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PUBLICATIONS REFERENCE DRAWING

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MACHINE NAME - Magnetic Tape Subsystem

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SY32-5061-1	336389	VOL. A05 - Maintenance Information IEC 0011215156 IEC 0011225996
SY32-5061-2	336390	Third Edition IEC 0011225997 IEC 0011215157
SY32-5061-3	336391	Fourth Edition IEC 0011215158 IEC 0011215159 IEC 0011225842 IEC 0011225843
SY32-5061-4	336392	Fifth Edition IEC 0011225998 IEC 0011228481
	336393	TNL SN32-5036
SY32-5061-5	336394	Sixth Edition
SY32-5061-6	336395	Seventh Edition IEC 0011225844
SY32-5061-7	336396	Eighth Edition
SY32-5061-8	A47957C	Ninth Edition
SY32-5061-9	A57693	Tenth Edition
SY32-5061-10	A57721	Eleventh Edition
SY32-5061-11	A57723	Twelfth Edition
SY32-5061-12	A57724	Thirteenth Edition
SY32-5061-13	C13783	Fourteenth Edition

IBM				DATE	CHANGE NO	DATE	CHANGE NO
NAME	PUB REF DWG (PRD)			REL	See EC History		
				7/24/89	A57723		
DESIGN			SHT OF	5/11/90	A57724		
DETAIL				9/30/91	C13783		
CHECK			CLASSIFICATION	MUST CONFORM TO ENG SPEC		DEVELOPMENT NO	
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IBM Maintenance Information

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Maintenance Library
Maintenance Information
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Vols. A01 to A05
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3480 Magnetic Tape Subsystem

This manual contains maintenance information about the IBM 3480 Magnetic Tape Subsystem and is intended for customer engineers responsible for servicing the 3480 tape subsystem. This publication is designed to be used with the IBM Maintenance Device (MD). Therefore, CEs using this manual should be familiar with that tool.

Prerequisite Knowledge

It is assumed that you have a background in data processing concepts and that you are familiar with the hexadecimal numbering system, stored program concepts, and have a basic understanding of tape subsystems and their relationship to a processor I/O channel.

Related Publications

IBM System/360 and System/370 I/O Interface Channel to Control Unit Original Equipment Manufacturers' Information, GA22-6974.

IBM 3480 Magnetic Tape Subsystem Description, GA32-0042.

How to Update the Maintenance Information

This manual is form number controlled. The 3480 manuals will be updated by Technical Newsletters (TNLs). The TNL cover letter will indicate the new EC level. The entire manual will be updated by major revision. All updates are processed through normal MLC control. The Publications Reference Drawing (PRD) in the front of each volume contains the EC history.

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Volume A05

FSI Fault Symptom Index
EAD Error Analysis Diagrams

Fault Symptom Index (FSI)

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General Information

This fault symptom index (FSI) is supplied for use as a troubleshooting tool if the product maintenance package does not supply a repair for a failure. You should not use the fault symptom index until the product maintenance package has been used as much as possible.

The fault symptom index is intended to find such causes of failure as:

- The service representative did not follow the product maintenance package procedures correctly or did not exchange all the FRUs.
- Power is missing or out of tolerance at the input to the named FRUs.
- Connections between FRUs (cables, connectors, top card connectors, board wiring, and land patterns) have short circuits or open circuits.
- The service representative put in a defective FRU.

The fault symptom index is intended to prevent your using much time analyzing design problems. When the fault symptom index information has been used as much as possible without supplying a correction, you should immediately request aid from your next level of support.

Attention

Take care in using the FSI. The FSI is designed on the assumption that the identified error indicator is the selected fault symptom code (FSC), not just any error code taken from the sense bytes. This means that if you are to use the FSI for corrective action, the source of the FSC must be the product maintenance package exit or the result of following the FSC development procedure discussed in the SPROC section. You should have come to the FSI from the SPROC section or from a diagnostic.

Any use of the FSI other than for FSCs developed as stated above is for informational purposes only. The 3480 develops many error codes in the sense data from the same problem. Some codes define the original cause of the problem; other codes can be the result of attempted error recovery actions. Because all codes are not direct results of the original error, if you review an error code not given by the product maintenance package or not chosen by following the FSC development procedure, you could be troubleshooting the effect of the problem, not its cause.

Contents of the Fault Symptom Index

The fault symptom index contains:

- The control unit error codes and the drive check codes in numeric order
- Error descriptions
- Suggested diagnostics to test the area that produced the error code
- Additional actions. This is added information and procedures that are useful for this error code, such as:
 - References to Error Analysis Diagrams (EADs) that diagnose this error
 - References to added theory information
 - CCW chains that test this area
 - A cable group list that provides all "from and to" connections for a given data path.
 - Additional sense information available, for example, "Sense byte 9 contains a value from the channel error register (CER)—see CER in 'Data Fields' (DF) section."
- A list of possible FRUs that can cause the error.

Entry into the Fault Symptom Index

The fault symptom index is entered because the product maintenance package did not repair a failure. The fault symptom index is in error-code order. Use the error code to find the information that you need in the fault symptom index.

Error codes can be obtained from three sources:

- From the product maintenance package when a repair is not successful
- From the FSC development procedure in the SPROC section
- From a support diagnostic failure ID message reference.

Support Troubleshooting

Before Using the Fault Symptom Index

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures for isolating drive/subsystem errors have been followed correctly before continuing troubleshooting using the fault symptom index.
2. Check all voltages at the inputs to each FRU identified in the fault symptom index to verify that the voltages are in tolerance.

The voltages at the inputs to each FRU are found in the lower left corner of the first logic page for each FRU and in the net wire lists.

3. For intermittent errors, loop any named diagnostics or CCW chains repeatedly and scope the area in question looking for unusual or deteriorated levels and signals.

Note: If the troubleshooting procedures in the FSI point to a failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Failures detected in the functional area can be caused by defective clock lines. If clocks to the functional area are suspected, verify that the clocks to the functional area are as shown on the "Control Unit Clocks" pages of the EAD section. See the entry "Control Unit Clocks" in the table of contents on EAD 1 for the functional area clocks.
5. Once FRUs have been replaced by the product maintenance package, the remaining failures are usually caused by the connections between FRUs. These are the cables, connectors, nets, and wires. The logic page numbers for connections of all FRUs can be found in the Logic Pages column in the "Fault Symptom Index Table."

Using the Fault Symptom Index

The fault symptom index is in error code numeric order. Error description information is supplied. Some error codes have additional error information available. For this condition, use the error analysis diagram (EAD) to determine the problem for the failure.

In the error analysis diagrams (EADs), the term "up logic level" means that the line is at a logic level of +4.75 volts to +5.0 volts (except as noted). The term "down logic level" means that the line is at a logic level of 0 volts to +0.4 volts.

The fault symptom index gives you a list of the FRUs that can cause this failure, the first being the most probable cause and the last being the least probable cause.

Note: If there is no error code listed, or if the error code definition states "This error should not occur," you should call your next level of support. You probably have a microprogram problem. Suggest that a control unit dump be made at this time.

After Using the Fault Symptom Index

1. If the failure is isolated and a correction is performed, for control unit failures, IML functional microcode into the control unit; for drive failures, IML functional microcode into the control unit only if a non-concurrent maintenance diagnostic was used, or you will disrupt normal customer operation on the non-failing drives. Insert the product diskette into the MD and select the Unit Test option to verify that the subsystem is operating correctly.
2. If the failure cannot be isolated, request technical aid from your next level of support.

After an aided correction, for control unit failures, IML functional microcode into the control unit; for drive failures, IML functional microcode into the control unit only if a non-concurrent maintenance diagnostic was used, or you will disrupt normal customer operation on the non-failing drives. Insert the product maintenance diskette into the MD and select the Unit Test option to verify that the subsystem is operating correctly.

Cable Groups

Many of the error codes have cable group numbers called as possible problems. Each group is a list of cables for a given data path. The cable groups are listed following the "Fault Symptom Index Table."

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
0002 — CHK 02	Open LED in tape path sensor A, cartridge present sensor, or cartridge latched sensor.	Use the EAD for CHK 02 for failure isolation. See EAD 1 for "CHK 02." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	006 011 010 085* 081 058	Tape path sensor A Cartridge latched sensor Cartridge present sensor Drive control card Tachometer sensor cable Logic board	Base plate Base plate Base plate 02A-A1B2 Base plate 02A-A1	SN001, 002 SN001, 002 SN001, 002 DD000, 001, 002, 003 SN001, 002 AA000, 100
0003 — CHK 03	Performing FRU isolation (MD) with a cartridge in the tray.	This error should not occur unless the cartridge is present after the message display tells you to remove it. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	010 085* 081	Cartridge present sensor Drive control card Tachometer sensor cable	Base plate 02A-A1B2 Base plate	SN001, 002 DD000, 001, 002, 003 SN001, 002
0004 — CHK 04	An under-tension error was not detected when it was tested before a load operation.	Use the EAD for CHK 04 for failure isolation. See EAD 1 for "CHK 04." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	014 059 085* 099 095 073 079* 080 049	Tension transducer Power amplifier board Drive control card Fuse F5 - 15 V dc for drive 0 or Fuse F6 - 15 V dc for drive 1 DC power supply Logic board to pwr amp J1 cable DC power distribution cable, drive internal - J1,J2 DC power distribution cable Logic board to pwr amp J2 cable	Base plate Drive 02A-A1B2 Power supply Drive Drive Drive Power supply Drive	ZT030 PA000, 001 DD000, 001, 002, 003 YF100 YF100 PA000, 001 ZZ010, 020, 110, 120 YF100 PA000, 001
0005 — CHK 05	Tape path sensor B failure or no LED current was detected.	Use the EAD for CHK 05 for failure isolation. See EAD 1 for "CHK 05." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	007 085* 081 058	Tape path sensor B Drive control card Tachometer sensor cable Logic board	Base plate 02A-A1B2 Base plate 02A-A1	SN001, 002 DD000, 001, 002, 003 SN001, 002 AA000, 100
0006 — CHK 06	A tape path sensor B detect circuit failure has occurred. An up logic level is always indicated.	Use the EAD for CHK 06 for failure isolation. See EAD 1 for "CHK 06." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085*	Drive control card	02A-A1B2	DD000, 001, 002, 003
0007 — CHK 07	The file protect switch is defective or shorted.	See SN001, 002 for the wiring of the file protect switch. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	009 085* 064 081 079*	File protect switch Drive control card Write power card Tachometer sensor cable DC power distribution cable, drive internal - J1, J2	Base plate 02A-A1B2 02A-A1G2 Base plate Drive	SN001, 002 DD000, 001, 002, 003 VP000 SN001, 002 ZZ010, 020, 110, 120
000E — CHK 0E	A tape path sensor B detection module failure occurred. A down logic level is always indicated.	Use the EAD for CHK 0E for failure isolation. See EAD 1 for "CHK 0E" TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 007 081	Drive control card Tape path sensor B Tachometer sensor cable	02A-A1B2 Base plate Base plate	DD000, 001, 002, 003 SN001, 002 SN001, 002

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
0002 — CHK 02	Open LED in tape path sensor A, cartridge present sensor, or cartridge latched sensor.	Use the FAD for CHK 02 for failure isolation. See EAD 1 for "CHK 02." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	006 011 010 085* 081 058	Tape path sensor A Cartridge latched sensor Cartridge present sensor Drive control card Tachometer sensor cable Logic board	Base plate Base plate Base plate 02A-A1B2 Base plate 02A-A1	SN001, 002 SN001, 002 SN001, 002 DD000, 001, 002, 003 SN001, 002 AA000, 100
0003 — CHK 03	Performing FRU isolation (MD) with a cartridge in the tray.	This error should not occur unless the cartridge is present after the message display tells you to remove it. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	010 085* 081	Cartridge present sensor Drive control card Tachometer sensor cable	Base plate 02A-A1B2 Base plate	SN001, 002 DD000, 001, 002, 003 SN001, 002
0004 — CHK 04	An under-tension error was not detected when it was tested before a load operation.	Use the EAD for CHK 04 for failure isolation. See EAD 1 for "CHK 04." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	014 059 085* 099 095 073 079* 080 049	Tension transducer Power amplifier board Drive control card Fuse F5 - 15 V dc for drive 0 or Fuse F6 - 15 V dc for drive 1 DC power supply Logic board to pwr amp J1 cable DC power distribution cable, drive internal - J1,J2 DC power distribution cable Logic board to pwr amp J2 cable	Base plate Drive 02A-A1B2 Power supply Drive Drive Drive Power supply Drive	ZT030 PA000, 001 DD000, 001, 002, 003 YF100 YF100 PA000, 001 ZZ010, 020, 110, 120 YF100 PA000, 001
0005 — CHK 05	Tape path sensor B failure or no LED current was detected.	Use the EAD for CHK 05 for failure isolation. See EAD 1 for "CHK 05." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	007 085* 081 058	Tape path sensor B Drive control card Tachometer sensor cable Logic board	Base plate 02A-A1B2 Base plate 02A-A1	SN001, 002 DD000, 001, 002, 003 SN001, 002 AA000, 100
0006 — CHK 06	A tape path sensor B detect circuit failure has occurred. An up logic level is always indicated.	Use the EAD for CHK 06 for failure isolation. See EAD 1 for "CHK 06." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085*	Drive control card	02A-A1B2	DD000, 001, 002, 003
0007 — CHK 07	The file protect switch is defective or shorted.	See SN001, 002 for the wiring of the file protect switch. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	009 085* 064 081 079*	File protect switch Drive control card Write power card Tachometer sensor cable DC power distribution cable, drive internal - J1, J2	Base plate 02A-A1B2 02A-A1G2 Base plate Drive	SN001, 002 DD000, 001, 002, 003 VP000 SN001, 002 ZZ010, 020, 110, 120
000E — CHK 0E	A tape path sensor B detection module failure occurred. A down logic level is always indicated.	Use the EAD for CHK 0E for failure isolation. See EAD 1 for "CHK 0E" TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 007 081	Drive control card Tape path sensor B Tachometer sensor cable	02A-A1B2 Base plate Base plate	DD000, 001, 002, 003 SN001, 002 SN001, 002
0013 — CHK 13			059 085* 049 081	Power amplifier board Drive control card Logic board to pwr amp J2 cable Tachometer sensor cable	Drive 02A-A1B2 Drive Base plate	PA001, 002 DD000, 001, 002, 003 PA001, 002 SN001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
0014 — CHK 14	A time-out occurred during removal of the tape slack at the beginning of a load operation (broken tape). OR the drive sensed either cartridge present or file protect when the manual latch was closed without a cartridge being inserted.	If the CHK 14 can be caused by latching the manual latch without a cartridge, the failure is caused by either the file protect switch (FRU 009), the cartridge present sensor (FRU 010) or the write power card at 02A-A1G2 (FRU 064). Use the EAD for CHK 14 for failure isolation. See EAD 1 for "CHK 14." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z Note: On drives with automatic cartridge loaders use FRUs 281 and 282 in place of FRU 008.	059 085* 003 008 095 079* 081 049 073 058 282 281	Power amplifier board Drive control card File reel motor Cartridge latch assembly DC power supply DC power distribution cable, drive internal - J1, J2 Tachometer sensor cable Logic board to pwr amp J2 cable Logic board to pwr amp J1 cable Logic board Load assembly Loader control card	Drive 02A-A1B2 Base plate Base plate Power supply Drive Base plate Drive Drive 02A-A1 Auto loader Auto loader	PA000, 001 DD000, 001, 002, 003 YG010, 110 Mechanical part YF100 ZZ010, 020, 110, 120 SN001, 002 PA000, 001 PA000, 001 AA000, 100 Mechanical part AL001
0015 — CHK 15	Loose wraps were detected in the cartridge.	See OPER 1 "Tape Threading/Loading—ILS - Test."	232 003 004 014 059	Cartridge File reel motor Machine reel motor Tension transducer Power amplifier board	Base plate Base plate Base plate Drive	YG010, 110 YG010 110 YG010 110 PA000, 001
0016 — CHK 16	Servo PLA failure.	See OPER 1 "Motion Control" and "Motor Control." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085*	Drive control card	02A-A1B2	DD000, 001, 002, 003
0017 — CHK 17	Timer failure. The timer is checked by hardware at load, unload, or after a power on reset.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085*	Drive control card	02A-A1B2	DD000, 001, 002, 003
0018 — CHK 18	Adapter card external register failure.	1. Run drive interface tests - diagnostic section EE40 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3 for EE40. 2. See OPER 1 for "Adapter Card" and "Parallel/Serial Interconnections." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 062* 063* 118	Drive control card Read preamplifier card Write card Drive-adapter card	02A-A1B2 02A-A1H2 02A-A1J4 01A-A1Q2	DD000, 001, 002, 003 RP000 WR000 DI001, 002
0019 — CHK 19	Adapter card interrupt failure.	1. Run diagnostic section EE40 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3 for EE40. 2. See OPER 1 for "Adapter Card" and "Parallel/Serial Interconnections." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 058	Drive control card Drive-adapter card Logic board	02A-A1B2 01A-A1Q2 02A-A1	DD000, 001, 002, 003 DI001, 002 AA000, 100
0020 — CHK 20	A machine reel null error was sensed during a load, or a phase one tach B failure occurred.	Use the EAD for CHK 20 for failure isolation. See EAD 1 for "CHK 20." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	226 004 059 085* 005 225 079* 081 073 049	Machine reel tach sensor B Machine reel motor and hub Power amplifier board Drive control card Flange Machine reel tach sensor A DC power distribution cable, drive internal - J1, J2 Tachometer sensor cable Logic board to pwr amp J1 cable Logic board to pwr amp J2 cable	Base plate Base plate Drive 02A-A1B2 Base plate Base plate Drive Base plate Drive Drive	SN001, 002 YG010, 110 PA000, 001 DD000, 001, 002, 003 Mechanical part SN001, 002 ZZ010, 020, 110, 120 SN001, 002 PA000, 001 PA000, 001

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
0021 — CHK 21	The threading mechanism is slow or stalled, or a tach 2 failure has occurred during a load operation.	Use the EAD for CHK 21 for failure isolation. See EAD 1 for "CHK 21." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	001 059 085* 003 007 079*	Threader assembly Power amplifier board Drive control card File reel motor assembly Tape path sensor B DC power distribution cable, drive internal - J1, J2 Tachometer sensor cable Logic board to pwr amp J2 cable Flange	Baseplate Drive 02A-A1B2 Baseplate Baseplate Drive Baseplate Drive Baseplate Baseplate Drive Auto loader Auto loader	YG010, 110 PA000, 001 DD000, 001, 002, 003 YG010, 110 SN001, 002 ZZ010, 020, 110, 120 SN001, 002 PA000, 001 Mechanical part YG010, 110 SN001, 002 PA000, 001 DD000, 001, 002, 003 Mechanical part Mechanical part ZZ010, 020 110, 120 SN001, 002 PA000, 001 Mechanical part AL001
0022 — CHK 22	The threading mechanism was not at the home position during cartridge load.	Use the EAD for CHK 22 for failure isolation. See EAD 1 for "CHK 22." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z Note: On drives with automatic cartridge loaders use FRUs 281 and 282 in place of FRU 008.	001 006 059 085* 127 008 079*	Threader assembly Tape path sensor A Power amplifier board Drive control card Latch interlock Cartridge latch assembly DC power distribution cable, drive internal - J1, J2 Tachometer sensor cable Logic board to pwr amp J2 cable Load assembly Loader control card	Baseplate Baseplate Drive 02A-A1B2 Baseplate Baseplate Drive Baseplate Drive Auto loader Auto loader	SN001, 002 YG010, 110 PA000, 001 DD000, 001, 002, 003 Mechanical part Mechanical part ZZ010, 020 110, 120 SN001, 002 PA000, 001 Mechanical part AL001
0023 — CHK 23	A machine reel null error was sensed during a load, or a phase one tach A failure occurred.	Use the EAD for CHK 23 for failure isolation. See EAD 1 for "CHK 23." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	225 004 059 085* 005 079*	Machine reel tach sensor A Machine reel motor and hub Power amplifier board Drive control card Flange DC power distribution cable, drive internal - J1, J2 Tachometer sensor cable Logic board to pwr amp J1 cable	Baseplate Baseplate Drive 02A-A1B2 Baseplate Drive Baseplate Drive	SN001, 002 YG010, 110 PA000, 001 DD000, 001, 002, 003 Mechanical part ZZ010, 020, 110, 120 SN001, 002 PA000, 001
0024 — CHK 24	A machine reel null error was detected during an unload operation.	Use the EAD for CHK 24 for failure isolation. See EAD 1 for "CHK 24." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	225 004 059 085* 005 079*	Machine reel tach sensor A Machine reel motor and hub Power amplifier board Drive control card Flange DC power distribution cable, drive internal - J1, J2 Tachometer sensor cable Logic board to pwr amp J1 cable	Baseplate Baseplate Drive 02A-A1B2 Baseplate Drive Baseplate Drive	SN001, 002 YG010, 110 PA000, 001 DD000, 001, 002, 003 Mechanical part ZZ010, 020, 110, 120 SN001, 002 PA000, 001
0025 — CHK 25	The threading mechanism is slow or stopped during an unload operation, or the leader block was not attached to the threader pin on a load operation and the drive tried to put the leader block back during a load retry. Note: If the threader pin does not engage the leader block on a load operation, the drive will attempt a load retry.	Use the EAD for CHK 25 for failure isolation. See EAD 1 for "CHK 25." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z Note: On drives with automatic cartridge loaders use FRUs 281 and 282 in place of FRUs 008, 017, and 018.	001 059 085* 003 017 018 019 127 008 006 049 079*	Threader assembly Power amplifier board Drive control card File reel motor Plunger spring Compression spring Interlock spring Latch interlock Cartridge latch assembly Tape path sensor A Power amplifier J2 cable DC power distribution cable, drive internal - J1, J2 Tachometer sensor cable Load assembly Loader control card	Baseplate Drive 02A-A1B2 Baseplate Baseplate Baseplate Baseplate Baseplate Baseplate Baseplate Drive Drive Baseplate Auto loader Auto loader	YG010, 110 PA000, 001 DD000, 001, 002, 003 YG010, 110 Mechanical part Mechanical part Mechanical part Mechanical part Mechanical part Mechanical part SN001, 002 PA000, 001 ZZ010, 020, 110, 120 SN001, 002 Mechanical part AL001

