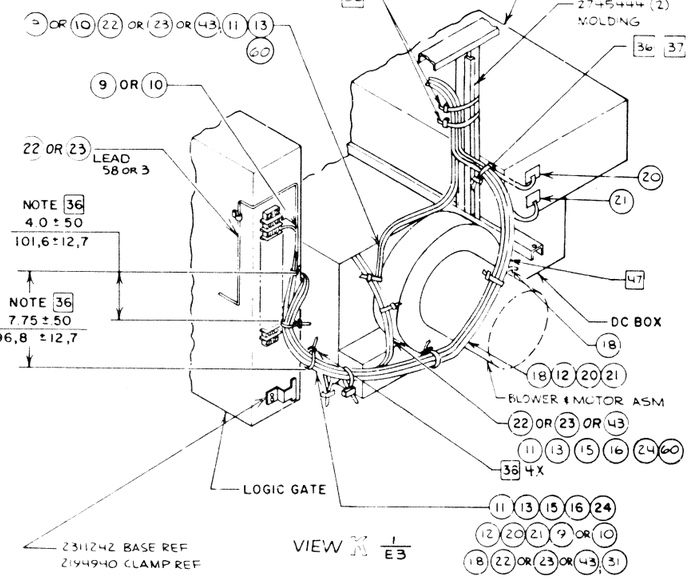












IBM MATERIAL NO		MUST CONFORM TO ENG SPEC 88350	IBM
IBM MATL ALTERNATE NO	SCALE	TOLERANCES UNLESS OTHERWISE NOTED: INCH / mm	NAME CABLE ROUTING
CASE DEPTH	THIRD ANGLE PROJECTION	LINEAR ±	ENGINEER SS 5DEC72
HARDNESS	INCH / mm	ANGLES ±	DETAILER GDI 23MAR73
SURFACE TREATMENT		RADII UNLESS OTHERWISE NOTED	DWG CHK
		EDGE/CORNER BREAKS: OUTSIDE MAX / INSIDE MAX	DSGN APPRO
			ANSI APPR HCP 5DEC72

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E

SHEET 1 OF 5

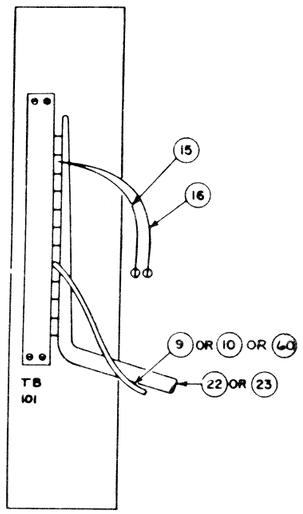
2744302

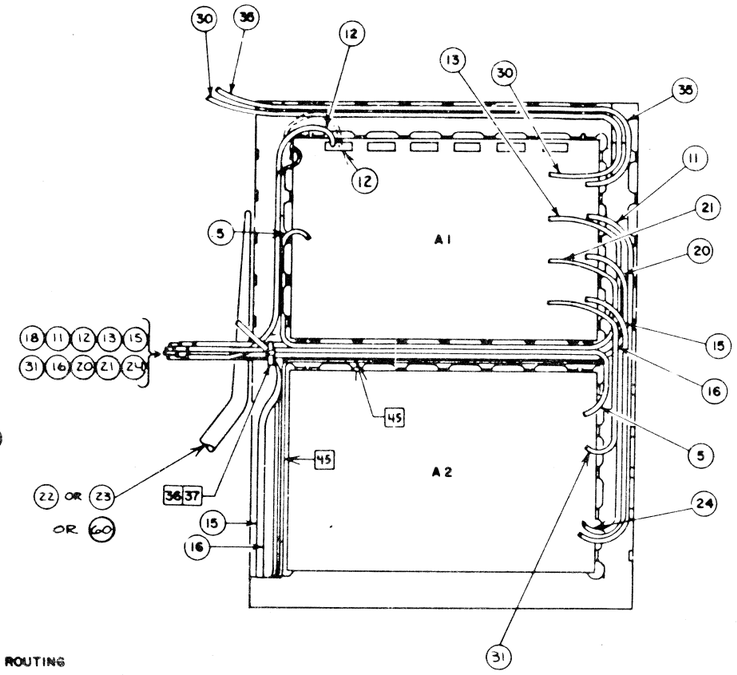
RELEASED FOR ASM	QTY	TECHNICAL APPROVAL			SYM	DATE	CHANGE NO	SYM	DATE	CHANGE NO
		ELEC				SEE	EC HISTORY		13JAN76	445172
		METAL				9JUN75	445077		26JUL76	445178
		PLASTIC				29JUL75	445146			
						15OCT75	445142B			

2744302

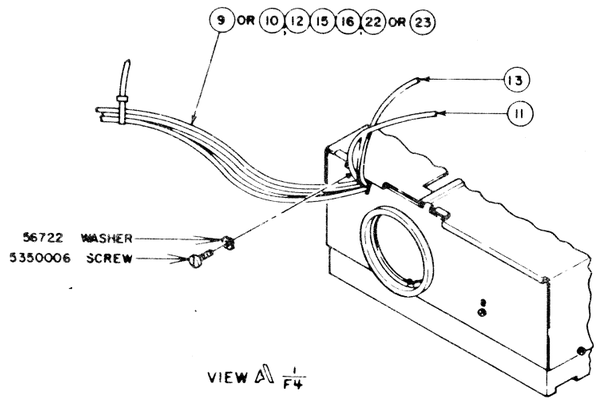
DEVELOPMENT NO | G/M

REFERENCE DRAWING
SHEET 2 OF 5

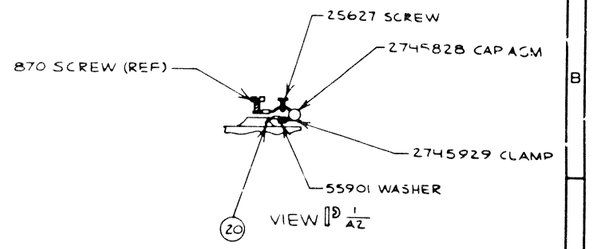




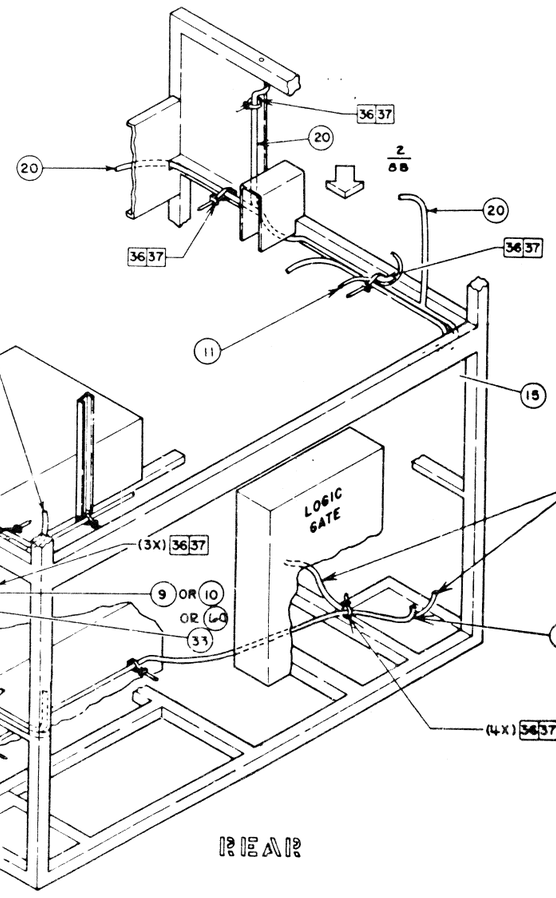
GATE CABLE ROUTING
SCALE: 1/2
(ROUND CABLES ONLY)



VIEW A 1/F4



VIEW D 1/A2



REAR

IBM MATERIAL NO	0 1 2 / 0 25.4 50.8	MUST CONFORM TO ENG SPEC 880380		CABLE ROUTING
IBM MATL ALTERNATE NO	SCALE	TOLERANCES UNLESS OTHERWISE NOTED	INCH	NAME
CASE DEPTH		LINEAR ±		DESIGNER SS 5DEC72
HARDNESS	THIRD ANGLE PROJECTION	ANGLES ±		DETAILER 8DI 23MAR73
SURFACE	INCH	RADII UNLESS OTHERWISE NOTED		DWG CHK
TREATMENT		EDGE/CORNER OUTSIDE MAX		DESIGN APPRO
		BREAKS INSIDE MAX		CLASSIFICATION HCP 5DEC72

SHEET 2 OF 5

2744302

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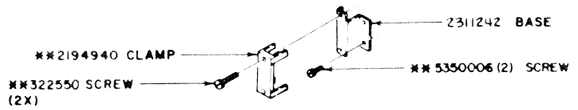
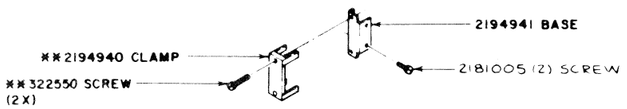
RELEASED FOR ASM	QTY	TECHNICAL APPROVAL			SYM	DATE	CHANGE NO	SYM	DATE	CHANGE NO
		ELEC				SEE	EC HISTORY		13JUN76	445172
		METAL				9JUN75	445077		[illegible]	445178
		PLASTIC				29JUL75	445146			
						15OCT75	445428			

2744302	
DEVELOPMENT NO.	Q/M

REFERENCE DRAWING
SHEET 3 OF 5



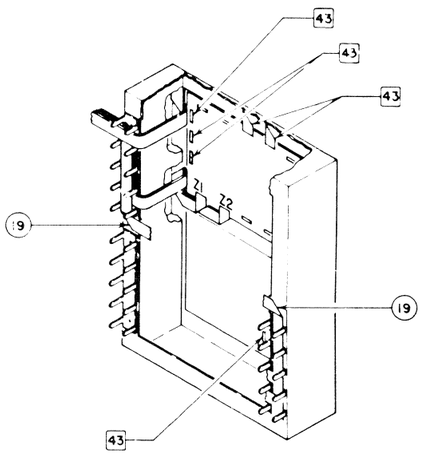
DETAIL [13]
SCALE 1/2

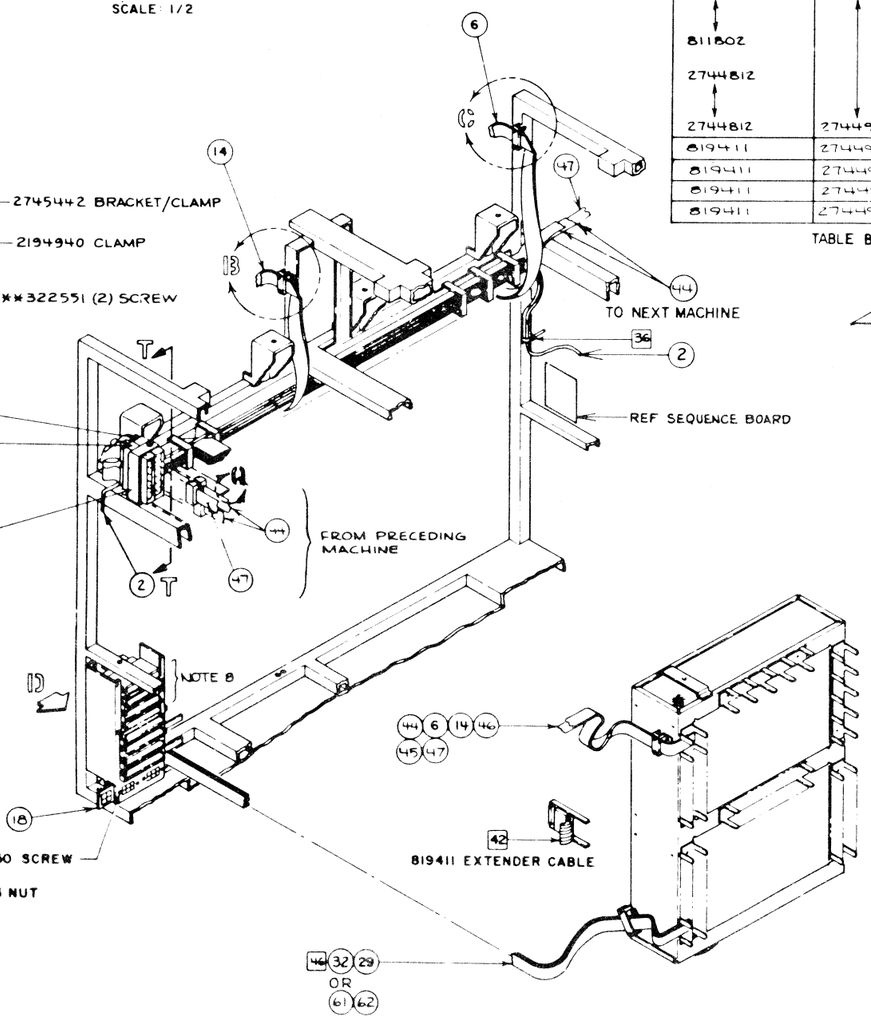


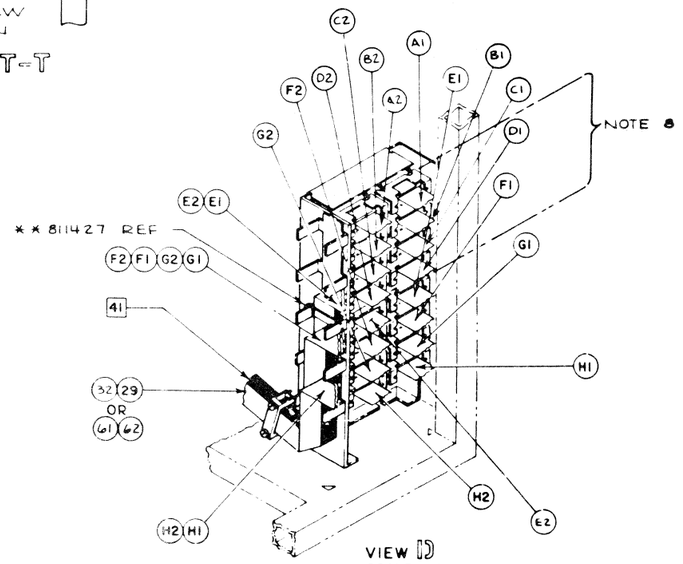
DETAIL [C]
SCALE 1/2

GUIDE OR EXTENDER P/N	CABLE P/N	LOCATIONS
819410	2744910	A1Y3-A1Z1
819410	2744925	A1Y4-A1Z2
811802	2745417	A1A2
811802	2745418	A1A5
819411		
↕	2744930	A1A2-A2V4
819411	2744930	A1A5-A2V5
2744812	2745417	A1A2
2744812	2745418	A1A5
811802	2744945	A2C2-A2A2 NOTE [50]
↕	↕	A2C3-A2A3
↕	↕	A2C4-A2A4
811802	↕	A2C5-A2A5
2744812	↕	A2C2-A2A2
↕	↕	A2C3-A2A3
↕	↕	A2C4-A2A4
2744812	2744945	A2C5-A2A5 NOTE [50]
2745393	2745417	A1B3T
2745393	2745418	A1B3B
811802	2744954	A2B2 NOTE [8]
↕	↕	A2B3
↕	↕	A2B4
811802	↕	A2B5
2744812	↕	A2B2
↕	↕	A2B3
↕	↕	A2B4
2744812	2744954	A2B5 NOTE [8]
819411	2744917	
819411	2744921	
819411	2744938	
819411	2744940	

TABLE B







VIEW [D]
SCALE 1/2

IBM MATERIAL NO	0 1 2 / 0 25.4 50.8	MUST CONFORM TO ENG SPEC 880350	IBM	
IBM MATL ALTERNATE NO	SCALE 1/4 & NOTED	TOLERANCES UNLESS OTHERWISE NOTED: INCH ±..	NAME	CABLE ROUTING
CASE DEPTH	THIRD ANGLE PROJECTION	LINEAR ± / ANGLES ±	DESIGNER	SS 5DEC72
HARDNESS	INCH	RADII UNLESS OTHERWISE NOTED	DETAILER	GDI 23MAR73
SURFACE TREATMENT		EDGE/CORNER BREAKS: OUTSIDE MAX / INSIDE MAX	DWG CHK	
			DSGN APPRO	
			CLASSIFICATION	HCP 5DEC72

E

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2744302

RELEASED FOR ASM	QTY	TECHNICAL APPROVAL			SYM	DATE	CHANGE NO
		ELEC				SEE	EC HISTORY
		METAL				9JUN75	445077
		PLASTIC				29JUL75	445146
						15OCT75	445142B

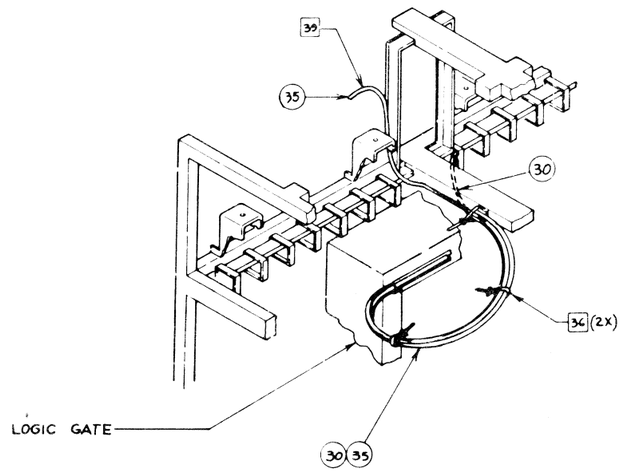
SYM	DATE	CHANGE NO
	13JAN78	445172
	26JUL76	445178

2744302

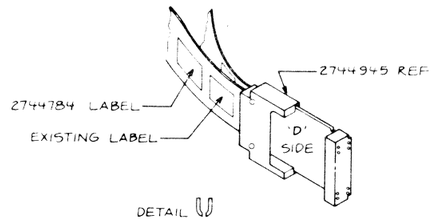
DEVELOPMENT NO | d/w

REFERENCE DRAWING

SHEET 4 OF 5

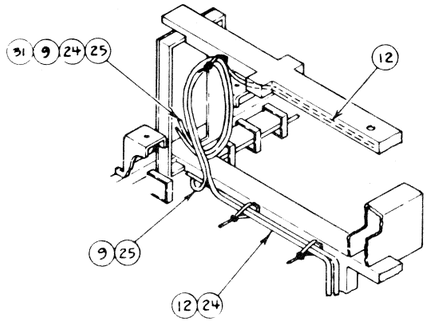


VIEW M 1/D4



DETAIL U

INSTALL LABEL ON FOUR PIECES NOTE 50



VIEW N 1/D4

NOTES:

1 B/M 2744250 CE PANEL
2 B/M 2744270 POWER RESET PANEL
3 OPERATOR PANEL B/M 5
4 OPERATOR PANEL B/M 5
5 B/M 2745000 A02 MODEL COMPLETION
6
7 B/M 2745052 A02 50 HZ 3P AC COMP-WTC
8 B/M 2745303 STRING SWITCH F B/M
9 B/M 2745056 A02 DC COMPARTMENT-50 HZ
10 B/M 2745965 CAM DRIVE MOTOR ASM-60 HZ
11 B/M 2745064 A02 LINE FILTER-60 HZ
12 B/M 2745051 A02 50 HZ 4P AC COMP-FRANCE
13 B/M 2745066 A02 DC COMPARTMENT-60 HZ
14 B/M 2745100 B01 MODEL COMPLETION
15 B/M 2745165 B01 AC POWER ASM 60HZ
16 B/M 2745265 B02 AC POWER ASM 60HZ
17 B/M 2745156 B01 DC COMPARTMENT-50 HZ
18 B/M 2745252 B01-B02 AC COMP 50HZ WTC
19 B/M 2745251 B01-B02 AC COMP 50HZ FRANCE
20 B/M 2745166 B01 DC COMPARTMENT-60 HZ
21 B/M 2745200 B02 MODEL COMPLETION
22
23 B/M 2757990 FIXED HEAD FEATURE 'A' DRIVE
24 B/M 2745256 B02 DC COMPARTMENT-50 HZ
25 B/M 2757990 FIXED HEAD FEATURE 'B' DRIVE
26 B/M 2745305 REMOTE SWITCH ATTACHMENT
27 B/M 2745266 B02 DC COMPARTMENT-60 HZ
28 B/M 2744200
29
30
31 B/M 2745500 DRIVE ASM
32 B/M 2745565 DRIVE MOTOR ASM-60 HZ
33 MFI
34 CIRCLED NUMBERS CORRESPONDING TO INDEX NUMBERS IN TABLE A SHEET 5
35 CLAMP CABLES PER ENG SPEC 878820 EXCEPT WHERE CLAMP P/N IS SPECIFIED.
36 USE P/N 1159519. TRIM ENDS WITHIN .12±.12 (3±3) OF LOCK.
37 USE P/N 2277082 PUSH-MOUNT
38 USE P/N 111598 NUT
39 USE P/N 532393 CLAMP
40 USE P/N 5319854 SCREW
41 CABLE P/N 2744945 INSTALLATION SEQUENCE:
A) INSTALL THE COMMON CONNECTORS ON THE A2 BOARD IN ASCENDING NUMBER SEQUENCE.
B) INSTALL OPPOSITE ENDS ON TAILGATE IN DESCENDING NUMBER SEQUENCE.
42 ASSEMBLE EXTENDER TO CABLE SO CABLE TERMINATION LABEL IS EXPOSED.
43 INSTALL CABLE EXTENDERS PER TABLE B SHEET 3.
44 "B" BOXES ONLY: INSTALL, COIL AND TAPE UNINSTALLED ENDS, AND STOW BY:
1. TAPE CABLES P/N 2744917 AND 2744940 TO INSIDE OF FRAME CROSS MEMBER ON LEFT END OF MACHINE ADJACENT TO CABLE RACEWAY EXIT USING TAPE P/N 114050.
2. TAPE CABLE P/N 2744908 TO INSIDE OF LOWER CROSS MEMBER ON LEFT END OF MACHINE USING TAPE P/N 114050.
45 USE THIS ROUTING ON B1 & B2 LOGIC GATES FOR CABLES 11, 13, 15, & 16.
46 BUNDLE CABLES BY TAPING AS REQUIRED USING TAPE P/N 811788.
47 DRESS CABLE LOOP FOR CLEARANCE TO BLOWER AND MOTOR
MAINTAIN SUFFICIENT LOOP FOR CLEARANCE TO AIR DUCT WHEN GATE IS OPEN.
48 DO NOT BUNDLE IN THIS AREA
49 LAST REFERENCE LETTER USED 'U'
50 IF STRING SWITCH FEATURE B/M 2745303 IS TO BE INSTALLED, A LABEL P/N 2744784 MUST BE APPLIED TO THE FOUR PIECES OF CABLE ASM P/N 2744945 PER DETAIL 'U' PRIOR TO INSTALLATION OF THIS CABLE ASM. PLUG THIS CABLE IN LOCATION A2 'A' ROW.

NOTES CONTD

51 B/M 2745300 C2 MODEL COMPLETION
52 B/M 2745375 C2 AC POWER ASM 50HZ
53 B/M 2745385 C2 AC POWER ASM 60HZ

SHEET 4 OF 5

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E

IBM MATERIAL NO
IBM MATL ALTERNATE NO
CASE DEPTH
HARDNESS
SURFACE
TREATMENT

SCALE
THIRD ANGLE PROJECTION
INCH

MUST CONFORM TO ENG SPEC 880380
TOLERANCES UNLESS OTHERWISE NOTED
LINEAR ±
ANGLES ±
RADII UNLESS OTHERWISE NOTED
EDGE/CORNER BREAKS
OUTSIDE MAX
INSIDE MAX
INCH

NAME CABLE ROUTING

DESIGNER	SS	5DEC72
DETAILER	DDS	29MAY73
DWG CHK		
DESIGN APPRO		
CLASSIFICATION	HCP	5DEC72

RELEASED FOR ASM	QTY

TECHNICAL APPROVAL			SYM	DATE	CHANGE NO	SYM	DATE	CHANGE NO
ELEC				26JUL76	445178			
METAL								
PLASTIC								

2744302

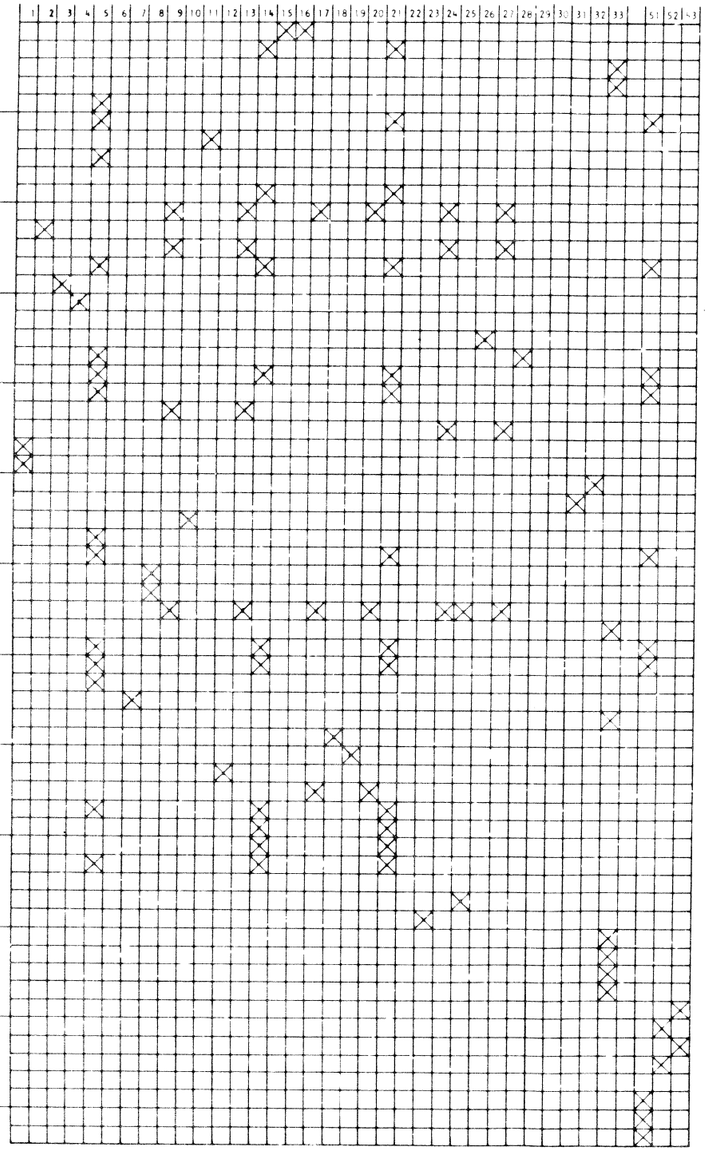
DEVELOPMENT NO | Q/M

REFERENCE DRAWING

SHEET 5 OF 5

INDEX NO	CABLE P/N	CABLE DESCRIPTION
1	2744902	AC BOX TO BOX
2	2744906	DC SEQUENCE
3	2744914	LINE CORD 30 AMP 14 FT
4	2744916	LINE CORD 30 AMP 6 FT
* 5	2744941	PLO VFO A1 BD TO A2 BD
* 6	2744910	MST R/W PREAMP TO GATE 5 DRIVE (2 PCS)
7	2744912	LINE FILTER TO AC COMP
8	2744918	SEQ TO EPO PLUG
9	2744919	SEQ BD DIST A BOX
10	2744920	SEQ BD DIST B BOX
11	2744944	PWR AMP A DR
12	2744923	RESET PANEL TO LOGIC BOARD
13	2744946	PWR AMP B DRIVE
* 14	2744925	MST R/W PREAMP TO GATE A DRIVE (2 PCS)
15	2744926	OPER PANEL A DRIVE
16	2744927	OPER PANEL B DRIVE
17		
18	2744961	REMOTE SW ATTACH FEAT
* 19	2744930	MST CROSSOVER LOGIC BD TO CONT BD (2 PCS)
20	2744931	BASEPLATE A DRIVE
21	2744932	BASEPLATE B DRIVE
22	2744933	DC TO GATE A BOX
23	2744934	DC TO GATE B2 BOX
24	2744935	CE LAMP TO A2 BD
25	2744936	CE SWITCHES
26	2744937	AC DRIVE MOTOR
27	2744939	BASEPLATE SWITCHES
28	2744943	DATA MODULE LOAD MOTOR
* 29	2744945	A2 BOARD TO TAILGATE (4 PCS)
30	2744965	R/W SERVO B DRIVE
31	2744955	STRING SWITCH A2 BOARD CONTROL/POWER
* 32	2744954	STRING SWITCH A2 BOARD TO TAILGATE
33	2744958	AC BOX TO FERRO
34	2744966	LINE CORD 50/60 HZ JAPAN ONLY
35	2744964	R/W SERVO A DRIVE
36	2744962	DC DIST A1 BOARD
37	2744963	DC DIST A2 BOARD
38	2744975	50 HZ LINE FILTER TO AC COMP
39	2744977	50 HZ LINE CORD 30 AMP
40	2744993	50 HZ BOX TO BOX
41	2744996	AC BOX TO BOX
42	2744992	50 HZ LINE FLTR TO AC BOX (FRANCE)
43	2744903	DC TO GATE B1 BOX
* 44	2744917	BOX TO BOX OUT
* 45	2744921	BOX TO BOX IN
* 46	2744938	PLO/VFO IN
* 47	2744940	PLO/VFO OUT
48		
49	2744968	R/W SERVO FIXED HD B DRIVE
50	2744969	R/W SERVO FIXED HD A DRIVE
51	2745402	LINE CORD 15 AMP 14 FT (60 HZ)
52	2745403	LINE CORD 15 AMP 6 FT (60 HZ)
53	2745404	LINE CORD WTC (50 HZ)
54	2745405	LINE CORD 50/60 HZ (JAPAN)
55	2745406	CABLE ASM SEQUENCE (60 HZ)
56	2745407	CABLE ASM SEQUENCE (50 HZ)
57	2745408	CABLE ASM AC TO FERRO (60 HZ)
58	2745409	CABLE ASM AC TO FERRO (50 HZ)
59		
60	2745416	CABLE ASM SEQUENCE DIST C BOX
* 61	2745417	CABLE ASM A1 PANEL TO TAILGATE
* 62	2745418	CABLE ASM A1 PANEL TO TAILGATE

NOTES



* DENOTES FLAT CABLE

TABLE A

SHEET 5 OF 5

2744302

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E

IBM MATERIAL	NO
IBM MATL ALTERNATE	NO
CASE DEPTH	
HARDNESS	
SURFACE TREATMENT	
SCALE	
THIRD ANGLE PROJECTION	
INCH	
MUST CONFORM TO ENG SPEC 880350	
TOLERANCES UNLESS OTHERWISE NOTED	INCH / MM
LINEAR ±	
ANGLES ±	
RADII UNLESS OTHERWISE NOTED	
EDGE/CORNER BREAKS	OUTSIDE MAX / INSIDE MAX

IBM

NAME	CABLE ROUTING	
DESIGNER	BJ	5MAY76
DETAILER	GDI	4AUG76
DWG CHK		
DSGN APPRO		
CLASSIFICATION	HCP	5D8C72

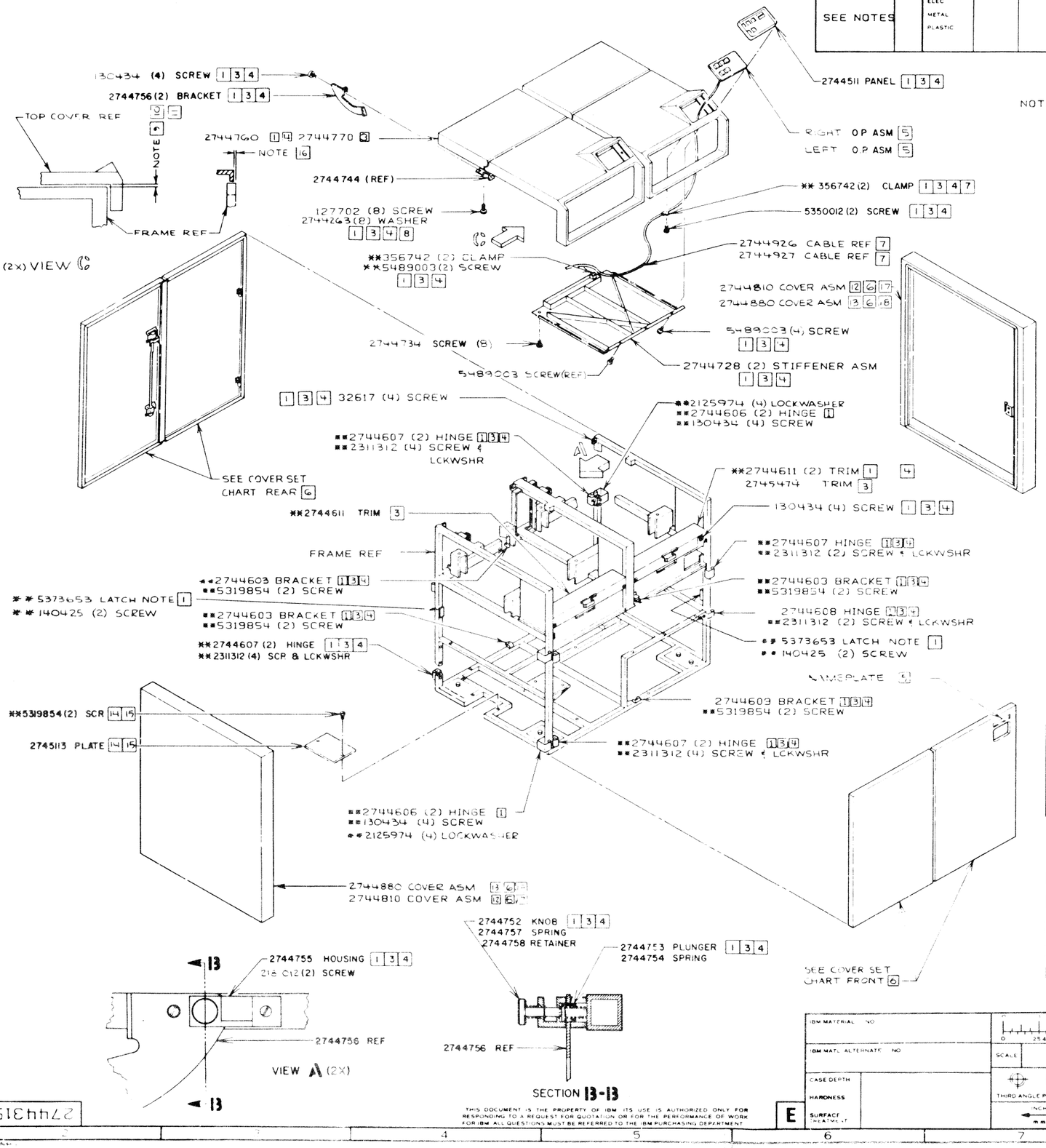
RELEASED FOR ASM	QTY	TECHNICAL APPROVAL			SYM	DATE	CHANGE NO
SEE NOTES		ELEC				SEE E/C	HISTORY
		METAL				6 OCT 73	439928H
		PLASTIC				7 DEC 73	442818
						22 MAY 74	445021
						AUG 74	445022