Fault Symptom Index (FSI)

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
0021 — CHK 21	The threading mechanism is slow or stalled, or a tach 2 failure has occurred during a load operation.	Use the EAD for CHK 21 for failure isolation. See EAD 1 for "CHK 21." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	001 059 085* 003 007 079* 081 049 005	Threader assembly Power amplifier board Drive control card File reel motor assembly Tape path sensor B DC power distribution cable, drive internal - J1, J2 Tachometer sensor cable Logic board to pwr amp J2 cable Flange	Base plate Drive 02A-A1B2 Base plate Base plate Drive Base plate Drive Base plate	YG010, 110 PA000, 001 DD000, 001, 002, 003 YG010, 110 SN001, 002 ZZ010, 020, 110, 120 SN001, 002 PA000, 001 Mechanical part
0022 — CHK 22	The threading mechanism was not at the home position during cartridge load.	Use the EAD for CHK 22 for failure isolation. See EAD 1 for "CHK 22." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z. Note: On drives with automatic cartridge loaders use FRUs 281 and 282 in place of FRU 008.	001 006 059 085* 127 008 079* 081 049 282 281	Threader assembly Tape path sensor A Power amplifier board Drive control card Latch interlock Cartridge latch assembly DC power distribution cable, drive internal - J1, J2 Tachometer sensor cable Logic board to pwr amp J2 cable Load assembly Loader control card	Base plate Base plate Drive 02A-A1B2 Base plate Base plate Drive Base plate Drive Auto loader Auto loader	YG010, 110 SN001, 002 PA000, 001 DD000, 001, 002, 003 Mechanical part Mechanical part ZZ010, 020 110, 120 SN001, 002 PA000, 001 Mechanical part AL001
0023 — CHK 23	A machine reel null error was sensed during a load, or a phase one tach A failure occurred.	Use the EAD for CHK 23 for failure isolation. See EAD 1 for "CHK 23." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	225 004 059 085* 005 079* 081 073	Machine reel tach sensor A Machine reel motor and hub Power amplifier board Drive control card Flange DC power distribution cable, drive internal - J1, J2 Tachometer sensor cable Logic board to pwr amp J1 cable	Base plate Base plate Drive 02A-A1B2 Base plate Drive Base plate Drive	SN001, 002 YG010, 110 PA000, 001 DD000, 001, 002, 003 Mechanical part ZZ010, 020, 110, 120 SN001, 002 PA000, 001
0024 — CHK 24	A machine reel null error was detected during an unload operation.	Use the EAD for CHK 24 for failure isolation. See EAD 1 for "CHK 24." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	225 004 059 085* 005 079* 081 073	Machine reel tach sensor A Machine reel motor and hub Power amplifier board Drive control card Flange DC power distribution cable, drive internal - J1, J2 Tachometer sensor cable Logic board to pwr amp J1 cable	Base plate Base plate Drive 02A-A1B2 Base plate Drive Base plate Drive	SN001, 002 YG010, 110 PA000, 001 DD000, 001, 002, 003 Mechanical part ZZ010, 020, 110, 120 SN001, 002 PA000, 001
0025 — CHK 25	The threading mechanism is slow or stopped during an unload operation, or the leader block was not attached to the threader pin on a load operation and the drive tried to put the leader block back during a load retry. Note: If the threader pin does not engage the leader block on a load operation, the drive will attempt a load retry.	Use the EAD for CHK 25 for failure isolation. See EAD 1 for "CHK 25." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z Note: On drives with automatic cartridge loaders use FRUs 281 and 282 in place of FRUs 008, 017, and 018.	001 059 085* 003 017 018 019 127 008 006 049 079* 081 282 281	Threader assembly Power amplifier board Drive control card File reel motor Plunger spring Compression spring Interlock spring Latch interlock Cartridge latch assembly Tape path sensor A Power amplifier J2 cable DC power distribution cable, drive internal - J1, J2 Tachometer sensor cable Load assembly Loader control card	Base plate Drive 02A-A1B2 Base plate Base plate Base plate Base plate Base plate Base plate Base plate Drive Drive Base plate Auto loader Auto loader	YG010, 110 PA000, 001 DD000, 001, 002, 003 YG010, 110 Mechanical part Mechanical part Mechanical part Mechanical part Mechanical part Mechanical part SN001, 002 PA000, 001 ZZ010, 020, 110, 120 SN001, 002 Mechanical part AL001 1.14

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
0026 — CHK 26	The cartridge latch failed to release.	Use the EAD for CHK 26 for failure isolation. See EAD 1 for "CHK 26 or CHK 31." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z This error may occur if the code has not been loaded to the automatic cartridge loader. Note: On drives with automatic cartridge loaders use FRUs 281 and 282 in place of FRUs 002 and 008.	002 008 059 085* 049 079* 011 006 081 282 281	Latch solenoid Cartridge latch assembly Power amplifier board Drive control card Logic board to pwr amp J2 cable DC power distribution cable drive internal - J1, J2 Cartridge latched sensor Tape path sensor A Tachometer sensor cable Load assembly Loader control card	Base plate Base plate Drive 02A-A1B2 Drive Drive Base plate Base plate Base plate Auto loader Auto loader	YG010, 110 Mechanical part PA000, 001 DD000, 001, 002, 003 PA000, 001 ZZ010, 020, 110, 120 SN001, 002 SN001, 002 SN001, 002 Mechanical part AL001
0027 — CHK 27	An unexpected interrupt occurred at tape path sensor B during an unload operation.	Use the EAD for CHK 27 for failure isolation. See EAD 1 for "CHK 27." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	007 226 085* 001 004 059 225 005 081 079* 073 049	Tape path sensor B Machine reel tach sensor B Drive control card Threader assembly Machine reel motor and hub Power amplifier board Machine reel tach sensor A Flange Tachometer sensor cable DC power distribution cable, drive internal - J1, J2 Logic board to pwr amp J1 cable Logic board to pwr amp J2 cable	Base plate Base plate 02A-A1B2 Base plate Base plate Drive Base plate Base plate Base plate Drive Drive Drive	SN001, 002 SN001, 002 DD000, 001, 002, 003 YG010, 110 YG010, 110 PA000, 001 SN001, 002 Mechanical part SN001, 002 ZZ010, 020, 110, 120 PA000, 001 PA000, 001
0028 — CHK 28	The tape is not attached to the leader block pin, the tape is broken, or the file reel is turning in reverse during a thread operation.	Use the EAD for CHK 28 for failure isolation. See EAD 1 for "CHK 28." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z Note: On drives with automatic cartridge loaders use FRUs 281 and 282 in place of FRU 008.	001 003 059 008 085* 081 079* 282 281	Threader assembly File reel motor Power amplifier board Cartridge latch assembly Drive control card Tachometer sensor cable DC power distribution cable, drive internal - J1, J2 Load assembly Loader control card	Base plate Base plate Drive Base plate 02A-A1B2 Base plate Drive Auto loader Auto loader	YG010, 110 YG010, 110 PA000, 001 Mechanical part DD000, 001, 002, 003 SN001, 002 ZZ010, 020, 110, 120 Mechanical part AL001
0029 — CHK 29	Hardware timer failure during unload operation.	See OPER 1 for "Tape Unloading—Unload." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085*	Drive control card	02A-A1B2	DD000, 001, 002, 003
002A — CHK 2A	An error was detected in attempting to reach the last wrap null point.	Use the EAD for CHK 2A for failure isolation. See EAD 1 for "CHK 2A." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	003 059 001 085* 014 007 226 010 079* 081 049	File reel motor Power amplifier board Threader assembly Drive control card Tension Transducer Tape path sensor B Machine reel tach sensor B Cartridge present sensor DC power distribution cable, drive internal - J1, J2 Tachometer sensor cable Logic board to power amplifier J2 cable	Base plate Drive Base plate 02A-A1B2 Base plate Base plate Base plate Base plate Drive Base plate Drive	YG010, 110 PA000, 001 YG010, 110 DD000, 001, 002, 003 ZT030 SN001, 002 SN001, 002 SN001, 002 ZZ010, 020, 110, 120 SN001, 002 PA000, 001
002B — CHK 2B	A mid-tape load failure occurred.	Run diagnostic section EEA0 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3 for EEA0. Note: See CART 1 for "Cartridge Removal by Hand" if needed. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	004 003 059 001 085* 081 079*	Machine reel motor and hub mount File reel motor Power amplifier board Threader assembly Drive control card Tachometer sensor cable DC power distribution cable, drive internal - J1, J2	Base plate Base plate Drive Base plate 02A-A1B2 Base plate Drive	YG010, 110 YG010, 110 PA000, 001 YG010, 110 DD000, 001, 002, 003 SN001, 002 ZZ010, 020, 110, 120

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
0026 — CHK 26	The cartridge latch failed to release.	Use the EAD for CHK 26 for failure isolation. See EAD 1 for "CHK 26 or CHK 31." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z This error may occur if the code has not been loaded to the automatic cartridge loader. Note: On drives with automatic cartridge loaders use FRUs 281 and 282 in place of FRUs 002 and 008.	002 008 059 085* 049 079*	Latch solenoid Cartridge latch assembly Power amplifier board Drive control card Logic board to pwr amp J2 cable DC power distribution cable drive internal - J1, J2 Cartridge latched sensor Tape path sensor A Tachometer sensor cable Load assembly Loader control card	Base plate Base plate Drive 02A-A1B2 Drive Drive Base plate Base plate Base plate Auto loader Auto loader	YG010, 110 Mechanical part PA000, 001 DD000, 001, 002, 003 PA000, 001 ZZ010, 020, 110, 120 SN001, 002 SN001, 002 SN001, 002 Mechanical part AL001
0027 — CHK 27	An unexpected interrupt occurred at tape path sensor B during an unload operation.	Use the EAD for CHK 27 for failure isolation. See EAD 1 for "CHK 27." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	007 226 085* 001 004 059 225 005 081 079*	Tape path sensor B Machine reel tach sensor B Drive control card Threader assembly Machine reel motor and hub Power amplifier board Machine reel tach sensor A Flange Tachometer sensor cable DC power distribution cable, drive internal - J1, J2 Logic board to pwr amp J1 cable Logic board to pwr amp J2 cable	Base plate Base plate 02A-A1B2 Base plate Base plate Drive Base plate Base plate Base plate Drive Drive Drive	SN001, 002 SN001, 002 DD000, 001, 002, 003 YG010, 110 YG010, 110 PA000, 001 SN001, 002 Mechanical part SN001, 002 ZZ010, 020, 110, 120 PA000, 001 PA000, 001
0028 — CHK 28	The tape is not attached to the leader block pin, the tape is broken, or the file reel is turning in reverse during a thread operation.	Use the EAD for CHK 28 for failure isolation. See EAD 1 for "CHK 28." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z Note: On drives with automatic cartridge loaders use FRUs 281 and 282 in place of FRU 008.	001 003 059 008 085* 081 079*	Threader assembly File reel motor Power amplifier board Cartridge latch assembly Drive control card Tachometer sensor cable DC power distribution cable, drive internal - J1, J2 Load assembly Loader control card	Base plate Base plate Drive Base plate 02A-A1B2 Base plate Drive Auto loader Auto loader 02A-A1B2	YG010, 110 YG010, 110 PA000, 001 Mechanical part DD000, 001, 002, 003 SN001, 002 ZZ010, 020, 110, 120 Mechanical part AL001 DD000, 001, 002, 003
0029 — CHK 29	Hardware timer failure during unload operation.	See OPER 1 for "Tape Unloading—Unload." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085*	Drive control card		
002A — CHK 2A	An error was detected in attempting to reach the last wrap null point.	Use the EAD for CHK 2A for failure isolation. See EAD 1 for "CHK 2A." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	003 059 001 085* 014 007 226 010 079*	File reel motor Power amplifier board Threader assembly Drive control card Tension Transducer Tape path sensor B Machine reel tach sensor B Cartridge present sensor DC power distribution cable, drive internal - J1, J2 Tachometer sensor cable Logic board to power amplifier J2 cable	Base plate Drive Base plate 02A-A1B2 Base plate Base plate Base plate Base plate Drive Base plate Drive	YG010, 110 PA000, 001 YG010, 110 DD000, 001, 002, 003 ZT030 SN001, 002 SN001, 002 SN001, 002 ZZ010, 020, 110, 120 SN001, 002 PA000, 001
002B — CHK 2B	A mid-tape load failure occurred.	Run diagnostic section EEA0 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3 for EEA0. Note: See CART 1 for "Cartridge Removal by Hand" if needed. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	004 003 059 001 085* 081 079*	Machine reel motor and hub mount File reel motor Power amplifier board Threader assembly Drive control card Tachometer sensor cable DC power distribution cable, drive internal - J1, J2 Cartridge	Base plate Base plate Drive Base plate 02A-A1B2 Base plate Drive Base plate Drive	YG010, 110 YG010, 110 PA000, 001 YG010, 110 DD000, 001, 002, 003 SN001, 002 ZZ010, 020, 110, 120 Mechanical part

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Fault Symptom Index (FSI)

Fault Symptom Index (FSI) FSI 7

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC Sensitive FRU. See CARR-DR 4 ** EC Sensitive FRU. See CARR-CU7	Location	Logic Pages
002C — CHK 2C	Excessive speed detected at the file reel motor during an unload operation.	See OPER 1 for "Tape Unloading—Unload." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	232 001 003 059 085* 081 049 073 058	Cartridge Threader assembly <i>13F3092</i> File reel motor <i>82X4204 MODEL B22</i> Power amplifier board Drive control card Tachometer sensor cable Logic board to pwr amp J2 cable Logic board to pwr amp J1 cable Logic board	Baseplate Baseplate Baseplate Drive 02A-A1B2 Baseplate Drive Drive Drive 02A-A1	Mechanical part YG010, 110 YG010, 110 PA000, 001 DD000, 001, 002, 003 SN001, 002 PA000, 001 PA000, 001 AA000, 100
002D — CHK 2D	Short tape in cartridge.		232	Cartridge	Baseplate	Mechanical part
002F — CHK 2F	The drive needs to be cleaned with the cleaner cartridge.					
0030 — CHK 30	The drive is unable to accept the patch commands during load, unload, or midtape load operations.					
0031 — CHK 31	On a drive with an automatic cartridge loader installed, the latch sensor did not open within 200 ms after the signal was sent to the loader. This is equivalent to a CHK 26 for a drive without the automatic cartridge loader.	Use the EAD for CHK 26 for failure isolation. See EAD 1 for "CHK 26" or "CHK 31." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z This error may occur if the code has not been loaded to the automatic cartridge loader.	281 282 059 085 049 079* 011 006 081	Loader control card Load assembly Power amplifier board Drive control card Logic board to pwr amp J2 cable DC power distribution cable, drive internal - J1, J2 Cartridge latched sensor Tape path sensor A Tachometer sensor cable	Loader Loader Drive 02A-A1B2 Drive Drive Baseplate Baseplate Baseplate	AL001 Mechanical part PA000, 001 DD000, 001, 002, 003 PA000, 001 ZZ10, 020, 110, 120 SN001, 002 SN001, 002 SN001, 002
0034 — CHK 34	The CU issued a Load Automatic Cartridge Loader command, but the drive is busy with tape loading or unloading and cannot accept the command.	None	281 085	Loader control card Drive control card	Loader 02A-A1B2	AL001 DD000, 001, 002, 003
0036 — CHK 36	Automatic cartridge loader is not responding to commands from the drive.	None	281 085	Loader control card Drive control card	Loader 02A-A1B2	AL001 DD000, 001, 002, 003
003D — CHK 3D	Tape length error (large diameter thin media mounted on a 3480 device).	IBM Enhanced Capacity Cartridge System tapes should not be mounted in a 3480 subsystem.	232	Cartridge	Baseplate	
003E — CHK 3E	Tape length error (too long).	IBM Enhanced Capacity Cartridge System tapes should not be mounted in a 3480 subsystem.	232	Cartridge	Baseplate	
0040 — CHK 40	The microprocessor detected a parity error on servo data. (Tach PLA bus error.)	See OPER 1 for "Drive Control Card." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085*	Drive control card	02A-A1B2	DD000, 001, 002, 003
0041 — CHK 41	The servo hardware sensed a power amplifier board failure.	Use the EAD for CHK 41 for failure isolation. See EAD 1 for "CHK 41."	059 085	Power amplifier board Drive control card Tension transducer	Drive 02A-A1B2 Baseplate	PA000, 001 DD000, 001, 002, 003 ZT000
	if sense byte 0 equals: 76 - tension established 73 - load/unload in progress	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	073 049	Logic board to pwr amp J2 cable	Drive	PA000, 001

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
0042 — CHK 42	The power amplifier board detected an open in the file reel motor circuit, or the file reel motor was running with no load. If sense byte 8 equals: 76 - tension established 73 - load/unload in progress	Use the EAD for CHK 42 for failure isolation. See EAD 1 for "CHK 42." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	003 059 085* 049 079* 080 081 058	File reel motor Power amplifier board Drive control card Logic board to pwr amp J2 cable DC power distribution cable, drive internal — J1, J2 DC power distribution cable Tachometer sensor cable Logic board	Base plate Drive 02A-A1B2 Drive Drive Power supply Base plate 02A-A1	YG010, 110 PA000, 001 DD000, 001, 002, 003 PA000, 001 ZZ010, 020, 110, 120 YF100 SN001, 002 AA000, 100

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
0043 — CHK 43	The power amplifier board detected an open in the machine reel motor circuit, or the machine reel motor was running with no load. If sense byte 8 equals: 76 - tension established 73 - load/unload in progress	Use the EAD for CHK 43 for failure isolation. See EAD 1 for "CHK 43." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	004 225 226 059 010 085* 216 014 081 079* 049 073 080 232 058	Machine reel motor and hub mount Machine reel tach sensor A Machine reel tach sensor B Power amplifier board Cartridge present sensor Drive control card Tape lifter solenoid Tension transducer Tachometer sensor cable DC power distribution cable, drive internal - J1, J2 Logic board to pwr amp J2 cable Logic board to pwr amp J1 cable DC power distribution cable Cartridge Logic board	Base plate Base plate Base plate Drive Base plate 02A-A1B2 Base plate Base plate Drive Drive Drive Drive Power Supply Base plate 02A-A1	YG010, 110 SN001, 002 SN001, 002 PA000, 001 SN001, 002 DD000, 001, 002, 003 YG010, 110 ZT030 SN001, 002 ZZ010, 020, 110, 120 PA000, 001 PA000, 001 YF100 Mechanical part AA000, 100
0044 — CHK 44	An over- or under-tension error has occurred.	See OPER 1 for "Motion Control." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	014 059 012 085* 003 004 216 215 013	Tension transducer Power amplifier board Decoupler assembly Drive control card File reel motor Machine reel motor and hub mount Tape lifter solenoid Tape lifter solenoid input hose Head and guide assembly	Base plate Drive Base plate 02A-A1B2 Base plate Base plate Base plate Base plate Base plate	ZT030 PA000, 001 Mechanical part DD000, 001, 002, 003 YG010, 110 YG010, 110 YG010, 110 Mechanical part WR000
0046 — CHK 46	Air pressure loss has occurred in one or both drives.	1. See OPER 1 for "Pneumatic Supply." 2. See PNEU 1 for "Air Pressure Loss—CHK 46 on Both Drives in Same Tape Unit" and "Air Pressure Loss—CHK 46 on a Single Drive." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	030 033 031 032 037 034 039 095 040 216 042 044 045 046 215 041 085* 071 081	Pump motor Inlet filter Regulator Output filter Manifold-in pressure hose Pressure hose assembly Plenum supply hose DC power supply Pressure sensor Tape lifter solenoid Decoupler pressure hose Right guide bearing hose Left guide bearing hose Tension transducer hose Tape lifter solenoid input hose Plenum assembly Drive control card Power supply blower Tachometer sensor cable	Tape Unit base Tape Unit base Tape Unit base Tape Unit base Drive Drive Base plate Tape Unit base Base plate Base plate	YF050, 060 Mechanical part Mechanical part Mechanical part Mechanical part Mechanical part Mechanical part YF100 SN001, 002 YG010, 110 Mechanical part Mechanical part Mechanical part Mechanical part Mechanical part Mechanical part Mechanical part Mechanical part YF050, 060 SN001, 002
0047 — CHK 47	Air cooling has been lost.	See OPER 1 for "Motion Control Diagram" for an illustration of the thermal switch circuit. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z CAUTION: The tape unit may be extremely hot.	020 110 085* 104 081 078 077 076 074	Blower assembly Thermal switch (drive) Drive control card Drive power switch Tachometer sensor cable Blower assembly ac power cable Blower assembly ac power cable (tape unit to both drives) AC distribution cable (60 Hz) Tape Unit ac power CB cable	Drive Drive 02A-A1B2 Drive Base plate Drive Drive Drive Drive	YG010, 110 SN001, 002 DD000, 001, 002, 003 YF020 SN001, 002 YG010, 110 YG010, 110 YF050, 060 YF050, 060
0048 — CHK 48	Tach 2 error.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	003 085* 081	File reel motor Drive control card Tachometer sensor cable	Base plate 02A-A1B2 Base plate	YG010, 110 DD000, 001, 002, 003 SN001, 002
0049 — CHK 49	Period counter parity error.	See OPER 1 for "Motor Control." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085*	Drive control card	02A-A1B2	DD000, 001, 002, 003

FSC / Error Code	Error Code Definition	Additional Actions / Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
004A — CHK 4A	High speed counter parity error.	See OPER 1 for "Motor Control." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085*	Drive control card	02A-A1B2	DD000, 001, 002, 003
004B — CHK 4B	3 microsecond clock parity error.	See OPER 1 for "Motor Control." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085*	Drive control card	02A-A1B2	DD000, 001, 002, 003
004C — CHK 4C	Gap counter parity error.	See OPER 1 for "Drive Control Card" (contains the gap counter). TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085*	Drive control card	02A-A1B2	DD000, 001, 002, 003
004D — CHK 4D	A digital to analog converter (DAC) parity error was detected.	Use the EAD for CHK 4D for failure isolation. See EAD 1 for "CHK 4D." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 059 060 073 210 211	Drive control card Power amplifier board Message display board Logic board to pwr amp J1 cable Message display cable (02A-A1Y2 to P1-DISP-P1) Message display cable (P1-DISP-P1 to MDJ1)	02A-A1B2 Drive Drive Drive Drive 02A-A1Y2 Drive	DD000, 001, 002, 003 PA000, 001 WD000, 001 PA000, 001 WD000, 001 WD000, 001
0050 — CHK 50	A parity error occurred on the message display. If sense byte 8 equals: 5B - load display command 7D - device initiated message	Use the EAD for CHK 50 for failure isolation. See EAD 1 for "CHK 50." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 059 060 073 210 211	Drive control card Power amplifier board Message display board Logic board to pwr amp J1 cable Message display cable (02A-A1Y2 to P1-DISP-P1) Message display cable (P1-DISP-P1 to MDJ1)	02A-A1B2 Drive Drive Drive Drive 02A-A1Y2 Drive	DD000, 001, 002, 003 PA000, 001 WD000, 001 PA000, 001 WD000, 001 WD000, 001
0051 — CHK 51	Timer hardware error	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adaptor card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
0060 — CHK 60	Tach 1 phase B signal failed after a thread/load or mid-tape load operation, or the cartridge present sensor failed during a thread/load operation.	Use the EAD for CHK 60 for failure isolation. See EAD 1 for "CHK 60." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	004 226 085* 059 010 005 081 079*	Machine reel motor and hub mount Machine reel tach sensor B Drive control card Power amplifier board Cartridge present sensor Flange Tachometer sensor cable DC power distribution cable, drive internal - J1, J2	Base plate Base plate 02A-A1B2 Drive Base plate Base plate Base plate Drive	YG010, 110 SN001, 002 DD000, 001, 002, 003 PA000, 001 SN001, 002 Mechanical part SN001, 002 ZZ010, 020, 110, 120
0061 — CHK 61	Invalid line count or radial pointer.	Possible problem in machine or file reel area. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 225 226 003 081 058	Drive control card Machine reel tach sensor A Machine reel tach sensor B File reel motor Tachometer sensor cable Logic board	02A-A1B2 Base plate Base plate Base plate Base plate 02A-A1	DD000, 001, 002, 003 SN001, 002 SN001, 002 YG010, 110 SN001, 002 AA000, 100
0062 — CHK 62	Direction change during unidirectional condition. Direction is determined from the file reel tach.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 003 118	Drive control card File reel motor Drive-adaptor card	02A-A1B2 Base plate 01A-A1Q2	DD000, 001, 002, 003 YG010, 110 DI001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name • EC sensitive FRU. See CARR-DR 4. •• EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
0063 — CHK 63	Tach 1 phase A signal has failed after a thread/load or mid-tape load operation, or the cartridge present sensor failed during a thread/load operation.	Use the EAD for CHK 63 for failure isolation. See EAD 1 for "CHK 63." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	004 225 085* 059 010 081 079* 058	Machine reel motor and hub mount Machine reel tach sensor A Drive control card Power amplifier board Cartridge present sensor Tachometer sensor cable DC power distribution cable, drive internal - J1, J2 Logic board	Base plate Base plate 02A-A1B2 Drive Base plate Base plate Drive 02A-A1	YG010, 110 SN001, 002 DD000, 001, 002, 003 PA000, 001 SN001, 002 SN001, 002 ZZ010, 020, 110, 120 AA000, 100
0064 — CHK 64	The P counter reached its maximum count during a record. This condition is normal on the first forward operation after BOT because of the length of the ID burst. The P counter is reset at each 'gap out' Tach 2 pulses increment the counter by 1 to a maximum of hexadecimal FF.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 063* 118 059 073	Drive control card Write card Drive-adapter card Power amplifier board Logic board to pwr amp J1 cable	02A-A1B2 02A-A1J4 01A-A1Q2 Drive Drive	DD000, 001, 002, 003 WRO00 DI001, 002 PA000, 001 PA000, 001
0065 — CHK 65	A tach 2 pulse was missed with no change in direction (stoplock).	Use the EAD for CHK 14 for the troubleshooting guide to check tach 2 pulses. See EAD 1 for "CHK 14." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	003 085* 059 081	File reel motor Drive control card Power amplifier board Tachometer sensor cable	Base plate 02A-A1B2 Drive Base plate	YG010, 110 DD000, 001, 002, 003 PA000, 001 SN001, 002
0066 — CHK 66	A tach 2 pulse was missed during acceleration or repositioning.	Use the EAD for CHK 14 for the troubleshooting guide to check tach 2 pulses. See EAD 1 for "CHK 14." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	003 059 081	File reel motor Power amplifier board Tachometer sensor cable	Base plate Drive Base plate	YG010, 110 PA001, 002 SN001, 002
0067 — CHK 67	A tach 2 pulse was missed during data transfer.	Use the EAD for CHK 14 for the troubleshooting guide to check tach 2 pulses. See EAD 1 for "CHK 14." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	003 085* 059 081	File reel motor Drive control card Power amplifier board Tachometer sensor cable	Base plate 02A-A1B2 Drive Drive	YG010, 110 DD000, 001, 002, 003 PA000, 001 SN001, 002
0068 — CHK 68	A timeout interrupt occurred. Either the file reel motor did not start or it did not get up to speed.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	003 059 085* 118 073	File reel motor Power amplifier board Drive control card Drive-adapter card Logic board to pwr amp J1 cable	Base plate Drive 02A-A1B2 01A-A1Q2 Drive	YG010, 110 PA000, 001 DD000, 001, 002, 003 DI001, 002 PA000, 001
0069 — CHK 69	An interruption occurred in the tape path sensors on a loaded drive.	Use the EAD for CHK 69 for failure isolation. See EAD 1 for "CHK 69." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	006 007 011 001 085* 081 058	Tape path sensor A Tape path sensor B Cartridge latched sensor Threader assembly Drive control card Tachometer sensor cable Logic board	Base plate Base plate Base plate Base plate 02A-A1B2 Base plate 02A-A1	SN001, 002 SN001, 002 SN001, 002 YG010, 110 DD000, 001, 002, 003 SN001, 002 AA000, 100
006A — CHK 6A	Accelerate started in the wrong direction and missed tach 2. This is a possible phase problem in the file reel tach area.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	003 059 085* 081 079*	File reel motor Power amplifier board Drive control card Tachometer sensor cable DC power distribution cable, drive internal - J1, J2	Base plate Drive 02A-A1B2 Base plate Drive	YG010, 110 PA000, 001 DD000, 001, 002, 003 SN001, 002 ZZ0010, 020 110, 120
006B — CHK 6B	The position counter reached 0 before 75% velocity during a read/write operation. The counter is updated by the file reel tachometer. Velocity is measured by the machine reel tachometer.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	003 004 059 085* 216	File reel motor Machine reel motor and hub mount Power amplifier board Drive control card Tape lifter solenoid	Base plate Base plate Drive 02A-A1B2 Base plate	YG010, 110 YG010, 110 PA000, 001 DD000, 001, 002, YG010, 110
			215 013	Tape lifter solenoid input hose Head and guide assembly	Base plate Base plate	Mechanical part WRO00

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
006C — CHK 6C	The position counter reached 0 before 95% velocity during a read/write operation. The counter counts time between tach 2 pulses. It is located on the digital servo card.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	003 004 059 085* 081 216 215 013	File reel motor Machine reel motor and hub mount Power amplifier board Drive control card Tachometer sensor cable Tape lifter solenoid Tape lifter solenoid input hose Head and guide assembly	Base plate Base plate Drive 02A-A1B2 Base plate Base plate Base plate Base plate	YG010, 110 YG010, 110 PA000, 001 DD000, 001, 002, 003 SN001, 002 YG010, 110 Mechanical part WR000
006D — CHK 6D	The period counter equals 0 after it has been loaded. The counter counts the time between tach 2 pulses.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	003 085* 081	File reel motor Drive control card Tachometer sensor cable	Base plate 02A-A1B2 Base plate	YG010, 110 DD000, 001, 002, 003 SN001, 002
006F — CHK 6F	A velocity check occurred on a write command during a data transfer.	See OPER 1 for "Write Operation." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 003 004 059 216 014 215 013	Drive control card File reel motor Machine reel motor and hub mount Power amplifier board Tape lifter solenoid Tension transducer Tape lifter solenoid input hose Head and guide assembly	02A-A1B2 Base plate Base plate Drive Base plate Base plate Base plate Base plate	DD000, 001, 002, 003 YG010, 110 YG010, 110 PA000, 001 YG010, 110 See LOC 1 Mechanical part WR000
0070 — CHK 70	Backward command at the beginning of tape, stoplock.	Run diagnostic section EEA0 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3 for EEA0. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adaptor card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
0071 — CHK 71	Forward command at physical end of tape.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adaptor card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
0072 — CHK 72	Moving forward into physical end of tape during a read operation.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adaptor card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
0073 — CHK 73	Moving forward into physical end of tape during a write operation.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adaptor card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
0074 — CHK 74	Read backward into beginning of tape.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adaptor card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
0075 — CHK 75	The Ready switch has been moved to the Not Ready position on a loaded drive.	See WD000, 001 for the Ready switch circuit. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	109 060 085* 213 210 211	Operator panel switch board Message display board Drive control card Message display board to message display switch board cable Message display cable (02A-A1Y2 to P1-DISP-P1) Message display cable (P1-DISP-P1 to MDJ1)	Drive Drive 02A-A1B2 Drive Drive Drive	WD000, 001 WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001 WD000, 001
0076 — CHK 76	The rewind switch was pressed.	This is a normal operating condition.				
0080 — CHK 80	Interconnection data bus out parity error from the control unit.	1. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." 2. See OPER 1 for "Adapter Card." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adaptor card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002

FSC/ Error Code	Error Code Definition	Additional Actions / Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
0081 — CHK 81	Serial command error.	1. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." 2. See OPER 1 for "Parallel/Serial Interconnections." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
0082 — CHK 82	Interconnection drive error.	1. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." 2. See OPER 1 for "Adapter Card." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 208 209	Drive control card Drive-adapter card Write adapter A cable (A1A2 to P1WA1) Write adapter A cable (A1A3 to P1WA2)	02A-A1B2 01A-A1Q2 Drive Drive	DD000, 001, 002, 003 DI001, 002 ZW101 ZW103
00A0 — CHK A0	'Select out' became inactive after address verification and before 'command out' and ending status.	1. Use the EAD for CHK A0 for failure isolation. See EAD 1 for "CHK A0." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
00A2 — CHK A2	'Command out' became inactive before presenting status.	1. Use the EAD for CHK A2 for failure isolation. See EAD 1 for "CHK A2." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
00A3 — CHK A3	A motion command was issued to a drive that is not ready.	Check the drive to make sure it is ready. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
00A4 — CHK A4	A write or data security erase was attempted on a file-protected cartridge.	1. Check the cartridge to make sure it is not file-protected. 2. Run the Drive Command Exerciser using the Data Security Erase and Rewind commands. See DIAG 1 for "Drive Command Exerciser." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	009 064 085* 118 081	File protect switch Write power card Drive control card Drive-adapter card Tachometer sensor cable	Base plate 02A-A1G2 02A-A1B2 01A-A1Q2 Base plate	SN001, 002 VP000 DD000, 001, 002, 003 DI001, 002 SN001, 002
00A5 — CHK A5	Parallel command does not match serial command.	Run diagnostic section EE40 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3 for EE40. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 02A-A1C2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
00A6 — CHK A6	Interface connection error.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 00, 002, 003 DI001, 002
00A7 — CHK A7	Command late (drive early start or accelerating from an aborted command).	Call your next level of support.				

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
00A8 — CHK A8	Invalid command.	1. Run diagnostic section EE40 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3 for EE40. 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 264 265	Drive control card Drive-adapter card Write bus terminator Write bus terminator	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
00A9 — CHK A9	'Command out' became inactive before loading the command.	1. Use the EAD for CHK A9 for failure isolation. See EAD 1 for "CHK A9." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
00AA — CHK AA	Patch command reached end of RAM area.	Call your next level of support.				
00AB — CHK AB	Patch command byte count does not agree.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 134	Drive control card Drive-adapter card Control store card	02A-A1B2 01A-A1Q2 01A-A1C2	DD000, 001, 002, 003 DI001, 002 CS001, 002
00AC — CHK AC	Parallel motion command to drive with incomplete disconnect command.	See OPER 1 for "Parallel/Serial Interconnections." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 116 118	Drive control card Write data card Drive-adapter card	02A-A1B2 01A-A1P2 01A-A1Q2	DD000, 001, 002, 003 DF001, 002 DI001, 002
00AD — CHK AD	The 'gap out' line is always on or late in coming on.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 203 204 208 209	Drive control card Drive-adapter card Write adapter B cable (A1A5 to P1WB1) Write adapter B cable (A1A4 to P1WB2) Write adapter A cable (A1A2 to P1WA1) Write adapter A cable (A1A3 to P1WA2)	02A-A1B2 01A-A1Q2 Drive Drive Drive Drive	DD000, 001, 002, 003 DI001, 002 ZW201 ZW203 ZW101 ZW103
00AE — CHK AE	'Gap out' failure.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 203 204 208 209	Drive control card Drive-adapter card Write adapter B cable (A1A5 to P1WB1) Write adapter B cable (A1A4 to P1WB2) Write adapter A cable (A1A2 to P1WA1) Write adapter A cable (A1A3 to P1WA2)	02A-A1B2 01A-A1Q2 Drive Drive Drive Drive	DD000, 001, 002, 003 DI001, 002 ZW201 ZW203 ZW101 ZW203
00AF — CHK AF	An Autospace Block command was attempted in the same direction as the last read or write operation.	Call your next level of support.				
00B0 — CHK B0	A long-loop-write-to-read operation was attempted with a cartridge in the drive.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	010 085* 081	Cartridge present sensor Drive control card Tachometer sensor cable	Base plate 02A-A1B2 Base plate	SN001, 002 DD000, 001, 002, 003 SN001, 002
00B1 — CHK B1	Write to control store with odd byte count.	Call your next level of support.				
00B2 — CHK B2	For a locate operation only so many sectors exist on a tape, and an invalid sector was requested.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
00B3 — CHK B3	Incorrect byte transferred from the control unit on a Load Message Display command.	Call your next level of support.				
00B4 — CHK B4	A host message display command issued to a drive with an error message active.	This is only a symptom. This error appears only in the sense byte. The drive displays the error message that is the problem.				

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
00B5 — CHK B5	Invalid serial command.	Run diagnostic section EE40 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3 for EE40. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z Call your next level of support.	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
00B6 — CHK B6	Consecutive Autospace commands issued.	Call your next level of support.				
00B7 — CHK B7	The drive is not able to accept patches at this time.	Call your next level of support.				
00B8 — CHK B8	The drive control card detected a data parity error during the patch transfer from the control unit.	None	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
00BA — CHK BA	The drive detected a parity error during a data transfer from the control unit.	None	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
00C0 — CHK C0	During a write operation, the write card did not go into write mode, and C0 is the default condition.	1. Use the EAD for CHK C0 for failure isolation. See EAD 1 for "CHK C0." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	063* 085* 064 009 116 118 265	Write card Drive control card Write power card File protect switch Write data card Drive-adapter card Write bus terminator	02A-A1J4 02A-A1B2 02A-A1G2 Base plate 01A-A1P2 01A-A1Q2	WR000 DD000, 001, 002, 003 VP000 SN001, 002 DF001, 002 DI001, 002
00C2 — CHK C2	A parity error was sensed on the write card.	1. Use the EAD for CHK C2 for failure isolation. See EAD 1 for "CHK C2." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	063* 085* 116 118 265	Write card Drive control card Write data card Drive-adapter card Write bus terminator	02A-A1J4 02A-A1B2 01A-A1P2 01A-A1Q2	WR000 DD000, 001, 002, 003 DF001, 002 DI001, 002
00C3 — CHK C3	A phase locked loop is not synchronized.	Use the EAD for CHK C3 for failure isolation. See EAD 1 for "CHK C3." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 063* 264 265	Drive control card Write card Write bus terminator Write bus terminator	02A-A1B2 02A-A1J4	DD000, 001, 002, 003 WR000
00C4 — CHK C4	Open head or cable. At least one track or wire is open.	Run the Drive Command Exerciser using a Write command with the loop control option set. See DIAG 1 for "Drive Command Exerciser." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	013 063* 085*	Head and guide assembly Write card Drive control card	Base plate 02A-A1J4 02A-A1B2	WR000 DD000, 001, 002, 003
00C5 — CHK C5	If write enable is active and read bias is not active, the write operation stops with this check.	Use the EAD for CHK C5 for failure isolation. See EAD 1 for "CHK C5." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	063* 085* 062*	Write card Drive control card Read preamplifier card	02A-A1J4 02A-A1B2 02A-A1H2	WR000 DD000, 001, 002, 003 RP000
00C6 — CHK C6	Write driver failure. At least one write pulse is missing because of an open or shorted write driver.	See OPER 1 for "Write Card." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	063* 064 085* 013	Write card Write power card Drive control card Head and guide assembly	02A-A1J4 02A-A1G2 02A-A1B2 Base plate	WR000 VP000 DD000, 001, 002, 003
00C7 — CHK C7	The drive detected a + 10.5 V regulator fault.	Use the EAD for CHK C7 for failure isolation. See EAD 1 for "CHK C7." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	009 063* 064 085* 049	File protect switch Write card Write power card Drive control card Logic board to pwr amp J2 cable	Base plate 02A-A1J4 02A-A1G2 02A-A1B2 Drive	SN001, 002 WR000 VP000 DD000, 001, 002, 003 PA000, 001
00D0 — CHK D0	The control unit has the wrong level of patches for this drive ROS EC level.	Call your next level of support.				