SYM	DATE	CHANGE NO
	26SEP74	445062
	20NOV74	445092
	3 FEB 75	445095
P,E	[illegible] 75	445142
	20 MAY 76	445 -
	29 [illegible] 76	445130

2744315

DEVELOPMENT NO	G/M

REFERENCE DRAWING



NOTES:

[1] A2 AND C2 BASIC COVER GROUP B/M 2744600

2

[3] B1 BASIC COVER GROUP B/M 2744700

[4] B2 BASIC COVER GROUP B/M 2744750

[5]

MFI LANGUAGE GROUP B/M'S				
MODEL	A2	B1	B2	C2
ENGLISH	2744430	2744621	2744521	2744431
FRENCH	2744440	2744623	2744523	2744432
GERMAN	2744450	2744622	2744522	2744433
JAPANESE	2744460	2744624	2744524	2744434
SPANISH	2744470	2744627	2744527	2744435
ITALIAN	2744480	2744625	2744525	2744436

[6] ADJUST PER ENG SPEC 2744358

[7] 2744926 OR 2744927 CABLE TO BE DRESSED IN $^{+1.00}_{+25.4}$ SUCH A MANNER THAT A 400-.50(101,6-12,7) SERVICE LOOP IS AVAILABLE BETWEEN THE STRAIN RELIEF AND THE O.P PANEL

[8] TIGHTEN (8) SCREW TO 80 IN LBS (92,17cm-kgf) MIN TORQUE

[9] ADJUST TOP COVER TO FRAME DISTANCE TO 040 TO .080 (1,02 - 2,03) THIS DIM TO BE TAKEN AT THE FRONT EDGE OF THE FRAME. THE 080(2,03) MAX MAY BE EXCEEDED BY UP TO .040(1,02) AS LONG AS A $50^{+.08}_{-.08}$ POUND FORCE APPLIED TO THE FRONT EDGE OF THE TOP COVER WILL NOT REDUCE THE COVER TO FRAME GAP BY MORE THAN .080(2,03)

[10] ADJUST COVER COMPRESSION SPRINGS SUCH THAT WHEN THE TOP COVER IS UNLATCHED THE FRAME TO COVER DISTANCE IS 3.00±1.00 (76,2±25,4) FOR ALL AØ2, BØ2 AND 'A' SIDE OF BØ1 MACHINES

[11] ADJUST COVER COMPRESSION SPRING SUCH THAT WHEN THE COVER IS OPEN, IN ANY POSITION, IT WILL SUPPORT ITS OWN WEIGHT, FOR THE 'B' SIDE OF BØ1 MACHINES ONLY

[12] 60HZ A02 MODEL POWER COMPLETION B/M 2745060

[13] 50HZ A02 MODEL POWER COMPLETION B/M 2745050

COVER SET CHART FOR FRONT AND REAR COVERS

FINISH	A2 C2			B1 / B2		
	FRONT COVER KIT PN	REAR COVER KIT PN	MFI PN	FRONT COVER KIT PN	REAR COVER KIT PN	MFI PN
LIGHT GRAY	2744536	2744546	2744531	2744586	2744546	2744581
FLAME RED	2744537	2744547	2744532	2744587	2744547	2744582
CLOUD WHITE	2744538	2744548	2744533	2744588	2744548	2744583
SKY BLUE	2744539	2744549	2744534	2744589	2744549	2744584
SMOKE YELLOW	2744540	2744550	2744535	2744590	2744550	2744585

[14] B1 MODEL COMPLETION GROUP B/M 2745100

[15] B2 MODEL COMPLETION GROUP B/M 2745200

[16] ADJUST FRONT AND REAR TOP COVER EDGE TO FRAME OUTSIDE EDGE DISTANCE TO .397±.060(10,1±1,5)

[17] 60 HZ C02 MODEL POWER COMPLETION BM 2745380

[18] 50 HZ C02 MODEL POWER COMPLETION BM 2745370

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IBM MATERIAL NO		MUST CONFORM TO ENG SPEC 8P0350	IBM
IBM MATL ALTERNATE NO	SCALE 1/8	TOLERANCES UNLESS OTHERWISE NOTED: INCH / mm; LINEAR ±; ANGLES ±; RADII UNLESS OTHERWISE NOTED	NAME: COVER GROUP
CASE DEPTH	THIRD ANGLE PROJECTION	EDGE/CORNER BREAKS: OUTSIDE MAX / INSIDE MAX	DESIGNER JD 6NOV72; DETAILER WLM 12NOV72; DWG CHK; DSGN APPRO HH 11JAN73; CLASSIFICATION KRN
HARDNESS	INCH / mm		
SURFACE TREATMENT			

2744315

E

MICRODIAGNOSTIC ERROR STOP INFORMATION

Note: The following known diagnostic problems have been identified. Some may appear as intermittent stops. Take the action indicated below until the EC indicated for your system or systems has been installed. File these pages in the front of the MICRO section in the MLM for future reference.

ERROR STOP CODE	SYSTEMS AFFECTED					DESCRIPTION AND ACTION	PROJECTED FIX Machine or System Area Affected and Projected EC Number					
	115	125	135	ISC	3830-2		3340	Sys/115	Sys/125	Sys/135	Sys with ISC	3830-2
A120	X	X	X	X	X	Check if Bus/Tag cables are reversed (MLM does not find).		MLM EC 440214	MLM EC 440214	MLM EC 440214	MLM EC 440214	MLM EC 440214
A132	X	X	X	X	X	Circuit timing problem dealing with cable length.		Disk EC 364215	Disk EC 364083	Disk EC 143005	Disk EC 440234	Disk EC 440234 MLM EC 440210
A242	X	X	X	X	X	All drives in CE Mode cause this error. Reset CE Mode on ready drive by pressing Attention pushbutton.	Will not change					
A43C	X	X	X	X		Test causes access to seek beyond physical cylinder 350. Detection of Carriage Home Photo cell causes a Drive Check. False error occurs when Inline Check allows the system to regain control before check is made for Drive Check. During the time the system has control, the access drifts toward track 0. If the access has drifted to a cylinder less than 350 when the micro looks at Drive Check, Bus In bit 6 is no longer on to cause the error.		Disk EC 364215	Disk EC 364083	Disk EC 143005	Disk EC 440234	Disk EC 440234 MLM EC 440210
A43D	X	X	X	X	X	Test forces access into zero mode. Access is at cylinder 0 and drifts into rezero pattern area causing an Overshoot Check; then check is reset and Rezero command is issued. False error occurs when the Rezero command is issued and the access is bouncing off the outer crash stop. This causes the access to overshoot cylinder 0 by 3 track crossing pulses causing a Drive Check.		Disk EC 364215	Disk EC 364083	Disk EC 143005	Disk EC 440234	Disk EC 440234 MLM EC 440210
A552	X	X	X			If RPS feature is not installed – ignore (A1G2 card).		Disk EC 364215	Disk EC 364083	Disk EC 143005		
A557	X	X	X	X	X	If machine is at EC level 442903 or REA 13-54846 and microdiagnostic disk is at a lower EC level than shown at the right, a false error stop will occur.		Disk EC 364215	Disk EC 364083	Disk EC 143005	Disk EC 440234	Disk EC 440234
A664	X	X	X	X	X	Invalid error stop – ignore.		Disk EC 364217	Disk EC 364087	Disk EC 143005	Disk EC 440235	Disk EC 440235
Routine A7			X			Routine A7 adjust mode is invalid for Mod 135. A7 will also cause the system to hang when it tries to get to the drive.				Disk EC 143005		

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MICRODIAGNOSTIC ERROR STOP INFORMATION

Note: The following known diagnostic problems have been identified. Some may appear as intermittent stops. Take the action indicated below until the EC indicated for your system or systems has been installed. File these pages in the front of the MICRO section in the MLM for future reference.

ERROR STOP CODE	SYSTEMS AFFECTED					DESCRIPTION AND ACTION	PROJECTED FIX Machine or System Area Affected and Projected EC Number					
	115	125	135	ISC	3830-2		3340	Sys/115	Sys/125	Sys/135	Sys with ISC	3830-2
A718	X	X	X	X	X	This error may occur if A1R2 or A1Q2 is changed and has not been adjusted on a drive that is not failing. Continue to adjust. If A1R2 or A1Q2 has not been changed, run Routines A6 and A8. Suspect some component value has changed in drive.	Will not change					
ABB2 ABB6	X	X				Bytes 7 and 8 fail to log.		Disk EC XXXXXX	Disk EC XXXXXX			
AD86	X	X	X	X	X	Write Gate on with index pulse. Timing from index pulse to index pulse can be a maximum of 10.4 milliseconds. Write Gate is on to 10.3 milliseconds. If motor is at maximum specification, Write Gate drops 100 microseconds too soon and a false error stop occurs.		Disk EC 364217	Disk EC 364087	Disk EC 143005	Disk EC 440234	Disk EC 440234 MLM EC 440210
AF00	X	X				Wrong error stop displayed. This is error AF4C.		Disk EC 364217	Disk EC 364087			
AF1B AFDB	X	X	X	X	X	If Check End byte bit 5 is on (no Sync Byte Found), run Routine AF, test 0E, to reformat the CE track.	Will not change					
Routine B0	X	X	X			Not included on microdisk.		Disk EC XXXXXX	Disk EC XXXXXX	Disk EC 143005		
B110	X	X				To Cylinder address fails to log.		Disk EC 364217	Disk EC 364087			
Routine B4			X			Not included on microdisk.				Disk EC 143005		
IOP Busy	X	X				Can occur if drive is made Ready while running ILT's in stand-alone mode. Do a System Reset and rerun ILT's.	Will not change					

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MICRODIAGNOSTIC ERROR STOP INFORMATION

Note: The following known diagnostic problems have been identified. Some may appear as intermittent stops. Take the action indicated below until the EC indicated for your system or systems has been installed. File these pages in the front of the MICRO section in the MLM for future reference.

ERROR STOP CODE	SYSTEMS AFFECTED					DESCRIPTION AND ACTION	PROJECTED FIX Machine or System Area Affected and Projected EC Number					
	115	125	135	ISC	3830-2		3340	Sys/115	Sys/125	Sys/135	Sys with ISC	3830-2
A252 A253	X	X				Tag '84' Bus '00' command is reversed on disk and is recorded as Tag '00' Bus '84'. Normal End is not received.		Disk EC 364215	Disk EC 364083			
AC09	X	X				Look at message byte 4 to determine correct microdiagnostic error. If bit 2 = 0, error AC11 bit 6 = 0, error AC12 bit 3 = 1, error AC13 bit 4 = 0, error AC14 bit 5 = 0, error AC15 If none of the above, look at message byte 3. If bit 0 = 1, error AC16 bit 0 = 0, error AC17 If none of the above, AC09 is a valid error.		Disk EC 364215	Disk EC 364083			
AE32	X	X				This is a false error stop if machine is below hardware level EC 442900 and microdisk level is at EC 364080B.						
A563 A564			X			This is a false Sector Compare if Sys/135 microdiagnostic disk is at EC 143009 and 3340 hardware is at or below EC 442903. A false Sector Compare also occurs if Sys/135 microdiagnostic disk is at EC 143005 or 143007 and 3340 hardware is at or above EC 442903.						

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MICRODIAGNOSTIC CONTENTS

Microdiagnostic Disk Loading – – – – – – – – – MICRO 8

S/370, Models 125 and 115
S/370, Model 135
3830-2 Storage Control Unit
Integrated Storage Control
System/3, Model 15
System/7, 5998-T01

Operating Instructions – – – – – – – – – – – – MICRO 10, 11
(See Note.)

Preliminary
Procedure
Enter Parameters
Select Run Options
Run Option Summary
Program Control/Data Display Summary
Control Option Summary

Displaying Errors/Messages – – – – – – – – – MICRO 12
(See Note.)

Determining Error Code
Displaying Message Bytes
Determining Fault Symptom Codes
Reading Message Bytes

Description Summary – – – – – – – – – – – – MICRO 20-38
(See Note.)

Includes:

Routine and Test Names
Routine Use
Parameters
Linkage
Prerequisites

Error Code Dictionary – – – – – – – – – – – – MICRO 90-XXXX
(See Note.)

Listing, in Error Code sequence,
of microdiagnostic error stops.

Microdiagnostic Flowcharts – – – – – – – – – MICFL Section

Includes:

Detailed routine and test descriptions
Scoping procedures and sync points

Microdiagnostic Routines

A0	CE Panel Test
A1	Control Interface and Logic Tests
A2	Drive Interface and Logic Tests
A3	Data Module/Control Logic Tests
A4	Dynamic Servo Tests Part I
A5	Drive Index and Sector Tests
A6	Dynamic Servo Tests Part II
A7	Dynamic Servo Adjustment Program
A8	Dynamic Servo Tests Part III
A9	Incremental Seek Test
AA	Cylinder Seek Test
AB	Random Seek Test
AC	Data Module State Analysis
AD	Gap Counter and Data Transfer Tests
AE	ECC Logic Test
AF	Format Read/Write Tests
B0	Reformat CE Tracks Utility Program
B1	Read Test
B2	Write Test
B3	Device Status Display Program
B4	Tag Cycle Utility Program
B6	String Switch Test
B7	Carriage Go Home Utility Program
HC	CTL Interface Bringup Program 3830-2 and ISC
BF	CTL Interface Bringup Program S/370, 115 and 125, and System/7

Linked Series 1:
A1, A2, A3, A5, AD, AF, A4, AE.
Linked Series 2:
A6, A8.

Note: Certain 3340 subsystems may have a 3344 drive attached. If a 3344 drive is attached and the problem is in the 3344, go to the MICRO section in Volume R08 of the 3344 MLM. (3344 documentation will be available in May 1976).

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MICRODIAGNOSTIC DISK LOADING

GENERAL – ALL SYSTEMS

Note: If SCU is a System/3–DSA, refer to the System/3 Diagnostic Users Guide for a description of the microdiagnostics.

If the SCU is a System/7, refer to the 5998 CTM, MAP 1302, for information on how to load the microdiagnostics.

Two factors which can affect the time required to run the microdiagnostics in inline mode are:

1. The presence or absence of the Rotational Position Sensing feature (RPS).
2. The setting of the Block Multiplex Bit (BLKMPX) in the System Control Register.

If the RPS feature is installed, check the Block Multiplex bit for the channel(s) or other file/disk attachments being used. (See the channel or system instructions for displaying this bit in the Control Register.) If the bit is not set on, manually set the bit to the on state. *Remember that the bit must be manually reset at the completion of the maintenance action.*

If the RPS feature is not installed, time may be saved by setting the Block Multiplex bit on as described above in that the time required by chained seek operations can be utilized by the microdiagnostics. However, the time required to run the microdiagnostics Inline will be considerable. This fact, along with customer considerations, should be useful in determining whether to perform the maintenance action in Inline mode, in Standalone mode, or to defer the maintenance until the Standalone mode can be used.

S/370, Models 125 and 115

1. Load the System disk in the S/370 Console Disk File. This disk is normally loaded for Customer operations. It contains the 3340 Microdiagnostic routines (ILTs).
2. Load a 3340 Microdiagnostic routine. Refer to the System 370/125 115 CTM or MLM (MLX Entry 11) for loading instructions.

   Note: The first 3340 Microdiagnostic routine must be loaded from the SVP console keyboard. Once the first routine has been loaded, program execution for it or subsequent routines may be controlled from either the SVP console or the 3340 CE Panel. After the first routine is loaded, it is not necessary to load subsequent routines from the SVP console, the 3340 CE Panel may be used. Microtesting is terminated by a '30' option entry, see Action Complete Procedure, START 500. After the '30' option has been used, it is necessary to restart from the SVP console.
3. Return to the 3340 Maintenance procedures after loading the initial routine.

   CAUTION
   Reset diagnostic control with the '30' run option (see START 500) after the maintenance activity is complete.

S/370, Model 135

1. At the Model 135 Console File, replace the Functional Program Disk with the 3340 Microdiagnostic disk.
2. If the Dual IFA Feature is installed and if the Stop button on the CPU is pressed, the 3340 Microdiagnostic programs may stop running.
3. The CHECK CONTROL switch must be set to PROCESS.
4. Programs can now be run from the 3340 CE Panel. If problems are found while doing Step 1, refer to the 135 TMM.
5. If Maintenance procedures require a transfer to the 135 FAM, proceed to Section IFA-3, page IFA 3 12 for the Cross Reference Index.

   CAUTION
   Reset the diagnostic control with the '30' option, see START 500.
   Return the Functional Program Disk to the 135 Console File before returning the 3340 to the customer.

3830-2 Storage Control Unit

1. At the 23FD Drive, replace the 3830-2 microprogram disk with the correct 3340 Microdiagnostic disk.

   Note: Install the basic 3340 microdiagnostic disk if the fixed head feature is not installed on the machine to be tested. Install the 3340 fixed head feature microdiagnostic disk if the fixed head feature is installed on the machine to be tested.
2. Programs can now be run from the 3340 CE Panel. If problems are found while doing Step 1, refer to the 3830-2 MLM. It is normal for the Check 2 lamp on the 3830-2 CE Panel to turn on while maintenance programs are running.

   CAUTION
   Return the Functional Program disk in the 23FD before returning the 3340 to the customer. Reload the Fault Symptom Code (FSC) generator into the Storage Control overlay area by executing the '30' option; see START 500.

Integrated Storage Control

1. At the ISC 23FD Drive, replace the ISC disk with the 3340 Microdiagnostic disk.
2. Programs can now be run from the 3340 CE Panel. If problems are found while doing Step 1, refer to the ISC MLM. It is normal for the Check 2 lamp on the ISC CE Panel to turn on while Maintenance programs are running.

   CAUTION
   Return the Functional Program disk in the 23FD before returning the 3340 to the customer. Reload the Fault Symptom Code (FSC) generator into the Storage Control overlay area by executing the '30' option; see START 500.

S/3, Model 15

Refer to the System/3 Diagnostic Users Guide for the loading of microdiagnostics.

S/7, 5998-T01

Refer to the 5998 CTM, MAP 1302, for information on how to load the microdiagnostics.

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(From 3340 CE Panel)

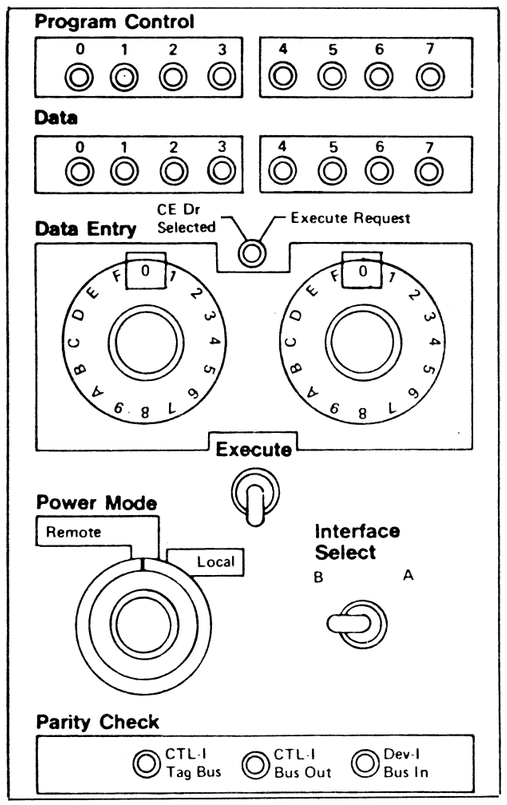
PRELIMINARY

1. The microdiagnostics can be used only if the functional microcode is in the storage control. If the system has been in use, the code will be loaded. Should this not be the case, load (IMPL) the functional microprogram.
2. For storage control requirements or references to storage control documentation for system requirements, see MICRO 8.
3. The recommended microdiagnostic running sequence for general checkout is shown on START 110. Follow the MAP instructions for other maintenance operations.

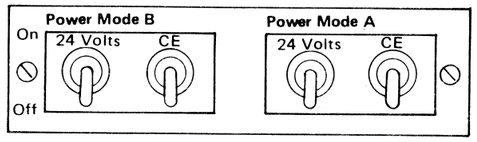
PROCEDURE

This procedure outlines operations at the CE Panel on the 3340 A2 module.

***Note:** If correct results are not obtained when running the micros, recheck all previous steps. See PANEL 150, Entry A if the controls do not work correctly.*



1 Turn on the CE Mode switch for the drive to be tested (A or B). (The CE Mode latch must be reset after the microdiagnostics are run; see Note on START 500.)

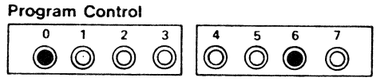


2 Set Data Entry switches to the required routine number. (The routine descriptions start on MICRO 20.)

3 Operate the Execute switch. The routine designated by the Data Entry switches is loaded from the microdiagnostic disk.

82 DIAGNOSTIC LOADING

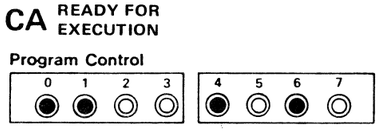
Program Control



The display of '82' may occur too quickly to be seen.

CA READY FOR EXECUTION

Program Control



The diagnostic is loaded. The routine number is shown in the Data display.
Is 'CA' and correct routine number displayed?

NO ↓ UNABLE TO LOAD ROUTINE

Check Program Control display. (See MICRO 11 for a summary.) If unable to solve problem, turn to Panel Checkout Procedure on PANEL 150, Entry A.

YES — Proceed to step 4.

4 Are parameters required (addresses, test loops, etc.)?

NO ↓ Are run options required (dynamic error display, loop routines, etc.)?

NO ↓

5 Set Data Entry switches to '00'.

YES → ENTER PARAMETERS

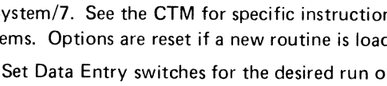
Parameters are entered to loop tests for scoping or to define seek addresses, etc. The microdiagnostic descriptions (MICRO 20) specify the available parameters.

A. Set '10' in the Data Entry switches.

B. Operate the Execute switch

Dx STORAGE CONTROL READY TO ACCEPT PARAMETERS

Program Control



Program Control bits 4–7 indicate the parameter byte number needed.

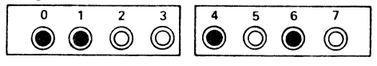
C. Set Data Entry switches to the parameter value for the byte number indication display bits 4 to 7 ('1' to 'F'). See MICRO 20 to 38 for the required parameter values.

D. Operate the Execute switch.

E. Repeat the above two steps until all parameters have been entered.

CA DIAGNOSTIC READY FOR EXECUTION

Program Control



All parameters, as specified in the routine descriptions (MICRO 20) must be entered.

F. If Run Options (for Dynamic Error Display, etc.) are required, go to "Select Run Options," otherwise return to Procedure Step 5.

SELECT RUN OPTIONS

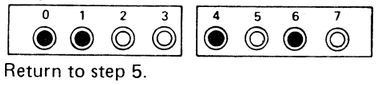
Run options may be selected at any time except when parameters are being entered, except on S370 Models 115 and 125, or System/7. See the CTM for specific instructions on these systems. Options are reset if a new routine is loaded.

A. Set Data Entry switches for the desired run option.

B. Operate the Execute switch.

CA DIAGNOSTIC READY FOR EXECUTION

Program Control

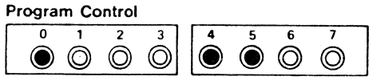


Return to step 5.

6 Operate the Execute switch to start microdiagnostic.

8C MICRODIAGNOSTIC RUNNING

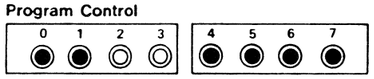
Program Control



Routine number is in Data display.

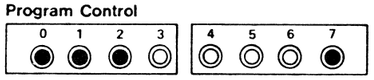
CF NORMAL COMPLETION

Program Control



E1 ERROR OCCURRED or MESSAGE AVAILABLE

Program Control



To determine error code or to display messages, see MICRO 12.

7 Refer to START 500 for procedures to return device to an online status after running the microdiagnostics.

RUN OPTIONS

Data Entry Switches (Hex)	Description
01	Dynamic Error Display, repeat test after error. Can be used when looping tests (parameter entry).
02	Loop routine. All routines linked to looped routine will also run. See descriptions (MICRO 20) for linking information.
03	Dynamic Error Display and loop routine (including linking routines).
04	Inhibit routine linking. See descriptions (MICRO 20) for linking information.
05	Inhibit routine linking, Dynamic Error Display, repeat test after error.
06	Loop single routine (inhibit linking).
07	Loop single routine (inhibit linking) and Dynamic Error Display.
08	Reset run options (allows linking, no looping, and error stops as if no run options were selected.

Bit significance of Run Option Entry:
0 1 2 3 4 5 6 7
- 7 — Dynamic Error Display, repeat test after error
- 6 — Loop routine(s)
- 5 — Inhibit linking
- 4 — Reset run options

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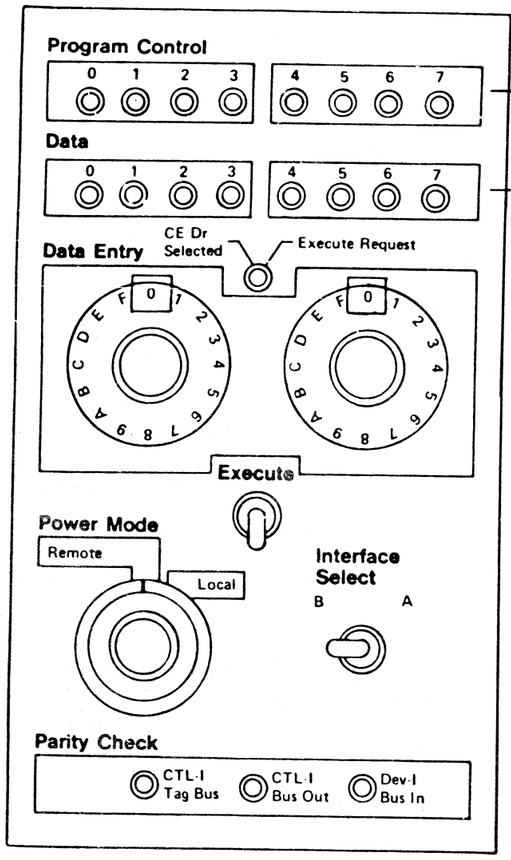
MICRODIAGNOSTIC OPERATING INSTRUCTIONS (Continued)



PROGRAM CONTROL/DATA DISPLAY SUMMARY

Program Control Display (Hex)	Description	Data Display
82	The routine specified in the Data Entry switches is now loading.	Routine Number
8C	The microdiagnostic is running.	Routine Number
8D	Dynamic error display. Errors are displayed as they occur, but execution is not stopped because of the Dynamic Error Display run option.	Error Number
C0	An invalid routine number was set in the Data Entry switches, or an incorrect microdiagnostic disk is installed.	Routine Number
	The routine execution was interrupted by a system or selective reset. Restart the microprogram.	'00'
CA	Microdiagnostic (routine series, routine, or test) is ready for execution.	Routine Number
CE	Routine stopped because of: 1. Manual intervention required 2. Error or message display complete	Routine Number
CF	**All Systems** Normal end of routine or end of series of linked routines.	Routine Number
	3830-2 or ISC only Normal end of '30' option and symptom code generator overlay complete.	'30'
DX	Parameter entry required. Bits 4–7 of Program Control display indicate parameter byte number needed.	Routine Number
E1 or EX	Error or message stop. If bits 4–7 of the Program Control display = '01', it indicates the first error or message byte is in the Data Display lamps. If run option '20' is used to display additional bytes, bits 4–7 of the Program Control display indicate the byte number displayed in the Data lamps.	Error Number or Message Byte
FX	An error was detected by the storage control unit. Verify: 1. Proper microdiagnostic disk is correctly installed. If the disk was not correct or not properly installed, reinstall the correct disk and execution will continue. 2. Disk reader door is securely closed. Refer to the storage control MLM if the correct disk is installed and a FXXX error occurs.	N/A

3340 10 Storage Control MLX CHART

CONTROL OPTIONS

Data Entry Switches (Hex)	Description
00	**Start/Stop** Starts (or resumes) execution if the routine is stopped. Stops execution if the routine is running or if an error message display is in progress.
10	Parameter entry control, see "ENTER PARAMETERS," MICRO 10.
20	Start or advance error or message display, see "DISPLAYING ERRORS/MESSAGES," MICRO 12.
30	Reset diagnostic control. If attached to S370 Models 115 or 125, or System/7 the '30' option can be entered from the 3340 CE panel. After the '30' has been read from the Data Entry switches (Execute lamp goes off), there is no further communication with the CE panel. All additional microdiagnostic information must be obtained from the console. The console must be used to run any additional microdiagnostics. If attached to a S370 Model 135, the Program Control/Data display will be COxx after completion. When the storage control is a 3830-2 or ISC, control option '30' must be selected with the *functional* microprogram disk installed before returning the subsystem to the customer. The purpose is to reload the fault symptom code generator into the diagnostic overlay area. If control '30' is selected: 1. Program Control/Data display should then display CF30 to indicate reload completion. For any other display, see below. 2. With the microdiagnostic disk installed, a B511 error occurs, see Microdiagnostic Error Code Dictionary. 3. With no disk installed, a FXXX error occurs. To recover, insert the disk in the reader and execution continues. 4. With the correct disk installed and an FXXX error occurs, refer to the storage control documentation.

3340 10 Storage Control MLX CHART

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DISPLAYING ERRORS/MESSAGES

DETERMINING ERROR CODE

Every routine except B3.

Entry into the microdiagnostic error code dictionary (MICRO) is by an error code consisting of four hex characters. To develop the code:

When E1 is displayed in the Program Control lamps,

E1

Program Control 0 1 2 3 4 5 6 7

the Data display lamps contain the last two hex characters of the Error Code number.

X X

Data 0 1 2 3 4 5 6 7

1. Record the Data display — —
2. Set '20' in the Data Entry switches.
3. Go to Display Message Bytes, then return here.
4. Record the routine number from the Data display. If the display is the last byte of routine B3, pass 2, this is the end of the message display. No error code is generated by B3, pass 2.

X X — —

Error Code X X X X

First byte of error code is displayed on Data lamps when 'CE' is displayed in Program Control.

Second byte of error code is displayed on Data lamps when 'E1' is displayed in Program Control.

5. Look up the code in the error code dictionary (starts on MICRO 90) to determine analysis procedure.

DISPLAY MESSAGE BYTES

(1)

EX

Program Control 0 1 2 3 4 5 6 7

The Data display contains a message byte. The byte number 'x' is indicated in Bits 4–7 of the Program Control display.

1. Operate Execute to display and record the next byte in the Data lamps. Bits 4–7 of Program Control increments 1 to indicate byte number.
2. Repeat step 1 until all message bytes have been recorded.

CE LAST BYTE

Program Control 0 1 2 3 4 5 6 7

A2 ROUTINE A2 (Example)

Data 0 1 2 3 4 5 6 7

The last byte contains the routine number (for example, 'A2').

B3 – DETERMINE FAULT SYMPTOM CODE (FSC) FROM B3 MICRO UTILITY

Pass 1 of B3 generates an FSC for entering maintenance procedures from the fault symptom index (FSI) starting at FSI 100. The results consist of a 4-hex character code. Pass 2 of B3 permits a display of the message bytes. For a B3 description, see MICRO 36, FSI 60, and FSI 65.

Program Control

E1 0 1 2 3 4 5 6 7

Data

X_1X_2 0 1 2 3 4 5 6 7

B3 is stopped and Byte 1 of FSC or error code is available.

1. Record Data display. Use display as first two hex characters of FSC. If display is 'FF', there is no error information to generate an FSC. Continue to read out message bytes.
2. Set '20' in the Data Entry switches.
3. Operate Execute

Program Control

E2 0 1 2 3 4 5 6 7

Equal to '01' through '07'?

No

FSC X_1 X_2 X_3 X_4

Yes

An error occurred when running B3. Refer to Error Code Dictionary to determine analysis procedure.

MICRO 85

Data

X_3X_4 0 1 2 3 4 5 6 7

4. Record Data display. Use display as last two hex characters of FSC. Disregard steps 4 and 5 if step 1 display was 'FF'.
5. Use FSC to enter maintenance procedures by going to FSI 100 and proceed until FSC is found.
6. Set '00' in the Data Entry switches.
7. Operate Execute

Program Control

CE 0 1 2 3 4 5 6 7

Data

B3 0 1 2 3 4 5 6 7

8. To obtain supporting message bytes, continue with B3, Pass 2.

B3, PASS 2 – READING MESSAGE BYTES

1. Set '00' in the Data Entry switches.
2. Operate Execute

E1 MESSAGE BYTE 1 AVAILABLE IN DATA DISPLAY LAMPS

Program Control 0 1 2 3 4 5 6 7

XX MESSAGE BYTE 1 (See FSI 65 for definition of message bytes.)

Data 0 1 2 3 4 5 6 7

Data display lamps contain message byte 1 as indicated by the 1 in bits 4–7 of the Program Control display lamps.