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
00B5 — CHK B5	Invalid serial command.	Run diagnostic section EE40 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3 for EE40. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
00B6 — CHK B6	Consecutive Autospace commands issued.	Call your next level of support.				
00B7 — CHK B7	The drive is not able to accept patches at this time.	Call your next level of support.				
00B8 — CHK B8	The drive control card detected a data parity error during the patch transfer from the control unit.	None	085* 118	Drive control card Drive - adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
00C0 — CHK C0	During a write operation, the write card did not go into write mode, and C0 is the default condition.	1. Use the EAD for CHK C0 for failure isolation. See EAD 1 for "CHK C0." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	063* 085* 064 009 116 118 265	Write card Drive control card Write power card File protect switch Write data card Drive-adapter card Write bus terminator	02A-A1J4 02A-A1B2 02A-A1G2 Base plate 01A-A1P2 01A-A1Q2	WR000 DD000, 001, 002, 003 VP000 SN001, 002 DF001, 002 DI001, 002
00C2 — CHK C2	A parity error was sensed on the write card.	1. Use the EAD for CHK C2 for failure isolation. See EAD 1 for "CHK C2." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	063* 085* 116 118 265	Write card Drive control card Write data card Drive-adapter card Write bus terminator	02A-A1J4 02A-A1B2 01A-A1P2 01A-A1Q2	WR000 DD000, 001, 002, 003 DF001, 002 DI001, 002
00C3 — CHK C3	A phase locked loop is not synchronized.	Use the EAD for CHK C3 for failure isolation. See EAD 1 for "CHK C3." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 063* 264 265	Drive control card Write card Write bus terminator Write bus terminator	02A-A1B2 02A-A1J4	DD000, 001, 002, 003 WR000
00C4 — CHK C4	Open head or cable. At least one track or wire is open.	Run the Drive Command Exerciser using a Write command with the loop control option set. See DIAG 1 for "Drive Command Exerciser." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	013 063* 085*	Head and guide assembly Write card Drive control card	Base plate 02A-A1J4 02A-A1B2	WR000 DD000, 001, 002, 003
00C5 — CHK C5	If write enable is active and read bias is not active, the write operation stops with this check.	Use the EAD for CHK C5 for failure isolation. See EAD 1 for "CHK C5." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	063* 085* 062*	Write card Drive control card Read preamplifier card	02A-A1J4 02A-A1B2 02A-A1H2	WR000 DD000, 001, 002, 003 RP000
00C6 — CHK C6	Write driver failure. At least one write pulse is missing because of an open or shorted write driver.	See OPER 1 for "Write Card." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	063* 064 085* 013	Write card Write power card Drive control card Head and guide assembly	02A-A1J4 02A-A1G2 02A-A1B2 Base plate	WR000 VP000 DD000, 001, 002, 003
00C7 — CHK C7	The drive detected a +10.5 V regulator fault.	Use the EAD for CHK C7 for failure isolation. See EAD 1 for "CHK C7." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	009 063* 064 085* 049	File protect switch Write card Write power card Drive control card Logic board to pwr amp J2 cable	Base plate 02A-A1J4 02A-A1G2 02A-A1B2 Drive	SN001, 002 WR000 VP000 DD000, 001, 002, 003 PA000, 001
00D0 — CHK D0	The control unit has the wrong level of patches for this drive ROS EC level.	Call your next level of support.				

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
00D1 — CHK D1	The control unit does not have patches for the automatic cartridge loader.	Call your next level of support.				
00E0 — CHK E0	Drive cannot communicate with the automatic cartridge loader.	None	281 085	Loader control card Drive control card	Loader 02A-A1B2	AL001 DD000, 001, 002 003
00E1 — CHK E1	The automatic cartridge loader is in the middle of cartridge movement and the control unit is issuing a load cartridge loader command.	Call your next level of support.				
00E2 — CHK E2	The control unit is issuing a load automatic cartridge loader command and no automatic cartridge loader is installed.	Call your next level of support.				
00E3 — CHK E3	The control unit is issuing a load automatic cartridge loader command but the drive cannot accept the command because it is moving tape.	Call your next level of support.				
00E7 — CHK E7	Drive detected a parity error on the data bus during data transfer from the control unit.	None	085 118	Drive control card Drive adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003, DI001, 002
00E8 — CHK E8	Automatic cartridge loader failed to receive a correct IML from the control unit/drive.	None	281 085	Loader control card Drive control card	Loader 02A-A1B2	AL001 DD000, 001, 002, 003
00EC — CHK EC	The automatic cartridge loader has detected a failure in one of its mechanical units.	Ensure the MD Product Maintenance diskette has been used before FRUs are replaced.	285 282	Load mechanical assembly Loader assembly	Loader Loader	
00ED — CHK ED	The automatic cartridge loader has detected a failure in the loader control card.	Ensure the MD Product Maintenance diskette has been used before FRUs are replaced.	281	Loader control card	Loader	AL001
00EE — CHK EE	The automatic cartridge loader has detected a failure in itself but cannot isolate the fault.	Ensure the MD Product Maintenance diskette has been used before FRUs are replaced.	281 285 282	Loader control card Loader mechanical assembly Load assembly	Loader Loader Loader	AL001
00EF — CHK EF	The automatic cartridge loader has detected a failure, but cannot isolate between itself and the drive.	Ensure the MD Product Maintenance diskette has been used before FRUs are replaced.	281 085 286	Loader control card Drive control card Loader signal cable	Loader 02A-A1B2 Loader	AL001 DD000, 001 002, 003
00FF — CHK FF	Drive patch load request.					
01nn	This error should not occur.	Call your next level of support.				
02nn	This error should not occur.	Call your next level of support.				
1000	The power on reset diagnostics detected an error during power-on time.	Use the EAD for IML/POR failures. See EAD 1 for "IML/POR Failures."				
1001	A level 1 interrupt was never detected during initialization. Sense byte 9 contains the value in the processor status register (PSR).	A level 1 interrupt indicates a microprocessor timeout. Run diagnostic Basic CU Tests for failure isolation.	117	Microprocessor card	01A-A1D2	MP001, 002, 003
1100	An always-active level 0 interrupt was detected during initialization. Sense byte 9 contains the value of the processor status register (PSR).	A level 0 interrupt indicates an MD command error or an external register error. Run diagnostic Basic CU Tests for failure isolation.	117	Microprocessor card	01A-A1D2	MP001, 002, 003
1101	An always-active level 1 interrupt was detected during initialization. Sense byte 9 contains the value of the processor status register (PSR).	A level 1 interrupt indicates a microprocessor timeout. Run diagnostic Basic CU Tests for failure isolation.	115 117	Maintenance adapter card Microprocessor card	01A-A1E2 01A-A1D2	MA001, 002, 003 MP001, 002, 003
1103	An always-active level 3 interrupt was detected during initialization. Sense byte 9 contains the value in the processor status register (PSR).	A level 3 interrupt indicates a read or write beginning sync. Run diagnostic Basic CU Tests for failure isolation.	119 117	Read clock and format card Microprocessor card	01A-A1S2 01A-A1D2	RC001, 002 MP001, 002, 003

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
00D1 — CHK D1	The control unit does not have patches for the automatic cartridge loader.	Refer to START 1 "Possible EC Level Compatibility Problems."	258	IML diskette		
00E0 — CHK E0	Drive cannot communicate with the automatic cartridge loader.	None	281 085	Loader control card Drive control card	Loader 02A-A1B2	AL001 DD000, 001, 002, 003
00E1 — CHK E1	The automatic cartridge loader is in the middle of cartridge movement and the control unit is issuing a load cartridge loader command.	This is only a temporary error. The Control Unit microcode will reissue the command.				
00E2 — CHK E2	The control unit is issuing a load automatic cartridge loader command and no automatic cartridge loader is installed.	Refer to SPROC 1 and perform procedure B. After completing procedure B, call your next level of support.				
00E3 — CHK E3	The control unit is issuing a load automatic cartridge loader command but the drive cannot accept the command because it is moving tape.	This is only a temporary error. The Control Unit microcode will reissue the command.				
00E7 — CHK E7	Drive detected a parity error on the data bus during data transfer from the control unit.	None	085	Drive control card	02A-A1B2	DD000, 001, 002, 003
00E8 — CHK E8	Automatic cartridge loader failed to receive a correct IML from the control unit/drive.	None	118	Drive adapter card	01A-A1Q2	D1001, 002
00EC — CHK EC	The automatic cartridge loader has detected a failure in one of its mechanical units.	Ensure the MD Product Maintenance diskette has been used before FRUs are replaced.	281 085	Loader control card Drive control card	Loader 02A-A1B2	AL001 DD000, 001, 002, 003
00ED — CHK ED	The automatic cartridge loader has detected a failure in the loader control card.	Ensure the MD Product Maintenance diskette has been used before FRUs are replaced.				
00EE — CHK EE	The automatic cartridge loader has detected a failure in itself but cannot isolate the fault.	Ensure the MD Product Maintenance diskette has been used before FRUs are replaced.				
00EF — CHK EF	The automatic cartridge loader has detected a failure, but cannot isolate between itself and the drive.	Ensure the MD Product Maintenance diskette has been used before FRUs are replaced.				
00FF — CHK FF	Drive patch load request.					
01nn	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
02nn	Microcode detected error.	Refer to SPROC 1 and perform procedure D. Set trace options as follows: MODULE + LVL7.				
1000	The power-on reset diagnostics detected an error during power-on time.	Use the EAD for IML/POR failures. See EAD 1 for "IML/POR Failures."				
1001	A level 1 interrupt was never detected during initialization. Sense byte 9 contains the value in the processor status register (PSR).	A level 1 interrupt indicates a microprocessor timeout. Run diagnostic Basic CU Tests for failure isolation.	117	Microprocessor card	01A-A1D2	MP001, 002, 003
1100	An always-active level 0 interrupt was detected during initialization. Sense byte 9 contains the value of the processor status register (PSR).	A level 0 interrupt indicates an MD command error or an external register error. Run diagnostic Basic CU Tests for failure isolation.	117	Microprocessor card	01A-A1D2	MP001, 002, 003
1101	An always-active level 1 interrupt was detected during initialization. Sense byte 9 contains the value of the processor status register (PSR).	A level 1 interrupt indicates a microprocessor timeout. Run diagnostic Basic CU Tests for failure isolation.	115 117	Maintenance adapter card Microprocessor card	01A-A1E2 01A-A1D2	MA001, 002, 003 MP001, 002, 003
1103	An always-active level 3 interrupt was detected during initialization. Sense byte 9 contains the value in the processor status register (PSR).	A level 3 interrupt indicates a read or write beginning sync. Run diagnostic Basic CU Tests for failure isolation.	119 117	Read clock and format card Microprocessor card	01A-A1S2 01A-A1D2	RC001, 002 MP001, 002, 003

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Fault Symptom Index (FSI)

Fault Symptom Index (FSI) FSI 16

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
1104	An always-active level 4 interrupt was detected during initialization. Sense byte 9 contains the value of the processor status register (PSR).	A level 4 interrupt indicates buffer device complete. Run diagnostic Basic CU Tests for failure isolation.	120 117	Buffer adapter card Microprocessor card	01A-A1K2 01A-A1D2	BA001, 002, 003 MP001, 002, 003
1105	An always-active level 5 interrupt was detected during initialization. Sense byte 9 contains the value of the processor status register (PSR).	A level 5 interrupt indicates buffer channel complete. Run diagnostic Basic CU Tests for failure isolation.	120 117	Buffer adapter card Microprocessor card	01A-A1K2 01A-A1D2	BA001, 002, 003 MP001, 002, 003
1106	An always-active level 6 interrupt was detected during initialization. Sense byte 9 contains the value of the processor status register (PSR).	A level 6 interrupt indicates status store or channel adapter. Run diagnostic Basic CU Tests for failure isolation.	133 152 195 196 117 121 122 197	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel address switch	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1D2 01A-A1G2 01A-A1F2 See LOC 1	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 SS001, 002 SM001, 002
1200	The microcode or microprocessor branched to address 0.	1. Run diagnostic Basic CU Tests for failure isolation. 2. If replacing the microprocessor card does not repair the failure, call your next level of support.	134 117	Control store card Microprocessor card	01A-A1C2 01A-A1D2	CS001, 002 MP001, 002, 003
1300	The hardware detected an external register (XR) error during power-on, or during internal check 1 recovery. Sense byte 9 contains the value of XRA.	1. Use EAD D1nn for failure isolation. See EAD 1 for "Error Code D1nn." 2. Use the EAD for Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn." TCC FRUs associated with this error code are: 159 - 01A-A1YKL 188 - 01A-A1ZKL	117 115 114 118 121 119 116 120 122	Microprocessor card Maintenance adapter card Buffer control card Drive-adapter card Status store basic card Read clock and format card Write data card Buffer adapter card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1D2 01A-A1E2 01A-A1L2 01A-A1Q2 01A-A1G2 01A-A1S2 01A-A1P2 01A-A1K2 01A-A1F2	MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 DI001, 002 SS001, 002 RC001, 002 DF001, 002 BA001, 002, 003 SM001, 002
1304	A test of the buffer wrap register indicates that a down level buffer memory is installed.	Ensure that the proper buffer memory is installed. See CARR-CU 7.	112** 113** 114	Buffer storage card Buffer storage card Buffer control card	01A-A1N2 01A-A1M2 01A-A1L2	BM200 BM100 BC001, 002, 003
1305	A test of the buffer adapter registers indicates that the switches on the buffer adapter card are not set correctly.	Ensure that the switches on the buffer adapter card are set correctly. See CARR-CU 1200.	120	Buffer adapter card	01A-A1K2	BA001, 002, 003
1308 1309 130A	There is an unsupported 34XX model/type set in the DLR switches on the drive adapter card.	Check the switches on the drive adapter card (FRU118). See CARR for FRU118 switch settings and switch assignments.	118	Drive adapter card	01A-A1Q2	
1500	A Read Channel Adapter Status Byte order could not complete successfully during initial selection. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	133 152 195 196 121 122	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A1F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002 SM001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
1502	<p>A channel adapter could not execute a Go Online order. Sense byte 9 contains the channel adapter address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>1. Check the control unit Channel Enable/Disable switch. See PANEL 1 for "Control Unit Switches and Indicators."</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p> <p>The cables associated with this failure are in cable groups 24A, 24B, 24C, and 24D. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	133 152 195 196 121 122	<p>Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)</p>	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A1F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002 SM001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
1503	An external register (XR) error occurred during initialization. Sense byte 9 contains the value of XRA.	1. Use EAD D1nn for failure isolation. See EAD 1 for "Error Code D1nn." 2. Use EAD Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn." TCC FRUs associated with this error code are: 159 - 01A-A1YKL 188 - 01A-A1ZKL	117 115 114 118 121 119 116 120 122	Microprocessor card Maintenance adapter card Buffer control card Drive-adapter card Status store basic card Read clock and format card Write data card Buffer adapter card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1D2 01A-A1E2 01A-A1L2 01A-A1Q2 01A-A1G2 01A-A1S2 01A-A1P2 01A-A1K2 01A-A1F2	MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 DI001, 002 SS001, 002 RC001, 002 DF001, 002 BA001, 002, 003 SM001, 002
1504	A channel could not execute a Write Channel Adapter Status Byte order successfully. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	133 152 195 196 121 122	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A1F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002 SM001, 002
1505	The channel adapter detected a bad parity on the channel-adapter-type switch. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Check the setting of the channel-type switch for the failing channel. See PANEL 1 for "Setting Address Switches." 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable groups 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table."	197 133 152 195 196	Channel address switch Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	See LOC 1 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
1506	The channel adapter returned an invalid response. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
1507	An error occurred when writing control unit end (CUE) in the device status byte in status store. Sense byte 9 contains the channel adapter/device address. 8n = Channel adapter A 4n = Channel adapter B 2n = Channel adapter C 1n = Channel adapter D n = Device address	1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122 133 152 195 196	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
1508	An error occurred when reading the channel adapter switch. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Check the seating of the channel-type switch for the appropriate channel. See PANEL 1 for "Setting Address Switches." 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable groups 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table."	121 122 133 152 195 196	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
		TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG				

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
1509	An error occurred when initializing status store.	<ol style="list-style-type: none"> 1. IML the product diskette to load the functional microcode. The functional microcode will initialize. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
1600	The two control units are not at the same microcode EC level.	This error could result from operating condition.				
1601	The two control units do not have the same Checks Sums. (The two control units have different levels of microcode.)	This error is an operating condition.				
1602	This error should not occur.	Call your next level of support.				
1603	This error should not occur.	Call your next level of support.				
1700	The local control unit received the wrong messages five times from the other control unit during initialization.	<ol style="list-style-type: none"> 1. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
1701	The local control unit detected a remote status store disconnection five times during initialization.	<ol style="list-style-type: none"> 1. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
1703	An invalid return code for a received message was received.	<ol style="list-style-type: none"> 1. Check the seating of the channel-type switch for the appropriate channel. See PANEL 1 for "Setting Address Switches." 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." <p>The cables associated with this failure are in cable groups 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
1509	An error occurred when initializing status store.	<ol style="list-style-type: none"> 1. IML the product diskette to load the functional microcode. The functional microcode will initialize. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
1600	The two control units are not at the same microcode EC level.	This error could result from operating condition.				
1601	The two control units do not have the same Checks Sums. (The two control units have different levels of microcode.)	This error is an operating condition.				
1603	This error should not occur.	Call your next level of support.				
1604	The Extended Data Recording Format (EDRF) allowed bit is not set the same on the two control units of a dual control unit subsystem. This is an invalid operating condition.	<ol style="list-style-type: none"> 1. Check the setting of the EDRF allowed bit on both control units. See CARR-CU 1200 for the switch setting procedure. <p>Note: If one control unit of a dual control unit subsystem does not have the EDRF feature, then the EDRF allowed bit must be turned off on the other control unit.</p>				
1700	The local control unit received the wrong messages five times from the other control unit during initialization.	<ol style="list-style-type: none"> 1. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
1701	The local control unit detected a remote status store disconnection five times during initialization.	<ol style="list-style-type: none"> 1. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
1703	An invalid return code for a received message was received.	<ol style="list-style-type: none"> 1. Check the seating of the channel-type switch for the appropriate channel. See PANEL 1 for "Setting Address Switches." 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." <p>The cables associated with this failure are in cable groups 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
1704	The status store messages received are being repeated, or a message is missing.	<ol style="list-style-type: none"> Use the EAD for Dual Control Unit failure isolation. See EAD 1 for "Dual Control Unit." The cables associated with this failure are in cable group 52. See FSI 1 for "Cable Group Table." Run diagnostic section EE90 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3. TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG 	121 122 120 118 115	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Buffer adapter card Drive-adapter card Maintenance adapter card	01A-A1G2 01A-A1F2 01A-A1K2 01A-A1Q2 01A-A1E2	SS001, 002 SM001, 002 BA001, 002, 003 DI001, 002 MA001, 002, 003
1705	The remote control unit never responded to an Update message during IML from the other control unit.	<ol style="list-style-type: none"> Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." The cables associated with this failure are in cable group 52. See FSI 1 for "Cable Group Table." Note: Be sure to check the cables in this list for both control units. Run diagnostic section EE90 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG 	122 121	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Status store basic card	01A-A1F2 01A-A1G2	SM001, 002 SS001, 002
18nn	An error occurred when reading the IML diskette.		258 086 134 138	Media IML diskette drive Control store card V Regulator Card	See LOC 1 01A-A1C2 01A-A1T2	CS001, 002 RG001
19nn	An error occurred when reading the IML diskette.		258 086 134 138	Media IML diskette drive Control store card V Regulator Card	See LOC 1 01A-A1C2 01A-A1T2	CS001, 002 RG001
2000	A check 1 error occurred in control unit 0. If the microcode forced a check 1, the actual error code is posted in sense bytes 12 and 13. If the hardware detected the check 1, no error code is posted.	<ol style="list-style-type: none"> If no error code is set in sense bytes 12 and 13. IML the product diskette. If the product diskette has already been run, continue with step 2. See SDISK 1 and display the ERA and ERB registers. Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100." See DF 1 for bit definitions of the registers. TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE 	135 115 117	Control storage array card Maintenance adapter card Microprocessor card	01A-A1B2 01A-A1E2 01A-A1D2	MS001, 002 MA001, 002, 003 MP001, 002, 003

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name • EC sensitive FRU. See CARR-DR 4. •• EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
2010	A check 1 error occurred in control unit 1. If microcode forced a check 1, the actual error code is in sense bytes 12 and 13. If hardware detected the check 1, no error code is posted.	<ol style="list-style-type: none"> If no error code is set in sense bytes 12 and 13, IML the product diskette. If the product diskette has already been run, continue with step 2. See SDISK 1 and display the ERA and ERB registers. Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100." See DF 1 for bit definitions of the registers. <p>TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE</p>	135 115 117	Control storage array card Maintenance adapter card Microprocessor card	01A-A1B2 01A-A1E2 01A-A1D2	MS001, 002 MA001, 002, 003 MP001, 002, 003
2020	A remote check 1 error has occurred but no microcode generated error code has been stored.	<p>Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100."</p> <p>TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE</p>	117 115 134 135 121 122	Microprocessor card Maintenance adapter card Control store card Control storage array card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1D2 01A-A1E2 01A-A1C2 01A-A1B2 01A-A1G2 01A-A1F2	MP001, 002, 003 MA001, 002, 003 CS001, 002 MS001, 002 SS001, 002 SM001, 002
2021	A hardware detected check 1 error, without another microcode error, occurred.	<p>Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100."</p>	117 115 134 135	Microprocessor card Maintenance adapter card Control store card Control storage array card	01A-A1D2 01A-A1E2 01A-A1C2 01A-A1B2	MP001, 002, 003 MA001, 002, 003 CS001, 002 MS001, 002
2050	The status store Enable Connection order failed after a check 1.	<ol style="list-style-type: none"> Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100." <p>The cables associated with this failure are in cable group 52. See FSI 1 for "Cable Group Table."</p> <ol style="list-style-type: none"> Run diagnostic section EE90 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3. 	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
2051	This error should not occur.	Call your next level of support.				
2055	No message was received from the other control unit during a check 1 recovery. Recovery is stopped.	<ol style="list-style-type: none"> Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." <p>The cables associated with this failure are in cable group 52. See FSI 1 for "Cable Group Table."</p> <p>Note: Be sure to check the cables in this list for both control units.</p> <ol style="list-style-type: none"> Run diagnostic section EE90 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3. <p>TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE</p>	134 117 115	Control store card Microprocessor card Maintenance adapter card	01A-A1C2 01A-A1D2 01A-A1E2	CS001, 002 MP001, 002, 003 MA001, 002, 003
2056	This error should not occur.	Call your next level of support.				

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
2010	A check 1 error occurred in control unit 1. If microcode forced a check 1, the actual error code is in sense bytes 12 and 13. If hardware detected the check 1, no error code is posted.	<ol style="list-style-type: none"> If no error code is set in sense bytes 12 and 13, IML the product diskette. If the product diskette has already been run, continue with step 2. See SDISK 1 and display the ERA and ERB registers. Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100." See DF 1 for bit definitions of the registers. <p>TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE</p>	135	Control storage array card	01A-A1B2	MS001, 002
			115	Maintenance adapter card	01A-A1E2	MA001, 002, 003
			117	Microprocessor card	01A-A1D2	MP001, 002, 003
2020	A remote check 1 error has occurred but no microcode generated error code has been stored.	<p>Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100."</p> <p>TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE</p>	117	Microprocessor card	01A-A1D2	MP001, 002, 003
			115	Maintenance adapter card	01A-A1E2	MA001, 002, 003
			134	Control store card	01A-A1C2	CS001, 002
			135	Control storage array card	01A-A1B2	MS001, 002
			121	Status store basic card	01A-A1G2	SS001, 002
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002
2021	A hardware detected check 1 error, without another microcode error, occurred.	<p>Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100."</p>	117	Microprocessor card	01A-A1D2	MP001, 002, 003
			115	Maintenance adapter card	01A-A1E2	MA001, 002, 003
			134	Control store card	01A-A1C2	CS001, 002
			135	Control storage array card	01A-A1B2	MS001, 002
2055	No message was received from the other control unit during a check 1 recovery. Recovery is stopped.	<ol style="list-style-type: none"> Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." <p>The cables associated with this failure are in cable group 52. See FSI 1 for "Cable Group Table."</p> <p>Note: Be sure to check the cables in this list for both control units.</p> Run diagnostic section EE90 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3. <p>TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE</p>	134	Control store card	01A-A1C2	CS001, 002
			117	Microprocessor card	01A-A1D2	MP001, 002, 003
			115	Maintenance adapter card	01A-A1E2	MA001, 002, 003
2056	This error should not occur.	Call your next level of support.				

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
2057	The check 1 recovery failed because the status store connection was not enabled.	<p>1. Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100." The cables associated with this failure are in cable group 52. See FSI 1 for "Cable Group Table."</p> <p>2. Run diagnostic section EE90 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3.</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
2058	An unsuccessful channel adapter operation has stopped the check 1 recovery process. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	<p>Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."</p>	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
2063	Status store did not set acknowledge.	<p>Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."</p>	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
2064	The local control unit requested information from the remote control unit, but no message was received. The check 1 recovery process is stopped.	<p>The FRUs called out in this error code pertain to both control units.</p> <p>1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." The cables associated with this failure are in cable groups 30 and 52. See FSI 1 for "Cable Group Table."</p>	122 121	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Status store basic card	01A-A1F2 01A-A1G2	SM001, 002 SS001, 002
2065	The control unit detected a check 1 error in the remote control unit. An incorrect checksum was received when getting the error code from status store.	<p>The FRUs called out in this error code pertain to both control units.</p> <p>1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." The cables associated with this failure are in cable groups 30 and 52. See FSI 1 for "Cable Group Table."</p>	122 121	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Status store basic card	01A-A1F2 01A-A1G2	SM001, 002 SS001, 002

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FSC/ Error Code	Error Code Definition	Additional Actions / Comments	FRU NUM	FRU Name • EC sensitive FRU. See CARR-DR 4. •• EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
2057	The check 1 recovery failed because the status store connection was not enabled.	<ol style="list-style-type: none"> Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100." The cables associated with this failure are in cable group 52. See FSI 1 for "Cable Group Table." Run diagnostic section EE90 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3. <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
2058	An unsuccessful channel adapter operation has stopped the check 1 recovery process. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	<p>Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p> <p>The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."</p>	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
2060	The channel adapter did not respond to an order. Sense byte 9 contains the channel address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D Sense byte 9 contains the channel adapter order.	<ol style="list-style-type: none"> To determine the failing path, see "Error Path Isolation" on START 400. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
2061	This error should not occur.	Call your next level of support.				
2062	This error should not occur.	Call your next level of support.				
2063	Status store did not set acknowledge.	<p>Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p> <p>The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."</p>	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
2064	The local control unit requested information from the remote control unit, but no message was received. The check 1 recovery process is stopped.	<p>The FRUs called out in this error code pertain to both control units.</p> <ol style="list-style-type: none"> Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." <p>The cables associated with this failure are in cable groups 30 and 52. See FSI 1 for "Cable Group Table."</p>	122 121	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Status store basic card	01A-A1F2 01A-A1G2	SM001, 002 SS001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/ Comments	FRU NUM	FRU Name • EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
2065	The control unit detected a check 1 error in the remote control unit. An incorrect checksum was received when getting the error code from status store.	The FRUs called out in this error code pertain to both control units. 1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." The cables associated with this failure are in cable groups 30 and 52. See FSI 1 for "Cable Group Table."	122 121	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Status store basic card	01A-A1F2 01A-A1G2	SM001, 002 SS001, 002
2066	This error should not occur.	Call your next level of support.				
2067	This error should not occur.	Call your next level of support.				
2101	The remote control unit detected a check 1 condition and check 1 recovery was disabled in both control units.	1. IML the product diskette. 2. Enter START REPAIR to investigate the check 1 error. 3. See SDISK 1 and display the ERA and ERB registers. See DF 1 for the definitions of the ERA and ERB registers. 4. Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100." TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE	135 115 117	Control storage array card Maintenance adapter card Microprocessor card	01A-A1B2 01A-A1E2 01A-A1D2	MS001, 002 MA001, 002, 003 MP001, 002, 003
2200	Channel transfer timeout on a write.	1. See SDISK 1 and display error register BCSE. See DF 1 for the definitions of the BCSE register. 2. Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	120 114 133 152 195 196	Buffer adapter card Buffer control card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1K2 01A-A1L2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	BA001, 002, 003 BC001, 002, 003 CA001, 002 CA101, 102 CA201, 202 CA301, 302
2201	Channel transfer timeout on a read.	1. See SDISK 1 and display error register BCSE. See DF 1 for the definitions of the BCSE register. 2. Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003
2500	The command is a Write Tape Mark or Erase Gap and the buffer is not in write mode and is not empty.	This is an operating condition. After a control unit reset, the last command will be reissued. This code logs as a temporary error.				
2501	The command is a Rewind or Rewind Unload and the buffer contains write data.	This is an operating condition. After a control unit reset, the last command will be reissued. This code logs as a temporary error.				
2502	The command is a Forward Space Block or Forward Space File and the buffer is not in read forward mode.	This is an operating condition. After a control unit reset, the last command will be reissued. This code logs as a temporary error.				
2503	The command is a Backspace Block or Backspace File and the buffer is not in read backward mode.	This is an operating condition. After a control unit reset, the last command will be reissued. This code logs as a temporary error.				
2504	The channel that issued the command has been removed from the extended contingent connection because of a system reset.	This is an operating condition. After a control unit reset, the last command will be reissued. This code logs as a temporary error.				
2505	The command is a Set Path Group ID or a Sense Path Group ID and it caused a unit check. The host must reissue the command.	This is an operating condition. After a control unit reset, the last command will be reissued. This code logs as a temporary error.				

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
2066	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
2101	The remote control unit detected a check 1 condition and check 1 recovery was disabled in both control units.	<ol style="list-style-type: none"> 1. IML the product diskette. 2. Enter START REPAIR to investigate the check 1 error. 3. See SDISK 1 and display the ERA and ERB registers. See DF 1 for the definitions of the ERA and ERB registers. 4. Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100." 	135 115 117	Control storage array card Maintenance adapter card Microprocessor card	01A-A1B2 01A-A1E2 01A-A1D2	MS001, 002 MA001, 002, 003 MP001, 002, 003
2200	Channel transfer timeout on a write.	<ol style="list-style-type: none"> 1. See SDISK 1 and display error register BCSE. See DF 1 for the definitions of the BCSE register. 2. Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." <p>TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE</p>	120 114 133 152 195 196	Buffer adapter card Buffer control card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1K2 01A-A1L2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	BA001, 002, 003 BC001, 002, 003 CA001, 002 CA101, 102 CA201, 202 CA301, 302
2201	Channel transfer timeout on a read.	<ol style="list-style-type: none"> 1. See SDISK 1 and display error register BCSE. See DF 1 for the definitions of the BCSE register. 2. Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." <p>TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL</p>	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003
2210	Channel transfer timeout on the write operation with the improved data recording feature enabled.	For error isolation, run the Support Diagnostics EE32 and EE33.				
2211	Channel transfer timeout on the read operation with the improved data recording feature enabled.	For error isolation, run the Support Diagnostics EE32 and EE33.				
2220	Channel transfer timeout on a write after command out is received and with the improved data recording feature enabled.	For error isolation, run the Support Diagnostics EE32 and EE33.	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003
2500	The command is a Write Tape Mark or Erase Gap and the buffer is not in write mode and is not empty.	This is an operating condition. After a control unit reset, the last command will be reissued. This code logs as a temporary error.				
2501	The command is a Rewind or Rewind Unload and the buffer contains write data.	This is an operating condition. After a control unit reset, the last command will be reissued. This code logs as a temporary error.				
2502	The command is a Forward Space Block or Forward Space File and the buffer is not in read forward mode.	This is an operating condition. After a control unit reset, the last command will be reissued. This code logs as a temporary error.				
2503	The command is a Backspace Block or Backspace File and the buffer is not in read backward mode.	This is an operating condition. After a control unit reset, the last command will be reissued. This code logs as a temporary error.				
2504	The channel that issued the command has been removed from the extended contingent connection because of a system reset.	This is an operating condition. After a control unit reset, the last command will be reissued. This code logs as a temporary error.				
2505	The command is a Set Path Group ID or a Sense Path Group ID and it caused a unit check. The host must reissue the command.	This is an operating condition. After a control unit reset, the last command will be reissued. This code logs as a temporary error.				
2600	A System Reset was received on the last path of a path group. The device was in Extended Contingent Allegiance prior to the reset (a permanent write error had been reported) or when buffered write data was being written (as a result the control unit's system reset processing) a permanent error occurred. The Extended Contingent Allegiance or the permanent error is reset and this error is presented until the tape is unloaded manually or by the system.	<ol style="list-style-type: none"> 1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures" before continuing the next step. 2. See the console log or EREP report for the sense data. Error 2600 also means that the operator or program failed to recover from the write error. 3. Use the drive command exerciser (write operation) for failure isolation. See "Drive Command Exerciser" on DIAG 1. 	062* 064 132 131 130 123 124 125 119 085*	Read preamplifier card Write power card Read detect card 2 Read detect card 1 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Drive control card	02A-A1H2 02A-A1G2 01A-A2S2 01A-A2R2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 02A-A1B2	RP000 VP000 RD001 RD101 RD001 SB001, 002 SB101, 102 SB201, 202 RC001, 002 DD000, 001, 002, 003

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
2700	A Read Channel Adapter Status Byte order could not complete successfully. The channel adapter is forced to a disabled condition. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	133 152 195 196 117 121 122	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel address switch	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1D2 01A-A1G2 01A-A1F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 SS001, 002 SM001, 002
2701	Invalid channel-adapter-type switch setting, broken switch, or other failure, resulted in an error detected in the control unit. The channel adapter is forced to a disabled condition. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Check the settings of the channel-type switch for the appropriate channel. See PANEL 1 for "Setting Address Switches." 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable groups 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	197 197 133 152 195 196	Channel address switch Channel address switch Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	See LOC 1 See LOC 1 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
2702	A channel adapter could not execute a Go Online order. The channel adapter is forced to a disabled condition. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Check the setting of the Enable/Disable switch for the failing channel. See PANEL 1 for "Control Unit Switches and Indicators." 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable groups 24A, 24B, 24C, and 24D. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	133 152 195 196 117 121 122	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel address switch	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1D2 01A-A1G2 01A-A1F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 SS001, 002 SM001, 002
2703	A channel adapter could not execute a "set system reset complete" order. The channel adapter is taken offline. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 2. To determine the failing path. See "Error Path Isolation" on START 400.	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302

2505
2600 Put these error codes here
see Page FSI 22

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
2600	A System Reset was received on the last path of a path group. The device was in Extended Contingent Allegiance prior to the reset (a permanent write error had been reported) or when buffered write data was being written (as a result the control unit's system reset processing) a permanent error occurred. The Extended Contingent Allegiance or the permanent error is reset and this error is presented until the tape is unloaded manually or by the system.	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. See the console log or EREP report for the sense data. Error 2600 also means that the operator or program failed to recover from the write error. Use the drive command exerciser (write operation) for failure isolation. See "Drive Command Exerciser" on DIAG 1. 	062* 064 132 131 130 123 124 125 119 085*	Read preamplifier card Write power card Read detect card 3 Read detect card 2 Read detect card 1 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Drive control card	02A-A1H2 02A-A1G2 01A-A2T2 01A-A2S2 01A-A2R2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 02A-A1B2	RP000 VP000 RD201 RD101 RD001 SB001, 002 SB101, 102 SB201, 202 RC001, 002 DD000, 001, 002, 003
2700	A Read Channel Adapter Status Byte order could not complete successfully. The channel adapter is forced to a disabled condition. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	<p>Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p> <p>The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	133 152 195 196 117 121 122 197	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel address switch	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1D2 01A-A1G2 01A-A1F2 See LOC 1	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 SS001, 002 SM001, 002
2701	Invalid channel-adapter-type switch setting, broken switch, or other failure, resulted in an error detected in the control unit. The channel adapter is forced to a disabled condition. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	<ol style="list-style-type: none"> Check the settings of the channel-type switch for the appropriate channel. See PANEL 1 for "Setting Address Switches." Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." <p>The cables associated with this failure are in cable groups 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	197 133 152 195 196	Channel address switch Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	See LOC 1 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
2702	A channel adapter could not execute a Go Online order. The channel adapter is forced to a disabled condition. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	<ol style="list-style-type: none"> Check the setting of the Enable/Disable switch for the failing channel. See PANEL 1 for "Control Unit Switches and Indicators." Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." <p>The cables associated with this failure are in cable groups 24A, 24B, 24C, and 24D. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	133 152 195 196 117 121 122 197	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel address switch	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1D2 01A-A1G2 01A-A1F2 See LOC 1	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 SS001, 002 SM001, 002
		<p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>				

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
2704	<p>The channel adapter switch is set to a channel transfer rate of 4.5 megabytes per second. However, this channel adapter does not have the necessary hardware to support that data rate. Sense byte 9 contains the channel adapter address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>1. Check the setting of the channel-type switch for the appropriate channel. See PANEL 1 for "Setting Address Switches."</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p> <p>The cables associated with this failure are in cable groups 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 157 - 01A-A1WKL 158 - 01A-A1XKL 159 - 01A-A1YKL 187 - 01A-A1ZFG 188 - 01A-A1ZKL 189 - 01A-A1WFG 190 - 01A-A1XFG 191 - 01A-A1YFG</p>	120 197 133 152 195 196	<p>Buffer adapter card</p> <p>Channel address switch</p> <p>Channel adapter card (channel A)</p> <p>Channel adapter card (channel B)</p> <p>Channel adapter card (channel C)</p> <p>Channel adapter card (channel D)</p>	<p>01A-A1K2</p> <p>See LOC 1</p> <p>01A-A2C2</p> <p>01A-A2D2</p> <p>01A-A2E2</p> <p>01A-A2F2</p>	<p>BA001, 002, 003</p> <p>CA001, 002</p> <p>CA101, 102</p> <p>CA201, 202</p> <p>CA301, 302</p>
2705	<p>A channel detected bad parity on the channel-adapter-type switch. The channel adapter is forced to a disabled condition. Sense byte 9 contains the channel adapter address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>1. Check the settings of the channel-type switch for the failing channel. See PANEL 1 for "Setting Address Switches." Check the plug on the back of the address switch for the failing channel.</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p> <p>The cables associated with this failure are in cable groups 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	197 133 152 195 196	<p>Channel address switch</p> <p>Channel adapter card (channel A)</p> <p>Channel adapter card (channel B)</p> <p>Channel adapter card (channel C)</p> <p>Channel adapter card (channel D)</p>	<p>See LOC 1</p> <p>01A-A2C2</p> <p>01A-A2D2</p> <p>01A-A2E2</p> <p>01A-A2F2</p>	<p>CA001, 002</p> <p>CA101, 102</p> <p>CA201, 202</p> <p>CA301, 302</p>
2706	<p>The channel adapter switch is set to a channel transfer rate of 4.5 megabytes per second. However, this control unit is a Model A11, which does not support the 4.5-megabyte data rate. Sense byte 9 contains the channel adapter address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>1. Check the setting of the channel-type switch for the appropriate channel. See PANEL 1 for "Setting Address Switches."</p> <p>2. Check the setting of the DLR switch on the drive adapter.</p> <p>3. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p> <p>The cables associated with this failure are in cable groups 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ 187 - 01A-A1ZFG 189 - 01A-A1WFG 190 - 01A-A1XFG 191 - 01A-A1YFG</p>	118 197 133 152 195 196	<p>Device adapter card</p> <p>Channel address switch</p> <p>Channel adapter card (channel A)</p> <p>Channel adapter card (channel B)</p> <p>Channel adapter card (channel C)</p> <p>Channel adapter card (channel D)</p>	<p>01A-A1Q2</p> <p>See LOC 1</p> <p>01A-A2C2</p> <p>01A-A2D2</p> <p>01A-A2E2</p> <p>01A-A2F2</p>	<p>D1001, 002</p> <p>CA001, 002</p> <p>CA101, 102</p> <p>CA201, 202</p> <p>CA301, 302</p>