3. Set '20' in the Data Entry switches, and go to Display Message bytes. (1)

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ROUTINE I.D. (HEX)	ROUTINE NAME	TEST DESCRIPTION		ROUTINE GENERAL USE	PARAMETERS				LINKAGE/ PREREQUISITES	REFERENCE NOTES
		Test No.	Test Name		Byte No.	Default Value (Hex)	Value Limits (Hex)	Description		
A0	CE Panel Test	1	(Single Test Routine)	Tests CE Panel data entry switches and CE Panel display lamps and registers. Limited use on control interface bugs.					Not linked. CTL-I operative to point of loading and starting this routine.	See MICFL section for flowchart and detailed description.
A1	Control Interface and Logic Tests	1 2 3 4 5	Pre-selection Selection Controller Tag Bus, Bus Out, and Bus In Parity Check Valid Tags Bus In Assembler	Tests interface lines for always active/inactive condition. Verifies valid 3-of-6 code on selection. Tests controller Tag decoder for Tag Valid returned on all controller tags. Tests the four registers in the 3340 Bus In Assembler.	1	00	00–05	Test Number (Allows looping a single test within this routine) 00 (default)=Run all tests	First routine in linked series 1. to: A2 CTL-I operative to point of loading and starting this routine.	See MICFL section for flowchart and detailed description. For System 370/125-2 with more than one A2 attached, the drive must be in CE mode. *Note: Drive in CE mode and/or data module not required. The Parity Check indicators on the 3340 CE Panel may be invalid unless the diagnostics are started from the 3340 CE Panel.*
A2	Device Interface and Logic Tests	1 2 3 4 5 6 7 8 9 A B	Drive Selection Drive Tag Bus and Bus Out Parity Bus Out/Bus In Wrap Drive Selection/ Rejection Drive Valid Tags Drive Invalid Tags Bus In Parity Check Head Address Register Difference Counter Part 1 Difference Counter Part 2 Optional CAR Test	Tests for ability to select device, force checkers used by test to set and reset to verify correct operation. Tests to verify that at least one complete path exists between Bus Out and Bus In. Tests to ensure that no drive selection occurs with Bus Out bit 4 active under tag '83'. Tests tag decoders for Tag Valid returned on all device valid tags. Tests for Not Tag Valid returned on all invalid tags. Tests Bus In parity checking circuits, and tests hardware counters in device. Tests CAR on machines with string switch feature installed.	1	00	00–0B	Test number (allows looping a single test within this routine) 00 (default)=Run all tests	from: A1 to: A3 A1 runs error free.	See MICFL section for flowchart and detailed description. *Note: Device must be in CE mode; data module not required. The Parity Check indicators on the 3340 CE Panel may be invalid unless the diagnostics are started from the 3340 CE Panel.*
A3	Data Module/ Control Logic Tests	1 2 3 4 5 6 7 8	Data Module Status Access Timer Accuracy Recalibrate No Motion Seek Unsuppressible Reg. Set Read/Write Tag Force No PLO Input Servo Off Track Error Verification	Tests for proper data module status, ensuring that drive check and attentions can be reset. Verifies that access timer is within specifications. Tests control logic for proper operation on both a rezero and a no-motion seek. Tests the unsuppressible register for proper operation. Tests the Set Read/Write Tag to ensure error conditions are not activated under this tag. Tests the no PLO input error to ensure its ability to set and reset, and also verifies that Error Alert and Controller Check are set as a result of this test. Verifies servo off track check circuitry.	1	00	00–08	Test number (Allows looping a single test within this routine) 00 (default)=Run all tests	from: A2 to: A5 A1, A2 run error free. Data Module loaded.	See MICFL section for flowchart and detailed description.

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ROUTINE I.D. (HEX)	ROUTINE NAME	TEST DESCRIPTION		ROUTINE GENERAL USE	PARAMETERS				LINKAGE/ PREREQUISITES	REFERENCE NOTES
		Test No.	Test Name		Byte No.	Default Value (Hex)	Value Limits (Hex)	Description		
A4	Dynamic Servo Tests Part 1	1. 2. 3. 4. 5. 6. 7. 8. 9. A.	Rezero, Read Home Address No Motion Seek, Read Home Address Overshoot Check Timer Verification Incremental Seek Increment = 1 Incremental Seek Increment = 2 Incremental Seek Increment = 50 Incremental Seek Increment = 116 Incremental Seek Increment = 174 Rezero, Read Home Address; Seek 12 Cyl. Read Home Address	All tests except tests 3 and 4 read the home address and compare the two physical address bytes to the expected values for access position verification. Test 3 forces an overshoot check by three different methods. Test 4 verifies a minimum Track Following Timer duration of 2 milliseconds. The odd track bit is tested for proper state after each Seek command is executed in tests 5 through 9.	1	00	00–0A	Test number (Allows looping a single test within this routine) 00 (default)=Run all tests	from: to: AF AE A1, A2, A3, A5, AD, AF run error free Data module loaded.	See MICFL section for flowchart and detailed description.
A5	Index/Sector Tests	1. 2. 3. 4. 5. 6.	Target Register Index Force Multihead Check Force Sector Compare Check Test Sector Compare Attention Sector Compare	Tests the target register if the RPS feature is installed. Forces checking circuits to set and reset to verify Index and Sector Checks. Measures the width of an index pulse, and the time between indexes to verify that the rotational period is within specification. Verifies that active track indication follows setting of HAR bit 7. Sector test is performed if the RPS feature is installed. Forces Sector Compare Check, and verifies both set and reset. Tests for Busy from Set Target operation. Verifies that Sector Compare Attention is received. Measures the duration of a sector and compares it to a specification. Verifies that sector compare is active for sectors (0, 1, 2, 4, 8, 16, 32, 64, and 127). Forces a Multi-Head Check by use of a diagnostic command.	1	00	00–06	Test number (allows looping a single test within this routine) 00 (default)=Run all tests	from: to: A3 AD A1, A2, A3 run error free. Data module loaded.	See MICFL section for flowchart and detailed description.

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ROUTINE DESCRIPTION (continued)

ROUTINE I.D. (HEX)	ROUTINE NAME	TEST DESCRIPTION		ROUTINE GENERAL USE	PARAMETERS				LINKAGE/ PREREQUISITES	REFERENCE NOTES
		Test No.	Test Name		Byte No.	Default Value (Hex)	Value Limits (Hex)	Description		
A6	Dynamic Servo Tests Part 2	1. 2. 3. 4. 5. 6.	Access Time Accuracy Open Servo Loop Course velocity gain adjustment check Rezero pattern area detection Rezero from outer crash stop. Rezero On Track verification	Forces an Access Timeout Check and verifies that Drive Check is also active. Resets checks and verifies their reset conditions. Open Loop Servo test verifies carriage movement on a Rezero and tests that the measured acceleration is indicative of feedback or closed loop operation. Test 3 measures carriage velocity from the home position to cylinder zero. Test 4 verifies that the servo detects the rezero pattern area and that the Servo advances from State 0 to State 2. Test 5 verifies that the access control latches advance from State 2 to State 6 and capture at cylinder 0. Test 6 verifies that the access control advances to the on track state and that the position is at cylinder 0 by reading the home address.	1	00	00–06	Test number (Allows looping a single test within this routine) 00 (default)=Run all tests	First routine in linked series 2 is A8. A1, A2 run error free. Data Module loaded. *Note: The Ready lamp may be off. If the Ready lamp is on, operate the Attention pushbutton before test execution.*	See MICFL section for flowchart and detailed description.
A7	Dynamic Servo Adjustment Program	1. 2.	Coarse Adjustment Fine Adjustment	Test 1: The coarse adjustment test runs only if a non-zero parameter is entered. Test 2: The fine adjustment program uses a ±50 microsecond tolerance when run in verification mode and a ±10 microsecond tolerance when run in adjustment mode. *CAUTION* *Do not run this Servo Test with the bobbin push rod installed or in Dynamic Error Display mode. Damage to the servo may result.*	1	00	00–01	Verification mode or Adjustment mode. 00 (or default) = verification mode (Spec = 450 ± 50 μs). 01 Adjustment mode (Spec = 450 ± 50 μs) In Adjustment mode, test 1 runs first, then links to test 2.	Not linked. A1, A2 run error free. Data Module loaded.	See MICFL section for flowchart and detailed description. Routine A7 is always run with the Default Parameter (verification mode) first. If an A720 Error Stop occurs, refer to MICRO 404 and ACC 800 Entry C for details required for adjustment. The drive servo adjustment ensures compatibility with all IBM 3348 data modules, thus it is to be accomplished using any IBM 3348 data module, including IBM System/3 CE data module if appropriate.

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ROUTINE DESCRIPTION (continued)

ROUTINE I.D. (HEX)	ROUTINE NAME	TEST DESCRIPTION		ROUTINE GENERAL USE	PARAMETERS				LINKAGE/ PREREQUISITES	REFERENCE NOTES
		Test No.	Test Name		Byte No.	Default Value (Hex)	Value Limits (Hex)	Description		
A8	Dynamic Servo Part 3	1. 2. 3. 4. 5.	Access Mode Selection Difference Counter Verification (Basic) Access Mode Acceleration Target Track Capture Difference Counter Verification (Advanced)	Test 1 verifies that carriage movement can be initiated by a Seek Start command. Test 2 verifies that the difference counter decrements with 128 track seek lengths. Test 3 verifies the DAC ladder by measuring the accelerate response time. Test 4 measures the approach velocity to the target track. Test 5 verifies that the difference counter decrements using different seek lengths.	1	00	00—05	Test number (Allows selection and looping of an individual test) 00 (default)=Run all tests	from: A6 Last routine in linked series 2. A1, A2 run error free. Data Module loaded.	See MICFL section for flowchart and detailed description.
					2	—	—	Use only when looping test 2, 3, 4, or 5.		
						—	00—FF	Test 2 - seek length (Default is 128 cylinders)		
						00	00—07	Test 3 - seek length selectio 1 = 128 tracks 2 = 32 tracks 3 = 16 tracks 4 = 8 tracks 00 Runs 5 = 4 tracks all lengths 6 = 2 tracks (default) 7 = 1 track		
						—	00—FF	Test 4 - seek length (Default is 128 cylinders)		
						—	00—FF	Test 5 - seek length (Default seek lengths are: 1, 2, 4, 8, 16, 32, 64, 128)		
A9	Incremental Seek Test			Seeks and verifies access position by reading the home address. Program loops indefinitely until stopped by the CE or an error halt occurs. *Note: Regardless of the feature installed, this routine accesses only movable head tracks. Fixed heads are never addressed, whether or not FHFE is installed.*	1	01	01—FF	Desired increment. (Program defaults to one cylinder seeks if no parameter is entered.)	Not linked. A1, A2, A3, A5, AD, AF, A4, AE (linked series 1) run error free. Data Module loaded.	See MICFL section for flowchart and detailed description.

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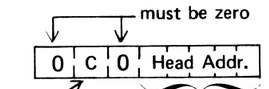
ROUTINE DESCRIPTION (continued)

ROUTINE I.D. (HEX)	ROUTINE NAME	TEST DESCRIPTION		ROUTINE GENERAL USE	PARAMETERS				LINKAGE/ PREREQUISITES	REFERENCE NOTES
		Test No.	Test Name		Byte No.	Default Value (Hex)	Value Limits (Hex)	Description		
AA	Cylinder Seek Test			This program seeks between two cylinders as specified by parameter entry. Access position is verified by reading home address. If no cylinders are specified by parameter entry, the program defaults to a no-motion seek. Program loops indefinitely until stopped by CE or an error halt operation. *Note: Regardless of the feature installed, this routine accesses only movable head tracks. Fixed heads are never addressed, whether or not FHFE is installed.*	1 2 3 4	00 00 00 00	00–FF xx 00–FF xx	From cylinder address (Physical Address – See Note 2) From head address (See Note 1) To cylinder address (Physical Address – See Note 2) To head address (See Note 1) *Note 2: The maximum physical cylinder address that can be entered is 349 (decimal) regardless of pack size.*	Not linked. A1, A2, A3, A5, AD, AF, A4, AE (linked series 1) run error free. Data module loaded.	Note 1: Parameters 2 and 4: must be zero  Logical Head Address (Hex) / Even Index / Odd Index / Physical Head Selected (Decimal) 0 1 0 2 3 1 4 5 2 6 7 3 8 9 4 A B 5 C* D* 6* E* F* 7* 10* 11* 8* 12* 13* 9* 14* 15* 10* 16* 17* 11* *70 MB data module only
AB	Random Seek Test			This routine executes 1792 Seeks using a random number generator as a seek argument. The home address is read after each seek and compared to the random number to verify access position. The program terminates on completion of the 1792nd seek. *Note: Regardless of the feature installed, this routine accesses only movable head tracks. Fixed heads are never addressed, whether or not FHFE is installed.*					Not linked. A1, A2, A3, A5, AD, AF, A4, AE (linked series 1) run error free. Data module is loaded.	See MICFL section for flowchart and detailed description.

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ROUTINE DESCRIPTION (continued)

ROUTINE I.D. (HEX)	ROUTINE NAME	TEST DESCRIPTION		ROUTINE GENERAL USE	PARAMETERS				LINKAGE/ PREREQUISITES	REFERENCE NOTES
		Test No.	Test Name		Byte No.	Default Value (Hex)	Value Limits (Hex)	Description		
AC	Data Module State Analysis			This routine analyzes the following status bytes: Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13'). The routine produces a unique error number according to the contents of the status bytes.				None	Not linked. Routines A1 and A2 tests 1 through 7 must run error free.	See MICFL section for flowchart and detailed description. Normal termination with the DM loaded and in Ready State 6 is indicated by error display 'AC60'. Refer to FSI 65 for bit description of error Logout bytes.

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ROUTINE DESCRIPTION (continued)

ROUTINE I.D. (HEX)	ROUTINE NAME	TEST DESCRIPTION		ROUTINE GENERAL USE	PARAMETERS				LINKAGE/ PREREQUISITES	REFERENCE NOTES
		Test No.	Test Name		Byte No.	Default Value (Hex)	Value Limits (Hex)	Description		
AD	Gap Counter and Data Transfer Tests	1. 2. 3. 4. 5. 6. 7. 8. 9.	Data Transfer Checkers Check G1 Gap Tolerance Extended G1 Gap Tolerance Modulo-16 Counter G2 Gap Tolerance G3 Gap Tolerance Data Transfer Write Safety Checkers Check Low Gain Check (FHFE only).	Verify operation of diagnostic write inhibit to device, force gap counter check, force write data check. Compare length of G1 gap to specification (114–121 microseconds). Compare length of extended G1 to specification (253–269 microseconds). Test module -16 counter. Test to ensure G2 gap is within tolerance (75–79 microseconds). Test G3 gap to ensure tolerance (72–82 microseconds) is met. Verify data path from interface through SERDES. Force control check, write overrun check, transition check, write current check, and low gain check.	1	00	Basic: 00–08 FHFE 00–09	Test number (Allows looping a single test within this routine) 00 (default)=Run all tests	from: to: A5 AF A1, A2, A3, A5 run error free. Data module loaded. Data module must have the Read Only function in the disable (Write Enabled) position.	See MICFL section for flowchart and detailed description.
AE	Error Correction Code Test.	1. 2. 3. 4. 5.	ECC Reset ECC Read Normal Data ECC Read Correctable Data Check ECC Read Uncorrectable Data Check ECC Write Burst (ECC Check Pattern)	Test 1: Verifies setting and resetting of the ECC registers. Also ensure that ECC registers do not reset with controller reset. Test 2: Verifies ECC hardware while reading an error free data pattern. Test 3: Similar to test 2 except data pattern used is one that will produce a correctable data check. Test 4: Similar to test 2 except data pattern used is one that will produce an uncorrectable data check. Test 5: Writes a 2 byte data pattern, then reads back 8 bytes and does a byte by byte compare to verify that the correct ECC pattern was written.	1 2	00 00	00–05 00–02	Test number (allows looping a single test within this routine) 00 (default)=Run all tests Loop control 00=Loop write and read 01=Loop write phase only 02=Write one time and loop read phase	from: Last routine A4 in linked series 1. A1, A2, A3, A5, AD, AF, A4 run error free. Data module loaded. Data module must have the Read Only function in the disable (Write Enabled) position.	See MICFL section for flowchart and detailed description.

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ROUTINE I.D. (HEX)	ROUTINE NAME	TEST DESCRIPTION		ROUTINE GENERAL USE	PARAMETERS				LINKAGE/ PREREQUISITES	REFERENCE NOTES
		Test No.	Test Name		Byte No.	Default Value (Hex)	Value Limits (Hex)	Description		
AF	Format Read-Write Tests	1	Read G1 Unoriented Status.	Test 1 checks for unoriented status stuck on, then verifies ability to orient on index & active track.	1	00	00 – 0F	Loop test number (allows looping a single test within this routine). See Notes 2 and 3 for prerequisites required by certain tests.	from: to: AD A4 A1, A2, A3, A5, AD run error free. Data module loaded. Data module must have the Read Only switch in the disable (Write Enabled) position.	See MICFL section for flowchart and detailed description. *Note 1: Since all tests that write in routine AF depend on the access being positioned on the CE track (i.e. physical cylinder 349), it is imperative that the access is not mechanically re-positioned off of this cylinder. Every precaution has been included to detect any movement of the access electrically, including changing data modules while running routine AF. The access position is verified using logical head '02'. Testing is performed using logical head '01'.* *Note 2: Test 9 depends upon successful completion of test 8 in order to run error free. Observe caution when using the loop test option.* *Note 3: Test B depends upon successful completion of test A in order to run error free. Observe caution when using the loop test option.* *Note 4: Test 6 depends on the proper placement of the G1 Record (HA) on the track. Test E formats a G1 record.*
		2.	Oriented/Unoriented Border Line.	Test 2 verifies that orientation is maintained for the specified time, then verifies that lost orientation occurs at the specified time.						
		3.	Force Command Overrun and Check End	Test 3 verifies operation of Command Overrun and Check End checkers in both read and write mode.	2	00	00 – FF	Password parameter. (Valid password = 5D). **CAUTION** **Extreme caution must be exercised when overriding the default parameter for parameter No. 2.** In normal operation, the home address is read to verify access position on the CE cylinder. If it is impossible to read the home address on this cylinder without error, the program terminates with an error. The CE can elect to continue testing with AF by entering the valid password parameter. Again caution must be observed as this allows the possibility of destroying customer data. The procedure is as follows: 1. Reload routine AF. 2. Enter parameter 1 = '0E' (Format Write G1). 3. Enter parameter 2 = '5D' (valid password) 4. Set Data Entry switches to '00' and operate Execute switch. 5. To stop test, operate Execute switch a second time after test has started. 6. Reload routine AF and run in default mode.	
		4.	Force Sync-Out Timing Error. Force Status Overrun.	Test 4 verifies the Sync Out timing checker and the Status Overrun checker.						
		5.	Test Allow HAR Function.	Test 5 verifies the Allow HAR function during the window past Index Format operation.						
		6.	Write Full Track G2	Test 6 verifies that a full track R0 count field can be successfully written, see note 4.						
		7.	Write G2 - Force Track Overrun.	Test 7 verifies operation of the Track Overrun checker by attempting to Write into index.						
		8.	Write G2/Format Write G2.	Test 8 verifies successful operation of the Write G2 and Format Write G2 commands.						
		9.	Read G2/Clock G2, Force No Sync Found.	Test 9 verifies successful operation of the Read G2 and Clock G2 commands. It also verifies operation of the No Sync Found checker.						
		A.	Format Write G3/Read G3.	Test A verifies successful operation of Format Write G3 and Read G3 commands.						
		B.	Clock G3/Read G3 AM Search.	Test B verifies successful operation of the Clock G3 and Read G3 AM Search commands.						
		C.	Format Erase, Force No AM Found.	Test C verifies operation of the Format Erase command, and verifies operation of the No AM Found checker by searching for AM on the previously erased track.						
		D.	Special Format Write G1/Read G1.	Test D verifies successful operation of the Special Format Write G1 and the Read G1 commands.						
		E.	Format Write G1/Read G1.	Test E verifies successful operation of the Format Write G1 command.						
		F.	Skip Displacement Fields.	Test F verifies successful operation of commands used for defect skipping Special Write G2, Special Read G2, Write G4, and Read G4.						

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ROUTINE DESCRIPTION(continued)

Routine ID (Hex)	Routine Name	Test Description		Routine General Use	Parameters				Linkage/Prerequisites	Reference Notes
		Test No.	Test Name		Byte No.	Default Value (Hex)	Value Limits (Hex)	Description		
B0	Reformat CE Tracks Utility			Routine B0 reformats any one of the CE tracks, as specified by parameter 1. It writes a track flag, as specified by parameter 2, bit 6. It positions the Home Address, as specified by parameter 2, bit 7. It writes several records; it then reads it back and looks for errors. Records written consist of HA (G1), R0 CNT (G2), R0 Data (G2), and R1 CNT (G3), and R1 Data (G2) for nondefective flagged tracks. The R0 data field is 8 bytes of : '00 00 00 00 00 00 00 00'. The R1 data field is 256 bytes of repetitive 4-byte patterns as follows: '77 77 FF AA'	1	FF	00 **	Head number – (Selects head number to be reformatted) ** – Upper limit is dependent on data module size, as follows: DM Size / Upper Limit 35 MB '0B' 70 MB '17' 2 FF 00-03 Function selection – Bits / Function (0-5) Not used (6) = 0 = Normal Flag (6) = 1 = Defective Flag (7) = 0 = Normal G1 (HA position) (7) = 1 = Extended G1 (HA position)	Routine does not link. A1, A2, A3, A4, A5, AD, AE, and AF must run error free. Data module is loaded. Data module must have the Read Only switch in the Disable (Write Enabled) position.	See MICFL section for flowchart and detailed description. This routine is not intended to be used as a diagnostic.

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ROUTINE DESCRIPTION (Continued)

ROUTINE I.D. (Hex)	ROUTINE NAME	TEST DESCRIPTION		ROUTINE GENERAL USE	PARAMETERS				LINKAGE/ PREREQUISITES	REFERENCE NOTES
		Test No.	Test Name		Byte No.	Default Value (Hex)	Value Limits (Hex)	Description		
B1	Read Test			This test can read data from any cylinder and head on a given data module (including fixed heads, if the fixed head feature is installed and the fixed head microdiagnostic disk is used). Correct Read operation is verified by testing for an ECC Data Check after the Read. No data is transferred or stored, to comply with data integrity regulations. If parameter entry is bypassed, the test seeks to the CE cylinder and reads the prerecorded CE track using all physical heads with even Index.	1	FF	00—FF	Cylinder address (default will read data on the CE read track). See Note.	Not linked. A1, A2, A3, A5, AD AF, A4, AE (linked series 1) run error free. Data Module loaded.	See MICFL section for flowchart and detailed description. *Note: Parameter 1 and 2* *1. If a valid cylinder and invalid head is specified, all heads on the specified cylinder are read.* *2. If an invalid cylinder (parameter 1 greater than '5D' with 256 bit on in parameter 2) and invalid head is specified, with the fixed head bit off, all even heads on the CE cylinder are read. If an invalid head is specified with the fixed head bit on, all fixed heads will be read on both even and odd tracks.* *3. If a valid cylinder and valid head is specified, the specified head and cylinder are read.*
					2	7F	See Note	Head address, logical. See Reference Notes and Parameter Byte 2 charts.		
					3	00	00—FF	00 Read cylinder and head specified in bytes 1 and 2 and stop on error. 02 to FF Loop test on read data and ignore errors (used for scoping read data). Any non-zero value entered for parameter 3 will cause looping, providing that a valid head number has been entered in parameter 2.		

OPERATING INSTRUCTIONS

Basic Operation — Without Parameters (Default Mode)

1. If attached to a 3830, ensure correct microdiagnostic disk is installed.
   a. Standard disk for basic 3340.
   b. Fixed head disk for 3340 with fixed head feature (labeled FHFE).
2. Load Routine B1.
3. Enter '00' in data entry switches and operate the Execute switch.

Scope Loop Setup (Specific Track)

1. Go to R/W 343 to convert the cylinder address and the head address to a physical address.
2. If attached to a 3830, ensure correct microdiagnostic disk is installed.
   a. Standard disk for basic 3340.
   b. FHFE disk for 3340 with fixed head feature.
3. Load Routine B1.
4. Enter '10' in data entry switches (parameter entry) and operate the Execute switch.
5. Enter low order physical cylinder address byte. Range = '00' to 'FF'.
6. A. If (1) the fixed head feature is installed and (2) a fixed data module is installed on the machine and (3) a fixed head is to be addressed, use the Fixed Head Chart at the right to enter the head address in Parameter Byte 2.
   B. If a moveable head is to be addressed, use the Moveable Head Chart to enter the head address and the cylinder 256 bit if the cylinder address is greater than 'FF'.
7. Enter any non-zero number 02 to FF (parameter 3).
8. Enter '00' to execute. Test seeks to desired cylinder, selects desired head, and reads a full track. This operation excluding the seek is looped indefinitely (ignoring all errors) until stopped by entering '00'.

Test Head Operation (Specific Track)

To set up a Read operation to look for errors on a specific track, use the following procedure (used for basic or fixed head feature):

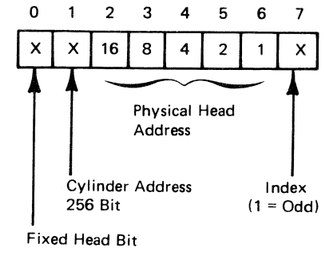
1. Go to R/W 343 to convert the cylinder address and the head address to a physical address.
2. If attached to a 3830, ensure correct microdiagnostic disk is installed.
   a. Standard disk for basic 3340.
   b. FHFE disk for 3340 with fixed head feature.
3. Load Routine B1.
4. Enter '10' in data entry switches (parameter entry) and operate the Execute switch.
5. Enter low order physical cylinder address byte. Range = '00' to 'FF'.
6. A. If (1) the fixed head feature is installed and (2) a fixed data module is installed on the machine and (3) a fixed head is to be addressed, use the Fixed Head Chart at the right to enter the head address in Parameter Byte 2.
   B. If a moveable head is to be addressed, use the Moveable Head Chart to enter the head address and the cylinder 256 bit if the cylinder address is greater than 'FF'.
7. Enter '00' (parameter 3).
8. Enter '00' to execute. Test seeks to desired head, and reads data until the normal routine completion or an error occurs.

Read All Fixed Heads (Fixed Head Feature)

To read on all of the even and odd fixed head tracks and check for errors, use the following procedure:

1. If attached to a 3830, ensure fixed head microdiagnostic disk is installed.
2. Load Routine B1.
3. Enter '10' in data entry switches (parameter entry) and operate the Execute switch.
4. Enter 'FF' (parameter 1).
5. Enter 'FF' (parameter 2).
6. Enter '00' (parameter 3).
7. Enter '00' to execute. Test reads even and odd tracks under each fixed head starting with fixed head 0 and ending with fixed head 29.

PARAMETER BYTE 2



MOVEABLE HEAD CHART (Bit 0 = 0)

Physical Moveable Head	Parameter Byte 2 Entry	
	Even Index	Odd Index
0	00 or 40*	01 or 41*
1	02 or 42*	03 or 43*
2	04 or 44*	05 or 45*
3	06 or 46*	07 or 47*
4	08 or 48*	09 or 49*
5	0A or 4A*	0B or 4B*
6**	0C or 4C*	0D or 4D*
7**	0E or 4E*	0F or 4F*
8**	10 or 50*	11 or 51*
9**	12 or 52*	13 or 53*
10**	14 or 54*	15 or 55*
11**	16 or 56*	17 or 57*

* Head address with cyl 256 bit.
** To 70 Mb Data module only.

FIXED HEAD CHART (Bit 0 = 1) (FHFE only)

Physical Fixed Head	Parameter Byte 2 Entry	
	Even Index	Odd Index
0	80	81
1	82	83
2	84	85
3	86	87
4	88	89
5	8A	8B
6	8C	8D
7	8E	8F
8	90	91
9	92	93
10	94	95
11	96	97
12	98	99
13	9A	9B
14	9C	9D
15	9E	9F
16	A0	A1
17	A2	A3
18	A4	A5
19	A6	A7
20	A8	A9
21	AA	AB
22	AC	AD
23	AE	AF
24	B0	B1
25	B2	B3
26	B4	B5
27	B6	B7
28	B8	B9
29	BA	BB

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ROUTINE I. D. (HEX)	ROUTINE NAME	TEST DESCRIPTION		ROUTINE GENERAL USE	PARAMETERS				LINKAGE/ PREREQUISITES	REFERENCE NOTES
		Test No.	Test Name		Byte No.	Default Value (Hex)	Value Limits (Hex)	Description		
B2	Write Test			This test will seek to the CE cylinder (Physical Cylinder Address 349) and verify access position by reading home address. If unable to read home address, an error code will be displayed (see error dictionary for further action). After positioning on the CE cylinder, the test writes an R0 with no key. The data length is 256 bytes and the pattern used is four bytes repeated Hex '7777FFAA'. This pattern is written on the odd CE tracks using all physical heads. After each track is written, the data is read back and validity is determined by ECC checking. This process continues until all CE tracks on a given data module have been written and read back.	1	FF	01 – FF (odd numbers only)	Head address. (Default value FF causes all odd heads to be written.) Selection of a valid odd head will write only that track specified by the head address entered. See Note 1.	Not linked. A1, A2, A3, A5, AD, AF, A4, AE (linked series 1) run error free. Data module loaded. Data module must have the Read Only switch in the Disable (Write Enabled) position.	See MICFL section for flowchart and detailed description. *Note 1: An invalid head address entry (i.e., even head, or value beyond the range of a given data module) will cause a B201 error stop.* Parameter Byte 1 (HAR) and Display Byte 2 (HAR) Bit = 0 1 2 3 4 5 6 7 X 0 0 Head Address
					2	00	00 – FF	Bypass read back verification. Any non-zero number will cause read back checking of previously written data to be bypassed.		

Physical Moveable Head Selected (decimal)	Logical Head Address (Hex)	
	Even Index	Odd Index
0	00	01
1	02	03
2	04	05
3	06	07
4	08	09
5	0A	0B
6	0C	0D
7	0E	0F
8	10	11
9	12	13
10	14	15
11	16	17

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ROUTINE I.D. (HEX)	ROUTINE NAME	TEST DESCRIPTION		ROUTINE GENERAL USE	PARAMETERS				LINKAGE/ PREREQUISITES	REFERENCE NOTES
		Test No.	Test Name		Byte No.	Default Value (Hex)	Value Limits (Hex)	Description		
B3	Device Status Display			The device status display program is a utility that performs two functions: • Generates a symptom code on pass 1 providing the necessary error conditions stored in the device have not been reset. • Displays 14 bytes (15 bytes for FHFE) of device information on pass 2. See Note 1. RUN INSTRUCTIONS (See MICRO 10 for detailed instructions) **PASS 1 – GENERATE FSI** 1. Place drive to be tested in CE Mode (CE Mode switch on). 2. Load routine B3. 3. When loaded enter '00' in Data Entry switches and operate Execute once. 4. Program Control display should contain 'E1'. 5. Data display: a. '01' to '07' = Error attempting to run B3 routine. See MICRO 85. b. 'FF' = Unable to generate symptom code. Run pass 2. c. Other than above = Byte 1 of Fault Symptom Code. Enter '20' in Data Entry switches and operate Execute once to display byte 2 of the Fault Symptom Code. **PASS 2 – DISPLAY DEVICE STATUS** 1. After successful completion of pass 1 (indicated by items 5b or 5c above) enter '00' in Data Entry switches and operate Execute twice. 2. Completion of pass 2 is indicated by 'E1' in the Program Control display, and the bit significant physical address of the drive in CE Mode in the Data display ('80', '40', '20', '10', '08', '04', '02', or '01'). 3. Enter '20' in the Data Entry switches and operate Execute once for each of the remaining display bytes. As each byte is displayed, the Program Control display advances (E2, E3, etc) to indicate which byte is displayed in the Data display. See Note 1 for byte content. 4. After the last byte is displayed,operating Execute results in 'CE' in the Program Control display and 'B3' in the Data display.					Not linked. Controller interface operative to the point of loading and starting this routine.	See MICFL section for flowchart and detailed description. *Note 1: At the end of Pass 2, the first of 14 bytes of logout are displayed; the contents is as follows:* Byte No. / Description 1. (E1) Physical Drive Address 2. (E2) Head Address Register 3. (E3) Difference Counter 4. (E4) Drive Status 5. (E5) Check Status 6. (E6) DM Sequence Control 7. (E7) Load Switch Status 8. (E8) Read/Write Safety 9. (E9) Access Status 10. (EA) Controller Check 11. (EB) Controller Interface Check 12. (EC) Device Interface Check 13. (ED) Target Register (RPS) 14. (EE) Cylinder Address Register (String Switch) 15. (EF) Sense Status 0 Refer to FSI 65 for bit significance of the message bytes.

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ROUTINE I.D.	ROUTINE NAME	TEST DESCRIPTION	ROUTINE GENERAL USE	PARAMETERS				LINKAGE/ PREREQUISITES	REFERENCE NOTES
				Byte No.	Default Value	Value Limits	Description		
B4	Tag Cycle Utility	This routine executes any valid tag/bus or delay commands entered by the CE through parameter entry. (Refer to OPER 100-101 for Tag/Bus summary).	*Note: Write Op (Tag '0F') under drive selection, Seek Start (Tag '8F' Bus '08'), and Rezero (Tag '8F' Bus '02') cannot be used.* *The sum of all delay commands entered must not exceed 500 milliseconds.* Each delay or tag command consists of two bytes of parameter entry and up to seven commands may be entered at one time. These entries are referred to as the command string. Following the last command, zeros must be entered to complete the parameter field. Once execution has been started, the command string loops until the CE enters a '00' and operates the execute switch. The command format is as follows:				Each of the following commands contains a control byte and a Bus Out or delay value.	Not linked. CTL-I operative to the point of loading and starting this routine.	See MICFL 1400 for detailed description.
				1 & 2	00	00 - FF	1st Command		
				3 & 4	00	00 - FF	2nd Command		
				5 & 6	00	00 - FF	3rd Command		
				7 & 8	00	00 - FF	4th Command		
				9 & A	00	00 - FF	5th Command		
				B & C	00	00 - FF	6th Command		
				D & E	00	00 - FF	7th Command		
				F	00	00	End String Command		

Control Byte (First Byte Of Command)

	Option Code	Modifier	Description
Bits	0123	4567	
	0000	0000	End command string.
	0000	XXXX	Controller tag, XXXX=tag value
	0001	XXXX	Controller tag. CE swtiches are used for Bus Out.
	0010	XXXX	Controller tag. Received Bus In is transmitted to the data display lamps.
	0011	MMMM	Execute a μsec delay. MMMM = the base value multiplier (not used if zero).
	0100	MMMM	Execute a msec delay. MMMM = the base value multiplier (not used if zero).
	0101-0111		Not used.
	1000	XXXX	Drive tag, XXXX=tag value.
	1001	XXXX	Drive tag. CE switches are used for Bus Out.
	1010	XXXX	Drive tag. Received Bus In is transmitted to the data display lights.
	1011-1111		Not used.

Bus Out Or Base Delay Value (Second Byte Of Command)

1. During a Tag command, the second byte is the Bus Out value, unless option code 0001 or 1001 has been selected.
2. During a Delay command, the second byte is the base delay value.

   The base value is multiplied by 'MMMM' in the control byte to arrive at the total delay value (refer to Note 1).

Note 1: Examples of delays.

ENTRY IN HEX Byte 1	Byte 2	DELAY VALUE
30	C8	200 usec
32	C8	400 usec
40	C8	200 msec
41	C8	200 msec
43	64	300 msec

64 hex is 100 decimal
100 x 3 = 300
4 = milliseconds total = 300 ms

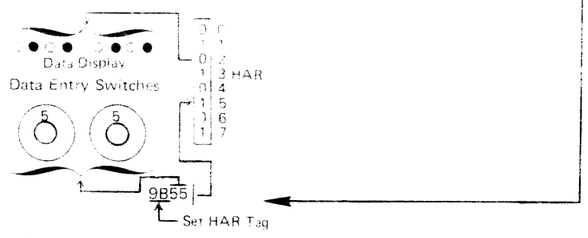
The sum of all delay commands must not exceed 500 milliseconds.