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
2708	The control unit sent a Go Online order to the channel adapter, but the channel adapter did not go online. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
2709	The channel adapter sent a interrupt code that is not valid in response to a power-on reset. The channel adapter is taken offline. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
270A	The channel adapter did not send an interrupt in response to a power on reset. The channel adapter is taken offline. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
270B	A channel adapter error that was indicated by the CER could not be reset. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196 121	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A2G2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002
270C	A channel adapter error that was indicated by the CER could not be reset. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196 121	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A2G2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002
270D	The channel adapter switch is set to a channel transfer rate of 4.5 megabytes per second. However, the channel does not have the correct shoe cards installed to run at the 4.5-megabyte data rate. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Check the setting of the channel type switch for the appropriate channel. See PANEL 1 for "Setting Address Switches." 2. Check the settings of the switches on the buffer adapter card. See CARR-CU 1200 for the switch settings. The cables associated with this failure are in cable groups 20, 21, and 22. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 158 - 01A-A1XKL 159 - 01A-A1YKL 188 - 01A-A1ZKL	120 197	Buffer adapter card Channel address switch	01A-A1K2 See LOC 1	BA001, 002, 003
270E	An attempt was made to initialize a channel adapter to an incorrect configuration for this subsystem. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Check the setting of the DLR switches on the drive adapter card. See CARR-CU 1189 for the switch setting procedure.	118	Drive adapter card	01A-A1Q2	DI001, 002
270F	The control unit timed out waiting for a channel adapter interrupt signaling a completion of an order to operate in CEM mode. The adapter is taken offline. Sense byte 9 = channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 2. To determine the failing path. See "See Error Path Isolation" on START 400.	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4 ** EC sensitive FRU. See CARR-CU 7	Location	Logic Pages
3000	The device is allocated to both control units in the same device status byte. Allocation to both control units is invalid.	1. See SDISK 1 and display the device status in status store to determine if a channel adapter is failing. This can be a microcode error. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
3001	An invalid channel connection code has been set on the Channel Adapter Address/Mode switch. The path will operate in throttled DCI mode until the switch setting is corrected and the interface re-enabled. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Check the seating of the channel-type switch for the appropriate channel. See PANEL 1 for "Setting Address Switches." 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable groups 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table."	197 133 152 195 196	Channel address switch Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	See LOC 1 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
3002	The previous command was a read and a permanent read error was encountered. Since the current BLOCK ID is unknown, write commands are rejected until the tape is unloaded.	See FSC 76nn for failure analysis.				
3030	A channel command retry was stacked or refused by the channel after a microcode channel command retry attempt. The error is logged as a temporary error. The program resumed running. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Check the temporary errors in &erp. for a possible failing channel adapter. This failure can be caused by a channel problem. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 001 CA101, 102 CA201, 202 CA301, 302
3032	The level 6 interrupt could not be reset. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. To determine the failing path, see "Error Path Isolation" on START 400. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	133 152 195 196 117 121 122 197	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel address switch	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1D2 01A-A1G2 01A-A1F2 See LOC 1	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 SS001, 002 SM001, 002
30CF	This device is not capable of reading the currently mounted tape format. (3480 Device, 3480-2 XF format).	Move cartridge to drive capable of Rd/Wrt IDRC format.	232	Cartridge	Baseplate	
31nn	An invalid command code was received from the channel adapter. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
3300	A channel command retry has been stacked or refused by the channel after a channel adapter channel command retry attempt, or the channel command retry could not be performed because the channel had issued an Interface Disconnect before the status could be presented. This is a temporary error and the previous command is sent again. This is normal operation during cancellation of an MVS job. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Check the EREP temporary errors to find the failing channel adapter. 3. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
3301	The channel adapter device condition byte could not be read successfully. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. To determine the failing path, see "Error Path Isolation" on START 400. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	133 152 195 196 117 121 122 197	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel address switch	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1D2 01A-A1G2 01A-A1F2 See LOC 1	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 SS001, 002 SM001, 002
3302	Used by the support diagnostics to define additional actions successfully.	1. To determine the failing path, see "Error Path Isolation" on START 400. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."		The FRUs are defined by the diagnostic failure ID that brought you here.		
33E2	The channel adapter detected a subsystem error during initial selection. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Check the console log for messages. Check the sense data for any additional error codes. See MSG 1 and SENSE 1 to interpret the sense data. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	133 137 136 152 234 233 195 236 235 196 238 237 197 126 122 141 120 121	Channel adapter card (channel A) Tag shoe card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Tag shoe card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Tag shoe card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Tag shoe card (channel D) Bus shoe card (channel D) Channel address switch Power/POR card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Control unit switch panel card Buffer adapter card Status store basic card	01A-A2C2 01A-T1A3 01A-T1A1 01A-A2D2 01A-T1B3 01A-T1B1 01A-A2E2 01A-T1C3 01A-T1C1 01A-A2F2 01A-T1D3 01A-T1D1 See LOC 1 01A-A2H4 01A-A1F2 Control unit 01A-A1K2 01A-A1G2	CA001, 002 IT001, 002, 003 IB001, 002, 003 CA101, 102 IT001, 002, 003 IB001, 002, 003 CA201, 202 IT001, 002, 003 IB001, 002, 003 CA301, 302 IT001, 002, 003 IB001, 002, 003 PR001 SM001, 002 BA001, 002, 003 SS001, 002
33E3	A channel command sequence error was detected by the channel adapter. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." Note: Possible program problem. It may be necessary to get a program dump and check the CCW sequences. TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	133 137 136 152 234 233 195 236 235 196 238 237 197 126 122 141 120 121	Channel adapter card (channel A) Tag shoe card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Tag shoe card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Tag shoe card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Tag shoe card (channel D) Bus shoe card (channel D) Channel address switch Power/POR card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Control unit switch panel card Buffer adapter card Status store basic card	01A-A2C2 01A-T1A3 01A-T1A1 01A-A2D2 01A-T1B3 01A-T1B1 01A-A2E2 01A-T1C3 01A-T1C1 01A-A2F2 01A-T1D3 01A-T1D1 See LOC 1 01A-A2H4 01A-A1F2 Control unit 01A-A1K2 01A-A1G2	CA001, 002 IT001, 002, 003 IB001, 002, 003 CA101, 102 IT001, 002, 003 IB001, 002, 003 CA201, 202 IT001, 002, 003 IB001, 002, 003 CA301, 302 IT001, 002, 003 IB001, 002, 003 PR001 SM001, 002 BA001, 002, 003 SS001, 002

FSC/ Error	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
33E4	<p>The addressed drive is currently assigned to a path group that does not contain the channel path over which the command was received. Sense byte 9 contains the allowed path:</p>	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." <p>Note: This error may be a program problem.</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	133 137 136 152 234 233 195 236 235 196 238 237 197 126 122 141 120 121	Channel adapter card (channel A) Tag shoe card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Tag shoe card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Tag shoe card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Tag shoe card (channel D) Bus shoe card (channel D) Channel address switch Power/POR card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Control Unit switch panel card Buffer adapter card Status store basic card	01A-A2C2 01A-T1A3 01A-T1A1 01A-A2D2 01A-T1B3 01A-T1B1 01A-A2E2 01A-T1C3 01A-T1C1 01A-A2F2 01A-T1D3 01A-T1D1 See LOC 1 01A-A2H4 01A-A1F2 Control Unit 01A-A1K2 01A-A1G2	CA001, 002 IT001, 002, 003 IB001, 002, 003 CA101, 102 IT001, 002, 003 IB001, 002, 003 CA201, 202 IT001, 002, 003 IB001, 002, 003 CA301, 302 IT001, 002, 003 IB001, 002, 003 PR001 SM001, 002 BA001, 002, 003 SS001, 002
33E5	<p>Command reject occurred because of an invalid command code. Sense byte 9 contains the channel address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Check the console log for the command that was rejected. See MSG 1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 	133 136 152 233 195 235 196 237 121	Channel adapter card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Status store basic card	01A-A2C2 01A-T1A1 01A-A2D2 01A-T1B1 01A-A2E2 01A-T1C1 01A-A2F2 01A-T1D1 01A-A1G2	CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
33E6	<p>A 'bus out' parity error occurred during the channel adapter decode of the channel command and drive address. Sense byte 9 contains the channel address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>This can be either a channel failure or a channel cable failure. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p>	133 136 152 233 195 235 196 237 121	Channel adapter card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Status store basic card	01A-A2C2 01A-T1A1 01A-A2D2 01A-T1B1 01A-A2E2 01A-T1C1 01A-A2F2 01A-T1D1 01A-A1G2	CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
33E7	The drive is not online to the local control unit. The drive must be online and/or ready to perform the channel command. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Check the drive Online/Offline and Ready/Not Ready switches and their connecting cables. See PANEL 1 for "Tape Unit Switches and Indicators." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." Check the device data bus and drives first, if a single drive failure. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 191 - 01A-A1YFG 189 - 01A-A1WFG 267* - 02A-A1B2Y 190 - 01A-A1XFG 268* - 02A-A1B2Z</p>	085* 118 121 122 133 152 195 196	Drive control card Drive-adapter card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	02A-A1B2 01A-A1Q2 01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	DD000, 001, 002, 003 DI001, 002 SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
33E8	The addressed drive is not ready and the program issued a channel command that must have the drive ready to be performed. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Check the drive Online/Offline and Ready/Not Ready switches and their connecting cables. See PANEL 1 for "Tape Unit Switches and Indicators." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." Check the device data bus and drives first, if a single drive failure. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 191 - 01A-A1YFG 189 - 01A-A1WFG 267* - 02A-A1B2Y 190 - 01A-A1XFG 268* - 02A-A1B2Z</p>	085* 118 121 122 133 152 195 196	Drive control card Drive-adapter card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	02A-A1B2 01A-A1Q2 01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	DD000, 001, 002, 003 DI001, 002 SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
33E9	The addressed drive is file protected and the channel command is a write-type command. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Check the cartridge to ensure that it is not file protected. <p>TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z</p>	009 064 085* 121 118 081	File protect switch Write power card Drive control card Status store basic card Drive-adapter card Tachometer sensor cable	Baseplate 02A-A1G2 02A-A1B2 01A-A1G2 01A-A1Q2 Baseplate	SN001, 002 VP000 DD000, 001, 002, 003 SS001, 002 DI001, 002 SN001, 002
33EA	An invalid channel adapter interrupt code was received. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
33EB	The addressed drive is logically file protected and the channel command is a write-type command. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
3411	A request for 3480 Improved Data Recording Capability format failed because the control unit is not allowed to write in that format.	1. Check the dip switch settings on the 01A-A1K2 card. See CARR-CU 1200 for the switch position assignment. If dip switch bit 3 is off, then the Improved Data Recording Capability is not allowed and a request for extended format should not be made. 2. If the 01A-A1K2 card does not have dip switches, then the Improved Data Recording Capability is not installed and a request for the extended data format should not be made. Note: This error may be a program problem.	120	Buffer adapter card	01A-A1K2	BA001, 002, 003
3412	This device is changing between 3480 format and 3480 Improved Data Recording Capability format while writing a file. This unit check is given only once per file.	This is a operating condition that affects performance. It is strongly recommended that 3480 Improved Data Recording Capability format not be turned on and off while writing a file.				
3421	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
3422	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
3460	Both control unit allocation bits are set in page 1 of the status store RAM for this device.	1. See SDISK 1 and display the status store for device assignments and channel adapters. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
3501	Invalid command data was sent from the host for the Multi-Space Block or File Mark command. Sense byte 9 contains the address of the failing channel: 80 = Channel Adapter A 40 = Channel Adapter B 20 = Channel Adapter C 10 = Channel Adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter".	133 152 195 196 121	Channel Adapter A card Channel Adapter B card Channel Adapter C card Channel Adapter D card Status store basic card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A2G2	
3502	The Retension-Rewind command was sent while the microcode was still processing and ERP Service Request. Normally this error should only occur when the Ready switch on the drive was sent to Not-Ready and a previous command was sent for which an ERA 3A was posted.	This error can be caused by microcode.	085*	Drive control card	02A-A1B2	

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
3740	The channel issued a selective reset during a Read Data Buffer command. The data block that was being sent has been purged from the subsystem and cannot be retrieved by the host. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Check the seating of the channel-type switch for the appropriate channel. See PANEL 1 for "Setting Address Switches." 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable groups 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel A) Channel adapter card (channel B)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
3880	A channel adapter check 2, or a remote control unit check 1 failure has caused a system reset. The path group IDs and assignment data were reset. A tape was mounted and the next channel command to this drive was not an Assign or Set Path Group ID command. This unit check state will continue until a rewind unload channel command, or a manual rewind unload has been executed. Sense byte 9 contains the channel adapter address. 80 = channel A 40 = channel B 20 = channel C 10 = channel D	Notes: 1. This error can be caused by a channel failure or by a channel cable failure. 2. The FRUs are located in the control unit that did not report the error. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
38B0	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
38B1	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
38B2	The Retension-Rewind command was sent to a drive in which NO TAPE is currently loaded.	This error will also be presented if the device is in the process of doing either a Host Rewind/Unload command or a Manual Rewind/Unload. This error can be caused by microcode.	085*	Device control card	02A-A1B2	
38B3	A rewind unload command has been received. ERA 51 is presented requesting a read buffered log command.	This is a normal operating command.				
38B4	The Retension-Rewind command was sent to a drive on which the Ready switch was set to the Not-Ready position.	An error code of 3502 will be sent instead, if the microcode was in the process of handling and ERP service request. This error can be caused by microcode.	085*	Device control card	02A-A1B2	
38C0	A channel command was received before ending status had been generated or accepted for the preceding command. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." Note: This error can be caused by incorrect manual intervention.	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
38E2	<p>A channel data transfer was successful to this buffer after it failed to the other buffer in a two control unit subsystem. The same channel paths were used for all retries. This error indicates the problem is in a buffer and not in a channel path. This drive is not permitted to use the failing buffer for the remainder of this tape mount. Sense byte 9 contains the address of the failing channel.</p> <p>80 = Channel adapter A in control unit 0 40 = Channel adapter B in control unit 0 20 = Channel adapter C in control unit 0 10 = Channel adapter D in control unit 0</p> <p>08 = Channel adapter A in control unit 1 04 = Channel adapter B in control unit 1 02 = Channel adapter C in control unit 1 01 = Channel adapter D in control unit 1</p> <p>Note: Sense byte 2 indicates the buffer that had the successful data transfer.</p>	<p>Note: The FRUs are located in the control unit that did not report the error.</p> <p>Run diagnostic section EE64. See the "Diagnostic Identification Code Table" on DIAG 3.</p> <p>TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL</p> <p>Cables associated with the failure are in cable groups 50 and 52. See FSI 1 for "Cable Group Table."</p>	114 120 112** 113** 133 152 195 196	<p>Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)</p>	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 CA101, 102 CA201, 202 CA301, 302
38E3	<p>The channel mode has been changed from 2 or 3 megabyte data streaming to DCI 1.5 megabyte. The mode will continue the same for the remainder of this tape mount, or until this drive receives a system reset. This error indicates that three times during this tape mount, a 'channel overrun' occurred in data streaming mode but was successful in DCI mode. Sense byte 9 contains the channel address of the failing channel.</p> <p>80 = Channel adapter A in control unit 0 40 = Channel adapter B in control unit 0 20 = Channel adapter C in control unit 0 10 = Channel adapter D in control unit 0</p> <p>08 = Channel adapter A in control unit 1 04 = Channel adapter B in control unit 1 02 = Channel adapter C in control unit 1 01 = Channel adapter D in control unit 1</p>	<p>Run diagnostic section EE64. See the "Diagnostic Identification Code Table" on DIAG 3.</p>	197 133 136 137 152 233 234 195 235 236 196 237 238	<p>Channel address switch Channel adapter card (channel A) Bus shoe card (channel A) Tag shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Tag shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Tag shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Tag shoe card (channel D)</p>	See LOC 1 01A-A2C2 01A-T1A1 01A-T1A3 01A-A2D2 01A-T1B1 01A-T1B3 01A-A2E2 01A-T1C1 01A-T1C3 01A-A2F2 01A-T1D1 01A-T1D3	CA001, 002 IB001, 002, 003 IT001, 002, 003 CA101, 102 IB001, 002, 003 IT001, 002, 003 CA201, 202 IB001, 002, 003 IT001, 002, 003 CA301, 302 IB001, 002, 003 IT001, 002, 003
38E4	<p>A channel data transfer (in Tape Write mode) was successful to this buffer, after it failed to the other buffer in a two control unit subsystem. The same channel path was used for all retries. This error indicates that the problem is in a buffer and not in a channel path. This drive is not permitted to use the failing buffer for the remainder of this tape mount. Sense byte 9 contains the address of the failing channel.</p> <p>80 = Channel adapter A in control unit 0 40 = Channel adapter B in control unit 0 20 = Channel adapter C in control unit 0 10 = Channel adapter D in control unit 0</p> <p>08 = Channel adapter A in control unit 1 04 = Channel adapter B in control unit 1 02 = Channel adapter C in control unit 1 01 = Channel adapter D in control unit 1</p> <p>Note: Sense byte 2 indicates the buffer that had the successful data transfer.</p>	<p>Note: The FRUs are located in the control unit that did not report the error.</p> <p>Run diagnostic section EE64. See the "Diagnostic Identification Code Table" on DIAG 3.</p> <p>TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL</p> <p>Cables associated with the failure are in cable groups 50 and 52. See FSI 1 for "Cable Group Table."</p>	114 120 112** 113** 133 152 195 196	<p>Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)</p>	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 CA101, 102 CA201, 202 CA301, 302



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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
38E5	The channel mode has been changed from 2 or 3 megabyte data streaming to DCI 1.5 megabyte. The mode will continue the same for the remainder of this tape mount, or until this drive receives a system reset. This error indicates that three times during this tape mount, a 'channel overrun' occurred in data streaming mode (and in Tape Write mode), but was successful in DCI mode. Sense byte 9 contains the address of the failing channel. 90 = Channel adapter A in &cu. 0 40 = Channel adapter B in &cu. 0 20 = Channel adapter C in &cu. 0 10 = Channel adapter D in &cu. 0 08 = Channel adapter A in &cu. 1 04 = Channel adapter B in &cu. 1 02 = Channel adapter C in &cu. 1 01 = Channel adapter D in &cu. 1	Run diagnostic section EE64. See the "Diagnostic Identification Code Table" on DIAG 3.	197 133 136 137 152 233 234 195 235 236 196 237 238	Channel address switch Channel adapter card (channel A) Bus shoe card (channel A) Tag shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Tag shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Tag shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Tag shoe card (channel D)	See LOC 1 01A-A2C2 01A-T1A1 01A-T1A3 01A-A2D2 01A-T1B1 01A-T1B3 01A-A2E2 01A-T1C1 01A-T1C3 01A-A2F2 01A-T1D1 01A-T1D3	CA001, 002 IB001, 002, 003 IT001, 002, 003 CA101, 102 IB001, 002, 003 IT001, 002, 003 CA201, 202 IB001, 002, 003 IT001, 002, 003 CA301, 302 IB001, 002, 003 IT001, 002, 003
38EA and 38EB	The Improved Data Recording has been disabled for the remainder of the tape mount.	Run support diagnostics EE32 and EE33 for error isolation. TCC FRUs associated with this error code are: 157-01A-A1WKL 159-01A-A1YKL 152-01A-A1XKL 188-01A-A1ZKL	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003
3941	A channel data transfer failed on both buffers of a two &cu. subsystem. The same channel path was used for all retries. This error indicates that the problem is in the channel path and not in a buffer. Immediately after the Sense command completes, or when the contingent allegiance is broken, this channel adapter is disabled.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 137 136 152 234 233 195 236 235 196 238 237 197 126	Channel adapter card (channel A) Tag shoe card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Tag shoe card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Tag shoe card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Tag shoe card (channel D) Bus shoe card (channel D) Channel address switch Power/POR card	01A-A2C2 01A-T1A3 01A-T1A1 01A-A2D2 01A-T1B3 01A-T1B1 01A-A2E2 01A-T1C3 01A-T1C1 01A-A2F2 01A-T1D3 01A-T1D1 See LOC 1 01A-A2H4	CA001, 002 IT001, 002, 003 IB001, 002, 003 CA101, 102 IT001, 002, 003 IB001, 002, 003 CA201, 202 IT001, 002, 003 IB001, 002, 003 CA301, 302 IT001, 002, 003 IB001, 002, 003 PR001
3945	A channel to buffer transfer failed with the Improved Data Recording feature enabled. The transfer will be retried with the feature disabled.	This FSC is always preceded by another FSC, therefore, use the preceding FSC to diagnose this error code.	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003
3990	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
39A0	Motion command issued to a tape that is too long.	IBM Enhanced Capacity Cartridge System tapes should not be mounted in a 3480 subsystem.	232	Cartridge	Baseplate	
39B0	Repositioning cannot be successfully concluded because the block that the channel last read, wrote, or located to cannot now be found.	This error can be caused by incorrect manual intervention. TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 117 112 113	Buffer control card Buffer adapter card Microprocessor card Buffer storage card Buffer storage card	01A-A1L2 01A-A1K2 01A-A1D2 01A-A1N2 01A-A1M2	BC001, 001, 002 BA001, 001, 002 MP001, 001, 002 BM200 BM100
39B1 and 39B2	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
39D1	Microcode detected error.	Refer to SPROC 1 and perform procedure D. Set trace options as follows: CHANNEL, DRIVE, MODULE, LVL7.				
3A10	A channel command was received before the host error recovery actions were completed after a permanent write error had occurred on a different channel.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures."				
3A16	An ending status was generated that does not match the earlier ending status. Sense byte 9 contains the address of the failing channel. 90 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 136 152 233 195 235 196 237 121	Channel adapter card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Status store basic card	01A-A2C2 01A-T1A1 01A-A2D2 01A-T1B1 01A-A2E2 01A-T1C1 01A-A2F2 01A-T1D1 01A-A1G2	CA001, 002 IB001, 002 CA101, 102 IB001, 002 CA201, 202 IB001, 002 CA301, 302 IB001, 002 SS001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
3A19	The channel adapter command byte could not be written with zeros. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."	133 152 195 196 121 122	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A1F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002 SM001, 002
3A1A	A channel adapter check 2 occurred during channel status presentation. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
3A1B	A channel adapter order never completed successfully during channel presentation. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."	133 152 195 196 121 122	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A1F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002 SM001, 002
3A20	A 'bus out' parity error was detected during channel data transmission. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. <i>Note: This error can be caused by a channel failure or by a channel cable failure.</i> 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 136 152 233 195 235 196 237 121	Channel adapter card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Status store basic card	01A-A2C2 01A-T1A1 01A-A2D2 01A-T1B1 01A-A2E2 01A-T1C1 01A-A2F2 01A-T1D1 01A-A1G2	CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002 003, WA013 CA301, 302 IB001, 002 003, WA013 SS001, 002
3A30	The device condition byte cannot be read successfully. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."	133 152 195 196 121	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002
3A31	The device condition byte cannot be written. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."	133 152 195 196 121	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
3C60	An incorrect byte count was detected during a channel to control unit control command. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Note: This could be a programming error. Check the CCW for the command and byte count. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002 003, WA013 CA301, 302 IB001, 002 003, WA013 SS001, 002
			136	Bus shoe card (channel A)	01A-T1A1	
3C61	An interface disconnect was detected during the channel data transfer of a channel to control unit control command. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Note: This is possibly a channel failure or a programming problem. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 	152	Channel adapter card (channel B)	01A-A2D2	CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002 003, WA013 CA301, 302 IB001, 002 003, WA013 SS001, 002
			233	Bus shoe card (channel B)	01A-T1B1	
3C63	A 'bus out' parity error occurred during channel data transfer on a channel to control unit control command. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Note: This is possibly a channel failure. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 	195	Channel adapter card (channel C)	01A-A2E2	CA201, 202 IB001, 002 003, WA013 CA301, 302 IB001, 002 003, WA013 SS001, 002
			235	Bus shoe card (channel C)	01A-T1C1	
3C63	A 'bus out' parity error occurred during channel data transfer on a channel to control unit control command. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Note: This is possibly a channel failure. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 	196	Channel adapter card (channel D)	01A-A2F2	CA301, 302 IB001, 002 003, WA013 SS001, 002
			237	Bus shoe card (channel D)	01A-T1D1	
			121	Status store basic card	01A-A1G2	
3CBA	Microcode detected error.	Refer to SPROC 1 and perform procedure D. Set trace options as follows: MODULE + LVL 7.	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002 003, WA013 CA301, 302 IB001, 002 003, WA013 SS001, 002
			136	Bus shoe card (channel A)	01A-T1A1	
3CBB	Microcode detected error.	Refer to SPROC 1 and perform procedure D. Set trace options as follows: CHANNEL, DRIVE, MODULE, LVL 7.	152	Channel adapter card (channel B)	01A-A2D2	CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002 003, WA013 CA301, 302 IB001, 002 003, WA013 SS001, 002
			233	Bus shoe card (channel B)	01A-T1B1	
3CBD	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.	195	Channel adapter card (channel C)	01A-A2E2	CA201, 202 IB001, 002 003, WA013 CA301, 302 IB001, 002 003, WA013 SS001, 002
			235	Bus shoe card (channel C)	01A-T1C1	
3D11	A read backward command has requested a record in "3480 extended data format."	This is an operating condition. The record is in the buffer in the forward direction and a read forward must be performed to retrieve it. Data in the 3480 extended data format cannot be read in the backward direction. This check is issued once for each read backward in 3480 extended data format mode.	196	Channel adapter card (channel D)	01A-A2F2	CA301, 302 IB001, 002 003, WA013 SS001, 002
			237	Bus shoe card (channel D)	01A-T1D1	
3E80	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.	121	Status store basic card	01A-A1G2	

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
4200	<p>An invalid tape-format bit combination was detected in the 3480 Mode Set command. Sense byte 9 contains the address of the failing channel.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p> <p>The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."</p>	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
			136	Bus shoe card (channel A)	01A-T1A1	
4201	<p>A permanent write error was ignored and a 3480 Mode Set command with tape write set was received. Any remaining write data in the buffer segment has been deleted.</p> <p>Note: No device type operations have occurred since the write error was reported.</p>	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>Note: This error code can be caused by a programming problem or by incorrect manual intervention.</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p>	152	Channel adapter card (channel B)	01A-A2D2	CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
			233	Bus shoe card (channel B)	01A-T1B1	
4202	<p>Either bit 5 or bit 6 in the Mode Set command data byte is not 0. Sense byte 9 contains the address of the failing channel.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>Note: This error code can be caused by a programming problem.</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p>	195	Channel adapter card (channel C)	01A-A2E2	CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
			235	Bus shoe card (channel C)	01A-T1C1	
4202			196	Channel adapter card (channel D)	01A-A2F2	CA301, 302 IB001, 002, 003, WA013 SS001, 002
			237	Bus shoe card (channel D)	01A-T1D1	
4202			121	Status store basic card	01A-A1G2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
			133	Channel adapter card (channel A)	01A-A2C2	
4202			152	Channel adapter card (channel B)	01A-A2D2	CA101, 102 CA201, 202 CA301, 302
			195	Channel adapter card (channel C)	01A-A2E2	
4202			196	Channel adapter card (channel D)	01A-A2F2	CA301, 302
			196	Channel adapter card (channel D)	01A-A2F2	

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
3F13	A permanent write error occurred and a command that may cause tape motion was issued instead of a Read Data Buffer command needed to recover the data. Write data has been deleted from the data buffer. The actions listed here try to diagnose the write error. Note: No device-type operations have occurred since the write error was reported.	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. See the console log or EREP report for the sense data. Error 3F13 also means that the operator or program failed to recover from the write error. Use the drive command exerciser (write operation) for failure isolation. See "Drive Command Exerciser" on DIAG 1. Use the EAD for error code D7nn for failure isolation. See EAD 1 for "Error Code D7nn." <p>TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z</p>	062* 064 132 131 130 123 124 125 119 085*	Read preamplifier card Write power card Read detect card 3 Read detect card 2 Read detect card 1 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Drive control card	02A-A1H2 02A-A1G2 01A-A2T2 01A-A2S2 01A-A2R2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 02A-A1B2	RP000 VP000 RD201 RD101 RD001 SB001, 002 SB101, 102 SB201, 202 RC001, 002 DD000, 001, 002, 003
3F14	There is no valid data path to the drive through either control unit, and the channel command received needs a drive online and/or ready. This error occurs if an attempt is made to select a drive that is not installed in the subsystem.	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Device Data Bus Problems - General." <p>The cables associated with this failure are cable groups 28, 30, and 80-86. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 191 - 01A-A1YFG 189 - 01A-A1WFG 267* - 02A-A1B2Y 190 - 01A-A1XFG 268* - 02A-A1B2Z</p>	085* 118 121 122 133 152 195 196	Drive control card Drive-adapter card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	02A-A1B2 01A-A1Q2 01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	DD000, 001, 002, 003 DI001, 002 SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
3F15	A permanent read error occurred and DDR was not used to recover the data. Tape position is not certain and the cartridge must be unloaded.	This FSC is always preceded by another sense record. Use the FSC from that sense record when troubleshooting this failure.				
3F16	A permanent read error occurred and DDR was not used to recover the data. Tape position is not certain and the cartridge must be unloaded.	This FSC is always preceded by another sense record. Use the FSC from that sense record when troubleshooting this failure.				
3FEE	The drive is at the physical end of tape and a command that requires forward tape motion is received from the channel.	This is an operating condition. No forward motion is allowed at the end of tape.				
41F0	The block ID to be located by the Locate Block command could not be found. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	<p>This error can be caused by incorrect operator action.</p> <ol style="list-style-type: none"> Use the drive command exerciser (locate operation) for failure isolation. See "Drive Command Exerciser" on DIAG 1. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Device Data Bus Problems - General." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 191 - 01A-A1YFG 189 - 01A-A1WFG 267* - 02A-A1B2Y 190 - 01A-A1XFG 268* - 02A-A1B2Z</p>	085* 118 121 122 133 152 195 196	Drive control card Drive-adapter card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	02A-A1B2 01A-A1Q2 01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	DD000, 001, 002, 003 DI001, 002 SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
4200	An invalid tape-format bit combination was detected in the 3480 Mode Set command. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table." 	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002 003, WA013 CA301, 302 IB001, 002 003, WA013 SS001, 002
			136	Bus shoe card (channel A)	01A-T1A1	
			152	Channel adapter card (channel B)	01A-A2D2	
			233	Bus shoe card (channel B)	01A-T1B1	
			195	Channel adapter card (channel C)	01A-A2E2	
			235	Bus shoe card (channel C)	01A-T1C1	
196	Channel adapter card (channel D)	01A-A2F2	01A-T1D1			
237	Bus shoe card (channel D)	01A-T1D1				
			121	Status store basic card	01A-A1G2	



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
4203	<p>A Mode Set command with the tape write mode bit set on was received and the drive was not ready.</p> <p>Sense byte 9 contains a channel address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<ol style="list-style-type: none"> 1. Make the drive ready to offload the buffered data. 2. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing to the next step. 3. Check the drive Online/Offline and Ready/Not Ready switches and their connecting cables. See PANEL 1 for "Tape Unit Switches and Indicators." 4. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." Check the device data bus and drives first, if a single drive failure. 5. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 191 - 01A-A1YFG 189 - 01A-A1WFG 267* - 02A-A1B2Y 190 - 01A-A1XFG 268* - 02A-A1B2Z</p>	<p>085* 118 121 122 133 152 195 196</p>	<p>FRU Name</p> <p>* EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.</p> <p>Drive control card Drive adapter card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)</p>	<p>02A-A1B2 01A-A1Q2 01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2</p>	<p>DD000, 001, 002, 003 DI001, 002 SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302</p>

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Fault Symptom Index (FSI)

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
4260	<p>There are no channel paths in the grouped state for this drive that have a path group ID matching the path group ID received as the argument to the Assign command. Sense byte 9 contains the channel address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p>	133	<p>Channel adapter card (channel A) Bus shoe card (channel A)</p> <p>Channel adapter card (channel B) Bus shoe card (channel B)</p> <p>Channel adapter card (channel C) Bus shoe card (channel C)</p> <p>Channel adapter card (channel D) Bus shoe card (channel D)</p> <p>Status store basic card</p>	01A-A2C2 01A-T1A1	<p>CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002</p>
			136		01A-A2D2 01A-T1B1	
			152		01A-A2E2 01A-T1C1	
			233		01A-A2F2 01A-T1D1	
			195		01A-A1G2	
4262	<p>The Unassign command was issued and no channel paths with path group IDs matching the Unassign command argument had assignment of the drive. Sense byte 9 contains the channel address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p>	133	<p>Channel adapter card (channel A) Bus shoe card (channel A)</p> <p>Channel adapter card (channel B) Bus shoe card (channel B)</p> <p>Channel adapter card (channel C) Bus shoe card (channel C)</p> <p>Channel adapter card (channel D) Bus shoe card (channel D)</p> <p>Status store basic card</p>	01A-A2C2 01A-T1A1	<p>CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002</p>
			136		01A-A2D2 01A-T1B1	
			152		01A-A2E2 01A-T1C1	
			233		01A-A2F2 01A-T1D1	
			195		01A-A1G2	
4263	<p>The drive is not online to the local control unit. The drive must be online and/or ready to perform the channel command. Sense byte 9 contains the channel address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>2. Check the drive Online/Offline and Ready/Not Ready switches and their connecting cables. See PANEL 1 for "Tape Unit Switches and Indicators."</p> <p>3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." Check the device data bus and drives first, if a single drive failure.</p> <p>4. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 191 - 01A-A1YFG 189 - 01A-A1WFG 267* - 02A-A1B2Y 190 - 01A-A1XFG 268* - 02A-A1B2Z</p>	085*	<p>Drive control card Drive-adapter card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)</p>	02A-A1B2 01A-A1Q2 01A-A1G2 01A-A1F2	<p>DD000, 001, 002, 003 DI001, 002 SS001, 002 SM001, 002</p> <p>CA001, 002 CA101, 102 CA201, 202 CA301, 302</p>
			118		01A-A2C2	
			121		01A-A2D2	
			122		01A-A2E2	
			133		01A-A2F2	
			152			
			195			
			196			

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
4280	An invalid function-control byte has been received—an invalid function was specified. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 136 152 233 195 235 196 237 121	Channel adapter card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Status store basic card	01A-A2C2 01A-T1A1 01A-A2D2 01A-T1B1 01A-A2E2 01A-T1C1 01A-A2F2 01A-T1D1 01A-A1G2	
4281	A Set Path Group ID command was performed successfully in the control unit that received the command but not in the remote control unit.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
4311 4312 4313 4314	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
4315	Physical End of Tape was encountered while executing a Forward Space Block (or a Forward Multi-Space Block) command.	This error can be caused by microcode.	085*	Drive control card	02A-A1B2	
4317	The Space Block operation (or the Multi-Space Block operation) is not making any progress down the tape.	This error can be caused by microcode.	085* 118 130 131 132 119 113* 114 120 111	Drive control card Drive adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read clock and format Buffer storage card Buffer control card Buffer adapter card Read ECC/CORR card	02A-A1B2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A1S2 01A-A1M2 01A-A1L2 01A-A1K2 01A-A1R2	
4411	A read backward command has requested a record in 3480 extended data format.	This is an operating condition. A read backward has been issued for a record in "3480 extended format." This unit check is given the first time a read backward command is issued. It is only given once per tape mount.				
4412	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
46B0	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
46C0	Reserved bits 6 and 7 of byte 0 of the load display data were not zero for a drive without the automatic cartridge loader feature or for drives with the automatic cartridge loader feature bit 6 of byte 0 of the load display was not zero.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
4740	An invalid channel connection code has been set on the Channel Adapter Address/Mode switch. The path will operate in throttled DCI mode until the switch setting is corrected and the interface re-enabled. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Check the seating of the channel-type switch for the appropriate channel. See PANEL 1 for "Setting Address Switches." 2. Check the cables in cable group 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table." See EAD 1 for "Cable and Board Interconnection Failures." 3. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable groups 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table."	197 133 152 195 196	Channel address switch Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	See LOC 1 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
47B0	The Space File operation is not making any progress down the tape. See the secondary error codes in the sense bytes.	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing to the next step. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 185 - 01A-A1XRS 184 - 01A-A1ZPQ 186 - 01A-A1YRS</p>	062* 064 116 118 130 131 132 123 124 125 119 112** 113** 111	* EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7. Read preamplifier card Write power card Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card Read ECC/CORR card	02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2 01A-A1R2	RP000 VP000 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100 EC001, 002
47D0	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
47D1	An invalid channel connection code has been set on the Channel Adapter Address/Mode switch. The path will operate in throttled DCI mode until the switch setting is corrected and the interface re-enabled. Sense byte 9 contains the channel adapter address.	<ol style="list-style-type: none"> Check the seating of the channel-type switch for the appropriate channel. See PANEL 1 for "Setting Address Switches." Check the cables in cable group 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table." See EAD 1 for "Cable and Board Interconnection Failures." Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." <p>The cables associated with this failure are in cable groups 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table."</p>	197 133 152 195 196	Channel address switch Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	See LOC 1 01A-A2C2 01A-A2B2 01A-A2D2 01A-A2E2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
	80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D					
47D2	Microcode detected error.	Refer to SPROC 1 and perform Procedure A. After completing procedure A, call your next level of support.				
47E0	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
4811	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
4812	A rewind unload command has been received. ERA 51 is presented requesting a read buffered log command.	This is a normal operating condition.				
4B20	A Set Path Group ID command was received with an invalid function control byte in the argument—bits 3 through 7 were not 0. Sense byte 9 contains the channel adapter address.	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing to the next step. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 	133 136 152 233 195 235 196 237	Channel adapter card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D)	01A-A2C2 01A-T1A1 01A-A2D2 01A-T1B1 01A-A2E2 01A-T1C1 01A-A2F2 01A-T1D1	CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
	80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D					
4B21	The path group ID in the argument of the Set Path Group ID command is equal to 0. Sense byte 9 contains the channel adapter address.	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing to the next step. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 	121 133 136 152 233 195 235 196 237 121	Status store basic card Channel adapter card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Status store basic card	01A-A1G2 01A-A2C2 01A-T1A1 01A-A2D2 01A-T1B1 01A-A2E2 01A-T1C1 01A-A2F2 01A-T1D1 01A-A1G2	CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
	80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D					

0 0 0 0 0 0 0 0 0 0 0

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
4B22	<p>The path group ID in the argument of the Set Path Group ID command does not match the path group ID received in a prior Set Path Group ID command over the same channel. Sense byte 9 contains the channel adapter address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p>	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002 IB001, 002, 003, WA013 CA 101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
			136	Bus shoe card (channel A)	01A-T1A1	
			152	Channel adapter card (channel B)	01A-A2D2	
			233	Bus shoe card (channel B)	01A-T1B1	
			195	Channel adapter card (channel C)	01A-A2E2	
			235	Bus shoe card (channel C)	01A-T1C1	
			196	Channel adapter card (channel D)	01A-A2F2	
237	Bus shoe card (channel D)	01A-T1D1				
			121	Status store basic card	01A-A1G2	
4B23	<p>The received path mode bit in the function-control byte does not match the path mode set in a prior Set Path Group ID command addressed to a channel interface with the same path group ID as the interface that issued the current command. Sense byte 9 contains the channel adapter address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p>	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002 IB001, 002, 003, WA013 CA 101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
			136	Bus shoe card (channel A)	01A-T1A1	
			152	Channel adapter card (channel B)	01A-A2D2	
			233	Bus shoe card (channel B)	01A-T1B1	
			195	Channel adapter card (channel C)	01A-A2E2	
			235	Bus shoe card (channel C)	01A-T1C1	
			196	Channel adapter card (channel D)	01A-A2F2	
237	Bus shoe card (channel D)	01A-T1D1				
			121	Status store basic card	01A-A1G2	
4B24	<p>The received path mode bit was on, indicating Multipath mode. Multipath mode is not supported by this machine. Sense byte 9 contains the channel adapter address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p>	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002 IB001, 002, 003, WA013 CA 101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
			136	Bus shoe card (channel A)	01A-T1A1	
			152	Channel adapter card (channel B)	01A-A2D2	
			233	Bus shoe card (channel B)	01A-T1B1	
			195	Channel adapter card (channel C)	01A-A2E2	
			235	Bus shoe card (channel C)	01A-T1C1	
			196	Channel adapter card (channel D)	01A-A2F2	
237	Bus shoe card (channel D)	01A-T1D1				
			121	Status store basic card	01A-A1G2	
4B40	This error should not occur.	Call your next level of support.				
4D70	<p>The received password for the Control Access command is 0. Sense byte 9 contains the channel adapter address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p>	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002 IB001, 002, 003, WA013 CA 101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
			136	Bus shoe card (channel A)	01A-T1A1	
			152	Channel adapter card (channel B)	01A-A2D2	
			233	Bus shoe card (channel B)	01A-T1B1	
			195	Channel adapter card (channel C)	01A-A2E2	
			235	Bus shoe card (channel C)	01A-T1C1	
			196	Channel adapter card (channel D)	01A-A2F2	
237	Bus shoe card (channel D)	01A-T1D1				
			121	Status store basic card	01A-A1G2	

FSC/ Error Code	Error Code Definition	Additional Actions / Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
4D71	An invalid function byte has been received for the Control Access command. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
			136	Bus shoe card (channel A)	01A-T1A1	
			152	Channel adapter card (channel B)	01A-A2D2	
			233	Bus shoe card (channel B)	01A-T1B1	
			195	Channel adapter card (channel C)	01A-A2E2	
			235	Bus shoe card (channel C)	01A-T1C1	
			196	Channel adapter card (channel D)	01A-A2F2	
237	Bus shoe card (channel D)	01A-T1D1				
121	Status store basic card	01A-A1G2				
4D72	The password received with the Control Access command is not identical to the password received during a prior Control Access command. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
			136	Bus shoe card (channel A)	01A-T1A1	
			152	Channel adapter card (channel B)	01A-A2D2	
			233	Bus shoe card (channel B)	01A-T1B1	
			195	Channel adapter card (channel C)	01A-A2E2	
			235	Bus shoe card (channel C)	01A-T1C1	
			196	Channel adapter card (channel D)	01A-A2F2	
237	Bus shoe card (channel D)	01A-T1D1				
121	Status store basic card	01A-A1G2				
4D73	A Control Access command attempted to establish a password, but the channel path that issued the command did not have assignment of the drive. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
			136	Bus shoe card (channel A)	01A-T1A1	
			152	Channel adapter card (channel B)	01A-A2D2	
			233	Bus shoe card (channel B)	01A-T1B1	
			195	Channel adapter card (channel C)	01A-A2E2	
			235	Bus shoe card (channel C)	01A-T1C1	
			196	Channel adapter card (channel D)	01A-A2F2	
237	Bus shoe card (channel D)	01A-T1D1				
121	Status store basic card	01A-A1G2				
4D74	A Control Access command attempted the temporary unassignment function, but a prior command had not established a password. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
			136	Bus shoe card (channel A)	01A-T1A1	
			152	Channel adapter card (channel B)	01A-A2D2	
			233	Bus shoe card (channel B)	01A-T1B1	
			195	Channel adapter card (channel C)	01A-A2E2	
			235	Bus shoe card (channel C)	01A-T1C1	
			196	Channel adapter card (channel D)	01A-A2F2	
237	Bus shoe card (channel D)	01A-T1D1				
121	Status store basic card	01A-A1G2				

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
4D75	<p>A Control Access command attempted the generalized unassignment function, but the channel path that issued the command did not have assignment of the drive. Sense byte 9 contains the channel adapter address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p>	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
			136	Bus slice card (channel A)	01A-T1A1	
4D76	<p>A Control Access command was performed successfully in the control unit that received the command but not in the remote control unit. This error code can be caused by a programming problem.</p>	<p>Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	152	Channel adapter card (channel B)	01A-A2D2	SS001, 002 SM001, 002
			233	Bus slice card (channel B)	01A-T1B1	
4D7B	Microcode detected error.	Refer to SPROC 1 and perform procedure B. After completing procedure B, call your next level of support.				
4D7C	Microcode detected error.	Refer to SPROC 1 and perform procedure B. After completing procedure B, call your next level of support.				
4D7D	Microcode detected error.	Refer to SPROC 1 and perform procedure B. After completing procedure B, call your next level of support.				
4D80	<p>An invalid order or flag byte has been received for the Perform Subsystem Function command. Sense byte 9 contains the channel adapter address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p>	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
			136	Bus slice card (channel A)	01A-T1A1	
4D81	<p>A perform subsystem function command was executed successfully in the receiving control unit, but unsuccessfully in the remote control unit.</p>	<p>1. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit."</p> <p>The cables associated with this failure are in cable group 52. See EAD 1 for "Cable Group Table."</p> <p>2. Run diagnostic section EE90 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3.</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	152	Channel adapter card (channel B)	01A-A2D2	SM001, 002
			233	Bus slice card (channel B)	01A-T1B1	
			195	Channel adapter card (channel C)	01A-A2E2	SS001, 002
			235	Bus slice card (channel C)	01A-T1C1	
			196	Channel adapter card (channel D)	01A-A2F2	SS001, 002
			237	Bus slice card (channel D)	01A-T1D1	
			121	Status store basic card	01A-A1G2	SS001, 002
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	
			121	Status store basic card	01A-A1G2	SS001, 002

0 0 0 0 0 0 0 0 0 0 0

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
4D84	A Perform Subsystem Function command has been received to pin the drive to this CU, but the drive is already pinned.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware".				
4D85	A Perform Subsystem Function command has been received to pin a drive to the other CU, but the drive is already pinned to this CU or the other CU is unavailable or non-existent	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware".				
4D86	A Perform Subsystem Function command has been received to unpin a device which is not pinned.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware".				
4D8A	A Perform Subsystem Function command has been received with an Access Control, pin, unpin or reset device fence and the device is assigned elsewhere.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware".				
4D8B	A Perform Subsystem Function command has been received with an Access Control, order, but the device is not ready.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware".				
4D8C	Addr A Perform Subsystem Function command has been received with an Access Control order, but the device is not online.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware".				
4E80	An Invalid Order or Flag byte received for the Perform Library Function command.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware".				
4E81	A Perform Library Function command has been received, but on a library system.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware".				
4E8A	Addr A Perform Library Function command has been received with a Mount or Demount order and the drive is not online.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware".				
4E8B	A Perform Library Function command has been received with a Mount or Demount order, but the drive is assigned elsewhere	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware".				