SAMPLE COMMAND STRING

Parameter Byte	(Hex)	
1	83	Tag (select drive) Note 2
2	XX	Bus Out is supplied by the program (service drive only)
3	9B	Drive tag (set HAR CE switches to be used for Bus Out)
4	$\overline{XX}$	Bus Out from CE switches
5	AF	Drive tag (sense HAR) Bus In transmitted to data display lights
6	05	Bus Out for sense HAR
7	8C	Drive tag (set difference to 'FF')
8	FF	Bus Out value
9	8F	Drive tag (sense difference)
A	09	
B	42	200 ms delay
C	64	
D	00	Filler for parameter field
E	00	
F	00	

AF05 Sense HAR

The run control option '00' must be entered to begin the program execution. The desired HAR value must be set in the Data Entry switches as soon as the '9C' message is displayed in the control lamps.



Note 2: The controller address is also supplied for select controller tag.

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ROUTINE I.D. (HEX)	ROUTINE NAME	TEST DESCRIPTION		ROUTINE GENERAL USE	PARAMETERS				LINKAGE/ PREREQUISITES	REFERENCE NOTES
		Test No.	Test Name		Byte No.	Default Value (Hex)	Value Limits (Hex)	Description		
B6	String Switch Test. *This routine can only be executed on 3340's with the String Switch Feature installed.*	1. 2. 3. 4. 5. 6. 7.	Short Busy test Long Busy test (partial selection). Device assignment test. Device End test. Pack change interrupt test. Address Decode test. Manual Enable/Disable switch test.	Routine B6 is a dynamic test of the String Switch Feature involving synchronized interaction between the two control interfaces, one chosen as master, the other as slave. *Refer to MICRO 39 for detailed operating instructions.*	1 2	00 FF	01–06 37 00–07	Test number. (Allows looping a single test within this routine.) If 00 (default) is entered, tests 1–6 will be run. Refer to MICRO 1178 for operating instructions. Device address to be tested. If FF (default) is entered, all device addresses will be tested.	The String Switch is not linked to any other routine. Prerequisites: 1. Routines A1, A2, A3, A5, AD, AF, A4, and AE (linked series 1) run error free. 2. The customer has varied the facility off line. 3. One drive is in CE mode and Ready. 4. Both CTL-I Enable/ Disable switches are set to Enable. 5. The 3340 microdiagnostic program disk is inserted in the readers of both SCU's.	See MICFL 1407 for detailed operating procedures and detailed description. *Note 1: If a single test is selected, it loops until halted by the CE or an error occurs. If the Bypass Error stop option is selected, the test continues with the error number dynamically displayed.* *Note 2: At the completion of testing, ensure that the diagnostic is stopped in both storage controls by entering the '00' control option over both interfaces.*
B7	Carriage Go Home Utility Program			This program is intended for scoping purposes. It issues the diagnostic carriage go home tag to move the access to home position. This tag is held active for 50 milliseconds, and then de-activated for 20 milliseconds. An inline check is performed before repeating the process. It is necessary to use the '00' run control option to stop this routine.					Not linked. A1, A2, A3 run error free.	
HC	CTL Interface Bringup Program (for System/370 Models 115 and 125 and System/7, see routine BF)	1. 2. 3.	Active Control Bus In/ Control Lines Test Tag Bus/Control Bus Out Test Control Lines Test	This routine must be executed from the Storage Control (that is, 3830-2, ISC, or IFA).					Not linked. Controller must be capable of a power-on reset. Attachment (3830 or IFA) must be operational.	See MICFL 1500 for description and running instructions.
BF	CTL Interface Bringup Program (for System/370 Models 115 and 125 and System/7 only)	1. 2. 3.	Active Control Bus In/ Control Lines Test Tag Bus/Control Bus Out Test Control Lines Test	This routine is identical to Routine HC; it is designed to be run only on System/370 Models 115 and 125 and System/7. Loading and execution is similar to other microdiagnostics on these systems.					Not linked. Controller must be capable of a power-on reset. System/370 Models 115 and 125 and System/7 DDA and SVP must be operational.	See MICFL 1500 for detailed description. Use description and flowcharts for routine HC. See direct disk attachment MLM (MLX, Entry 11) for run instructions.

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RUNNING INSTRUCTIONS – B6

DESCRIPTION

Routine B6 checks those controller functions that are unique to a switchable controller interface. The routine must be run simultaneously on both controller interfaces.

Although the routine must be loaded and started on each controller interface, it is controlled exclusively from the interface designated as the Master. Control and error information is passed between the interfaces via registers in the service drive.

The routine contains 7 tests. Normally, tests 1 through 6 are run in sequence ending with Error Code B6E0. B6E0 is displayed to remind the CE to run test 7. Test 7 requires a special operating procedure. (See Figure 1 on this page.)

Normally tests 1 through 6 execute 8 times before linking to the next test. Tests 3 through 6 execute once with each device address (0 through 7) on each of the 8 passes. Test 7 is run only once each time it is called.

Error information is displayed at the end of the test. The Error Code is developed by ORing the error data from both interfaces. Tests 3 through 6 develop a second error byte which indicates the failing register position. For details of a specific error, see the Error Code Dictionary in this section.

OPERATING THEORY

Prior to running any test, the two interfaces must be synchronized. Once synchronized, the routine executes short sequences of operations separated by fixed time delays. The operational and delay sequences are offset in time so that each operational sequence is executed during the time delay on the other interface. In actuality, the test execution alternates between the two interfaces.

One interface is referred to as the Master, the other as the Slave. There are two flowcharts for each test in the MICFL section. One flowchart is the Master, the other is the Slave. The flowcharts are identical except for the Error Codes.

OPERATING PROCEDURES

To effectively run the B6 microdiagnostics two passes are required: Pass 1, in which interface A is the Master and B is the Slave; and Pass 2 in which B is the Master and A is the Slave.

Pass 1: (A = Master)

1. Set the CE Interface Select Switch to the B interface position, then load and execute Routine B6. Use standard operating procedures (MICRO 10), but do not enter Run Options or Parameters at this time. A few seconds after starting, the routine will display '8DFF' indicating it is ready to accept control information from the other interface.
2. Set the CE Interface Select Switch to the A interface position. Routine B6 may now be loaded and run on interface A using standard operating procedure (MICRO 10). Run Options and/or Parameters may be entered if desired.
3. Test 7 requires a special operating procedure. See Figure 1 on this page. Looping Routine B6 (Loop Run Option) runs tests 1 through 6 only.

Pass 2: (B = Master)

1. Set the CE Interface Select Switch to the A interface position, then load and execute Routine B6. Use standard operating procedures (MICRO 10), but do not enter Run Options or Parameters at this time. A few seconds after starting, the routine will display '8DFF' indicating it is ready to accept control information from the other interface.
2. Set the CE Interface Select Switch to the B interface position. Routine B6 may now be loaded and run on interface B using standard operating procedures (MICRO 10). Run Options and/or Parameters may be entered if desired.
3. Test 7 requires a special operating procedure. See Figure 1 on this page. Looping Routine B6 (Loop Run Option) runs test 1 through 6 only.

RESTART PROCEDURES

To restart (Pass 1 or Pass 2) begin at Step 2. The Slave enters an idle loop when the Master is stopped. Restarting the Master restarts the Slave after both interfaces are resynchronized. Step 1 is repeated only if the service drive is made not ready or after Test 7 has been run. (See Error Codes B602 and B60E in the Error Code Dictionary in this section.)

Note: *To recover from improper starting or an unexpected '8DFF' display, stop the service drive momentarily, then restart via Operating Procedures Step 1.*

PARAMETER ENTRIES

See MICRO 38 for additional information on parameter entries.

Test 7

The error stop below indicates test 6 has completed and test 7 may be run at this time. Test 7 may also be selected directly and run as indicated in the operating procedure given below.

Figure 1

B6E0	Tests 1 through 6 of the string switch routine have completed execution. Test 7 (Manual Switching test) may now be run. See Operating Procedure below. **CAUTION** *If test 7 is not run at this time, the slave program must be stopped by entering the '00' control option for the slave interface.* **CAUTION** *Test 7 may "lock out" the customer for up to 1 minute. Become familiar with the operating procedure before running test 7. Perform steps 4 and 5 as quickly as possible to minimize interference with the customer programs.* **OPERATING PROCEDURE** 1. Load routine B6. (Do not move the Interface Select switch.) 2. When 'CAB6' is displayed, enter '10 37 00 00'. 3. Test 7 displays '3FFF'. Perform Steps 4 and 5 as quickly as possible because the customer is "locked out" from both interfaces while '3FFF' is displayed. 4. Proceed to the Power Panel and set both Enable/Disable switches to Disable. 5. Wait 3 to 5 seconds; then set both switches to Enable. 6. Return to the CE Panel. If the test detected an error an Error Code is displayed. Refer to the Error Code Dictionary. If no error is detected, Error Message Code 'CFB6' is displayed. Routine B6 has run to completion. 7. After test 7 has run, routine B6 will halt on both interfaces. To restart the routine, start at the beginning of the Operating Procedure.

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
XX00		Lost synchronization between the master and the slave.				Restart B6. Error code XX00, valid only on routine B6. See MICFL 1407.	
XX01		Invalid parameter entered by CE.				Refer to MICRO 20 through 38 for valid parameters.	22
XX02		On Line Status not present	2	Drive Status Byte xxxx 1xxx Expected	DEV-I 280, Entry B		22
XX03		No Physical Address returned from CE Drive after selection.	2	Physical Drive I.D. Byte	DEV-I 112, Entry A	1. Suspect drive not in CE Mode; check CE Mode switch. 2. If not already run, run Linked Series 1 starting with routine A1.	22
XX04		Data Module is not Write Enabled	2	Received Checks/Status Byte xxxx 1xxxx Expected	R/W 210, Entry C	Unload data module, inset write enable plug, re-load data module and restart routine.	22
XX05		Multiple drives selected (1 of 8 check).	2	Physical Drive I.D. Byte	DEV-I 112, Entry B	This error can be caused by more than one drive returning its address on the Attention/Select Bus. Check to ensure that only one drive is in CE Mode. Note: Byte 2 will indicate physical drives selected.	22
XX06		Incorrect device type or microdiagnostic disk/drive feature incompatability.	2	XXXX XXYY = Received Composite Bus In where X = Bits 0–5 under Tag '0A' Bus '80' and Y = Bits 6 and 7 under Tag '8F' Bus '03' Without FHFE Expected 0000 0100 With FHFE 0000 0101	CTL-I 330, Entry A		22
XX07		Data Module sequence error.	2	Data Module status 0110 000x Expected	DM 100, Entry B	Make sure a data module has been loaded.	22

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Refere
A001 through A007		Errors common to all routines			MICRO 85		
A010	**1**	No Select Active received after Controller Select	2	x0xx xxxx Received x1xx xxxx Expected	CTL-I 410, Entry B		30
A011	**1**	Bus In Parity check in storage control.	2	xx1x xxxx Received xx0x xxxx Expected	PANEL 151, Entry D		30
A012	**1**	Value read from switches does not equal expected value	2 3	xxxx xxxx Received xxxx xxxx Expected	PANEL 151, Entry C		30

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MICRODIAGNOSTIC ERROR CODE DICTIONARY

Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referer
A101 through A107		Errors common to all routines			MICRO 85		None

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Analysis Procedure or Possible Failing Units	Additional Action and Reference Notes	Test Flowcharts
A110	**1**	CTL-I Bus In contains a non-zero value prior to controller selection.	2 3	Not Used Not Used	CTL-I 440		45
A111	**1**	Select Active was on prior to controller selection.	2 3	Not Used Not Used	CTL-I 410, Entry A.		45
A112	**1**	Tag Valid was received prior to controller selection.	2 3	Not Used Not Used	CTL-I 270 ,Entry C		45
A113	**1**	Normal End was received prior to controller selection.	2 3	Not Used Not Used	CTL-I 260 ,Entry B		45
A114	**1**	Check End was received prior to controller selection	2 3	Not Used Not Used	CTL-I 260 ,Entry B		45
A115	**1**	Error Alert was received prior to controller selection.	2 3	Not Used Not Used	CTL-I 400, Entry A		45
A116	**1**	Index Alert was received prior to selection	2 3	Not Used Not used	RPI 110, Entry A		45
A117	**1**	Sync In was received prior to controller selection.	2 3	Not Used Not Used	DATA 110, Entry A		45

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A120	2	Invalid 3-of-6 code returned.	2 3	Controller address Received Controller address Expected	CTL-I 300, Entry B	The following chart describes the addresses expected: 3-of-6 code for: **Controller** **Address** 0 00000111 1 00100110 2 01000101 3 01100100	45
A121	2	Select Active was off following a controller selection.	2 3	Not Used Not Used	CTL-I 410, Entry B		45
A122	2	With a controller selected, Tag Valid was received after dropping Tag Gate.	2 3	Not Used Not Used	CTL-I 271, Entry A		45
A123	2	With a controller selected, Normal End was received without receiving Tag Valid.	2 3	Not Used Not Used	CTL-I 260, Entry B		45
A124	2	With a controller selected, Check End was received.	2 3	Not Used Not Used	CTL-I 260, Entry B		45
A125	2	With a controller selected, Sync-In was received.	2 3	Not Used Not Used	DATA–110, Entry A		45
A126	2	With a controller selected, Index Alert was received.	2 3	Not Used Not Used	RPI 110, Entry A		45
A127	2	With a controller selected, Error Alert was received.	2 3	Not Used Not Used	CTL-I 400, Entry A		45

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A130	**3**	CTL-I Tag Bus Parity error failed to come on after being forced.	2 3	Bus In under Controller/Interface Check Tag '04' Bus '01' Received 1xxx xxxx Expected Not used	CTL-I 371, Entry B		50
A131	**3**	CTL-I Tag Bus Parity error failed to reset following a Controller Reset.	2 3	Bus In under Controller/Interface Check Tag '04' Bus '01' Received 0xxx xxxx Expected Not used	CTL-I 160, Entry A		50
A132	**3**	CTL-I Bus Out Parity error failed to come on after being forced.	2 3	Bus In under Controller/Interface Check Tag '04' Bus '01' Received x1xx xxxx Expected Not used	CTL-I 371, Entry A	CTL-I Bus Out Parity error is forced by: 1. Placing a value on Bus Out. 2. Raising Tag Gate. 3. Changing the value on Bus Out. 4. Dropping Tag Gate.	50
A133	**3**	CTL-I Bus Out Parity error failed to reset following a Controller Reset.	2 3	Bus In under Controller/Interface Check Tag '04' Bus '01' Received x0xx xxxx Expected Not used	CTL-I 160, Entry A		50
A134	**3**	Error Alert failed to come on after forcing Tag Bus Parity error.	2 3	Not used Not used	CTL-I 401, Entry A		50
A135	**3**	Controller check failed to come on after forcing Tag Bus Parity error.	2 3	Bus In under Drive Status Tag '84' Received 1xxx xxxx Expected Not used	CTL-I 400, Entry C		50
A136	**3**	Error Alert remained active following a Controller Reset.	2 3	Bus In under Controller/Interface Check Tag '04' Bus '01' Received Not used	CTL-I 161, Entry A		50
A137	**3**	Controller check failed to reset following a Controller Reset.	2 3	Bus In under Drive Status Tag '84' Received 0xxx xxxx Expected Not used	CTL-I 160, Entry A		50

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A138	3	Error Alert failed to come on after forcing Bus Out parity error.			CTL-I 401, Entry A		50
A139	3	Controller Check failed to come on after forcing Bus Out parity error.	2	Bus In under Drive Status Tag '84' Received 1xxx xxxx Expected	CTL-I 400, Entry C		50
A13A	3	Error Alert remained active following a controller Reset.	2	Bus In under Controller /Interface Check Tag '04' Bus '01'	CTL-I 161, Entry A		50
A13B	3	Controller check failed to reset following Controlier Reset.	2	Bus In under Drive Status Tag '84' Received 0xxx xxxx Expected	CTL-I 160, Entry A		50
A13C	3	Tag Bus parity check as well as Bus Out parity check failed to come on when forced.	2	Bus In under Sense Status Controller Error 1 Tag '04' Bus '01'	CTL-I 160, Entry B	The Reset line is suspected of being tied down or Bus In Assembler is failing.	50

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A140	4	Tag Valid was not received for a given controller tag. However, no Tag Bus or Bus Out Parity checks were detected.	2	Controller tag that failed to give Tag Valid.	CTL-I 271, Entry B	Bus Out value was zero for all immediate operations tags, and '20' for all extended operations tags.	55
A141	4	Normal End was not received for a given controller tag. Applies to Immediate operations.	2	Controller tag that failed to give Normal End.	CTL-I 272, Entry A	Bus Out value was zero.	55
A142	4	Tag Valid was not received for a given controller tag. However, Tag Bus Parity error was detected.	2 3 4	Bus In under Received Sense Status Controller Error 1 Tag '04' Bus '01' 0xxx xxxx Expected Failing tag	CTL-I 380, Entry E		55
A143	4	Tag Valid was not received for a given controller tag. However, Bus Out Parity error was detected.	2 3 4	Bus In under Received Sense Status Controller Error 1 Tag '04' Bus '01' x0xx xxxx Expected Failing tag	CTL-I 370, Entry E		55
A144	4	Tag Valid was not received for Display CE High tag.			CTL-I 271, Entry C	Bus Out was set to '8C'.	55
A145	4	Normal End was not received for Display CE High tag.			CTL-I 272, Entry B	Bus Out was set to '8C'.	55
A146	4	Tag Valid was not received for Display CE High tag. However, Tag Bus Parity error was detected.	2	Bus In under Received Sense Status Controller Error 1 Tag '04' Bus '01' 0xxx xxxx Expected	CTL-I 380, Entry E		55
A147	4	Tag Valid was not received for Display CE High tag. However, Bus Out Parity error was detected.	2	Bus In under Received Sense Status Controller Error 1 Tag '04' Bus '01' x0xx xxxx Expected	CTL-I 370, Entry E		55

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referen
A148	**4**	Tag Valid was not received for Display CE Lo Tag.	2 3	Not Used Not Used	CTL-I 271, Entry D	Bus Out was set to '8C'.	55
A149	**4**	Normal End was not received for Tag 0D.	2 3	Not Used Not Used	CTL-I 272, Entry C		55
A14A	**4**	Tag Valid was not received for Display CE Low Tag. iving However, Tag Bus Parity error was detected.	2 3	Bus In under Received Controller/Interface Checks Tag '04' Bus '01' 0xxx xxxx Expected Not Used	CTL-I 380, Entry E		55
A14B	**4**	Tag Valid was not received for Display CE Low Tag. However, Bus Out Parity error was detected.	2 3	Bus In under Received Controller/Interface Checks Tag '04' Bus '01' x0xx xxxx Expected Not Used	CTL-I 370, Entry E		55
A14C	**4**	Normal End was received for one of the Extended Op Tags.	2 3	Tag that gave Normal End. Received Not Used	CTL-I 261 Entry A		55
A14D	**4**	Monitor Check failed to come on when forced.	2 3	Bus In under Received Controller Checks Tag '04' Bus '02' xxxx x1xx Expected Not Used	DATA 221		60
A14E	**4**	Monitor Check failed to reset following Controller General Reset.	2 3	Bus In under Received Controller Checks Tag '04' Bus '02' xxxx x0xx Expected Not Used	CTL-I 160, Entry A		60

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referenc
A150	5	Controller Bus In Parity check failed to come on after being forced.	2	Bus In under Controller/Interface Checks Tag '04' Bus '01' Received xxxx 1xxx Expected	CTL-I 390, Entry C		65
A151	5	Controller Bus In Parity check failed to reset following Controller Reset.	2	Bus In under Controller/Interface Checks Tag '04' Bus '01' Received xxxx 0xxx Expected	CTL-I 390, Entry B		65
A152	5	Bus In value received was other than '20'.	2	Bus In under Lost Orientation Tag '04' Bus '00' Received 0010 0000 Expected	CTL-I 450, Entry A	Either Register Select bit is always active or Lost Orientation bit is always inactive.	65
A153	5	Bus In Parity check in the 3830-2/IFA.		Not used.	CTL-I 452, Entry A		65
A154	5	Bus In value received was other than '00'.		Bus In under Controller/Interface Checks Tag '04' Bus '01' Received 0000 0000 Expected	CTL-I 454, Entry A	If the received value is '01', Register Select bit is always active. If the received value is '20', Register Select bit is always inactive.	65
A155	5	Bus In value received was other than '00'.	2	Bus In under ECC Low Tag '04' Bus '80' Received 0000 0000 Expected	CTL-I 456, Entry A	If the received value is 'FF', Register Select bit is always active. If the received value is '20', Register Select bit is always inactive.	65
A156	5	Bus In value received was other than '00'.	2	Bus In under ECC High Tag '04' Bus '40' Received 0000 0000 Expected	CTL-I 456, Entry A	If the received value is 'FF', Register Select bit is always active. If the received value is '20', Register Select bit is always inactive.	65
A157	5	Bus In value received was other than 'FF'.	2	Bus In under Read G1 Tag '0E' Bus '49' Received 1111 1111 Expected	CTL-I 458, Entry A		65

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MICRODIAGNOSTIC ERROR CODE DICTIONARY

Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referer
A158	**5**	Bus In value received was other than '80'.	**2**	Bus In under Request Drive Status Tag '84' Bus '00' Received 1000 0000 Expected	CTL-I 460, Entry A	If the received value is '20', the Register Select bit is always inactive.	65
A1A1	–	False error stop. Microdiagnostics failed to load properly. This error may occur with any routine.			PANEL 150, Entry A		

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A201 through A207		Errors common to all routines.			MICRO 85		
A210	**1**	Tag Valid not received when Select Tag '83' Bus '10' was issued to select a CE drive.		Not used.	DEV-I 142, Entry A	*Note: This error can be caused by not having a drive in CE mode.* The conditions that should exist during Tag '83' are: 1. Device Tag Bus should equal 000 with the P bit on. 2. Bus Out bit 3 = 1, bit 4 = 0. 3. Enable functions (No Device Interface, Tag Bus, or Bus Out Parity Error) 4. Select Hold from Controller.	105
A211	**1**	Physical Address not returned after issuing Select Drive Tag '83' to select a CE drive.	2	Bus In = 00 under Received Sense Status for Physical Address Tag '04' Bus '10'.	DEV-I 112, Entry A	Tag Valid was returned properly, but no bits were active on the Attention/Select Bus.	105
A212	**1**	File Selection Error indication is on. (1-of-8 Check)	2	Bus In under Received Sense Status for Physical Address Tag '04' Bus '10'.	DEV-I 112, Entry B	This error can be caused by more than one drive returning its address on the Attention/Select Bus. Check to ensure that no more than one drive is in CE mode. Display byte 2 contains the Physical Addresses received.	105
A213	**1**	Monitor Check found to be on after drive selection.	2	Bus In under Received Sense Status for Controller Error 2 Tag '04' Bus '02' xxxx x0xx Expected	DATA 220, Entry A		105
A214	**1**	Device type is other than 3340.	2	Bus In under Received Read Device Type Tag '0A' Bus '80' xxxx x1xx Expected	CTL-I 330, Entry B		105

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Error Code	Test No.	Error Description	CE Panel Lamp Display			Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION				
A220	2	Device Interface Check not on after being forced by the inversion of Tag Bus Parity.	2	Bus In under Device Intf. Checks Tag '89'. xxxx xxx1	Received Expected	DEV-I 182, Entry A	This error could be caused by any one of the following: 1. Failure to invert Tag Bus Parity. 2. Device Tag Bus Parity Latch. 3. Device Interface Check Latch. 4. Bus In bit 1 not returned under Tag '84'. Device Bus In Parity lamp on CE Panel should not be on at this time. 5. CE or Power On Reset always active.	105
A221	2	Device Tag Bus Parity error not on after an Invert Tag Bus Parity command was issued.	2	Bus In under Device Intf. Checks Tag '89'. (Sense Interface) xxxx xxx1	Received Expected	DEV-I 182, Entry A	The Device Tag Bus Parity Latch is working but bit 7 was not returned on Bus In for Tag '89'.	105
A222	2	Device Interface Check failed to reset following a Sense Interface command. (Tag '89')	2	Bus In under Drive Status Tag '84'. (Sense Interface) x0xx xxxx	Received Expected	DEV-I 182, Entry A	Device Interface Check failed to reset or Bus In bit 1 is hot.	105
A223	2	Device Tag Bus Parity error failed to reset following a Sense Interface command. (Tag '89')	2	Bus In under Device Intf. Checks Tag '89'. (Sense Interface) xxxx xxx0	Received Expected	DEV-I 182, Entry A	Device Tag Bus Parity Check failed to reset or Bus In bit 7 is hot.	105
A224	2	Device Interface Check not on after being forced by the inversion of Bus Out Parity.	2	Bus In under Device Intf. Checks Tag '89'. xxxx xxx1	Received Expected	DEV-I 122, Entry A	Interface Check is OK but Device Bus Out Parity Latch is not coming on.	110
A225	2	Device Bus Out Parity error not on after an Invert Bus Out Parity command was issued.	2	Bus In under Device Intf. Checks Tag '89'. (Sense Interface) xxxx xx1x	Received Expected	DEV-I 182, Entry A	The Device Bus Out Parity Latch is working but bit 6 was not returned on Bus In for Tag '89'.	110
A226	2	Device Interface Check failed to reset following a Sense Interface command. (Tag '89')	2	Bus In under Drive Status Tag '84'. x0xx xxxx	Received Expected	DEV-I 122, Entry C	The Sense Interface line (Reset line) has previously been tested (Error Code A222). The Device Interface Check Latch is most likely being held up by the Device Bus Out Parity Latch which should have reset also.	110
A227	2	Device Bus Out Parity error failed to reset following a Sense Interface command. (Tag '89')	2	Bus In under Device Intf. Checks Tag '89'. (Sense Interface) xxxx xx0x	Received Expected	DEV-I 122, Entry C	Device Bus Out Parity Error fails to reset or Device Bus in Bit 6 is active.	110

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A230	**3**	A Device Tag Bus Parity error occurred during Tag '8F' Bus '00'	2	Bus In under Device Interface Checks Tag '89' (Sense Interface) Received xxxx xxx0 Expected	DEV-I 124, Entry A		110
A231	**3**	A Device Bus Out Parity error occurred during a Set HAR to '00' operation. (Tag '8B' Bus Out '00')	2	Bus In under Device Interface Checks Tag '89' (Sense Interface) Received xxxx xx0x Expected	DEV-I 122, Entry C		110
A232	**3**	A Device Bus Out Parity error occurred during a Set HAR to 'FF' operation. (Tag '8B' Bus Out 'FF')	2	Bus In under Device Interface Checks Tag '89' (Sense Interface) Received xxxx xx0x Expected	DEV-I 122, Entry C		110
A233	**3**	Active bits on Bus In following a Sense Interface command, Tag '89'.	2	Bus In under Device Interface Checks Tag '89' (Sense Interface) Received 0000 0000 Expected	DEV-I 182, Entry A	Tag '89' should reset any Device Bus Out or Device Tag Bus Parity Error. (Bits 6 and 7)	110
A234	**3**	Bus In not equal to Bus Out. Bus Out was set to zero.	2	Bus In under Sense Difference Counter (Tag '8F' Bus '09') or Sense HAR (Tag '8F' Bus '05') Received 0000 0000 Expected	DEV-I 182, Entry A	Both the Difference Counter and HAR are used to transfer the Bus Out value to Bus In. (Both paths failed before the error was indicated.)	115
A235	**3**	Bus In not equal to Bus Out. Bus Out was set to 'FF'.	2	Bus In under Sense Difference Counter (Tag '8F' Bus '09'), or Sense HAR (Tag '8F' Bus '05') Received 1111 1111 Expected	DEV-I 182, Entry A	Both the Difference Counter and HAR are used to transfer the Bus Out value to Bus In. (Both paths failed before the error was indicated.)	115
A236	**3**	Bus In not equal to Bus Out. Bus Out value was a sliding 1s pattern. (1, 2, 4, 8, 16, 32, 64, 128)	2	Bus In under Sense Difference Counter (Tag '8F' Bus '09'), or Sense HAR (Tag '8F' Bus '05') Received	DEV-I 182, Entry A	Both the Difference Counter and HAR are used to transfer the Bus Out value to Bus In. (Both paths failed before the error was indicated.) Suspect Enable Register Resets line failed.	115

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A240	**4**	Drive Physical Address was returned while Bus Out bit 4 under Tag '83' was turned on.	2	Bus In under Sense Status for Physical Address Tag '04' Bus '10' Received 0000 0000 Expected	DEV-I 114, Entry A	Device Bus Out bit 4 should block the Attention/Select response, preventing an address bit from being placed on the Attention/Select bus.	120
A241	**4**	Physical Address was not returned for the CE drive.	2	Bus In under Sense Status for Physical Address Tag '04' Bus '10'	DEV-I 112, Entry A		120
A242	**4**	Drive Selection error did not come on when forced. Attempted to select CE drive and one non-CE drive.	2	Bus In under Controller/Interface Checks Tag '04' Bus '01' (Sense Status for Controller Error 1) Received xx1x xxxx Expected	DEV-I 114, Entry B	For this test to run successfully, the following conditions must be met: 1. One drive in the string must have the CE switch on. 2. All other drives must have the CE Mode latch reset. To reset the CE Mode latch: Ensure that the CE switch is off. Make the drive ready. Operate the Attention button.	120

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A250	5	Tag Valid was not received but Device Tag Bus Parity error was on. This error applies to Tags '84', '89'–'8F' only.	2 3 4	Bus In under Received Device Interface Check Tag '89'. (Sense Interface) xxxx xxx0 Expected Not used Drive Tag causing error	DEV-I 124, Entry A		125
A251	5	Tag Valid was not received but Device Bus Out Parity error was on. This error applies to Tags '84', '89'–'8F' only.	2 3 4	Bus In under Received Device Interface Check Tag '89'. (Sense Interface) xxxx xx0x Expected Not used Drive Tag causing error	DEV-I 122, Entry C		125
A252	5	Tag Valid was not received and no Device Tag Bus or Device Bus Out errors were detected. Applies to Tags '84', '89'–'8F' only.	2	Failing Drive Tag	CTL-I 270, Entry E		125
A253	5	Normal End was not received after receiving Tag Valid. Applies to Tags '84', '89'–'8F' only.	2	Failing Drive Tag	CTL-I 270, Entry D		125
A254	5	Interface Check was found to be active following a Set Read/Write.	2	Bus In under Received Read Status Tag '84' x0xx xxxx Expected	DEV-I 124, Entry B		125
A255	5	Tag Valid was not received for Set Read/Write Tag '85'.			CTL-I 270, Entry F		125
A256	5	Tag Valid was not received but Device Tag Bus Parity error was on. This error applies to Tag '82' (Poll Device).	2 3 4	Bus In under Received Device Interface Check Tag '89'. (Sense Interface) xxxx xxx0 Expected Not used Drive Tag causing error	DEV-I 124, Entry A		130
A257	5	Tag Valid was not received but Device Bus Out Parity error was on. This error applies to Tag '82' (Poll Device).	2 3	Bus In under Received Device Interface Check Tag '89'. (Sense Interface) xxxx xx0x Expected Not used	DEV-I 122, Entry C		130

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A258	**5**	Tag Valid was not received for Poll Device Tag '82' without Tag Bus or Bus Out Parity errors.			CTL-I 270, Entry E		130
A259	**5**	Normal End was not received after receiving Tag Valid. Applies to Tag '82' only.			CTL-I 270, Entry D		130
A260	**6**	Tag Valid was received after forcing Tag Bus Parity error. Applies to Tags '8A'–'8F' only.	2	Failing Drive Tag	CTL-I 270, Entry B		130
A270	**7**	Device Bus In Parity error did not come on after being forced.	2	Bus In under Received Controller/Interface Check Tag '04' Bus '01'. (Sense Status for Controller Error 1) xxx1 xxxx Expected	DEV-I 180, Entry B	The Device Bus In Parity lamp on the CE Panel should be on.	135
A271	**7**	Device Bus In Parity error failed to reset following Controller Reset.	2	Bus In under Received Controller/Interface Check Tag '04' Bus '01'. (Sense Status for Controller Error 1) xxx0 xxxx Expected	DEV-I 180, Entry C		135

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A272	7	With FHFE Hot Bus Out or Bus In bits or failure of Set TSF or Sense Status 0 commands.	2	Bus In under Sense Status 0 Tag '8F' Bus '03' Received x000 000x Expected	DEV-I 160, Entry A	Possible causes include: • Hot bits on Bus In, bits 0-6 • Command failure: Set TSF or Sense Status 0.	135
A273	7	Fixed head feature not installed or failure of Set TSF or Sense Status 0 command.	2	Bus In under Sense Status 0 Tag '8F' Bus '03' Received 1000 0001 Expected	DEV-I 160, Entry A	Possible causes include: • Using FHFE microdiagnostic disk on a machine, without fixed head feature. • Bit 0 failed to set Direction bit (Bus Out). • Bit 0 or 7 failure on Bus In.	135
A274	7	With FHFE Direction bit (Bus In bit 0) under Set TSF failed to reset by a Tag '8F' Bus '0E' command	2	Bus In under Sense Status 0 Tag '8F' Bus '03' Received 0000 0001 Expected	DEV-I 160, Entry A		135
A275	7	Basic 3340 microdiagnostic disk installed on a FHFE machine.		Bus In under Sense Status 0 Received 0000 0000 Expected		Insert the correct microdiagnostic disk and restart.	

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A280	8	Device Bus In Parity error indication came on with Bus In not equal to Bus Out. Bus Out values used by this test are: all 0s, all 1s, sliding 1s pattern, and sliding 2s pattern.	2 3	Bus In under Sense HAR Tag '8F' Bus '05' Bus Out value	Received Expected	DEV-I 180, Entry D		135 140
A281	8	Device Bus In Parity error indication came on with Bus In equal to Bus Out.	2 3	Bus In under Sense HAR Tag '8F' Bus '05' Bus Out value	Received Expected	DEV-I 180, Entry D	A parity bit may have been picked or dropped. A malfunction is suspected between the Device Bus In Parity Generator in the device and the Parity Checker in the controller.	135 140
A282	8	Bus In not equal to Bus Out and no Device Bus In Parity error indication. Bus Out value was set to zero.	2 3	Bus In under Sense HAR Tag '8F' Bus '05' Bus Out value	Received Expected	DEV-I 154, Entry A	A malfunction is in HAR, or Set HAR is always active.	135
A283	8	Bus In not equal to Bus Out and no Device Bus In Parity error indication. Bus Out value was set to 'FF'.	2 3	Bus In under Sense HAR Tag '8F' Bus '05' Bus Out value	Received Expected	DEV-I 154, Entry B	A malfunction is in HAR, or Set HAR or Sense HAR control lines failed to activate.	135
A284	8	Bus In not equal to Bus Out and no Device Bus In Parity error indication. Variable values on Bus Out.	2 3	Bus In under Sense HAR Tag '8F' Bus '05' Bus Out value	Received Expected	DEV-I 154, Entry C	A malfunction is suspected in HAR.	140

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A290	9	Device Bus In Parity error indication came on with Bus In not equal to Bus Out. Bus Out values used by this test are: all 0s, all 1s, sliding 1s pattern, and sliding 2s pattern.	2 3	Bus In under Sense Difference Counter Tag '8F' Bus '09'. Received Bus Out value Expected	DEV-I 180, Entry D		140 145
A291	9	Device Bus In Parity error indication came on with Bus In equal to Bus Out.	2 3	Bus In under Sense Difference Counter Tag '8F' Bus '09'. Received Bus Out value Expected	DEV-I 180, Entry D	A parity bit may have been picked or dropped on Device Bus In. A malfunction is suspected between the Device Bus In Parity Generator in the device and the Device Bus In Parity Checker in the controller.	140 145
A292	9	Bus In not equal to Bus Out and no Device Bus In Parity error indication. Bus Out value was set to zero.	2 3	Bus In under Sense Difference Counter Tag '8F' Bus '09'. Received Bus Out value Expected	DEV-I 154, Entry D	A malfunction is in the Difference Counter, or Set Difference Counter is always active.	140
A293	9	Bus In not equal to Bus Out and no Device Bus In Parity error indication. Bus Out value was set to 'FF'.	2 3	Bus In under Sense Difference Counter Tag '8F' Bus '09'. Received Bus Out value Expected	DEV-I 154, Entry E	A malfunction is in the Difference Counter, or the Set Difference Counter, or Sense Difference Counter control lines failed to activate.	140
A294	9	Bus In not equal to Bus Out and no Device Bus In Parity error indication. Variable values on Bus Out.	2 3	Bus In under Sense Difference Counter Tag '8F' Bus '09'. Received Bus Out value Expected	DEV-I 154, Entry F	A malfunction is suspected in the Difference Counter.	145

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A2A0	A	Bus In not equal to Bus Out (variable Bus Out values).	2 3	Bus In under Sense Difference Counter Tag '8F' Bus '09' Received Bus Out value Expected	DEV-I 152, Entry E		145
A2A1	A	Without FHFE The 256 bit in the Head Address Register is reset to zero while the Difference Counter decremented 255 times.	2	Bus In under Sense HAR Tag '8F' Bus '05' Received x1xx xxxx Expected	DEV-I 152, Entry E		145
		With FHFE The 256 bit in the TSF Register is reset to zero while the Difference Counter decremented 255 times.	2	Bus In under Sense Status 0 Tag '8F' Bus '03' Received xx1x xxxx Expected			
A2A2	A	Without FHFE The 256 bit in the Head Address Register failed to reset to zero after the Difference Counter decremented from 256 (HAR bit 1 on) to 255.	2	Bus In under Sense HAR Tag '8F' Bus '05' Received x0xx xxxx Expected	DEV-I 152, Entry E	This error may also be caused by a failure of the Sense Status 0 command. If running a drive with FHFE, Sense Status 0, bit 7 should be equal to 1. Routine B3 may be used to verify this condition.	145
		With FHFE The 256 bit in the TSF Register failed to reset to zero after the Difference Counter decremented from 256 (TSF bit 2 on) to 255.	2	Bus In under Sense Status 0 Tag '8F' Bus '03' Received xx0x xxxx Expected			

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Error Code	Test No.	Error Description	CE Panel Lamp Display			Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION				
A2B0	**B**	Device Bus In Parity check. Sense CAR value not equal to Set CAR value.	2 3	Bus In under Sense CAR Tag '8F' Bus '01' CAR value	Received Expected	DEV-I 182, Entry A		150 155
A2B1	**B**	Device Bus In Parity Check. Sense CAR value equal to Set CAR value.	2 3	Bus In under Sense CAR Tag '8F' Bus '01' CAR value	Received Expected	DEV-I 180, Entry D		150 155
A2B2	**B**	Value set in CAR does not equal value received under Sense CAR, no Device Bus In Parity check.	2	Bus In under Sense CAR Tag '8F' Bus '01' 0000 0000	Received Expected	DEV-I 170, Entry B		150
A2B3	**B**	Bus In not equal to 'FF' on Sense CAR. CAR was set to 'FF'.	2	Bus In under Sense CAR Tag '8F' Bus '01' 1111 1111	Received Expected	DEV-I 170, Entry C		155
A2B4	**B**	Value set in CAR does not equal value received under Sense CAR. CAR set to variable patterns.	2 3	Bus In under Sense CAR Tag '8F Bus '01' CAR value	Received Expected	DEV-I 170, Entry D		155
A2B5	**B**	String switch bit not active and machine has a CAR.	2	Not used		SSW 125, Entry A	Suspect string switch bit (Bit 3 under Tag '06' Bus '00') being stuck down or string switch feature is not installed but Cylinder Address Register (CAR) card is installed (card A1J4 should not be plugged unless string switch feature is installed).	150

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A301 through A307		Errors common to all routines			MICRO 85		None

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A310	1	Data module sequence status was found to be other than '60'. Data module load/unload error. Check that correct CE Mode switch is on and a data module is loaded on the service drive.	2	Bus In under Received Data Module Sequence and Control Tag '8F' Bus '43' 0110 0000 Expected	DM 101, Entry A	Make sure a data module has been loaded on the service drive. Check that the correct CE mode switch is on.	205
A311	1	Drive check failed to reset following Check Reset.	2 3	Bus In under Received Drive Status Tag '84' xx0x xxxx Expected Not Used	ACC 100, Entry A		205
A312	1	Data Module Ready Attention remained outstanding following Attention Reset.	2 3	Bus In under Received Drive Status Tag '84' xxxx x0xx Expected Not used	ACC 200, Entry A		205
A313	1	Busy Attention remained outstanding following Attention Reset.	2 3	Bus In under Received Drive Status Tag '84' xxxx xx0x Expected Not used	ACC 210, Entry B		205
A314	1	Seek Complete/Sector Compare Attention remained outstanding following Attention Reset.	2 3	Bus In under Received Drive Status Tag '84' xxxx xxx0 Expected Not used	ACC 220, Entry B		205

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A320	2	Access Status received was other than 000x 0001 after issuing a Servo Go Home command.	2	Bus In under Access Status Tag '8F' Bus '13' Received 000x 0001 Expected	ACC 310, Entry A		205
A321	2	Access Timeout Check failed to come on after being forced.	2	Bus In under Access Status Tag '8F' Bus '13' Received 1xxx xxxx Expected	ACC 110, Entry B		205
A322	2	Drive Check failed to come on after forcing Access Timeout Check.	2	Bus In under Read Status Tag '84' Bus '00' Received xx1x xxxx Expected	ACC 100, Entry B		205
A323	2	Access Timeout Check failed to reset following Check Reset.	2	Bus In under Access Status Tag '8F' Bus '13' Received 0xxx xxxx Expected	ACC 110, Entry A		205
A324	2	Drive Check failed to reset following Check Reset.	2	Bus In under Read Status Tag '84' Bus '00' Received xx0x xxxx Expected	ACC 100, Entry A		205
A325	2	Failed to get Busy indication following a Rezero command.	2 3	Bus In under Drive Status Tag '84' Received xxxx xx10 Expected Not used	ACC 210, Entry C		205
A326	2	Premature Drive Check was detected within 140 milli-seconds following a Rezero command.	2 3	Bus In under Drive Status Tag '84' Received xx0x xxxx Expected Not Used	ACC 110, Entry C		205
A327	2	Access Timeout Check failed to come on after being forced.	2 3	Bus In under Access Status Tag '8F' Bus '13' Received 1xxx xxxx Expected Not used	ACC 110, Entry D		205

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A328	2	Access Timeout check failed to reset following Check Reset.	2 3	Bus In under Received Access Status Tag '8F' Bus '13' 0xxx xxxx Expected Not Used	ACC 110, Entry A		208

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A330	3	Drive Busy was not received following a Rezero command.	2 3	Bus In under Received Drive Status Tag '84' xxxx xx1x Expected Not Used	ACC 210, Entry C		210
A331	3	Difference Counter failed to reset to zero following a Rezero operation.	2 3	Bus In under Received Sense Difference Counter Tag '8F' Bus '09' 0000 0000 Expected Not Used	DEV-I 152, Entry D		210
A332	3	Head Address Register failed to reset to zero following a Rezero operation.	2 3	Bus In under Received Sense HAR Tag '8F' Bus '05' 0000 0000 Expected Not Used	DEV-I 152, Entry D		210
A333	3	Seek Complete was not received in 220 milliseconds after a Rezero operation.	2 3	Bus In under Received Drive Status Tag '84' xxxx xxx1 Expected Not Used	ACC 220, Entry A		210
A334	3	Busy Attention failed to reset following Attention Reset.	2 3	Bus In under Received Drive Status Tag '84' xxxx xx0x Expected Not Used	ACC 210, Entry B		210
A335	3	Seek Complete Attention failed to reset following Attention Reset.	2 3	Bus In under Received Drive Status Tag '84' xxxx xxx0 Expected Not Used	ACC 220, Entry B		210
A336	3	Odd Track indication is still on after a Rezero operation.	2 3	Bus In under Received DM Sequential Control Tag '8F' Bus '43' xxxx xxx0 Expected Not used	ACC 310, Entry C		210
A337	3	Drive Check indication came up following a Rezero operation.	2 3	Bus In under Received Access Status Tag '8F' Bus '13' Not Used	ACC 300, Entry A		210

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A338	3	With FHFE Difference Counter 256 bit and/or Direction bit failed to reset on a Rezero command.	2	Bus In under Received Sense Status 0 Tag '8F' Bus '03' 0x0x xxxx Expected	DEV-I 160, Entry A		210
A340	4	Seek Complete was not received following a Seek Start command. Both Head Address Register and Difference Counter were zero.	2	Bus In under Received Drive Status Tag '84' xxxx xxx1 Expected	ACC 520, Entry A		215
A341	4	Attention was not active when polling device.	2	Bus In under Received Poll Device Tag '82' 1xxx xxxx Expected	DEV-I 200, Entry B		215
A342	4	Attention failed to reset following Attention Reset.	2	Bus In under Received Poll Device Tag '82' 0xxx xxxx Expected	DEV-I 200, Entry D		215

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A350	5	No BSDA was received during a Poll Device operation with the CE drive selected.	2	Bus In under Tag '82' Bus '00' Received For expected value, refer to table 1.	DEV-I 112, Entry A	**Table 1** **Selected Drive** / **Expected Value** 0 '80' 1 '40' 2 '20' 3 '10' 4 '08' 5 '04' 6 '02' 7 '01' *Note: The selected drive is the physical address of the drive that is in CE Mode.*	220
A351	5	Incorrect BSDA was received during a Poll Device operation with the CE drive selected.	2	Bus In under Tag '82' Bus '00' Received For expected value, refer to table 1.	CTL-I 340		220
A352	5	With the Unsuppressible Register set and the polling device unsuppressible, no BSDA was returned.	2	Bus In under Tag '82' Bus '10' Received For expected value, refer to table 1.	CTL-I 340		220
A353	5	With the Unsuppressible Register set and the polling device unsuppressible, the BSDA returned was incorrect.	2	Bus In under Tag '82' Bus '10' Received For expected value, refer to table 1.	CTL-I 340		220
A354	5	With the Unsuppressible Register reset and the polling device unsuppressible, a BSDA value was returned.	2	Bus In under Tag '82' Bus '10' Received 0000 0000 Expected	CTL-I 340		220

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A360	**6**	Received an incorrect controller status byte.	2	Bus In under Controller Checks Tag '04' Bus '02' Received 0000 000x Expected		Run routine B3. Display the symptom code and refer to the FSI.	225
A361	**6**	Normal End was received prematurely for Set Read/Write Tag '85'.		Not used	CTL-I 261, Entry A		225
A362	**6**	Check End was received for Set Read/Write Tag '85'.		Not used	CTL-I 261, Entry B		225
A363	**6**	Normal End was not received in 500 microseconds after issuing Tag '85' and with no error conditions set.		Not used	CTL-I 260, Entry B		225
A364	**6**	Normal End was not reset by the Response line.		Not used	CTL-I 430, Entry A		225
A365	**6**	Error Alert was active due to a check condition other than Controller Check or Read/Write Check.	2	Bus In under Drive Status Tag '84'		Run routine B3. Display the symptom code and refer to the FSI.	225
A366	**6**	Error Alert was active due to Controller Check. However, the controller status byte was found to be other than 0000 000x.	2	Bus In under Controller Checks Tag '04' Bus '02' Received 0000 000x Expected		Use bits 0-6 of byte 2 to form Symptom Code 92xx and refer to the FSI.	225

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referenc
A367	6	Controller Check came on after the Set Read/Write Tag while Error Alert was found to be active. Proper Controller Status was returned.	2 3	Bus In under Controller Interface Tag '04' Bus '01' Not used		Run Routine B3 to form a symptom code and refer to FSI 60.	225
A368	6	Interface Check was found to be active after the Set Read/Write while Error Alert was inactive.	2 3	Bus In under Drive Status Tag '84' Received x0xx xxxx Expected Not used	DEV-I 124, Entry B		225
A369	6	Without FHFE Read/Write Check came on after Set Read/Write while Error Alert was active.	2 3	Bus In under Sense Read/Write Tag '8F' Bus '0B' Not used	R/W 280, Entry C		225
		With FHFE False Read/Write Check.	2 3	Bus In under Sense Read/Write Tag '8F' Bus '0B' Not used	R/W 280, Entry E		
A36A	6	With FHFE Low Gain Check.	2 3	Bus In under Sense Status 0 Tag '8F' Bus '03' Not used	R/W 290, Entry F		225
A36B	6	With FHFE Write Safety Check.	2 3	Bus In under Sense Read/Write Tag '8F' Bus '0B' Not used	R/W 280, Entry C		225

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A370	7	Normal End was received for Set Read/Write Tag '85' without even selecting a CE drive.		Not used	CTL-I 261, Entry A		230
A371	7	No PLO Input error indication failed to come on after being forced.	2	Bus In under Controller Check Tag '04' Bus '02' x1xx xxxx — Received / Expected	DATA 261, Entry A		230
A372	7	Controller Check failed to come on after receiving No PLO Input indication.	2	Bus In under Drive Status Tag '84' 1xxx xxxx — Received / Expected	DATA 261, Entry A		230
A373	7	Error Alert did not come on after receiving Controller Check.		Not used	DATA 261, Entry A		230
A374	7	No PLO Input error indication failed to reset following Controller Reset.	2	Bus In under Controller Check Tag '04' Bus '02' x0xx xxxx — Received / Expected	CTL-I 160, Entry A		230
A375	7	Controller Check failed to reset following Controller Reset.	2	Bus In under Drive Status 0xxx xxxx — Received / Expected	DATA 261, Entry A		230
A376	7	Error Alert failed to reset following Controller Reset.		Not used	DATA 261, Entry A		230

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A380	8	Busy indication failed to come on following a Rezero operation.	2	Bus In under Read Status Tag '84' Received: xxxx xx1x Expected	ACC 210, Entry C		235 240
A381	8	Seek Complete was not received in 220 milliseconds following a Rezero operation.	2	Bus In under Read Status Tag '84' Received: xxxx xxx1 Expected	ACC 220, Entry A		235 240
A382	8	Servo Off Track error failed to come on after being forced (Method 1).	2	Bus In under Access Status Tag '8F' Bus '13' Received: xx1x xxxx Expected	ACC 130, Entry B		235
A383	8	Drive check failed to come on after being forced.	2	Bus In under Access Status Tag '8F' Bus '13' Received: xx1x xxxx Expected	ACC 100, Entry B		235
A384	8	Capable/Enable check failed to come on after being forced.	2	Bus In under Sense Read/Write Tag '8F' Bus '0B' Received: x1xx xxxx Expected	R/W 210, Entry A		235
A385	8	Index check failed to come on after being forced.	2	Bus In under Sense Read/Write Tag '8F' Bus '0B' Received: xxx1 xxxx Expected	RPI 100, Entry C		235
A386	8	Read/Write check failed to come on after being forced.	2	Bus In under Read Status Tag '84' Received: xxx1 xxxx Expected	R/W 280, Entry E		235
A387	8	Drive check failed to reset following Check Reset.	2	Bus In under Read Status Tag '84' Received: xx0x xxxx Expected	ACC 100, Entry A		235

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A388	8	Capable/Enable check failed to reset following Check Reset.	2	Bus In under Sense Read/Write Tag '8F' Bus '0B' Received x0xx xxxx Expected	R/W 210, Entry B		235
A389	8	Index check failed to reset following Check Reset.	2	Bus In under Sense Read/Write Tag '8F' Bus '0B' Received xxx0 xxxx Expected	RPI 100, Entry D		235
A38A	8	Read/Write check failed to reset following Check Reset.	2	Bus In under Read Status Tag '84' Received xxx0 xxxx Expected	R/W 280, Entry E		235
A38B	8	Drive check was found to be active following a Rezero operation.	2	Bus In under Access Status Tag '8F' Bus '13'	ACC 300, Entry A		240

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referen
			BYTE	DESCRIPTION			
A401 through A407		Errors common to all routines.			MICRO 85		None

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Error Code	Test No.	Error Description	CE Panel Lamp Display			Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION				
A410	**1**	Seek Complete not active after a Rezero command.	2	Drive Status xxxx xxx0 xxxx xxx1	Received Expected	ACC 220, Entry A		305
A411	**1**	Drive check after a Rezero command.	2	Access Status xxxx xxxx 0001 1110	Received Expected	ACC 300, Entry A		305
A412	**1**	Read/Write check during a Read Home Address routine.	2	R/W Safety xxxx xxxx 0000 0000	Received Expected	R/W 280, Entry C		305
A413	**1**	Home Address Read does not compare to expected Home Address.	2 3 4 5	PA1 PA2 PA1 PA2	Received Expected	ACC 370, Entry A	Run attachment tests before continuing. This error may be a read problem.	305
A414	**1**	Timeout waiting for End Response (Normal/Check End).	2	Not used		CTL-I 260, Entry B		
A415	**1**	Check End after Read G1 command.	2	Check End Byte (Read G1 command only) xxxx xxxx	Received	CTL-I 210, Entry A		
A416	**1**	Error Alert after a Set Read/Write or Read G1 command.	2	Not used			Run routine B3. Display the symptom code and refer to the FSI.	
A417	**1**	Microprogram timed-out waiting for a response from the controller during a Read G1 operation.	2	Not used		DATA 113		

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referenc
A418	01	Busy did not become active on a Rezero command.	2	Drive Status Received xxxx xx0x xxxx xx1x Expected	ACC 210, Entry C		305

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A420	2	Seek Complete not active after a no-motion Seek.	2	Access Status Received xxxx xxxx 0001 1110 Expected	ACC 520, Entry A		
A421	2	Drive check after a no-motion Seek.	2	Access Status Received xxxx xxxx 0001 1110 Expected	ACC 510, Entry A		310
A422	2	Read/Write check occurred during a Read Home Address routine.	2	R/W Safety Received xxxx xxxx 0000 0000 Expected	R/W 280, Entry C		310
A423	2	Home Address read does not compare to expected Home Address.	2 PA1 3 PA2 4 PA1 5 PA2	Received Expected	ACC 500, Entry A		310
A424	2	Timeout waiting for End Response (Normal/Check End).	2	Not used	CTL-I 260, Entry B		
A425	2	Check End after Read G1 command.	2	Check End Byte Received (Read G1 command only) xxxx xxxx	CTL-I 210, Entry A		
A426	2	Error Alert after a Set Read/Write or Read G1 command.	2	Not used		Run routine B3. Display the symptom code and refer to the FSI.	
A427	2	Microprogram timed-out waiting for a response from the controller during a Read G1 operation.	2	Not used	DATA 113		

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A428	2	Busy and/or Seek Complete failed to reset with Attention Reset.	2	Drive Status xxxx xx11 or xxxx xx01 or xxxx xx10 — Received xxxx xx00 — Expected	ACC 210, Entry B or ACC 220, Entry B	ACC 210 if bit 6 is on ACC 220 if bit 7 is on	310
A429	2	Seek Complete late after a no-motion Seek.	2	Drive Status xxxx xxx1 — Received	ACC 520, Entry B		310

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A430	3	Seek Complete not active after a Rezero command.	2	Drive Status Received xxxx xxx0 xxxx xxx1 Expected	ACC 220, Entry A		315 320 325
A431	3	Track Crossing pulse not active within 300 microseconds after a Seek Start.	2	Not used		Run routine A6, A8 Servo diagnostic sequence. Troubleshoot first microdiagnostic error encountered.	315
A432	3	Track Crossing pulse remained active more than 100 microseconds.	2	Not used		Run routine A6, A8 Servo diagnostic sequence. Troubleshoot first microdiagnostic error encountered.	315
A433	3	Overshoot check became active too early.	2	Not used	ACC 120, Entry D		315
A434	3	Overshoot check not active when forced on.	2	Access Status Received x0xx xxxx x1xx xxxx Expected	ACC 120, Entry C		315
A435	3	Failed to set Drive check after forced Overshoot check.	2	Drive Status Received xx0x xxxx xx1x xxxx Expected	ACC 100, Entry B		315
A436	3	Overshoot check failed to reset with Check Reset.	2	Access Status Received x1xx xxxx 00xx xxxx Expected	ACC 120, Entry A		315 320
A437	3	Drive check failed to reset with Check Reset.	2	Drive Status Received xx0x xxxx xx1x xxxx Expected	ACC 100, Entry A		315 320

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Error Code	Test No.	Error Description	CE Panel Lamp Display			Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION				
A438	3	Failed to get Forced Drive check (Method 2).	2	Drive Status xx0x xxxx xx1x xxxx	Received Expected	ACC 120, Entry E		320
A439	3	Failed to get Forced Overshoot check (Method 2).	2	Access Status x0xx xxxx x1xx xxxx	Received Expected	ACC 120, Entry E		320
A43A	3	Failed to get Busy on a Seek Start (Method 3).	2	Drive Status xxxx xx0x xxxx xx1x	Received Expected	ACC 210, Entry C		325
A43B	3	Failed to get forced Overshoot check (Method 3).	2	Access Status x0xx xxxx x1xx xxxx	Received Expected	ACC 120, Entry F		325
A43C	3	An unexpected Drive check occurred during a 2-cylinder Seek prior to home position, or when in the home position without the overshoot check bit being on.	2	Access Status	Received		Run Routine A8. Refer to MICRO Error Code Dictionary for any error stop.	325
A43D	3	Drive check after a Rezero command (all methods).	2	Access Status xxxx xxxx 0001 1110	Received Expected	ACC 300, Entry A		315 320 325

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A440	**4**	Busy did not become active on a Rezero command.	2	Drive Status xxxx xx0x Received xxxx xx1x Expected	ACC 210, Entry C		330 335
A441	**4**	Microprogram timed-out waiting for Track Crossing or Control latch to set.	2	Access Status xxx0 xxxx or xxxx xx0x } Received xxx1 xxxx or xxxx xx1x } Expected		Run routine A6, A8 diagnostic sequence. Troubleshoot first microdiagnostic error encountered.	330
A442	**4**	Seek Complete not active after a Rezero command.	2	Drive Status xxxx xxx0 Received xxxx xxx1 Expected	ACC 220, Entry A		330 335
A443	**4**	Seek Complete not active after a Seek command.	2	Drive Status xxxx xxx0 Received xxxx xxx1 Expected	ACC 220, Entry A		330
A444	**4**	Drive Check after a Seek Start.	2	Access Status xxxx xxxx Received 0001 1110 Expected	ACC 510, Entry A		330
A445	**4**	Time measured from the leading edge of the first track crossing pulse to the set of Control latch is less than 2 milliseconds.	2 3	High-order count in microseconds Low-order count in microseconds	ACC 700, Entry C		330
A446	**4**	Drive check after a Rezero operation.	2	Access Status 1xxx xxxx Received 0001 1110 Expected	ACC 300, Entry A		330 335

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referenc
			BYTE	DESCRIPTION			
A450	5	Odd Track did not Set/Reset for odd/even cylinder.	2	Data Module Sequence Control xxxx xxx0 or xxxx xxx1 — Received 0110 0001 or 0110 0000 — Expected	ACC 520, Entry C		340
A451	5	Drive Check after a Seek command.	2	Access Status — Received xxxx xxxx 0001 1110 — Expected	ACC 510, Entry A		340
A452	5	Read/Write check during a Read Home Address routine.	2	R/W Safety — Received xxxx xxxx 0000 0000 — Expected	R/W 280, Entry C		340
A453	5	Home Address read does not compare to expected Home Address.	2 3 4 5 6	Not used PA1, PA2 — Received PA1, PA2 — Expected	ACC 500, Entry A	Run attachment tests before continuing. This error may be a read problem.	340
A454	5	Timeout waiting for End response (Normal/Check End).	2	Not used	CTL-I 260, Entry B		380
A455	5	Check End after Read G1 command.	2	Check End byte — Received (Read G1 command only) xxxx xxxx	CTL-I 210, Entry A		380
A456	5	Error Alert after a Set Read/Write or Read G1 command.	2	Not used		Run routine B3. Display the symptom code and refer to the FSI.	380
A457	5	Microprogram timed-out waiting for a response from the controller during a Read G1 operation.	2	Not used	DATA 113		380

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A460	**6**	Odd Track did not Set/Reset for odd/even cylinder.	2	Data Module Sequence Control xxxx xxx1 or xxxx xxx0 — Received 0110 0000 or 0110 0001 — Expected	ACC 520, Entry C		345
A461	**6**	Drive check after a Seek command.	2	Access Status xxxx xxxx — Received 0001 1110 — Expected	ACC 510, Entry A		345
A462	**6**	Read/Write check during a Read Home Address routine.	2	R/W Safety xxxx xxxx — Received 0000 0000 — Expected	R/W 280, Entry C		350
A463	**6**	Home Address read does not compare to expected Home Address.	2 3 4 5 6	Not used PA1, PA2 — Received PA1, PA2 — Expected	ACC 500, Entry A		345
A464	**6**	Timeout waiting for End response (Normal/Check End).	2	Not used	CTL-I 260, Entry B		380
A465	**6**	Check End after Read G1 command.	2	Check End byte (Read G1 command only) xxxx xxxx — Received	CTL-I 210, Entry A		380
A466	**6**	Error Alert after a Set Read/Write or Read G1 command.	2	Not used		Run Routine B3. Display the symptom code and refer to the FSI.	380
A467	**6**	Microprogram timed-out waiting for a response from the controller during a Read G1 operation.	2	Not used	DATA 113		380

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A470	7	Odd Track did not Set/Reset for odd/even cylinder.	2	Data Module Sequence Control xxxx xxx1 or xxxx xxx0 } Received 0110 0000 or 0110 0001 } Expected	ACC 520, Entry C		355
A471	7	Drive check after a seek.	2	Access Status Received xxxx xxxx 0001 1110 Expected	ACC 510, Entry A		355
A472	7	Read/Write check during a Read Home Address routine.	2	R/W Safety Received xxxx xxxx 0000 0000 Expected	R/W 280, Entry C		355
A473	7	Home Address read does not compare to expected Home Address.	2 3 PA1 4 PA2 Received 5 PA1 6 PA2 Expected	Not used	ACC 500, Entry A		355
A474	7	Timeout waiting for End response (Normal/Check End)	2	Not used	CTL-I 260, Entry B		380
A475	7	Check End after Read G1 command.	2	Check End byte Received (Read G1 command only) xxxx xxxx	CTL-I 210, Entry A		380
A476	7	Error Alert after a Set Read/Write or Read G1 command.	2	Not used		Run Routine B3. Display the symptom code and refer to the FSI.	380
A477	7	Microprogram timed-out waiting for a response from the controller during a Read G1 operation.	2	Not used	DATA 113		380

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A480	**8**	Odd Track did not Set/Reset for Odd/Even Cylinder.	2	Data Module Sequence Control xxxx xxx1 or xxxx xxx0 — Received 0110 0000 or 0110 0001 — Expected	ACC 520, Entry C		360
A481	**8**	Drive check after a Seek.	2	Access Status xxxx xxxx — Received 0001 1110 — Expected	ACC 510, Entry A		360
A482	**8**	Read/Write check during a Read Home Address routine.	2	Read/Write Safety xxxx xxxx — Received 0000 0000 — Expected	R/W 280, Entry C		365
A483	**8**	Home Address read does not compare to expected Home Address.	2 3 PA1 4 PA2 5 PA1 6 PA2	Not used Received Expected	ACC 500, Entry A		360
A484	**8**	Timeout waiting for End response (Normal/Check End).	2	Not used	CTL-I 260, Entry B		380
A485	**8**	Check End after Read G1 command.	2	Check End byte (Read G1 command only) xxxx xxxx — Received	CTL-I 210, Entry A		380
A486	**8**	Error Alert after a Set Rd/Wr or Read G1 command.	2	Not used		Run routine B3. Display the symptom code and refer to the FSI.	380
A487	**8**	Microprogram timed-out waiting for a response from the controller during a Read G1 operation.	2	Not used	DATA 113		380

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A490	9	Odd Track did not Set/Reset for Odd/Even Cylinder.	2	Data Module Sequence Control xxxx xxx1 or xxxx xxx0 — Received 0110 0000 or 0110 0001 — Expected	ACC 520, Entry C		370
A491	9	Drive check after a seek.	2	Access Status — Received xxxx xxxx 0001 1110 — Expected	ACC 510, Entry A		370
A492	9	Read/Write check during a Read Home Address routine.	2	Read/Write Safety — Received xxxx xxxx 0000 0000 — Expected	R/W 280, Entry C		370
A493	9	Home Address read does not compare to Expected Home Address.	2 3 PA1, 4 PA2 5 PA1, 6 PA2	Not used Received Expected	ACC 500, Entry A		370
A494	9	Timeout waiting for End response (Normal/Check End).	2	Not used	CTL-I 260, Entry B		380
A495	9	Check End after Read G1 command.	2	Check End byte — Received (Read G1 command only) xxxx xxxx	CTL-I 210, Entry A		380
A496	9	Error Alert after a Set Rd/Wr or Read G1 command.	2	Not used		Run routine B3. Display the symptom code and refer to the FSI.	380
A497	9	Microprogram timed out waiting for a response from the controller during a Read G1 operation.	2	Not used	DATA 113		380

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A4A0	A	Seek Complete not active after a Rezero command.	2	Drive Status xxxx xxx0 Received xxxx xxx1 Expected	ACC 220, Entry A		375
A4A1	A	Seek Complete not active after a 12-cylinder Seek.	2	Drive Status xxxx xxx0 Received xxxx xxx1 Expected	ACC 220, Entry A		375
A4A2	A	Read/Write Check occurred during a Read Home Address routine.	2	Read/Write Safety xxxx xxxx Received 0000 0000 Expected	R/W 280, Entry C		375
A4A3	A	Home Address read does not compare to expected Home Address for Cylinder 0 or Cylinder 12.	2 3 4 4	PA1 / PA2 Received 0000 0000 or 0000 1100 PA1 Expected 0000 0000 PA2 Expected	ACC 500, Entry A		375
A4A4	A	Timeout waiting for End response (Normal/Check End).	2	Not used	CTL-I 260, Entry B		380
A4A5	A	Check End after Read G1 command.	2	Check End byte (Rd G1 command only) xxxx xxxx Received	CTL-I 210, Entry A		380
A4A6	A	Error Alert after a Set Read/Write or Read G1 command.	2	Not used		Run routine B3. Display the symptom code and refer to the FSI.	380
A4A7	A	Microprogram timed-out waiting for a response from the controller during a Read G1 operation.	2	Not used	DATA 113		380

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A4A8	A	Drive check after a 12-cylinder seek.	2	Access Status Received xxxx xxxx 0001 1110 Expected	ACC 510, Entry A		375
A4A9	A	Drive check after a Rezero command.	2	Access Status Received xxxx xxxx 0001 1110 Expected	ACC 300, Entry A		375

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MICRODIAGNOSTIC ERROR CODE DICTIONARY

Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A501 through A507		Errors common to all routines.			MICRO 85		

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A510	1	RPS feature bit failed to come on. Bit is suspected of being forced off.	2	Bus In under Sense Target Tag '8F' Bus '0D' 1xxx xxxx Received Expected	RPI 600, Entry B		455
A511	1	Busy indication came on while the RPS bit was off, indicating that the Sense Target command is failing.	2	Bus In under Drive Status Tag '84' xxxx xx0x Received Expected	RPI 600, Entry C		455
A512	1	Drive Bus In Parity error indication came on with Bus In not equal to Bus Out. Bus Out values used by this test are: all zeros, all ones, sliding one's, and sliding two's pattern.	2 3	Bus In under Sense Target Tag '8F' Bus '0D' Bus Out value	DEV-I 180, Entry D	A parity bit was dropped between the Parity Generator and the controller, or a bad Parity Generator.	455 460
A513	1	Drive Bus In Parity error indication came on with Bus In equal to Bus Out.	2 3	Bus In under Sense Target Tag '8F' Bus '0D' Bus Out value	DEV-I 180, Entry D	A parity bit was picked up between the Parity Generator and the controller.	455 460
A514	1	Bus In not equal to Bus Out and no Bus In Parity check. Bus Out value was set to '00'. '80' was expected on Bus In, because with the RPS Feature, bit 0 is expected to be on.	2 3	Bus In under Sense Target Tag '8F' Bus '0D' Bus Out value	RPI 600, Entry D	A malfunction is suspected in the register, or between Bus In and the Parity Generator.	455
A515	1	Bus In not equal to Bus Out and no Bus In Parity check. Bus Out value was set to '7F'. 'FF' was expected because with the RPS feature, bit 0 is expected to be on.	2 3	Bus In under Sense Target Tag '8F' Bus '0D' Bus Out value	RPI 600, Entry D	Same as Error A514.	455
A516	1	Bus In not equal to Bus Out and no Bus In Parity check. Variable values on Bus Out.	2 3	Bus In under Sense Target Tag '8F' Bus '0D' Bus Out value	RPI 600, Entry D	Same as Error A514.	455

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A520	2	Index Mark was not received in 10.4 milliseconds.		Not used	RPI 103, Entry D		495
A521	2	Index Mark pulse width was greater than 10 microseconds.		Not used	RPI 103, Entry A		495
A522	2	Index Mark pulse width was less than 8 microseconds.		Not used	RPI 103, Entry B		495
A523	2	Time between two consecutive Index marks was less than 9.8 milliseconds.		Not used	RPI 103, Entry C	Time was based on 10.1 milliseconds ± 3%.	495
A524	2	Index check was active after receiving Index. Early Index is suspected.	2	Bus-In under Read/Write Safety Tag '8F' Bus '0B' Received xxx0 xxxx Expected	RPI 100, Entry B		465
A525	2	Active track indication does not follow HAR bit 7. Active track was on at this point.	2	Bus-In under Drive Status Tag '84' Received xxxx xxx0 Expected	RPI 100, Entry E		465
A526	2	Active track indication does not follow HAR bit 7. Active track was off at this point.	2	Bus-In under Drive Status Tag '84' Received xxxx xxx1 Expected	RPI 100, Entry E		465
A527	2	Active track indication failed to change states after index mark.	2	Bus-In under Drive Status Tag '84' Received xxxx xxx0 Expected	RPI 100, Entry E		465

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A528	2	Active track indication in the controller was found to be on during the time active track in the drive was off.	2	Bus In under Sense Status Tag '04' Bus '00' Received xxxx xxx0 Expected	RPI 110, Entry C		465
A529	2	Active track indication in the drive failed to come on in one full revolution.	2	Bus In under Read Status Tag '84' Received xxxx xxx1 Expected	RPI 100, Entry E		465
A52A	2	Active track indication in the controller was found to be off during the time Active Track in the drive was on.	2	Bus In under Sense Status Tag '04' Bus '00' Received xxxx xxx1 Expected	RPI 110, Entry C		465
A530	3	Multihead Check failed to come on after being forced.	2	Bus In under Read/Write Safety Tag '8F' Bus '0B' Received 1xxx xxxx Expected	R/W 200, Entry C		470 471
A531	3	Read/Write Check failed to come on after forcing Multihead Check.	2	Bus In under Drive Status Tag '84' Received xxx1 xxxx Expected	R/W 280, Entry E		470 471
A532	3	Error Alert was not active after detecting a Read/Write Check	2	Not used	DATA 150		470 471
A533	3	Multihead Check failed to reset following Read/Write Check Reset.	2	Bus In under Read/Write Safety Tag '8F' Bus '0B' Received 0xxx xxxx Expected	R/W 200, Entry D		470
A534	3	Read/Write Check failed to reset following Read/Write Check Reset.	2	Bus In under Drive Status Tag '84' Received xxx0 xxxx Expected	R/W 280, Entry E		470

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A535	3	Invalid DM Size for data module with fixed heads.	2	Bus In under Received Tag '8F' Bus '83' xxxx x110 Expected	DEV-I 290, Entry C	Bit 5 = 70 MB, fixed head DM Bit 6 = 70 MB Bit 7 = 35 MB	470 471
A536	3	Invalid DM Size for data module without fixed heads.	2	Bus In under Received Tag '8F' Bus '83' xxxx x001 or xxxx x010 Expected	DEV-I 290, Entry D	Bit 5 = 70 MB, fixed head DM Bit 6 = 70 MB Bit 7 = 35 MB	470 471
A537	3	With FHFE Multihead Check active following a Check Reset operation.	2	Bus In under Received Tag '8F' Bus '0B' 0xxx xxxx Expected	R/W 200, Entry E		471
A538	3	With FHFE Read/Write Check active following a Check Reset operation.	2	Bus In under Received Tag '84' Bus '00' xx0x xxxx Expected	R/W 280, Entry E		471
A539	3	With FHFE Multihead Check not active when forced on fixed heads.	2	Bus In under Received Tag '8F' Bus '0B' x0xx xxxx Expected	R/W 200, Entry C		471
A53A	3	With FHFE Multihead Check failed to reset following Rd/Wr Reset or failure od diagnostic command to reset. (fixed heads)	2	Bus In under Received Tag '8F' Bus '0B' 0xxx xxxx Expected	R/W 200, Entry D		471
A53B	3	With FHFE Read/Write Check failed to reset following Rd/Wr Reset. (fixed heads)	2	Bus In under Received Tag '84' Bus '00' xxx0 xxxx Expected	R/W 280, Entry E		471

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A540	4	Index Mark was not received in 10.4 milliseconds.	2	Not used	RPI 103, Entry D		480
A541	4	Active Track indication in the drive failed to go off in one full revolution.	2	Bus In under Diag Read/Write Control Tag '8F' Bus '07' Received xxxx xxx0 Expected	RPI 100, Entry E		475
A542	4	Failed to detect Sector Compare check after being forced.	2	Bus In under Drive Check Status Tag '8F' Bus '83' Received x1xx xxxx Expected	RPI 500, Entry B		475
A543	4	Failed to detect Drive check after forcing Sector Compare check.	2	Bus In under Request Drive Status Tag '84' Bus '00' Received xx1x xxxx Expected	DEV-I 240, Entry C		475
A544	4	Failed to receive an attention when Polling Device after forcing a Sector Compare check.	2	Bus In under Poll Service Device Tag '82' Bus 'X4' Received 1xxx xxxx Expected	DEV-I 200, Entry C		475
A545	4	Sector Compare Attention failed to reset following an Attention Reset.	2	Bus In under Poll Service Device Tag '82' Bus 'X4' Received 0xxx xxxx Expected	DEV-I 200, Entry E		475
A546	4	Sector Compare check failed to reset following a Check Reset.	2	Bus In under Drive Check/Status Tag '8F' Bus '83' Received x0xx xxxx Expected	RPI 500, Entry B		475
A547	4	Drive check failed to reset following Check Reset.	2	Bus In under Request Drive Status Tag '84' Bus '00' Received xx0x xxxx Expected	DEV-I 240, Entry D		475

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A550	05	Index Mark was not received in 10.4 milliseconds	2	Not Used.	RPI 103, Entry D		480
A551	05	Active Track indication in the drive failed to change states in one full revolution.	2	Bus In under Diagnostic Set Read/Write Received Tag '8F' Bus '07' xxxx xxx1 Expected	RPI 100, Entry E		485
A552	05	Failed to receive Search Sector after issuing a Set Target command.	2	Bus In under Request Drive Status Received Tag '84' Bus '00' xxxx xxx1 Expected	RPI 500, Entry B	This error stop may occur if routine A5 test 5 is run without RPI installed (A1G2 card).	485
A553	05	Busy Attention was found to be active after receiving Sector Compare Attention for Sector Zero.	2	Bus In under Request Drive Status Received Tag '84' Bus '00' xxxx xx0x Expected	RPI 600, Entry A		485
A554	05	Failed to receive Sector Compare Attention when Polling Device.	2	Bus In under Poll Service Drive Received Tag '82' Bus 'x4' 1xxx xxxx Expected	DEV—I 200, Entry C		485
A555	05	Sector Compare Attention failed to reset following an Attention Reset.	2	Bus In under Poll Service Drive Received Tag '82' Bus 'x4' 0xxx xxxx Expected	DEV—I 200, Entry E		485
A556	05	Failed to receive Busy Attention following a Set Target command.	2	Bus In under Request Drive Status Received Tag '84' Bus '00' xxxx xx1x Expected	RPI 600, Entry A		485
A557	05	Search Sector failed to reset following an Attention Reset command.	2	Bus In under Request Drive Status Received Tag '84' Bus '00' xxxx xxx0 Expected	RPI 500, Entry B		485

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A558	05	Busy Attention failed to reset following an Attention Reset.	2	Bus In under Received Request Drive Status Tag '84' Bus '00' xxxx xx0x Expected	RPI 600, Entry A		485

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A560	6	Index Mark was not received in 10.4 milliseconds.	2	Not Used	RPI 103, Entry D		480
A561	6	Active Track Indication in the drive failed to change states in one full revolution.	2	Bus In under Diagnostic Set Read/Write Tag '8F' Bus '07' Received xxxx xxx1 Expected	RPI 100, Entry E		490
A562	6	Failed to receive Sector Compare in over 25 milliseconds after initiating a Search Sector operation.	2	Sector that failed to give Sector Compare.	RPI 500, Entry B		495
A563	6	Sector Compare Duration was found to be greater than 163 microseconds (based on 158 + 3% tolerance).	2	Failing Sector.	RPI 500, Entry B		495
A564	6	Sector Compare Duration was found to be less than 153 microseconds (based on 158 – 3% tolerance).	2	Failing Sector.	RPI 500, Entry B		495
A565	6	Target Register failed to reset to Zero.	2	Bus In under Sense Target Tag '8F' Bus '0D' Received 0000 0000 Expected	RPI 600, Entry D		490
A566	6	Bus In from Sense Target operation is not equal to 127 after transferring the Sector Counter to the Target Register during Sector 127 Time.	2	Bus In under Sense Target Tag '8F' Bus '0D' Received 1111 1111 Expected Only bits 1-7 are tested for 127. Bit 0 is RPS bit.	RPI 600, Entry E		490
A567	6	Bus In from Sense Target operation is not equal to zero after transferring Sector Counter to the Target Register during Sector Zero time.	2	Bus In under Sense Target Tag '8F' Bus '0D' Received 1000 0000 Expected Only bits 1-7 are tested for zero. Bit 0 is RPS bit.	RPI 600, Entry E		490

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A601 through A607		Errors common to all routines			MICRO 85		None

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	DESCRIPTION		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A610	1	Drive failed to go Busy after a Rezero command was issued.	2	Drive Status xxxx xx1x	Received Expected	ACC 210, Entry C		530
A611	1	Drive check indicated in less than 140 ms after starting the Access Timer to force a Timeout check.	2	Drive Status xx0x xxxx	Received Expected	ACC 110, Entry C	Access Timer duration should be 180 ± 40 ms. Drive check received too early.	530
A612	1	Drive check not indicated within 220 ms after starting the Access Timer to force a Timeout check.	2	Drive Status xx1x xxxx	Received Expected	ACC 100, Entry B		530
A613	1	Access timeout not posted in access status.	2	Access Status 1xxx xxxx	Received Expected	ACC 110, Entry D	Access Timer duration should be 180 ± 40 ms. Drive check not received.	530
A614	1	Drive check failed to reset after an Attention Reset and Check Reset command sequence.	2	Drive Status xx0x xxxx	Received Expected	ACC 100, Entry A		530
A615	1	Access Timeout Bit in Sense Status 4 failed to go off after an Attention Reset Check Reset command sequences.	2	Access Status 0xxx xxxx	Received Expected	ACC 110, Entrv A		530

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A621	2	Drive failed to go Busy after a Rezero command was issued.	2	Drive Status xxxx xx1x	Received Expected	ACC 210, Entry C	The Access Control was reset and the carriage was forced to the inner crash stop by a Diagnostic Go Home command. A Rezero command was issued but not acknowledged with a Drive Busy indication.	530
A622	2	Unexpected Access Control state advance after a Rezero command.	2	Access Status xxxx xx0x	Received Expected	ACC 320, Entry B	The Access Control was expected to advance to State 0 (Move Out) and move from inner crash stop towards cylinder 0. Probable indication is that the Go Home command failed to force the carriage to the inner stop.	535
A623	2	Access Timeout Drive check after a Rezero command. Access Control failed to advance out of Wait State.	2	Access Status 0xxx xxxx	Received Expected	ACC 310, Entry B		535
A624	2	Access Timeout Drive check after a Rezero command. Access Control is in State 0 but carriage movement was not detected.	2	Access Status 0xxx xx0x	Received Expected	ACC 320, Entry B	Carriage movement is monitored by the program via the Track Crossing bit in Sense Status 4 bit 3.	535
A625	2	Unexpected Access Control state advance after a Rezero command.	2	Access Status 0xxx xx0x	Received Expected	ACC 320, Entry B	Similar to A622 except some carriage movement was detected in State 0 (Move Out).	535
A626	2	Access Timeout Drive check after a Rezero command. Access Control is in State 0 and some carriage movement was detected.	2	Access Status 0xxx xx0x	Received Expected	ACC 320, Entry B	Similar to A624 but a small amount of carriage movement was detected by the program before the Timeout check occurred.	535
A627	2	Servo velocity feedback loop is open. (Over acceleration)		Not used		ACC 341, Entry A	Pure acceleration was measured in the carriage movement. Closed Servo Loop operation should have accelerated to a constant 11 in/sec velocity.	535
A628	2	No Seek Complete after 225 ms.	2	Drive Status xxxx xxx1	Received Expected	ACC 220, Entry A		535

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	DESCRIPTION		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A630	3	Servo not in valid Reset state.	2	Access Status	Received	ACC 310, Entry A	Access Control was not in the Reset state after being reset and forced to the inner crash stop area by a Diagnostic Go Home command.	560
				000x 0001	Expected			
A631	3	Drive failed to go Busy after a Rezero command was issued.	2	Drive Status	Received	ACC 210, Entry C	With the Access Control in the Reset state, a Rezero command was issued but not acknowledged by a drive Busy indication.	560
				0000 1010	Expected			
A633	3	Access Timeout Drive Check or unexpected state advance before gain measurement completed.	2	Access Status	Received	ACC 330, Entry B		540 550
				0xxx xx0x	Expected			
A636	3	Velocity Gain not accurate. (Out of specification.)		Not used		ACC 340, Entry A		540

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MICRODIAGNOSTIC ERROR CODE DICTIONARY

Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A640	4	Servo not in valid Reset state.	2	Access Status 000x 0001	Received Expected	ACC 310, Entry A	Access Control was not in the Reset state after being reset and forced to the inner crash stop area by a Diagnostic Go Home command.	560
A641	4	Drive failed to go Busy after a Rezero command was issued.	2	Drive Status 0000 1010	Received Expected	ACC 210, Entry C		560
A642	4	Access Timeout Drive check or unexpected state advance during Rezero acceleration period.	2	Access Status 0xxx xx0x	Received Expected	ACC 330, Entry B		555
A643	4	Access Timeout Drive check or unexpected state advance during measurment period.	2	Access Status 0xxx xxxx	Received Expected	ACC 330, Entry C		540
A646	4	Servo failed to detect or respond to detection of Rezero Pattern area of Servo disk.	2	Access Status 0xxx xxxx	Received Expected	ACC 350, Entry A		540
A648	4	Access Control State 0 to State 2 advance failure.	2	Access Status 0xxx xxxx	Received Expected	ACC 350, Entry A		540

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A650	5	Servo not in Valid Reset State.	2	Access Status Tag '8F' Bus '13' xxxx 0001	Received Expected	ACC 310, Entry A		545
A651	5	Drive failed to go Busy after a Rezero command was issued.	2	Drive Status xxxx xx1x	Received Expected	ACC 210, Entry C		545
A652	5	Access Timeout Drive check. Access Control is in Rezero Mode State 1 (Wait).	2	Access Status Tag '8F' Bus '13' 0xxx xxxx	Received Expected	ACC 310, Entry B		545
A653	5	Unexpected State advance. Expected Access Control advance to State 2 (Move In).	2	Access Status Tag '8F' Bus '13' xxxx 0010	Received Expected	ACC 310, Entry D		545
A654	5	Access Timeout Drive check in Access Control State 2 (Move In) before carriage movement was detected.	2	Access Status Tag '8F' Bus '13' 0xxx xxxx	Received Expected	ACC 360, Entry A		545
A655	5	Track 0 approach velocity measured too high.				ACC 371, Entry A	*Note: Do not run this test with the Bobbin Push Rod inserted in the VCM.*	547
A656	5	Access Timeout Drive check. Access Control is in Rezero Mode State 2 (Move In).	2	Access Status 0xxx xxxx	Received Expected	ACC 360, Entry A		545

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A65C	5	No Sync In received after 25 ms.		Not used	ACC 371, Entry D		547
A65E	5	Error Alert or Check End received after Set Read/Write.		Not used	ACC 371, Entry D		547
A65F	5	Error Alert or Check End received after Read G1 operation.		Not used	ACC 371, Entry D		547

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A660	6	Servo not in valid Reset state.	2	Access Status Received 000x 0001 Expected	ACC 310, Entry A		None
A661	6	Drive failed to go Busy after a Rezero command was issued.	2	Drive Status Received 0000 1010 Expected	ACC 210, Entry C		None
A662	6	Access Timeout Drive Check during a Rezero operation before advance to State 6.	2	Access Status Received 0xxx xxxx Expected	ACC 330, Entry A		545
A663	6	Access Timeout Drive Check during Rezero State 6.	2	Access Status Received 0xxx xxxx Expected	ACC 380, Entry A		545
A665	6	Overshoot, Drive Check, Rezero operation.	2	Access Status Received	ACC 380, Entry B		545
A666	6	Read error No Sync In after 25 milliseconds.		Not used	DATA 113, Entry A		550
A667	6	Read error Timeout waiting for an ending condition.		Not used	CTL–I 250, Entry A		550

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A668	**6**	Read Error. Error Alert received after a Read Home Address operation.		Not used		Run microdiagnostic routines starting with A1.	550
A669	**6**	Read Error. Check End received on a Read Home Address operation.	2	Bus In under Check End	CTL-I 210, Entry A		550
A66A	**6**	Read Error. Error Alert received on a Set Read/Write operation.		Not used		Run microdiagnostic routines starting with A1.	550
A66B	**6**	Cylinder 0 verification error. Home Address read did not compare to the expected Home Address of track 0.	2 3 4	Not used PA2 xxxx xxxx Received 0000 0000 Expected PA1 xxxx xxxx Received 0000 0000 Expected	ACC 370, Entry A		550

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A701 through A707		Errors common to all routines.			MICRO 85		A703 on 605

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A710	1	Sense Status 2 not equal to '60' with data module loaded.	2	DM Sequence Status xxxx xxxx Received 0110 0000 Expected	DM 100, Entry D	The data module load sequencer does not indicate normal loaded status. Ensure data module is loaded on drive.	605
A712	1	Failed to get busy on a Rezero command.	2	Drive Status xxxx xx0x Received xxxx xx1x Expected	ACC 210, Entry C		605
A713	1	Unexpected state advance. Access Status byte logged out.	2	Access Status xxxx xxx0 Received 00xx 0001 Expected	ACC 320, Entry B	Probable indication is that the access control did not respond to the Go Home command.	605
A714	1	Access Timeout check in state 1.	2	Access Status 1xxx xxxx Received 0xxx xxxx Expected	ACC 310, Entry B		605
A715	1	Servo latch, Linear Mode latch, or Control latch set early during a Rezero command.	2	Not used		Probable indication is that the Go Home command is not moving the carriage to the inner stop. Run diagnostic routine A6.	610
A716	1	Access Timeout check during a Rezero command while at State zero.	2	Not used	ACC 300, Entry D		610
A717	1	Time less than 0.9 ms for 4 track crossing pulses on a Rezero command.	2	Not used	ACC 300, Entry D	Measured carriage velocity is high out of the range of the velocity gain adjustment.	605

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A718	1	Time greater than 1.6 ms for 4 track-crossing pulses during a Rezero command.	2	Not used	ACC 300, Entry D	Measured carriage velocity is low out of the range of the velocity gain adjustment	605
A719	1	Access Timeout check and/or Overshoot check during a Rezero command.	2 3	Access Status Received 000x xxxx Expected	ACC 300, Entry A	The coarse velocity gain setting is within the specification; rerun test 2 to verify setting. If error persists, refer to MAP for problem analysis.	610
A71A	1	Adjustment out of specification. Servo Rezero velocity too fast (preliminary gain measurement).	2	Amount under specification in microseconds. See hex numbers displayed.	ACC 801, Entry A		610
A71B	1	Adjustment out of specification. Servo Rezero velocity too slow (preliminary gain measurement).	2	Amount over specification in microseconds. (Hex numbers displayed)	ACC 801, Entry A		610

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A720	2	Adjustment out of specification. Re-run routine in Adjustment Mode (refer to MICRO 24). (Verification Mode)	2	Not used	ACC 800, Entry C		615
A721	2	Adjustment out of specification. Servo Seek velocity too fast (fine measurement).	2	Amount under specification in microseconds (See hex numbers displayed).	ACC 801, Entry B		615
A722	2	Adjustment out of specification. Servo Seek velocity too slow (fine measurement). (Adjustment Mode)	2	Amount over specification in microseconds (See hex number displayed).	ACC 801, Entry B		615
A723	2	Failed to get Busy status on a Rezero command.	2 3	Drive Status Byte Received xxxx xx0x xxxx xx1x Expected	ACC 210, Entry C		615
A724	2	Access Timeout check during a Seek command.	2 3	Access Status 4 Byte Received Not used	ACC 510, Entry A	The timeout error occurred while the program was measuring the Seek velocity. Refer to MAP for failure analysis.	620
A725	2	Access Timeout and/or Overshoot check during a Seek command.	2 3	Access Status Received 000x xxxx Expected	ACC 510, Entry A	The Velocity Gain Fine adjustment is within specification. Refer to MAP for failure analysis.	615
A726	2	Access Timeout check and/or Overshoot check during a Rezero command.	2 3	Access Status Received 000x xxxx Expected	ACC 300, Entry A	Rerun Routine A7 in adjustment mode. See MICRO 24 for parameter required to run in adjustment mode. If error persists, refer to MAP for problem analysis.	615
A727	2	Timeout waiting for track-crossing transitions on a Seek Start command.	2 3	Access Status byte Received Not used	ACC 520, Entry D		620

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A801 through A807		Errors common to all routines			MICRO 85		A801 on 655 660 670 690

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Error Code	Test No.	Error Description	CE Panel Lamp Display			Maintenance Analysis Procedure	Additional Action and Reference Notes	MICOL Reference
			BYTE	DESCRIPTION				
A810	1	No seek complete after a Rezero operation.	2	Drive Status Tag '84' xxxx xxx1	Received Expected	ACC 220, Entry A		655
A811	1	Access error after a Rezero operation.	2	Access Status Tag '8F' Bus '13' 000x xxxx	Received Expected	ACC 300, Entry A		655
A812	1	Drive did not become busy after a Seek Start operation.	2	Drive Status Tag '84' xxxx xx1x	Received Expected	ACC 210, Entry C		655
A813	1	No seek complete after a Seek Start operation.	2	Drive Status Tag '84' xxxx xxx1	Received Expected	ACC 220, Entry A		655
A814	1	No access motion was detected after 10 milliseconds.	2	Access Status Tag '8F' Bus '13' xxx0 xxxx	Received Expected	ACC 520, Entry D		655

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedue	Additional Action and Reference Notes	MICFL Reference
A821	2	Seek Complete not set after a Rezero or Seek command.	2	Drive Status Byte Received Bus In Tag '04' xxxx xxx1 Expected	ACC 220, Entry A		690
A822	2	Difference counter failed to decrement or decremented more than once on a single track crossing pulse.	2 3 4	Difference Counter Value: Received / Expected / Original	ACC 530, Entry A	*Note; If byte 4 of the logout is 00, this means that the original difference counter value was 256.*	690
A823	2	Access Check after a Rezero command.	2	Access Status Byte Received Tag '8F' Bus '13' 000 x xxxx Expected	ACC 300, Entry A		690
A824	2	Access Check after a Seek command waiting for track crossing pulses.	2	Access Status Byte Received Tag '8F' Bus '13' 000x xxxx Expected		Run tests A8-3 and A8-4, A8-5 individually. Refer to MICRO for any Error Stop.	690
A825	2	Microprogram timed out waiting for track crossing transitions after a Seek Start command.	2	Access Status Byte Received Bus In Tag '8F' Bus '13'	ACC 520, Entry D		690

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Error Code	Test No.	Error Description	CE Panel Lamp Display			Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION				
A830	3	No Seek Complete received after a Rezero operation.	2	Drive Status Tag '84' xxxx xxx1	Received Expected	ACC 220, Entry A		660
A831	3	Access error received after a Rezero operation.	2	Access Status Tag '8F' Bus '13' 000x xxxx	Received Expected	ACC 300, Entry A		660
A832	3	Drive did not become Busy after a Seek Start operation.	2	Drive Status Tag '84' 000x xxxx	Received Expected	ACC 210, Entry C		665
A833	3	Access error during Seek operation.	2	Access Status Tag '8F' Bus '13' 000x xxxx	Received Expected	ACC 541, Entry A		665
A834	3	No Seek Complete received after a Seek Start operation.	2	Drive Status Tag '84' xxxx xxx1	Received Expected	ACC 220, Entry A		665
A835	3	Seek Acceleration time measured out of specification is too short.	2	Seek length used		ACC 550, Entry A		665
A836	3	Seek Acceleration time measured out of specification is too long.	2	Seek length used		ACC 550, Entry A		665

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A840	4	Failed to receive a Seek Complete following a Rezero operation.	2	Drive Status — Received xxxx xxx1 — Expected	ACC 220, Entry A		670 675
A841	4	Access Error detected during a Rezero operation.	2	Access Status — Received Tag '8F' Bus '13' 000x xxxx — Expected	ACC 300, Entry A		670 675
A842	4	Drive failed to become Busy after a Seek Start operation.	2	Drive Status — Received Tag '84' xxxx xx1x — Expected	ACC 210, Entry C		670 685
A843	4	Access Error detected during a Seek operation.	2 3 & 4	Access Status — Received Tag '8F' Bus '13' 000 x xxxx — Expected Difference Counter decrement time in microseconds.	ACC 590, Entry A		670 685
A844	4	Incorrect HA read after Seek Complete.	2 3 & 4 5 6 7 8	Not used Difference Counter Decrement Time In μseconds PA2, PA1 — Received PA2, PA1 — Expected	ACC 591, Entry A		670 690
A84C	4	Program timeout while waiting for a Sync In.		Not used	DATA 113		685
A84E	4	Error Alert or Check End received during a set Read/Write or RD HA tags.	2	Bus In under Check End condition	CTL-I 210, Entry A		685

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A851	5	Failed to get Seek Complete after a Rezero or Seek command.	2	Drive Status Tag '84' Received xxxx xxx1 Expected	ACC 220, Entry A		690
A852	5	Difference Counter failed to decrement or decremented more than once on a single Track Crossing Pulse.	2 3 4	Difference Counter Value Received Difference Counter Value Expected Difference Counter Value Original	ACC 530, Entry A	*Note: If Byte 4 of the Logout is 00, the Original Difference Counter value was 256.*	690
A853	5	Access check was detected during a Rezero operation.	2	Access Status Tag '8F' Bus '13' Received 000x xxxx Expected	ACC 300, Entry A		690
A854	5	Access check was detected while waiting for a Track Crossing Pulse.	2	Access Status Tag '8F' Bus '13' Received 000x xxxx Expected	ACC 510, Entry A		690
A855	5	Program Timeout while waiting for Track Crossing Latch to change states.		Not used	ACC 510, Entry A		690

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
A901 through A907		Errors common to all routines.			MICRO 85		

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
A990		Device Tag Bus Parity error was found to be on upon entry into this routine.	2	Bus In under Sense Interface Tag '89' — Received xxxx xx0 — Expected	DEV-I 124, Entry A		725
			3	Not used			
A991		Device Bus Out Parity error was found to be on upon entry into this routine.	2	Bus In under Sense Interface Tag '89' — Received xxxx xxx0 — Expected	DEV-I 122, Entry C		725
			3	Not used			
A992		The received Physical Address bytes of the Home Address do not match the expected.	2	Not used	ACC 500, Entry A	PA1 is the Low Cylinder (CCCC CCCC). PA2 is the High Cylinder (0x00 0000) where x = 256 Bit. Note that physical head 0 is used to read the Home Address.	730
			3 4	PA1 PA2 — Received			
			5 6	PA1 PA2 — Expected			
A993		Microprogram timed out waiting for a response from the controller during a Read G1 operation.	2	Not used		Run routine AD	730
			3	Not used			
A994		Busy status was not received following a Rezero or Seek Start command.	2	Bus In under Drive Status Tag '84' — Received xxxx xx1x — Expected	ACC 210, Entry C		725
			3	Not used			
A995		Drive Check was found to be active after receiving Seek Complete from a Rezero operation.	2	Bus In under Access Status Tag '8F' Bus '13'	ACC 300, Entry A		725
			3	Not used			
A996		Access Timeout and/or Overshoot Checks or Servo Off Track error were found to be on after receiving Seek Complete from a Seek operation.	2	Bus In under Access Status Tag '8F' Bus '13' — Received 000x xxxx — Expected	ACC 510, Entry A		725
			3	Not used			
A997		Error Alert was active following a Set Read/Write or Read G1 commands.	2	Not used		Run routine B3. Display the Symptom Code and refer to the FSI.	730
			3	Not used			

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referenc
A998		Normal End was not received for Set Read/Write or Read G1 commands.	2 3	Not Used Not used.	CTL-I 260, Entry B		730
A999		Check End was active following Read G1.	2 3	Bus-In on Check End Not used	CTL-I 210, Entry A		730

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
AA01 through AA07		Errors common to all routines.			MICRO 85		

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AAA0	1	Device Tag Bus Parity error was found to be on upon entry into this routine.	2	Bus In under Sense Interface Tag '89' Received	DEV-I 124, Entry A		755
				xxxx xxx0 Expected			
			3	Not used			
AAA1	1	Device Bus Out Parity error was found to be on upon entry into this routine.	2	Bus In under Sense Interface Tag '89' Received	DEV-I 122, Entry C		755
				xxxx xx0x Expected			
			3	Not used			
AAA2	1	Received physical bytes of the Home Address do not match the expected.	2	Not used	ACC 500, Entry A	PA1 is the Low Cylinder Address (CCCC CCCC). PA2 is the High Cylinder Address (0X0H HHHH) where X = 256 Bit, H = Physical Head.	765
			3 4	PA1 PA2 Received			
			5 6	PA1 PA2 Expected			
AAA3	1	Microprogram timed out waiting for a response from the controller during a Read G1 operation.	2	Not used		Run routine AD.	765
AAA4	1	Busy status was not received following a Rezero command.	2	Bus In under Drive Status Tag '84' Received	ACC 210, Entry C		758
				xxxx xx1x Expected			
			3	Not used			
AAA5	1	Drive Check was found to be active after receiving Seek Complete from a Rezero operation.	2	Bus In under Access Status Tag '8F' Bus '13' Received	ACC 300, Entry A		755
				000x xxxx Expected			
			3	Not used			
AAA6	1	Access Timeout and/or Overshoot Check or Servo Off Track error were found to be active after receiving Seek Complete from a Seek operation.	2	Bus In under Access Status Tag '8F' Bus '13' Received	ACC 510, Entry A		760
				00xx xxxx Expected			
			3	Not used			
AAA7	1	Error Alert was active following a Set Read/Write or Read G1 commands.	2	Not used		Run routine B3. Display the Symptom Code and refer to the FSI.	765
			3	Not used			

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AAA8	1	Normal End was not received for Set Read/Write or Read G1 commands.	2 3	Not used. Not used	CTL-I 260, Entry B		765
AAA9	1	Check End was active following Read G1 command.	2 3	Bus-In on Check End Not used	CTL-I 210, Entry A		755 765
AAAA	1	Cylinder address selected by the CE was found to be greater than 349 (decimal).	2 3	Not used Not used			
AAAB	1	Invalid Head was selected by the CE for the present data module.	2 3	Not used Not used		Refer to chart on MICRO 28 for valid heads for each data module.	755
AAAC	1	Head selected in the "from HAR" does not match that in the "to HAR" or vice versa.	2 3	Not used Not used			755
AAAD	1	Bits 6 and 7 under Drive Check/Status. Tag '8F' Bus '83' were both zero.	2 3	Bus In under Drive Check/Status Tag '8F' Bus '83' Received: xxxx xx01 or xxxx xx10 Expected Not used	DEV-I 290, Entry A	For a 35 Mb data module, Bit 6 is off while Bit 7 is on. For a 70 Mb data module, Bit 6 is on while Bit 7 is off.	755
AAAE	1	Same as Error AAAD except Bits 6 and 7 were both on.	2 3	Bus In under Drive Check/Status Tag '8F' Bus '83' Received: xxxx xx01 or xxxx xx10 Expected Not used	DEV-I 290, Entry B		755

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MICRODIAGNOSTIC ERROR CODE DICTIONARY

Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AB01 through AB07		Errors common to all routines.			MICRO 85	Make sure data module is loaded on the CE Drive and a CE Mode switch is on.	
ABB0		Device Tag Bus Parity error was found to be on upon entry into this routine.	2 3	Bus In under Sense Interface Tag '89' — Received xxxx xxx0 — Expected Not used	DEV-I 124, Entry A		795
ABB1		Device Bus Out Parity error was found to be on upon entry into this routine.	2 3	Bus In under Sense Interface Tag '89' — Received xxxx xx0x — Expected Not used	DEV-I 122, Entry C		795
ABB2		The received physical address bytes of the Home Address do not match the expected.	2 3 4 5 6 7 8	Not used PA1 } Received PA2 } PA1 } Expected PA2 } PA1 } Previous Physical Cylinder Address PA2 }	ACC 500, Entry A	PA1 = Low Cylinder Address (CCCC CCCC). PA2 = High Cylinder Address (0x00 0000) where x = 256 Bit. Note that physical head 0 is used to read the Home Address.	800
ABB3		Microprogram timed-out waiting for a response from the controller during a Read G1 operation.	2 3	Not used Not used		Run routine AD.	800

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
ABB4		Busy status was not received following a Rezero command.	2 3-8	Bus In under Drive Status Tag '84' xxxx xx1x Expected Not used	ACC 210, Entry C		795
ABB5		Drive Check was found to be active after receiving Seek Complete from a Rezero operation.	2 3-8	Bus In under Access Status Tag '8F' Bus '13' 000x xxx1 Expected Not used	ACC 300, Entry A		795
ABB6		Access Timeout and/or Overshoot Checks or Servo Off Track Error were found to be on after receiving Seek Complete from a Seek operation.	2 3-8	Bus In under Access Status Tag '8F' Bus '13' Not used	ACC 510, Entry A		795
ABB7		Error Alert was active following a Set Read/Write or Read G1 commands.	2-8	Not used		Run routine B3. Display the Symptom Code and refer to the FSI.	800
ABB8		Normal End was not received for Set Read/Write or Read G1 commands.	2-8	Not used	CTL-I 260, Entry B		800
ABB9		Check End was active following Read G1.	2 3-8	Bus In on Check End Not used	CTL-I 210, Entry A		800

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referen
AC01 through AC07		Errors common to all routines.			MICRO 85		None
AC08		DM sequencer stuck at State 3 (Load operation).	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 110, Entry C		825
AC09		Check latch or Recycle latch is on (not both). DM sequencer is in State 1, 2, 3, 4, 5, or 7.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 110, Entry A		825 830
AC0A		DM sequencer stuck at State 5 (Unload operation).	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 110, Entry E		830
AC0F		Unable to Determine State (State not 0 through 7)	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')		State Latches probably changed while comparing, restart routine.	830

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referen
AC11		DM Sequence error State 1. Cover not locked.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 120, Entry B		825
AC12		DM Sequence error State 1. Carriage not home.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	ACC 395, Entry A		825
AC13		DM Sequence error State 1. DM Unloaded switch active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 210, Entry A		825
AC14		DM Sequence error State 1. DM Unloaded switch not active. DM Loaded switch not active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 211, Entry A		825
AC15		DM Sequence error State 1. Belt switch not active. DM Loaded switch active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 211, Entry B		825
AC16		DM Sequence error State 1. DM Size check.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 210, Entry B		825
AC17		DM Sequence error State 1. All interlocks are correct but DM Sequence error exists.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 210, Entry C		825
AC18		DM Sequencer stuck at State 1.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 110, Entry C		

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AC21		DM Sequence error State 2. Cover Locked switch not active.	2 3 4 5	Checks, Status (Tag '8F. Bus '83') DM Sequence Control (Tag '8F. Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 120, Entry B		825
AC22		DM Sequence error State 2. DM Loaded switch not active.	2 3 4 5	Checks, Status (Tag '8F Bus' 83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 140, Entry B		825
AC23		DM Sequence error State 2. Belt switch not active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 150, Entry B		825
AC24		DM Sequence error State 2. Air/Motor-At-Speed switch not active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 160, Entry B		825
AC26		DM Sequence error State 2. All interlocks are correct but DM Sequence error exists.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 230, Entry B		825

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AC31		DM Sequence error State 3. Cover Locked switch not active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 120, Entry B		825
AC32		DM Sequence error State 3. DM Loaded switch not active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 140, Entry B		825
AC33		DM Sequence error State 3. Belt switch not active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 150, Entry B		825
AC34		DM Sequence error State 3. Air/Motor-At-Speed switch not active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 220, Entry A		825
AC35		DM Sequence error State 3. All interlocks are correct but DM Sequence error exists.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 220, Entry C		

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AC41		DM Sequence error State 4 Carriage Home switch not active	2 3 4 5	Checks. Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 340, Entry A		830
AC42		DM Sequence error State 4 DM Loaded switch active	2 3 4 5	Checks. Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 340, Entry B		830
AC43		DM Sequence error State 4 DM Unloaded switch not active. DM Loaded switch not active.	2 3 4 5	Checks. Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 340, Entry C		830
AC44		DM Sequence error State 4. All interlocks are correct but DM Sequence error exists.	2 3 4 5	Checks. Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 340, Entry D		830
AC51		DM Sequence error State 5. Carriage Home switch not active.	2 3 4 5	Checks. Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 330, Entry A		830
AC52		DM Sequence error State 5. Air/Motor-At-Speed switch active.	2 3 4 5	Checks. Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 330, Entry B		830
AC53		DM Sequence error State 5. All interlocks are correct but DM Sequence error exists.	2 3 4 5	Checks. Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 330, Entry C		830

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referen
AC60		Normal Ready State. (See Note) DM Sequence State 6.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 101, Entry B	*Note: If Start/Stop switch is in Start position and Ready lamp is on, ignore this error (normal operation). If conditions are other than as described, go to DM 101, Entry B.*	830
AC61		DM Sequence error or Check Latch is on in State 6.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 310, Entry A		830
AC62		DM Sequencer in State 6. Start Latch is off. Indicates DM will not unload.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 310, Entry B		830
AC71		DM Sequence error State 7. Carriage Home switch not active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 320, Entry B		830
AC72		DM Sequence error State 7. Carriage Home switch is active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 320, Entry A		830

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICRO Reference
AC81		DM Sequencer in State 0. Check Latch is on. DM Sequence error is off.	2 3 4 5	Checks, Status (Tag '8F' Bus '33') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 110, Entry 9		820
AC82		DM Sequencer locked in State 0. DM Unloaded switch not active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 200, Entry A		820
AC83		DM Sequencer locked in State 0. DM Loaded switch active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 140, Entry A		820
AC84		DM Sequence locked in State 0. Belt switch active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 150, Entry A		820
AC85		DM Sequencer locked in State 0. Carriage Home switch not active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 201, Entry A		820
AC86		DM Sequence locked in State 0. Air/Motor-At-Speed switch active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 160, Entry A		820
AC87		DM Sequencer locked in State 0. Bias Disable is active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 170, Entry A		820

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referen
AC88		DM Sequencer locked in State 0. DM Present switch not active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 180, Entry A		820
AC89		DM Sequencer locked in State 0. Start latch is off.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 190, Entry A		820
AC8A		DM Sequencer locked in State 0. Cover Locked switch not active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 120, Entry A		820
AC8B		All interlocks are correct but DM Sequencer is locked in State 0.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 201, Entry B		820

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referen
AC91		DM Sequence error State 0. Carriage Home switch not active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 350, Entry B		820
AC92		DM Sequence error State 0. DM Loaded switch active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 350, Entry A		820
AC93		DM Sequence error State 0. Bias Disable active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 350, Entry D		820
AC94		DM Sequence error State 0. DM Unloaded switch not active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 351, Entry A		820
AC95		DM Sequence error State 0. DM Unloaded switch active.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 350, Entry C		820

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AC98		DM dropped Ready, now in State 0. DM Loaded switch failed.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 300, Entry A		820
AC99		DM dropped Ready, now in State 0. Air/Motor-At-Speed switch failed.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 300, Entry B		820
AC9A		DM dropped Ready, now in State 0. Belt switch failed.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 300, Entry C		820
AC9B		DM dropped Ready, now in State 0. DM Size check.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 300, Entry D		820
AC9C		DM Sequencer in State 0. Stop Recycle latch is on.	2 3 4 5	Checks, Status (Tag '8F' Bus '83') DM Sequence Control (Tag '8F' Bus '43') Load Switch Status (Tag '8F' Bus '23') Access Status (Tag '8F' Bus '13')	DM 300, Entry E		820

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
AD01 through AD07		Errors common to all routines			MICRO 85		905

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
AD08	**ANY**	Failed to raise Busy after a Rezero Start.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xxxx xx1x Expected	ACC 210, Entry C	Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '08') may be selected.	905
AD09	**ANY**	Failed to raise Busy after a Seek Start.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xxxx xx1x Expected	ACC 210, Entry C	Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '08') may be selected.	910
AD0A	**ANY**	Incorrect status following a Rezero operation.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xx0x xx01 Expected		Expected Not Busy, Not Drive Check, and Seek Complete. Run Routine B3. Display the symptom code and refer to the FSI. Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '08') may be selected.	905
AD0B	**ANY**	Incorrect status following a Seek operation.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xx0x xx01 Expected	ACC 540, Entry B	Expected Not Busy, Not Drive Check, and Seek Complete. Run Routine B3. Display the symptom code and refer to the FSI. Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '08') may be selected.	910
AD0C	**ANY**	Failed to receive Normal End following a Set Read/Write operation.		Not used	CTL-I 260, Entry B	Expected Normal End. Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '08') may be selected.	905
AD0D	**ANY**	Failed to orient on Index and Active Track within 21 milliseconds.		Not used	RPI 110, Entry B	Expected Index and Active Track (bits 6, 7) from Read Status operation. Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '08') may be selected.	905
AD0E	**ANY**	Received Error Alert from Set Read/Write operation.		Not used		Run Routine B3. Display the symptom code and refer to the FSI. Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '08') may be selected.	905
AD0F	**ANY**	Received Error Alert from Seek operation.		Not used		Run Routine B3. Display the symptom code and refer to FSI. Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '08') may be selected.	905

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
AD12	1	Unexpected Attention Status encountered from the data module under Tag '84'.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xxxx x000 Expected		Indicates unexpected access mechanism movement since last Seek operation. Reload Routine AD.	915
AD13	1	Received I Write Sense = 1 following Set Read/Write operation and prior to initiating any Write.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xxxx x0xx Expected	DATA 121, Entry A		915
AD14	1	Failed to orient on Index and Active Track within 21 milliseconds.			RPI 110, Entry B	See error AD0D.	915
AD15	1	Failed to receive I Write Sense = 1 during a Write G1 operation, approximately 20 microseconds after Index.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xxxx x1xx Expected	DATA 120, Entry A		915
AD16	1	Received I Write Sense = 1 during a Write G1 operation with Diagnostic Inhibit Write Gate Mode active approximately 20 microseconds after Index.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xxxx x0xx Expected	DATA 121, Entry B		915
AD17	1	No Check End or Normal End response received following Write G1 operation in Diagnositc Invert Bus Out Parity mode within 21 milliseconds.			CTL-I 260, Entry B		920

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Error Code	Test No.	Error Description	CE Panel Lamp Display			Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION				
AD18	1	Unable to force Gap Counter error in Diagnostic Invert Bus Out Parity mode.	2	Controller Checks Tag '04' Bus '02' xxx0 xxxx	Received	DATA 240, Entry C		920
				xxx1 xxxx	Expected			
			3	Check End Byte xxxx xxxx	Received			
AD19	1	Gap Counter error is on when it should be off.	2	Controller Checks Tag '04' Bus '02' xxx1 xxxx	Received	DATA 240, Entry A		
				xxx0 xxxx	Expected			
AD1A	1	No Write Data Check in Diagnostic Invert Bus Out Parity mode.	2	Controller Checks Tag '04' Bus '02' xxxx 0xxx	Received	DATA 230, Entry B		920
				xxxx 1xxx	Expected			
AD1B	1	No Controller Error as a result of Gap Counter error in Diagnostic Invert Bus Out Parity mode.	2	Drive Status Tag '84' Bus '00' 0xxx xxxx	Received	CTL-I 400, Entry C		920
				1xxx xxxx	Expected			
AD1C	1	Controller Reset did not reset Gap Counter error.	2	Controller Checks Tag '04' Bus '02' xxx1 xxxx	Received	CTL-I 160, Entry A		920
				xxx0 xxxx	Expected			

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referenc
AD22	2	Unexpected Attention Status encountered.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xxxx x000 Expected		Indicates unexpected Access mechanism movement since last Seek operation. Reload Routine AD.	925
AD24	2	Failed to orient on Index and Not Active Track.			RPI 110, Entry B		925
AD25	2	Failed to orient on Index (presumed Active Track).		Not used	RPI 110, Entry A		925
AD26	2	Microprogram timed out waiting for a response from the controller during a Read G1 operation.		Not used	DATA 113		925
AD27	2	Abnormal End condition received while timing G1 gap in Write mode.	2	Check End Byte Received xxxx xxxx 0000 0000 Expected	CTL-I 210, Entry A		925
AD28	2	Gap G1 length out of tolerance.	2 3	Gap timer – Hi xxxx xxxx Gap timer – Lo xxxx xxxx	DATA 241	Bytes 2 and 3 are a 2-byte timer, indicating the measured G1 gap length in microseconds. Expected timer value is 114 to 121 microseconds ('0072' – '0079').	925

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AD32	3	Unexpected Attention Status encountered.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xxxx x000 Expected		Indicates unexpected Access mechanism movement since last Seek operation. Reload Routine AD.	930
AD34	3	Failed to orient on Index and Not Active Track.			RPI 110, Entry B		930
AD35	3	Failed to orient on Index. (Presumed Active track.)			RPI 110, Entry A		
AD36	3	No Sync In received within 21 milliseconds during extended G1 operation.			DATA 240, Entry A		930
AD37	3	Abnormal End condition received while timing extended G1 gap in Write Mode.	2	Check End Byte Received xxxx xxxx 0000 0000 Expected	CTL-I 210, Entry A		930
AD38	3	Extended G1 gap out of tolerance.	2 3	Gap timer – Hi xxxx xxxx Gap timer – Lo xxxx xxxx	DATA 241	Bytes 2 and 3 are a 2-byte timer, indicating the measured extended G1 gap in microseconds. Expected timer value is 253 to 269 microseconds ('00FD' – '010D').	930

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referer
AD42	4	Unexpected Attention Status encountered.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xxxx x000 Expected		Indicates unexpected access mechanism movement since last Seek operation. Reload Routine AD.	935
AD44	4	Failed to orient on Index and Not Active Track.			RPI 110, Entry B		935
AD46	4	Failed to receive Any End response following Write G1 operation.		Not used	CTL-I 260, Entry B		935
AD48	4	Incorrect number of Sync In's received after a Write G1 operation of 'nn' bytes.	2 3	Number of Sync In's Received xxxx xxxx xxxx xxxx Expected	DATA 100, Entry A	'nn' = Number of bytes written. Values are: '01', '02', '04', '08', or '11'. The number of Sync In's expected is: '02', '03', '05', '09', or '12'.	935

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AD52	5	Unexpected Attention Status encountered.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xxxx x000 Expected		Indicates unexpected access mechanism movement since last Seek operation. Reload Routine AD.	940
AD53	5	No End response received from a Write G1 operation within 21 milliseconds.		Not used	CTL-I 260, Entry B		940
AD54	5	Failed to orient on Index and Not Active Track.		Not used	RPI 110, Entry B		940
AD56	5	No Sync In received from a Write G2 following a successful orientation with a Write G1 operation.		Not used	DATA 113		940
AD57	5	Abnormal End received while timing a G2 gap in Write mode.	2	Check End Byte Received xxxx xxxx 0000 0000 Expected	CTL-I 210, Entry A		940
AD58	5	Gap G2 out of tolerance.	2 3	Gap timer – Hi xxxx xxxx Gap timer – Lo xxxx xxxx	DATA 241	Bytes 2 and 3 are a 2-byte timer indicating the measured G2 gap in microseconds. Expected timer value is 72 to 79 microseconds ('0048' – '004F').	940

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referenc
AD62	6	Unexpected Attention Status encountered.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xxxx x000 Expected		Indicates unexpected Access mechanism movement since last Seek operation. Reload Routine AD.	945
AD63	6	No End response received from a Write G1 operation within 21 milliseconds.			CTL-I 260, Entry B		945
AD64	6	Failed to orient on Index and Not Active Track.		Not used	RPI 110, Entry B		945
AD66	6	Microprogram timed out waiting for a response from the controller during a Write G3 operation.			DATA 113		945
AD67	6	Abnormal End received while timing G3 gap in Write mode.	2	Check End Byte Received xxxx xxxx 0000 0000 Expected	CTL-I 210, Entry A		945
AD68	6	Gap G3 out of tolerance.	2 3	Gap timer – Hi xxxx xxxx Gap timer – Lo xxxx xxxx	DATA 241	Bytes 2 and 3 are a 2-byte timer indicating the measured G3 gap in microseconds. Expected timer value is 76 to 82 microseconds ('004C' – '0052').	945

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AD72	**7**	Unexpected Attention Status encountered.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xxxx x000 Expected		Indicates unexpected access mechanism movement since last Seek operation. Reload Routine AD.	950
AD73	**7**	No End response from a Write G1 operation within 21 milliseconds.		Not used	CTL-I 260, Entry B	Expected Check End or Normal End response to Write G1 operation. Wrote 4-byte data pattern = 'EB 6D B6 DB'.	950
AD74	**7**	Failed to orient on Index and Not Active Track.		Not used	RPI110, Entry B		950
AD76	**7**	Microprogram timed out waiting for a response from the controller during a Write G1 operation.			DATA 113		950

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
AD78	7	Write Data check and/or ECC Data check received from Write G1 operation with data field – 'EB 6D B6 DB'.	2	Controller Checks Received xxxx xxxx xxxx 0x0x Expected	DATA 230, Entry D		950
AD79	7	Unexpected End response received from Write G1 operation during Data Response mode.	2	Check End Byte Received xxxx xxxx 0000 0000 Expected	CTL-I 260, Entry B		950

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
AD81	8	Unsolicited Attention Status received from the data module.	2	Bus In under Tag '84' Bus '00' Received Bits 5, 6, 7 = 000 Expected		Access mechanism has probably moved since last verification. Restart Routine AD.	955
AD82	8	Read/Write Check (Bit 3) not = 0 following a Check Reset operation.	2	Bus In under Tag '84' Bus '00' Received Bit 3 = 0 Expected	R/W 280, Entry E		955
AD83	8	Read/Write Status Bits 2, 5, 6, 7 not = 0 following a Check Reset operation.	2	Bus In under Tag '8F' Bus '0B' Received Bits 2, 5, 6, 7 = 0000 Expected	R/W 280, Entry E		955
AD84	8	Control Check not = 1 after being forced.	2	Bus In under Tag '8F' Bus '0B' Received Bit 5 = 1 Expected	R/W 250, Entry B		955
AD85	8	Control Check not = 0 following a Check Reset operation.	2	Bus In under Tag '8F' Bus '0B' Received Bit 5 = 0 Expected	R/W 250, Entry C		955
AD86	8	Write Overrun Check not = 1 after being forced by writing through Index.	2	Bus In under Tag '8F' Bus '0B' Received Bit 2 = 1 Expected	R/W 220, Entry C	This error may be caused by the drive motor running too fast.	955
AD87	8	Write Overrun Check not = 0 following a Check Reset operation.	2	Bus In under Tag '8F' Bus '0B' Received Bit 2 = 0 Expected	R/W 220, Entry B		955

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
AD88	8	Transition Check not = 1 after being forced.	2	Bus In under Tag '8F' Bus '0B' Received Bit 6 = 1 Expected	R/W 260, Entry A		955
AD89	8	Transition Check not = 0 following a Check Reset operation.	2	Bus In under Tag '8F' Bus '0B' Received Bit 6 = 0 Expected	R/W 260, Entry B		960
AD8A	8	Write I Check not = 1 after being forced.	2	Bus In under Tag '8F' Bus '0B' Received Bit 7 = 1 Expected	R/W 270, Entry A		955
AD8B	8	Write I Check not = 0 following a Check Reset operation.	2	Bus In under Tag '8F' Bus '0B' Received Bit 7 = 0 Expected	R/W 270, Entry B		960
AD8C	8	Read/Write Check not = 1 after forcing Control check.	2	Bus In under Tag '84' Bus '00' Received Bit 3 = 1 Expected	R/W 280, Entry E		955
AD8D	8	Read/Write Check not = 1 after forcing Write Overrun check.	2	Bus In under Tag '84' Bus '00' Received Bit 3 = 1 Expected	R/W 280, Entry E		955
AD8E	8	Read/Write Check not = 1 after forcing Transition Check and and Write I Check.	2	Bus In under Tag '84' Bus '00' Received Bit 3 = 1 Expected	R/W 280, Entry E		960

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AD92	9	With FHFE Low Gain Check active following Check Reset operation.	2	Bus In under Tag '8F' Bus '03' Received xxxx x0xx Expected	R/W 290, Entry C		960
AD93	9	With FHFE Read/Write Check active following Check Reset operation with Low Gain Check not active.	2	Bus In under Tag '84' Bus '00' Received xxx0 xxxx Expected	R/W 280, Entry E		960
AD94	9	With FHFE Low Gain Check active following Set Read/Write mode in drive.	2	Bus In under Tag '8F' Bus '03' Received xxxx x0xx Expected	R/W 290, Entry D		960
AD95	9	With FHFE Read/Write Check active following Set Read mode in drive with Low Gain Check not active.	2	Bus In under Tag '84' Bus '00' Received xxx0 xxxx Expected	R/W 280, Entry E		960
AD96	9	With FHFE Low Gain Check not active when forced.	2	Bus In under Tag '8F' Bus '03' Received xxxx x1xx Expected	R/W 290, Entry E		960
AD97	9	With FHFE Read/Write Check not active after forcing Low Gain Check.	2	Bus In under Tag '84' Bus '00' Received xxx1 xxxx Expected	R/W 280, Entry E		960
AD98	9	With FHFE Low Gain Check not reset by Check Reset operation.	2	Bus In under Tag '8F. Bus '03' Received xxxx x0xx Expected	R/W 290, Entry C		960
AD99	9	With FHFE Read/Write Check not reset by Check Reset operation after Low Gain Check reset.	2	Bus In under Tag '84' Bus '00' Received xxx0 xxxx Expected	R/W 280, Entry E		960

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AE01 through AE07		Errors common to all routines.				MICRO 85		None
AE10	1	ECC Zeros Detect was off after G1 Gap Byte 53 time. At this time the ECC Reset line should have been raised to reset the registers.	2 3	Controller Checks xxxx xxx1	Received Expected	DATA 205	No ECC Reset. No serial data to ECC required. Uses Zero Compare to set Zeros Detect.	1010
AE11	1	ECC Zeros Detect was on after the program received the fourth Sync In. ECC registers should be loaded with data at this time.	2 3	Controller Checks xxxx xxx0	Received Expected	DATA 205	*WARNING* *This error could occur if the Home Address read contained zeros in the first 4 bytes.*	1010

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Error Code	Test No.	Error Description	CE Panel Lamp Display			Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION				
AE20	2	Bus In at Normal End was not '00'.	2	Bus In under Normal End	Received	DATA 180		1030
AE21	2	ECC low pattern register not equal to zero.	2	ECC Low 0000 0000	Received Expected	DATA 210, Entry A		1030
AE22	2	ECC high pattern register not equal to zero.	2	ECC High 0000 0000	Received Expected	DATA 210,Entry A		1030
AE23	2	ECC zeros detect was off.	2	Controller Checks xxxx xx1x	Received Expected	DATA 205		1030
AE24	2	ECC data check was on after pattern was read back.	2	Bus In under Check End 1001 0000	Received Expected	DATA 205		1030

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AE30	3	No Check End received after forcing a Data Check.	2 3 4	Bus In Not used Not used	Received	DATA 207, Entry A		1035
AE31	3	Bus In Bit 3 (Data Check) missing.	2	Bus In under Check End xxx1 xxxx	Received Expected	DATA 207, Entry B		1035
AE32	3	No AM Found bit should be on with ECC Data Check Bit.	2	Bus In under Check End xxxx 1xxxx	Received Expected	DATA 207, Entry D		1035
AE33	3	After the correction operation, the data was indicated as uncorrectable. (Normal End came on.)		Not used		DATA 205		1035
AE34	3	Incorrect counter value after correction. Expected '00'.	2 3	Counter high Counter low		DATA 205		1035
AE35	3	ECC Zeros Detect was not on after Data Check was indicated to be correctable.	2 3	Controller Checks xxxx xxx1	Received Expected	DATA 205		1035
AE36	3	ECC Low Pattern register incorrect after correctable Data Check.	2	ECC Low 1000 0000	Received Expected	DATA 210, Entry A		1035
AE37	3	ECC High Pattern register incorrect after correctable Data Check.	2	ECC High 0000 0011	Received Expected	DATA 210, Entry A		1035
AE3F	3	No Index Alert after 25 millisecond wait during ECC Correct operation.		Not used		RPI 120, Entry C		1035 1040

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Error Code	Test No.	Error Description	CE Panel Lamp Display			Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION				
AE40	**4**	No Check End after uncorrectable Data Check was read.	2	Bus In	Received	DATA 207, Entry A		1040
AE41	**4**	No ECC Data Check Bit 3 after Data Check was forced.	2	Bus In under Check End	Received	DATA 207, Entry B		1040
				1xx1 xxxx	Expected			
AE42	**4**	Uncorrectable Data Check was indicated to be correctable during ECC correction operation. (Index Alert turned on.)		Not used		RPI 120, Entry C		1040
AE43	**4**	Normal End was not received by ECC correction operation. (Normal End indicates an uncorrectable Data Check.)		Not used		DATA 207, Entry C		1040
AE44	**4**	ECC Zeros Detect was on after an uncorrectable Data Check was processed through correction cycle.	2	Controller Check	Received	DATA 205		1040
				xxxx xxx0	Expected			

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MICRODIAGNOSTIC ERROR CODE DICTIONARY

Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MIC Refe
AE50	5	ECC pattern read does not match what was written during Write ECC burst.			DATA 190	Record should read '00 00 FF FF FF FF FF FF'	1(

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Refere
AEF1	Int	Drive did not become Busy after a Seek Start or Rezero command.	2	Drive Status	Received	ACC 210, Entry C	Run Sense Display Routine B3 to gather drive and controller error bytes. Error numbers '0x' should be detected by a prior routine (except 0A and 0F).	1005
			3	xxxx xx1x	Expected			
AEF2	Int	Drive Check received after Seek or Rezero operation.	2	Drive Status	Received		Run diagnostic Routines A2, A3, and A4.	1005
			3	xx0x xxx1	Expected			
AEF3	2,3 4,5	Microprogram timed out waiting for a response from the controller.		Not used		DATA 113		1010 1015 1020 1025 1030
AEF5	2,3 4,5	Read an incorrect HA prior to writing the test pattern. Should be cylinder 349, head 1.		Not used			Run Routine AF.	1010 1015
AEF6	2,3 4,5	No Ending Status after a 25 millisecond wait after Read G1, Write G2, or Set Read/Write command.				CTL-I 260, Entry B		1010 1015 1020 1025

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AEF8	1	Program timed-out waiting for Index Alert or Index Mark not Active Track.		Not used	RPI 110, Entry A		1010
AEF9	2, 3 4, 5	Error Alert received during one of the following Tags: Set Read/Write Read G1 Write G2 Read G2	2	Drive Status Received 0000 xxxx Expected		Error Alert other than ECC hardware check. Run Sense Display, Routine B3. Refer to FSI 60 to generate Fault Symptom Code.	1010 1015 1025
AEFA	2, 3 4, 5	ECC Hardware Check received during one of the following Tags: Set Read/Write Read G1 Write G2 Read G2	2	Controller Checks Received xxxx xx0x Expected	DATA 200, Entry B		1015 1025
AEFD	2, 3 4, 5	No Ending Status after a 25-millisecond wait during Read G1 or Read G2.		Not used	DATA 113, Entry A		1025 1030
AEFE	2, 3 4, 5	Unexpected Check End received during Read G1 or Read G2, other than ECC Data Check.	2	Bus In under Check End Received 0001 1000 Expected	CTL-I 210, Entry A	*Note: Unit Data Checks during Read G1 are ignored.*	1015 1025 1030

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
AF01 through AF07		Errors common to all routines			MICRO 85		None

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
AF08	**ANY**	Failed to raise Busy following Rezero start.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xxxx xx1x Expected	ACC 210, Entry C	Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '0F) may be selected.	1105
AF09	**ANY**	Failed to raise Busy following Seek start.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xxxx xx1x Expected	ACC 210, Entry C	Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '0F') may be selected.	1105
AF0A	**ANY**	Incorrect status following a Rezero operation.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xx0x xx01 Expected No Drive Check No Busy Seek Complete	FSI 60	Run Routine B3 pass 2, display message byte 9 (Access Status). Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '0F') may be selected.	1105
AF0B	**ANY**	Incorrect status following a Seek operation.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx xx0x xx01 Expected No Drive Check No Busy Seek Complete	ACC 540, Entry B	Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '0F') may be selected.	1105
AF0C	**ANY**	Failed to receive Normal End response following Set Read/Write operation.			CTL-I 260, Entry B	Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '0F') may be selected.	1105
AF0D	**ANY**	Failed to orient on Index and Active Track.				Run Routine A5, Index and Sector Test. Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '0F') may be selected.	1110
AF0E	**ANY**	Received Error Alert following Set Read/Write operation.				Run Routine B3. Display the symptom code and refer to the FSI. Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '0F') may be selected.	1105
AF0F	**ANY**	Received Device Address does not compare with expected address.	2	Sense Physical Address Received Tag '04' Bus '10' xxxx xxxx		CE swapped drives in middle of run Restart Routine AF. Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '0F') may be selected.	1110

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AF12	ANY	PA 1 and PA 2 compare incorrectly and no error condition detected.	2 3	xxxx xxxx PA 1 Received xxxx xxxx PA 2 Received 0101 1101 PA 1 Expected 0100 0010 PA 2 Expected		Run attachment tests before continuing. This error may be a read problem. Run access Routine A4, A6, and A8 to verify servo operations. If this has been done, refer to the operating instructions on MICRO 32. Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '0F') may be selected.	1110
AF15	1	Read G1 Unoriented is on following initiation of a Read G1 operation immediatley after orientation on Index and Active Track.	2	Bus In under Tag '0E' and Tag Valid Received xxxx xxxx Bit 6 = 0 Expected	DATA 090, Entry A		1115
AF16	1	Read G1 Unoriented is off following initiation of an unoriented Read G1 operation.	2	Bus In under Tag '0E' and Tag Valid Received xxxx xxxx Bit 6 = 1 Expected	DATA 090, Entry B		1115
AF17	1	Unsolicited attention status received from the DM.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx Bits 5, 6, 7 = 000 Expected		Access mechanism has probably moved since last Seek Verification. Restart Routine AF.	1115
AF18	1	PA 1 and PA 2 bytes not = '5D41' and no error conditions detected.	2 3	xxxx xxxx = PA 1 Received xxxx xxxx = PA 2 Expected		If the password (see MICRO 32) has been used prior to receiving this stop, it can be assumed that there has been an access malfunction. Run access Routines A4, A6, and A8 to verify servo operations. Do not continue with Routine AF. If the password has not been used prior to receiving this stop, loop Routine AF test '0E' (see MICRO 32) to restore the physical address of this location.	1115
AF19	1	Timeout. Failed to orient on Index Alert.				Run Routine A5 (Index and Sector Test). If routine A5 does not fail, go to CTL-I 350, Entry B.	1115

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
AF1A	ANY	Error Alert received following the Read G1 operation.	2	Operation number. Note 1 on MICRO 824.		Run Routine B3. Display the symptom code and refer to the FSI. Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '0F') may be selected.	1110
AF1B	ANY	Received Check End response following Read G1 operation.	2 3	Operation number. See Note 1 on MICRO 824 Check End Byte Received xxxx xxxx 0000 0000 Expected	CTL-I 210, Entry B	Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '0F') may be selected.	1180
AF1C	ANY	Unexpected End received during Read G1 operation.	2 3	Operation number. See Note 1 on MICRO 824 Check End Byte Received	DATA 100, Entry A	Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '0F') may be selected.	1180
AF1D	ANY	Microprogram timed out waiting for a response from the controller during a Read G1 operation.	2	Operation number. See Note 1 on MICRO 824	DATA 113, Entry A	Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test execution. To loop these errors, any test number ('01' – '0F') may be selected.	1180
AF1E	ANY	Failed to receive any End response.	2	Operation number. See Note 1 on MICRO 824	CTL-I 260, Entry B	Test numbers indicated by **ANY** refer to pre-test initialization, which precedes the execution of the first test. To loop these errors, any test number ('01' – '0F') may be selected.	1180

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referenc
AF21	2	Unsolicited attention status received from the DM.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx Bits 5, 6, 7 = 000 Expected		Access mechanism has probably moved since last seek verification. Restart Routine AF.	1120
AF24	2	Received Command Overrun or Unoriented status following an Oriented Write G2 operation.	2	Check End Byte Received xxxx xxxx 0x0x xxxx Expected	CTL-I 220, Entry B		1120
AF26	2	Failed to receive Check End following an Unoriented Write G2 operation.			CTL-I 220, Entry B		1120
AF28	2	Failed to receive Command Overrun status following an Unoriented Write G2 operation.	2	Check End Byte Received xxxx xxxx 1xxx xxxx Expected	CTL-I 220, Entry B		1120

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AF2A	2	Received Error Alert.	2	Operation number. See Note 1 on MICRO 824.		Run Routine B3. Display the symptom code and refer to FSI 60.	
AF2B	2	Received Check End response.	2 3	Operation number. See Note 1 on MICRO 824 Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		
AF2C	2	Received an unexpected End during a Read G1 operation or during an Unoriented Write G2 operation.	2 3	Operation number. See Note 1 on MICRO 824 Check End Byte Received	CTL-I 210, Entry B		
AF2D	2	Microprogram timed-out waiting for a response from the controller during a Read G1 or Write G2 operation.	2	Operation number. See Note 1 on MICRO 824	DATA 113, Entry A		
AF2E	2	Failed to receive any End response.	2	Operation number See Note 1 on MICRO 824	CTL-I 260, Entry B		

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AF31	3	Unsolicited Attention Status received from the DM.	2	Drive Status Received Tag '84' Bus '00' xxxx xxxx Bits 5, 6, 7 = 000 Expected		Access mechanism has probably moved since last Seek Verification. Restart Routine AF.	1125
AF32	3	Failed to orient on Index and Active Track.				Run Routine A5, Index and Sector Test	1125
AF34	3	Failed to receive Check End following an unoriented Write G2 operation.			CTL-I 260, Entry B		1125
AF36	3	Failed to receive Check End following an unoriented Clock G2 operation.			CTL-I 260, Entry B		1125

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AF38	3	Failed to receive Command Overrun status following an unoriented Write G2 operation.	2	Check End Byte Received xxxx xxxx 1xxx xxxx Expected	CTL-I 220, Entry B		1125
AF3A	3	Failed to receive Command Overrun status following an unoriented Clock G2 operation.	2	Check End Byte Received xxxx xxxx 1xxx xxxx Expected	CTL-I 220, Entry B		1125

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AF41	04	Unsolicited Attention Status received from the data module.	2	Drive Status under Tag '84' Bus '00' — Received xxxx x000 — Expected		The access mechanism has probably moved since last seek verification. Restart Routine AF.	1130
AF42	04	Microprogram timed out waiting for a response from the controller during a Write G1 operation.			DATA 113, Entry A		1130
AF44	04	No End received following a Write G1 operation.			CTL-I 260, Entry B		1130
AF46	04	Failed to receive Check End following a Write G1 operation.			CTL-I 260, Entry B		1130
AF48	04	Failed to receive Sync Out Timing error end status from a Write G1 operation.	2	Check End Byte — Received x1xx xxxx — Expected	DATA 110, Entry A		1130
AF4A	04	Failed to receive Status Overrun bit on Bus In when forced.	2	Bus In under Write operation while Tag Valid is active. — Received xxxx 1xxx — Expected	DATA 165, Entry A		1130
AF4C	04	Failed to reset Status Overrun bit on Bus In when Tag Valid is dropped.	2	Bus In under Write operation while Tag Valid is active. — Received xxxx 0xxx — Expected	DATA 165, Entry B		1130

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
AF51	05	Unsolicited Attention Status received from the data module.	2	Drive Status Received under Tag '84' Bus '00' xxxx x000 Expected		Access mechanism has probably moved since last seek verification. Restart Routine AF.	1135
AF52	05	Failed to set HAR = '00'	2	HAR value Received under Tag '8F' Bus '05' 0000 0000 Expected		Run Routine A2. Test 8 tests HAR.	1135
AF53	05	Failed to set HAR = '01' approximately 20 microseconds after Index during Read/Write operation. (inside Allow HAR window)	2	HAR value Received under Tag '8F' Bus '05' 0000 0001 Expected	CTL-I 350, Entry A		1135
AF54	05	Failed to prevent set HAR = '02' approximately 120 microseconds after Index during Read/Write operation. (outside Allow HAR window)			CTL-I 350, Entry A		1135
AF55	05	Failed to orient on Index and Active Track within 21 milliseconds.				Run routine A5, Index and Active Track tests.	1135
AF57	05	Failed to transfer Sector Counter value to Target Register during the initiation of a Read G1 operation.	2	Target Register value Received under Tag '8F' Bus '0D' 1100 0000 Expected	RPI 530		1135

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referenc
AF61	06	Unsolicited Attention Status received from the DM.	2	Drive status Received under Tag '84' Bus '00' Bits 5, 6, 7 = 000 Expected		Access mechanism has probably moved since last Seek Verification. Restart routine AF.	1140
AF6A	06	Received Error Alert following Read G1 or Write G2 operation.	2	Operation number. See Note 1 on MICRO 824.		Run routine B3. Display the symptom code and refer to FSI 60.	
AF6B	06	Received Check End response following Read G1 or Write G2 operation.	2 3	Operation number. See Note 1 on MICRO 824. Check End Byte. Received 0000 0000 Expected	CTL-I 210, Entry B	Test 6 depends on the proper placement of the G1 record on the track. A G1 record that occurs later than a normal extended G1 record causes this error. If not previously done, reformat G1 by looping routine AF, test E and then rerun test 6.	
AF6C	06	Received Unexpected End response	2 3	Operation number. See Note 1 on MICRO 824. Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		
AF6D	06	Microprogram timed out waiting for a response from the controller.	2	Operation number. See Note 1 on MICRO 824.	DATA 113, Entry A		
AF6E	06	Failed to receive any end response following Read G1 or Write G2 operation.	2	Operation number. See Note 1 on MICRO 824	CTL-I 260, Entry B		

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
AF71	07	Unsolicited Attention Status received from the DM	2	Drive Status Received Tag '84' Bus '00' Bits 5, 6, 7 = 000 Expected		Access mechanism has probably moved since last Seek Verification. Restart routine AF.	1140
AF74	07	Failed to receive Check End following Write G2 operation (forcing Track Overrun)			CTL-I 260, Entry B		1140
AF76	07	Failed to receive Track Overrun following Write G2 operation	2	Check End Byte Received xxx1 xxxx Expected	DATA 160, Entry A		1140

Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
AF7A	7	Received Error Alert.	2	Operation number. Note 1 on MICRO 824.		Run Routine B3. Display the symptom code and refer to FSI 60.	1140
AF7B	7	Received Check End response.	2 3	Operation number. Note 1 on MICRO 824. Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		1180
AF7C	7	Received unexpected End response.	2 3	Operation number. Note 1 on MICRO 824. Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		1180
AF7D	7	Microprogram timed-out waiting for a response from the controller.	2	Operation number. Note 1 on MICRO 824.	DATA 113, Entry A		1180
AF7E	7	Failed to receive any End response.	2	Operation number. Note 1 on MICRO 824.	CTL-I 260, Entry B		1180

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AF81	8	Unsolicited attention status received from DM.	2	Drive Status Received Tag '84' Bus '00' Bits 5, 6, 7 = 000 Expected		Access mechanism has probably moved since last seek verification. Restart Routine AF.	1145
AF84	8	Failed to receive I Write Sense = 1, 5 milliseconds after initiating an FMT G2 operation.	2	Operation number. See Note 1 on MICRO 824. Drive Status Received Tag '84' Bus '00' Bit 5 = 1 Expected	DATA 122, Entry A		1145
AF85	8	Failed to receive I Write Sense = 0 after a Reset Read/Write operation.	2 3	Operation number. See Note 1 on MICRO 824. Drive Status Received Tag '84' Bus '00' Bit 5 = 0 Expected	DATA 122, Entry A		1145

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICF Refer
AF8A	8	Received Error Alert.	2	Operation number. See Note 1 on MICRO 824.		Run Routine B3. Display the symptom code and refer to FSI 60	1145
AF8B	8	Received Check End response.	2 3	Operation number. See Note 1 on MICRO 824 Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		1180
AF8C	8	Received unexpected End response.		Operation number. See Note 1 on MICRO 824 Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		1180
AF8D	8	Microprogram timed-out waiting for a response from the controller.	2	Operation number. See Note 1 on MICRO 824			1180
AF8E	8	Failed to receive any End response.	2	Operation number. See Note 1 on MICRO 824	CTL-I 260, Entry B		1180

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AF91	**9**	Unsolicited attention status received from the DM.	2	Drive Status Received Tag '84' Bus '00' Bits 5, 6, 7 = 000 Expected		Access mechanism has probably moved since last seek verification. Restart Routine AF.	1150
AF96	**9**	Failed to receive Check End following Read G2 operation (of non-existent field).	2	Check End Byte Received	CTL-I 260, Entry B		1150
AF97	**9**	Failed to receive No Sync Found following Read G2 operation (of non-existent field).	2	Check End Byte Received xxxx x1xx Expected	DATA 135, Entry A		1150

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AF9A	9	Received Error Alert.	2	Operation number. See Note 1 on MICRO 824.		Run Routine B3. Display the symptom code and refer to FSI 60.	
AF9B	9	Received Check End response.	2 3	Operation number. See Note 1 on MICRO 824. Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		
AF9C	9	Received unexpected End response.	2 3	Operation number. See Note 1 on MICRO 824. Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		
AF9D	9	Microprogram timed-out waiting for a response from the controller.	2	Operation number. See Note 1 on MICRO 824.	DATA 113, Entry A		
AF9E	9	Failed to receive any End response.	2	Operation number. See Note 1 on MICRO 824.	CTL-I 260, Entry B		

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referen
AFA1	A	Unsolicited attention status encountered from DM.	2	Drive Status Received Tag '84' Bus '00' Bits 5, 6, 7 = 000 Expected		Access mechanism has probably moved since last seek verification. Restart Routine AF.	1155

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referen
AFAA	A	Received Error Alert.	2	Operation number. See Note 1 on MICRO 824.		Run Routine B3. Display the symptom code and refer to FSI 60.	1155
AFAB	A	Received Check End response.	2 3	Operation number. See Note 1 on MICRO 824. Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		1180
AFAC	A	Received unexpected End response.	2 3	Operation number. See Note 1 on MICRO 824 Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		1180
AFAD	A	Microprogram timed-out waiting for a response from the controller during a Data Transfer operation.		Operation number. See Note 1 on MICRO 824	DATA 113, Entry A		1180
AFAE	A	Failed to receive any End response.	2	Operation number. See Note 1 on MICRO 824.	CTL-I 260, Entry B		1180

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referen
AFB1	B	Unsolicited Attention Status received from the data module.	2	Drive Status under Tag '84' Bus '00' Received xxxx x000 Expected		Access mechanism has probably moved since last seek verification. Restart routine 'AF'.	1160
AFBA	B	Received Error Alert.	2	Operation number. See Note 1 on MICRO 824.		Run Routine B3. Display the symptom code and refer to FSI 60.	1160
AFBB	B	Received Check End response.		Operation number. See Note 1 on MICRO 824. Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		1180
AFBC	B	Received Unexpected End response.		Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		1180
AFBD	B	Microprogram timed out waiting for a response from the controller during a data transfer operation.		Operation number. See Note 1 on MICRO 824.	DATA 113, Entry A		1180
AFBE	B	Failed to receive any End response.		Operation number. See Note 1 on MICRO 824.	CTL-I 260, Entry B		1180

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referen
AFC1	**C**	Unsolicited attention status received from the DM.	2	Drive Status Received Tag '84' Bus '00' Bits 5, 6, 7 = 000 Expected		Access mechanism has probably moved since last seek verification. Restart Routine AF.	1165
AFC4	**C**	Failed to receive Check End following Read G3 AM Search operation (after Erase operation).	2	Check End Byte Received	CTL-I 260, Entry B		116
AFC5	**C**	Failed to receive No AM Found following Read G3 AM Search operation (after Erase operation).	2	Check End Byte Received xxxx 1xxx Expected	DATA 130, Entry B		116

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referen
AFCA	C	Received Error Alert.	2	Operation number. See Note 1 on MICRO 824.		Run Routine B3. Display the symptom code and refer to FSI 60.	116E
AFCB	C	Received Check End response.	2 3	Operation number. See Note 1 on MICRO 824. Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		118C
AFCC	C	Received Unexpected End response.	2 3	Operation number. See Note 1 on MICRO 824 Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		118C
AFCD	C	Microprogram timed out waiting for a response from the controller during a data transfer operation.	2	Operation number. See Note 1 on MICRO 824.	DATA 113, Entry A		1180
AFCE	C	Failed to receive any End response.	2	Operation number. See Note 1 on MICRO 824.	CTL-I 260, Entry B		1180

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referer
			BYTE	DESCRIPTION			
AFD1	D	Unsolicited attention status received from the DM.	2	Drive Status Received Tag '84' Bus '00' Bits 5, 6, 7 = 000 Expected		Access mechanism has probably moved since last seek verification. Restart Routine AF.	117(

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Refere
AFDA	**D**	Received Error Alert.	2	Operation number. See Note 1 on MICRO 824.		Run Routine B3. Display the symptom code and refer to FSI 60.	
AFDB	**D**	Received Check End response.	2 3	Operation number. See Note 1 on MICRO 824. Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		
AFDC	**D**	Received unexpected End response.	2 3	Operation number. See Note 1 on MICRO 824. Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		
AFDD	**D**	Microprogram timed-out waiting for a response from the controller.	2	Operation number. See Note 1 on MICRO 824.	DATA 113, Entry A		
AFDE	**D**	Failed to receive any End response following data transfer operation.	2 3	Operation number. See Note 1 on MICRO 824. Check End Byte Received 0000 0000 Expected	CTL-I 260, Entry B		

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referenc
AFE1	E	Unsolicited attention status received from DM.	2	Drive Status Received Tag '84' Bus '00' Bits 5, 6, 7 = 000 Expected		Access mechanism has probably moved since last seek verification. Restart Routine AF.	1170
AFEA	E	Received Error Alert.	2	Operation number. Note 1 on MICRO 824 .		Run Routine B3. Display the symptom code and refer to FSI 60.	
AFEB	E	Received Check End response following Format Write G1 operation.	2 3	Operation number. Note 1 on MICRO 824 Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		
AFEC	E	Received unexpected End response.	2 3	Operation number. Note 1 on MICRO 824 . Check End Byte Received 0000 0000 Expected	CTL-I 210, Entry B		
AFED	E	Microprogram timed-out waiting for a response from the controller during a data transfer operation.	2	Operation number. Note 1 on MICRO 824 .	DATA 113, Entry A		
AFEE	E	Failed to receive any End response following data transfer operation	2	Operation number. Note 1 on MICRO 824	CTL-I 260, Entry B		

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referen
			BYTE	DESCRIPTION			
AFF1	F	Unsolicited attention status encountered from the DM.	2	Drive Status Received Tag '84' Bus '00' Bus In bits 5, 6, 7 = 000 Expected		Access mechanism has probably moved since last seek verification. Restart Routine AF.	1175

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
AFFA	**F**	Received Error Alert.	2 3	Operation Code. See Note 1, MICRO 824. Check End Byte Received See Note 2, MICRO 824		Run Routine B3. Display the symptom code and refer to the FSI.	
AFFB	**F**	Check End response received following a Read or Write operation.	2 3	Operation Code. See Note 1, MICRO 824. Check End Byte Received See Note 2, MICRO 824	CTL-I 210, Entry B		
AFFC	**F**	Received unexpected End response.	2 3	Operation Code. See Note 1, MICRO 824. Check End Byte Received See Note 2, MICRO 824	CTL-I 210, Entry B		
AFFD	**F**	Microprogram timed-out waiting for a response from the controller during a data transfer operation.	2 3	Operation Code. See Note 1, MICRO 824. Check End Byte Received See Note 2 MICRO 824.	DATA 113, Entry A		
AFFE	**F**	10 microseconds (minimum) timeout while waiting for Check End or Norm End response following a Read or Write operation. Failed to receive any End response.	2	Operation Code. See Note 1, MICRO 824.	CTL-I 260, Entry B		

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ADDITIONAL INFORMATION FOR AFxx ERRORS

This is a cross reference of operation versus option number (OPN#) as displayed in Byte 2 of some error messages.

Byte 1 = Error number
Byte 2 = Operation number (code)
Byte 3 = Ending status received (if so specified in Error Code Dictionary).

NOTE 1: Operation Number (Code) Description

Error Number	Option Number	Description	Tag/Bus	Comments
1X	00	RD G1	T'0E' B'49'	HD # = 02 (Initialization-Seek Verification)
1X	01	RD G1	T'0E' B'49'	HD # = 01
2X	01	RD G1	T'0E' B'49'	
2X	02	WR G2	T'0F' B'21'	
2X	03	RD G1	T'0E' B'49'	
2X	04	WR G2	T'0F' B'21'	
3X	01	WR G2	T'0F' B'21'	
3X	02	CL G2	T'0E' B'21'	
4X	01	WR G1	T'0F' B'41'	Diagnostic Mode: Inhibit Write Gate
—	—	—	—	(No messages displaying option number in test 5.)
6X	01	RD G1	T'0E' B'49'	
6X	02	WR G2	T'0F' B'2B'	(8631 Bytes — Full track).
7X	01	RD G1	T'0E' B'49'	
7X	02	WR G2	T'0F' B'25'	(8832 Bytes — Track Overrun)
8X	01	RD G1	T'0E' B'49'	
8X	02	WR G2	T'0F' B'25'	
8X	03	FM G2	T'0F' B'64'	
9X	01	RD G1	T'0E' B'49'	
9X	02	RD G2	T'0E' B'64'	
9X	03	CL G2	T'0E' B'24'	
9X	04	RD G2	T'0E' B'64'	
AX	01	RD G1	T'0E' B'49'	
AX	02	FM G3	T'0E' B'54'	
AX	03	RD G1	T'0E' B'49'	
AX	04	RD G3	T'0E' B'54'	
BX	01	RD G1	T'0E' B'49'	
BX	02	CL G3	T'0E' B'14'	
BX	03	RD G1	T'0E' B'49'	
BX	04	RD G3 AM Search	T'0E' B'74'	
CX	01	RD G1	T'0E' B'49'	
CX	02	FM ER	T'0F' B'71'	
CX	03	RD G1	T'0E' B'49'	
CX	04	RD G3 AM Search	T'0E' B'71'	
DX	01	FM G1 Special	T'0F' B'C9'	
DX	02	RD G1	T'0E' B'49'	
EX	01	FM G1	T'0F' B'49'	
EX	02	RD G1	T'0F' B'49'	
FX	01	RD G1	T'0E' B'49'	
FX	02	FM G2	T'0F' B'69'	
FX	03	FM G3	T'0F' B'59'	
FX	04	FM RE-Orient	T'0F' B'39'	
FX	05	FM G3	T'0F' B'59'	
FX	06	WR G2 Special	T'0F' B'E9'	
FX	07	WR G4	T'0F' B'B9'	
FX	08	RD G1	T'0E' B'49'	
FX	09	RD G2	T'0E' B'69'	
RX	0A	RD G3	T'0E' B'59'	
FX	0B	RD G2 Special	T'0E' B'E9'	
FX	0C	RD G4	T'0E' B'39'	

Note 2: Ending Status

Valid only on Check End type errors. See MLM page OPER 100 for Check End Status from Read or Write errors. Refer to note 1 for operation type as per operation number displayed.

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
B001 through B007		Errors common to all routines.			MICRO 85		None

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Referen
B010		Invalid DM size detected.	2 3	Not used. Drive Status — Received Tag '8F' Bus '83' xxxx xxxx Bits 6 and 7 = 01 or 10. — Expected		This routine supports 35 MB (Bits 6 and 7 = 01) and 70 MB (Bits 6 and 7 = 10) data modules.	1232
B011		Incorrect Drive Status received following a Rezero or Seek operation.	2 3	Not used. Drive Status — Received Tag '84' Bus '00' xxxx xxxx xx0x xx01 — Expected	FSI 60	Possible Seek failure. Run Routine B3, pass 2. Display Message Byte 9 (Access Status).	1232
B012		Unexpected DM Attention received.	2 3	Not used. Drive Status — Received Tag '84' Bus '00' xxxx xxxx xxxx x000 — Expected		Access mechanism has probably moved since last Seek operation. Restart routine.	1235
B013		Unable to obtain a valid physical address cylinder number comparison on any track of the CE cylinder on this DM. The head address is not compared.	2 3 4	Operation number (see Note). PA1 (last head) — Received x1x1 11x1 — Expected PA2 (last head) — Received x1xx xxxx — Expected		Possible Seek failure, Read failure, or incorrect cylinder address in PA1 and PA2 of Home Address. Routine AF, test 0E writes a valid HA on track 1 of CE cylinder.	1235
B014		Microprogram timeout waiting for a controller response during a Read or Write operation.	2	Operation number (see Note).	DATA 113, Entry A		1240
B015		Received Error Alert 1 following a Read or Write operation.	2	Operation number (see Note).	FSI 60	Run Routine B3. Display the Symptom Code and refer to the FSI section.	1240
B016		Received Check End following a Read or Write operation	2 3	Operation number (see Note). Check End Byte — Received 0000 0000 — Expected	CTL-I 210, Entry B		1240
B017		Failed to receive Normal End following a Read or Write operation.	2	Operation number. (see Note).	CTL-I 260, Entry B		1240

Note:

Table of Operations —

Operation Number	Operation Type	Tag/Bus Value	Byte Counter	Save Data Switch	Data Pattern
1	READ G1	T'0E' B'49'	9	1	—
2	FORMAT G1	T'0F' B'49'	9	—	LOGICAL HA
3	FORMAT EXTENDED G1	T'0F' B'C9'	9	—	LOGICAL HA
4	FORMAT G2	T'0F' B'6D'	13	—	R0 Count
5	FORMAT G2	T'0F' B'08'	8	—	R0 Data
6	FORMAT G3	T'0F' B'5D'	13	—	R1 Count
7	FORMAT G2	T'0F' B'60'	256	—	R1 Data
8	READ G1	T'0E' B'49'	9	0	—
9	READ G2	T'0E' B'6D'	13	0	—
A	READ G2	T'0E' B'68'	8	0	—
B	READ G3	T'0E' B'5D'	13	0	—
C	READ G2	T'0E' B'60'	256	0	—

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
B101 through B107		Errors common to all routines.			MICRO 85		
B108	**1**	With FHFE Drive failed to go Busy following a Rezero or Seek Start operation.	2	Drive Status under Tag '84' Bus '00' Received xxxx xx1x Expected	ACC 210, Entry C		1257
B109	**1**	Error Alert after Tag 85. (Set RD/WR)	2 (Basic) Not used (FHFE) TSF: Bit 0 = Direction Bit 2 = Cylinder Address (256) 3 Head Address (P.A. 2 expected) (Basic) Bits 0,1 = '00' = Movable head cylinder 256 = 0 Bits 0,1 = '01' = Movable head cylinder 256 = 1 Bits 0,1 = '11' = Fixed head 4 Cylinder Address (1-128)	Feature Description	—	Run routine B3. Display the symptom code and refer to the FSI section.	1260
B10A	**1**	No Normal End or Error Alert received after Tag '85'. (Set RD/WR)	2 (Basic) Not used (FHFE) TSF: Bit 0 = Direction Bit 2 = Cylinder Address (256) 3 Head Address (P.A. 2 expected) (Basic) Bits 0,1 = '00' = Movable head cylinder 256 = 0 Bits 0,1 = '01' = Movable head cylinder 256 = 1 Bits 0,1 = '11' = Fixed head 4 Cylinder Address (1-128)	Feature Description	CTL-I 260, Entry B		1260
B10C	**1**	Error Alert (Selected Alert 1) occurred during a read data transfer.	2 (Basic) Not used (FHFE) TSF: Bit 0 = Direction Bit 2 = Cylinder address (256) 3 Head Address (P.A. 2 expected) (Basic) Bits 0,1 = '00' = Movable head cylinder 256 = 0 Bits 0,1 = '01' = Movable head cylinder 256 = 1 Bits 0,1 = '11' = Fixed Head 4 Cylinder Address (1-128)	Feature Description	—	Run routine B3. Display the symptom code and refer to the FSI section.	1265

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
B10D	1	Microprogram timed out waiting for a response from the Controller during a Data Transfer Operation.		**Feature** **Description**	DATA 113, Entry A		1265
			2	(Basic) Not used (FHFE) TSF: Bit 0 = Direction Bit 2 = Cylinder Address (256)			
			3	Head Address (P.A. 2 expected) (Basic) Bits 0,1 = '00' = Movable head cylinder 256 = 0 Bits 0,1 = '01' = Movable head cylinder 256 = 1 Bits 0,1 = '11' = Fixed head			
			4	Cylinder Address (1-128)			
B10E	1	No recognizable ending status for end of a read data transfer.		**Feature** **Description**	CTL-I 260, Entry B		1265
			2	(Basic) Not used (FHFE) TSF: Bit 0 = Direction Bit 2 = Cylinder address (256)			
			3	Head Address (P.A. 2 expected) (Basic) Bits 0,1 = '00' = Movable head cylinder 256 = 0 Bits 0,1 = '01' = Movable head cylinder 256 = 1 Bits 0,1 = '11' = Fixed Head			
			4	Cylinder Address (1-128)			
B110	1	Incorrect drive status after rezero or seek.		**Feature** **Description**		Run routine B3 pass 2, display message byte 9 (Access Status).	1255 1256
			2	(Basic) Not used (FHFE) TSF: Bit 0 = Direction Bit 2 = Cylinder Address (256)			
			3	Head Address (P.A. 2 expected) (Basic) Bits 0,1 = '00' = Movable head cylinder 256 = 0 Bits 0,1 = '01' = Movable head cylinder 256 = 1 Bits 0,1 = '11' = Fixed head			
			4	Cylinder Address (1-128)			
			5	Drive Status under Tag '84' Bus '00' — Received: xx0x xx01 — Expected			

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
B111	1	Flagged defective track(s) found in the specified cylinder.	2 3 4	**Feature** **Description** (Basic) Not used (FHFE) TSF: Bit 0 = Direction Bit 2 = Cylinder Address (256) Head Address (P.A. 2 expected) (Basic) Bits 0,1 = '00' = Movable head cylinder 256 = 0 Bits 0,1 = '01' = Movable head cylinder 256 = 1 Bits 0,1 = '11' = Fixed Head Cylinder Address (1-128)	Information Only	This error is meaningful only if the routine is run in single head mode. If it is not run in single head mode, or an invalid head address parameter was entered, the microdiagnostic attempts to read all tracks before posting the error. When this happens, the display bytes will not be meaningful, and HAR will be zero.	1260
B112	1	Expected cylinder and head address differ from physical address read from H. A.	2 3 4 5	Physical Address 1 received Physical Address 2 received Physical Address 1 expected Physical Address 2 expected	ACC 500, Entry A		1257
B114	1	With FHFE Failed to orient on Index within 25 milliseconds.			—	Run routine A5 (Index and Sector Test).	1257
B120	1	With FHFE Unexpected DM Attn received.	2	Drive Status under Received Tag '84' Bus '00' xxxx x000 Expected	—	Access mechanism has probably moved since last seek verification. Restart routine B1.	1257
B130	1	With FHFE Fixed head specified and no fixed head DM mounted. DM size Bit 3 = 0	2	Drive Status under Received Tag '8F' Bus '83' xxxx x1xx Expected	DEV-I 290, Entry F	If a fixed head feature DM is mounted, DM Size Bit 3 is failing.	1256

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
B1F0	1	Check End: Data Check in Home Address field.	2 3 4 5	**Feature** **Description** (Basic) Not used (FHFE) TSF: Bit 0 = Direction Bit 2 = Cylinder Address (256) Head Address (P.A. 2 expected) (Basic) Bits 0,1 = '00' = Movable head cylinder 256 = 0 Bits 0,1 = '01' = Movable head cylinder 256 = 1 Bits 0,1 = '11' = Fixed Head Cylinder Address (1-128) Check End Byte Received	R/W 300, Entry C	Detailed bit definition of Check End Byte is shown in the OPER section.	1270
B1F1	1	Check End: Data Check in Count field.	2 3 4 5	**Feature** **Description** (Basic) Not used (FHFE) TSF: Bit 0 = Direction Bit 2 = Cylinder Address (256) Head Address (P.A. 2 expected) (Basic) Bits 0,1 = '00' = Movable head cylinder 256 = 0 Bits 0,1 = '01' = Movable head cylinder 256 = 1 Bits 0,1 = '11' = Fixed head Cylinder Address (1-128) Check End Byte Received	R/W 300, Entry C	Detailed bit definition of Check End Byte is shown in the OPER section.	1270
B1F2	1	Check End: Data Check in Key field.	2 3 4 5	**Feature** **Description** (Basic) Not used (FHFE) TSF: Bit 0 = Direction Bit 2 = Cylinder address (256) Head Address (P.A. 2 expected) (Basic) Bits 0,1 = '00' = Movable head cylinder 256 = 0 Bits 0,1 = '01' = Movable head cylinder 256 = 1 Bits 0,1 = '11' = Fixed Head Cylinder Address (1-128) Check End Byte Received	R/W 300, Entry C	Detailed bit definition of Check End Byte is shown in the OPER section.	1270

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
B1F3	1	Check End: Data Check in Data field.		**Feature** **Description**	R/W 300, Entry C	Detailed bit definition of Check End Byte is shown in the OPER section.	1270
			2	(Basic) Not used (FHFE) TSF: Bit 0 = Direction Bit 2 = Cylinder Address (256)			
			3	Head Address (P.A. 2 expected) (Basic) Bits 0,1 = '00' = Movable head cylinder 256 = 0 Bits 0,1 = '01' = Movable head cylinder 256 = 1 Bits 0,1 = '11' = Fixed head			
			4	Cylinder Address (1-128)			
			5	Check End Byte Received			
B1F4	1	Check End: No sync byte found for Home Address field.		**Feature** **Description**	R/W 300, Entry C	Detailed bit definition of Check End Byte is shown in the OPER section.	1270
			2	(Basic) Not used (FHFE) TSF: Bit 0 = Direction Bit 2 = Cylinder address (256)			
			3	Head Address (P.A. 2 expected) (Basic) Bits 0,1 = '00' = Movable head cylinder 256 = 0 Bits 0,1 = '01' = Movable head cylinder 256 = 1 Bits 0,1 = '11' = Fixed Head			
			4	Cylinder Address (1-128)			
			5	Check End Byte Received			
B1F5	1	Check End: No sync byte found for R0 count field.		**Feature** **Description**	R/W 300, Entry C	Detailed bit definition of Check End Byte is shown in the OPER section. Check End with no sync byte found for a non-R0 Count field is assumed to be end of records on this track.	1270
			2	(Basic) Not used (FHFE) TSF: Bit 0 = Direction Bit 2 = Cylinder Address (256)			
			3	Head Address (P.A. 2 expected) (Basic) Bits 0,1 = '00' = Movable head cylinder 256 = 0 Bits 0,1 = '01' = Movable head cylinder 256 = 1 Bits 0,1 = '11' = Fixed Head			
			4	Cylinder Address (1-128)			
			5	Check End Byte Received			

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
B1F6	1	Check End: No sync byte found for Key field.	2 3 4 5	**Feature** **Description** (Basic) Not used (FHFE) TSF: Bit 0 = Direction Bit 2 = Cylinder Address (256) Head Address (P.A. 2 expected) (Basic) Bits 0,1 = '00' = Movable head cylinder 256 = 0 Bits 0,1 = '01' = Movable head cylinder 256 = 1 Bits 0,1 = '11' = Fixed head Cylinder Address (1-128) Check End Byte Received	R/W 300, Entry C		1270
B1F7	1	Check End: No sync byte found for Data field.	2 3 4 5	**Feature** **Description** (Basic) Not used (FHFE) TSF: Bit 0 = Direction Bit 2 = Cylinder address (256) Head Address (P.A. 2 expected) (Basic) Bits 0,1 = '00' = Movable head cylinder 256 = 0 Bits 0,1 = '01' = Movable head cylinder 256 = 1 Bits 0,1 = '11' = Fixed Head Cylinder Address (1-128) Check End Byte Received	R/W 300, Entry C		1270
B1F8	1	Check End: Conditions not covered by 'B1F0' through 'B1F7'.	2 3 4 5	**Feature** **Description** (Basic) Not used (FHFE) TSF: Bit 0 = Direction Bit 2 = Cylinder address (256) Head Address (P.A. 2 expected) (Basic) Bits 0,1 = '00' = Movable head cylinder 256 = 0 Bits 0,1 = '01' = Movable head cylinder 256 = 1 Bits 0,1 = '11' = Fixed Head Cylinder Address (1-128) Check End Byte Received	CTL-I 210, Entry E		1270

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
B201 through B207		Errors common to all routines.			MICRO 85		
B208	1	With FHFE Drive failed to go Busy following a Rezero or Seek Start operation.	2	Drive Status under Tag '84' Bus '00' Received xxxx xx1x Expected	ACC 210, Entry C		
B210	1	Rezero or Seek incorrect status	2	Drive Status under Tag '84' Bus '00' Received xx0x xx01 Expected		Run routines A3 and A4 to analyze seek failures.	1300

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
B220	1	Error Alert after tag 85 (Set RD/WR).	2	xxxH HHHH H = Head Address No.		Run routine B3. Display the symptom code and refer to the FSI.	1310
B221	1	Normal End or Error Alert not received after tag 85 (Set RD/WR).	2	xxxH HHHH H = Head Address No.	CTL 1260		1310
B222	1	Microprogram timed out waiting for a response from the controller.	2	xxxH HHHH H = Head Address No.	DATA 113, Entry A		1315
B223	1	Error Alert after Read.	2	xxxH HHHH H = Head Address No.		Run routine B3. Display the symptom code and refer to the FSI.	1310 1315
B224	1	Check End after Read.	2 3	xxxH HHHH H = Head Address No. Check End Byte Received	CTL 1210, Entry B		1310 1315
B225	1	Normal or Check End or Error Alert not received after Read.	2	xxxH HHHH H = Head Address No.	CTL 1260		1310 1315
B226	1	Track physical address non-compare with expected values.	2	xxxH HH H = Head Address No.		Probable cause is seek to the wrong track. Run Test A4 to verify Seek Operation.	1310
B227	1	Unexpected Seek Complete attention, or Unexpected Data Module Ready attention.	2	xxxH HHHH H = Head Address No.		This stop indicates that the access may have moved. To continue may destroy data. Reinitiate the test.	1310

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
B2A2	1	Sync-In not received for Write.	2	xxxH HHHH H = Head Address No.	DATA 113, Entry A		1315
B2A3	1	Error Alert after Write.	2	xxxH HHHH H = Head Address No.		Run routine B3. Display the symptom code and refer to the FSI.	1315
B2A4	1	Check End after Write.	2 3	xxxH HHHH H = Head Address No. Check End Byte Received	CTL-I 210, Entry B		1315
B2A5	1	Normal or Check End or Error Alert not received after Write.	2	xxxH HHHH H = Head Address No.	CTL-I 260, Entry B		1315

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
B300	**PASS 2 ONLY**	No drive selected. ('00' = physical drive ID) Expected '01', '02', '04', '08', '10', '20', '40', or '80'.				Ensure that desired drive is in CE Mode; check CE Mode switch	
B303, B305, through B307	**PASS 1 ONLY**	Errors common to all routines.			MICRO 85		
B3XX	**PASS 1 ONLY**	'xx' = First byte of symptom code generated by PASS 1 of routine B3.	2	Second byte of symptom code	Record symptom code, determine analysis procedure from symptom index on FSI 100	Display message byte 2 for second byte of symptom code. Message display procedure is on MICRO 12 B3 symptom code generation described on FSI 60.	
B3XX	**PASS 2 ONLY**	Normal termination of Pass 2. 'xx' = physical drive ID, should be: '01','02','04','08','10','20','40', or '80' (See Note 1).	2 ↓ 14/15 15/16	Device status information ↓ " " " (15=FHFE) 'B3' routine ID (16=FHFE)		*Note 1. More than one bit active in 'xx' indicates more than one drive selected. Ensure that only desired drive is in CE Mode.* Use procedure on MICRO 12 to display device status message bytes. Bytes are described on FSI 65.	
B3FF	**PASS 1 ONLY**	Unable to generate symptom code.				Run Pass 2 of routine B3 to display 14 bytes (15 for FHFE) of device status information. Place '00' in Data Entry switches and operate the Execute *twice* to start Pass 2. See FSI 65 for description of message bytes.	1355

Routine B3 is a utility microprogram that is run in two passes to perform two functions:

PASS 1 — Generate a symptom code providing the necessary device status conditions have not been reset.

PASS 2 — Display 14 bytes (15 for FHFE) of device status information.

See MICRO 36 for description.

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
B401 through B407		Errors common to all routines.			MICRO 85		
B411		Total delay values entered exceed 500 milliseconds.				See MICRO 37	1405
B412		Tag '0F' (Write command) was entered when a drive was selected. This tag is only allowed when only the controller is selected.				See MICRO 37.	1405
B413		With FHFE Illegal Rezero (Tag '8F' Bus '02') or Seek Start (Tag '8F' Bus '08') command encountered.				See MICRO 37	1405

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Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
B511	—	Microdiagnostic disk was loaded in the 3830-2 or Integrated Storage Control (ISC) 23FD when a 30 run option was executed. The functional micro disk must be used on these storage controls when using the 30 run option. This loads the symptom code generator into the overlay area.				1. Insert the function code disk in the 23FD file (3830-2 or ISC only). 2. Set Data Entry switches on the 3340 CE Panel to 30 run option and operate the Execute switch. This restores the Symptom Code Generator in the Storage Control.	

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Error Code	Test No.	Error Description	CE Panel Lamp Display		Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
			BYTE	DESCRIPTION			
B600		Lost synchronization between the master and the slave. (Valid only if string switch feature is installed).				Restart the test.	
B601 thru B607		Errors common to all routines.			MICRO 85		
B608	2–7	Master received a short Busy indication for more than 12 milliseconds while waiting for the slave to synchronize. (Valid only if string switch feature is installed).				Restart the test. (See MICFL 1407)	
B609	1–7	Without string switch feature: Feature not installed; do not run routine B6.				Expected stop if string switch feature is not installed.	
		With string switch feature: The string switch feature is installed, but feature bit was not received.	2	Bus In under Tag '06' Received xxx1 xxxx Expected	See Additional Action and Reference Notes.	SSW 130, Entry A if failure is on Master Interface. SSW 130, Entry B if failure is on Slave Interface. SSW 130, Entry C if failure is on both Interfaces.	

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MICRODIAGNOSTIC ERROR CODE DICTIONARY

Error Code	Test No.	Error Description	CE Panel Lamp Display BYTE	CE Panel Lamp Display DESCRIPTION	Maintenance Analysis Procedure	Additional Action and Reference Notes	MICFL Reference
B701 through B707		Errors common to all routines			MICRO 85		

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