0 0 0 0 0 0 0 0 0 0 0

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
4D75	<p>A Control Access command attempted the generalized unassignment function, but the channel path that issued the command did not have assignment of the drive. Sense byte 9 contains the channel adapter address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p>	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002 IB001, 002, 003, WA013 CA 101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 SS001, 002
			136	Bus shoe card (channel A)	01A-T1A1	
			152	Channel adapter card (channel B)	01A-A2D2	
			233	Bus shoe card (channel B)	01A-T1B1	
			195	Channel adapter card (channel C)	01A-A2E2	
			235	Bus shoe card (channel C)	01A-T1C1	
196	Channel adapter card (channel D)	01A-A2F2				
237	Bus shoe card (channel D)	01A-T1D1				
			121	Status store basic card	01A-A1G2	
4D76	<p>A Control Access command was performed successfully in the control unit that received the command but not in the remote control unit.</p>	<p>This error code can be caused by a programming problem.</p> <p>Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	121	Status store basic card	01A-A1G2	SS001, 002 SM001, 002
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1F2	
4D7B	<p>A control unit function that is not valid has been specified when the function control byte indicates that a control unit function is to be allowed or inhibited.</p>	<p>Call your next level of support.</p>				
4D7C	<p>A drive function that is not valid has been specified when the function control byte indicates that a drive function is to be allowed or inhibited.</p>	<p>Call your next level of support.</p>				
4D7D	<p>An implementation byte that is not valid has been received for the Control Access command.</p>	<p>Call your next level of support.</p>				

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
50nn	The channel adapter detected an error and interrupted the control unit with an 'nn' reason code. The actual FRU is dependent on the value of 'nn'.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 'None' under FRUs in the Error Code Definition column indicates that the next level of support should be called.	133 152 195 196 121 115 197	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Maintenance adapter card Channel address switch	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A1E2 See LOC 1	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002 MA001, 001, 003
nn	Error Description FRUs					
10	Initialization error 133, 152, 195, 196					
20	Checksum error 133, 152, 195, 196 - hardware failure					
21	Microprocessor error 133, 152, 195, 196 - hardware failure					
22	XR error 133, 152, 195, 196 - hardware failure					
23	Status store error 133, 152, 195, 196, 121 - hardware failure					
27	Timeout on status order error 133, 152, 195, 196, 121					
28	Timeout on status order error 133, 152, 195, 196, 121					
29	Timeout on channel adapter to control unit interrupt 133, 152, 195, 196, 121					
33	Unexpected level 3 interrupt 133, 152, 195, 196					
34	Unexpected level 4 interrupt 133, 152, 195, 196					
35	Unexpected level 5 interrupt 133, 152, 195, 196					
36	Unexpected level 6 interrupt 133, 152, 195, 196					
40	Timeout waiting for 'Request in' 133, 152, 195, 196					
41	Channel chained illegally 133, 152, 195, 196					
43	Channel stacked '00' status Host channel					
50	This error should not occur None					
51	This error should not occur None					
52	This error should not occur None					
60	'disc in' will not reset 115, 133, 152, 195, 196					
61	This error should not occur None					
70	This error should not occur None					
71	This error should not occur None					
72	This error should not occur None					
81	Timeout waiting for fall of holdout for a '70' x short busy 133, 152, 195, 196					
82	Timeout waiting for fall of service 'command out' prior to 'status in' 133, 152, 195, 196					
83	Timeout waiting for 'service out' 'command out' interface disconnect or reset response to 'status in' 133, 152, 195, 196					
84	Timeout waiting for fall of 'command out' and 'service out' before starting buffer data transfer 133, 152, 195, 196					
	(continued on next page)					



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
50nn	The channel adapter detected an error and interrupted the control unit with an 'nn' reason code. The actual FRU is dependent on the value of 'nn'.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 'None' under FRUs in the Error Code Definition column indicates that the next level of support should be called.	133 152 195 196 121 115 197 117 134 135	* EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7. Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Maintenance adapter card Channel address switch Microprocessor card Control store card Control store array card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A1E2 See LOC 1 01A-A1D2 01A-A1C2 01A-A1B2	A001, 002 JA101, 102 CA201, 202 CA301, 302 SS001, 002 MA001, 001, 003 MP001, 002, 003 CS001, 002 MS001, 002
nn	Error Description	FRUs				
10	Initialization error	133, 152, 195, 196				
20	Checksum error	133, 152, 195, 196				
	- hardware failure					
21	Microprocessor error	133, 152, 195, 196				
	- hardware failure					
22	XR error	133, 152, 195, 196				
	- hardware failure					
23	Status store error	133, 152, 195, 196, 121				
	- hardware failure					
27	Timeout on status order error	133, 152, 195, 196, 121				
28	Timeout on status order error	133, 152, 195, 196, 121				
29	Timeout on channel adapter to control unit interrupt	133, 152, 195, 196, 121				
33	Unexpected level 3 interrupt	133, 152, 195, 196				
34	Unexpected level 4 interrupt	133, 152, 195, 196				
35	Unexpected level 5 interrupt	133, 152, 195, 196				
36	Unexpected level 6 interrupt	133, 152, 195, 196				
40	Timeout waiting for 'request in'	133, 152, 195, 196				
41	Channel chained illegally	133, 152, 195, 196				
43	Channel stacked '00' status	Host channel				
50	This error should not occur.	None				
51	This error should not occur.	None				
52	This error should not occur.	None				
60	'disc in' will not reset	115, 117, 134, 135, 133, 152, 195, 196				
61	This error should not occur.	None				
70	This error should not occur.	None				
71	This error should not occur.	None				
72	This error should not occur.	None				
81	Timeout waiting for fall of holdout for a '70' x short busy	133, 152, 195, 196				
82	Timeout waiting for fall of service 'command out' prior to 'status in'	133, 152, 195, 196				
83	Timeout waiting for 'service out' 'command out' interface disconnect or reset response to 'status in'	133, 152, 195, 196				
84	Timeout waiting for fall of 'command out' and 'service out' before starting buffer data transfer	133, 152, 195, 196				

(continued on next page)

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Fault Symptom Index (FSI) (Continued)

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
50nn	<p>The channel adapter detected an error and interrupted the control unit with an 'nn' reason code. The actual FRU is dependent on the value of 'nn'.</p> <p>nn Error Description FRUs</p> <p>85 Timeout waiting for fall of 'address out' during initial selection sequence 133, 152, 195, 196</p> <p>86 Timeout waiting for rise of 'command out' during initial selection sequence 133, 152, 195, 196</p> <p>87 Timeout waiting for rise of 'command out' during control unit initiated sequence 133, 152, 195, 196</p> <p>88 Timeout waiting for fall of 'command out' 'service out' and 'suppress out' before starting a get data transfer 133, 152, 195, 196</p> <p>89 Timeout waiting for 'command out' or 'service out' in response to 'service in' during a get data transfer 133, 152, 195, 196</p> <p>8A Timeout waiting for fall of 'command out' 'service out' and 'suppress out' before starting a put data transfer 133, 152, 195, 196</p> <p>8B Timeout waiting for 'command out' or 'service out' in response to 'service in' during a put data transfer 133, 152, 195, 196</p> <p>8C Timeout waiting for fall of 'hold out' during interface termination 133, 152, 195, 196</p> <p>8D Timeout waiting for chained reselection or chain break 133, 152, 195, 196</p> <p>D0 This error should not occur None</p> <p>D1 This error should not occur None</p> <p>D2 This error should not occur None</p> <p>E0 Bad channel adapter address switch parity 197, 133, 152, 195, 196</p> <p>F1 Status store error 133, 152, 195, 196, 121</p> <p>F2 Status store error 133, 152, 195, 196, 121</p> <p>F3 Status store error 133, 152, 195, 196, 121</p> <p>F4 Status store error 133, 152, 195, 196, 121</p> <p>F5 Status store error 133, 152, 195, 196, 121</p> <p>F6 Status store error 133, 152, 195, 196, 121</p> <p>F7 Status store error 133, 152, 195, 196, 121</p>					

FSC/ Error Code	Error Code Definition	Additional Actions/ Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
5100	The microcode detected a parity error during the command that was sent. The appropriate channel adapter is forced offline. Sense byte 9 contains the channel adapter address. 80 - channel adapter A 40 - channel adapter B 20 - channel adapter C 10 - channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
52nn	The channel command did not match. The nn of the error code is the System/370 channel command. Sense byte 9 contains the channel adapter number and the five-bit encoded device command translated from the channel command. Bits 0-4 = the 5-bit encoded device command. Bits 5-7 = the channel adapter number. 0 = Channel adapter A 1 = Channel adapter B 2 = Channel adapter C 3 = Channel adapter D	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. See OPER 1 for "Channel Command Descriptions." See SDISK 1 for "Channel RAM Display" to find the five-bit encoded device commands. 3. Run the Channel Adapter Function Test for failure isolation. See DIAG 1 for "Channel Adapter Function Test." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	133 152 195 196 117 121 122 197	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel address switch for channel A, B, C, or D	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1D2 01A-A1G2 01A-A1F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 SS001, 002 SM001, 002
5310	The status store did not respond to a Read Message Buffer order.	1. Run Channel Adapter Function Test for failure isolation. See DIAG 1 for "Channel Adapter Function Test." 2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122 133 152 195 196	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
5311	The status store did not perform a Read Message Buffer order.	1. Run Channel Adapter Function Test for failure isolation. See DIAG 1 for "Channel Adapter Function Test." 2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122 133 152 195 196	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
5320	The status store did not respond to a Write Message Buffer order. Sense byte 9 contains the channel card address.	1. Run Channel Adapter Function Test for failure isolation. See DIAG 1 for "Channel Adapter Function Test." 2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
5100	The microcode detected a parity error during the command that was sent. The appropriate channel adapter is forced offline. Sense byte 9 contains the channel adapter address. 80 = channel adapter A 40 = channel adapter B 20 = channel adapter C 10 = channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
52nn	The channel command did not match. The nn of the error code = the System/370 channel command. Sense byte 9 contains the channel adapter number and the five-bit encoded device command translated from the channel command. Bits 0-4 = the 5-bit encoded device command. Bits 5-7 = the channel adapter number. 0 = Channel adapter A 1 = Channel adapter B 2 = Channel adapter C 3 = Channel adapter D	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. See OPER 1 for "Channel Command Descriptions." See SDISK 1 for "Channel RAM Display" to find the five-bit encoded device commands. 3. Run the Channel Adapter Function Test for failure isolation. See DIAG 1 for "Channel Adapter Function Test."	133 152 195 196 117 121 122 197	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel address switch for channel A, B, C, or D	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1D2 01A-A1G2 01A-A1F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 SS001, 002 SM001, 002
5310	The status store did not respond to a Read Message Buffer order.	1. Run Channel Adapter Function Test for failure isolation. See DIAG 1 for "Channel Adapter Function Test." 2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."	121 122 133 152 195 196	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
5320	The status store did not respond to a Write Message Buffer order. Sense byte 9 contains the channel card address.	1. Run Channel Adapter Function Test for failure isolation. See DIAG 1 for "Channel Adapter Function Test." 2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
5322	The retry of a failed message also failed.	TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
5323	A status store error occurred on a 'rec msg' order.	Note: The FRUs are located in the control unit that did not report the error. 1. Check the seating of the channel-type switch for the appropriate channel. See PANEL 1 for "Setting Address Switches." 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this error code are in cable group 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
5324	A status store order initiated in this interrupt level completed in a higher level.	Note: Replace the FRUs in both control units. 1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter". 2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." The cables associated with this error code are in cable group 30 and 52. See FSI 1 for "Cable Group Table."	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
5332	A status store error on an 'ack msg' occurred, or the remote control unit disconnected status store.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this error code are in cable group 30. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 188 - 01A-A1ZKL 158 - 01A-A1XKL 189 - 01A-A1WFG 159 - 01A-A1YKL 190 - 01A-A1XFG 187 - 01A-A1ZFG 191 - 01A-A1YFG	133 152 195 196 121 122 120 114	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Buffer adapter card Buffer control card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A1F2 01A-A1K2 01A-A1L2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002 SM001, 002 BA001, 002, 003 BC001, 002, 003
5333	The channel adapter returned an invalid byte count. Sense byte 9 contains the invalid count.	Use the EAD for Status Store/Channel Adapter failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA101, 102 CA101, 102
5334	The channel adapter returned an invalid byte count. Sense byte 9 contains the invalid count.	Use the EAD for Status Store/Channel Adapter failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA101, 102 CA101, 102

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
5341	An Access Read Message Buffer order failed between the control units.	1. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." The cables associated with this failure are in cable group 52. See EAD 1 for "Cable Group Table." 2. Run diagnostic section EE90 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3. TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	122	Status store communication card	01A-A1F2	SM001, 002
			121	(This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Status store basic card	01A-A1G2	SS001, 002
5342	A status store error occurred on an Acknowledge Message order, or the remote control unit just disconnected status store.	1. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." The cables associated with this failure are in cable group 52. See EAD 1 for "Cable Group Table." 2. Run diagnostic section EE90 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3. TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	122	Status store communication card	01A-A1F2	SM001, 002
			121	(This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Status store basic card	01A-A1G2	SS001, 002
5344	The microcode expected a repeat of the last message because a checksum failure occurred the first time it was sent.	Replace the FRUs in both control units. TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121	Status store basic card	01A-A1G2	SS001, 002
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002
5345	The retry of a failed message also failed.	Replace the FRUs in both control units. TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121	Status store basic card	01A-A1G2	SS001, 002
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002
5346	Microcode detected error.	Refer to SPROC 1 and perform procedure B. After completing procedure B, call your next level of support.				
5347	A status store order initiated in this interrupt level completed in a higher level. It did not complete successfully.	Note: Replace the FRUs in both control units. 1. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." The cables associated with this failure are in cable group 52. See EAD 1 for "Cable Group Table." 2. Run diagnostic section EE90 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3.	122	Status store communication card	01A-A1F2	SM001, 002
			121	(This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Status store basic card	01A-A1G2	SS001, 002
5350	The local microprocessor stopped and then started running again.	TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE	117	Microprocessor card	01A-A1D2	MP001, 002, 003
			115	Maintenance adapter card	01A-A1E2	MA001, 002, 003
5356	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
5357	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
5360	Status store never responded to an order.	1. Check the cables in cable group 30. See FSI 1 for "Cable Group Table." See EAD 1 for "Cable and Board Interconnection Failures." 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG Note: Defective CU 0/1 switch could cause this error.	121	Status store basic card	01A-A1G2	SS001, 002
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002
			134	Control store card	01A-A1C2	CS001, 002
			118	Drive adapter card	01A-A1Q2	
			133	Channel adapter card (channel A)	01A-A2C2	SI001, 002
			152	Channel adapter card (channel B)	01A-A2D2	CA001, 002
			195	Channel adapter card (channel C)	01A-A2E2	CA101, 102
			196	Channel adapter card (channel D)	01A-A2F2	CA201, 202
			141	Control unit switch panel card	Control unit	CA301, 302

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
5362	Status store never responded to an order.	<p>1. Use the EAD for Status Store/Channel Adapter failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p> <p>2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit."</p> <p>The cables associated with this failure are in cable groups 30 and 52. See EAD 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	122 121	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Status store basic card	01A-A1F2 01A-A1G2	SM001, 002 SS001, 002
5380	The other control unit is unable to operate for some reason. For example, master is set in the other control unit, or the code is in an endless loop.	<p>1. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit."</p> <p>The cables associated with this failure are in cable group 52. See FSI 1 for "Cable Group Table."</p> <p>2. Run Channel Adapter Function Test for failure isolation. See DIAG 1 for diagnostic EE64 "Channel Adapter Function Test."</p> <p>3. Run diagnostic section EE90 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3. See EAD 1 for "Dual Control Unit."</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	122 121	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Status store basic card	01A-A1F2 01A-A1G2	SM001, 002 SS001, 002
5391	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
5392	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
53A0	Status store never responded to an order.	<p>This error can be caused by the microcode.</p> <p>1. Check the cables in cable group 30. See FSI 1 for "Cable Group Table." See EAD 1 for "Cable and Board Interconnection Failures."</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	122 121 134	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Status store basic card Control storage card	01A-A1F2 01A-A1G2 01A-A1C2	SM001, 002 SS001, 002 CS001, 002
53A1	Status store never responded to an order.	<p>1. Check the cables in cable group 30 and 52. See FSI 1 for "Cable Group Table." See EAD 1 for "Cable and Board Interconnection Failures."</p> <p>2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p>	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name • EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
5362	Status store never responded to an order.	1. Use the EAD for Status Store/Channel Adapter failure isolation. See EAD 1 for "Status Store/Channel Adapter." 2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." The cables associated with this failure are in cable group 30 and 52. See EAD 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1F2	SM001, 002
			121	Status store basic card	01A-A1G2	SS001, 002
5380	The other control unit is unable to operate for some reason. For example, master is set in the other control unit, or the code is in an endless loop.	1. Use the EAD for Dual Control Unit failure isolation. See EAD 1 for "Dual Control Unit." The cables associated with this failure are in cable group 52. See FSI 1 for "Cable Group Table." 2. Run Channel Adapter Function Test for failure isolation. See DIAG 1 for diagnostic EE64 "Channel Adapter Function Test." 3. Run diagnostic section EE90 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3. See EAD 1 for "Dual Control Unit." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1F2	SM001, 002
			121	Status store basic card	01A-A1G2	SS001, 002
5391	This error should not occur.	Call your next level of support.				
5392	This error should not occur.	Call your next level of support.				
53A0	Status store never responded to an order.	This error can be caused by the microcode. 1. Check the cables in cable group 30. See FSI 1 for "Cable Group Table." See EAD 1 for "Cable and Board Interconnection Failures." 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1F2	SM001, 002
			121 134	Status store basic card Control storage card	01A-A1G2 01A-A1C2	SS001, 002 CS001, 002
53A1	Status store never responded to an order.	1. Check the cables in cable group 30 and 52. See FSI 1 for "Cable Group Table." See EAD 1 for "Cable and Board Interconnection Failures." 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	121	Status store basic card	01A-A1G2	SS001, 002
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1F2	SM001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
53B0	Status store never responded to the Read Status Store RAM order.	<ol style="list-style-type: none"> Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." Check the cables in cable group 52. See FSI 1 for "Cable Group Table." Run Channel Adapter Function Test for failure isolation. See DIAG 1 for diagnostic EE64 "Channel Adapter Function Test." Run diagnostic section EE90 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3. 		FRUs are defined by the diagnostic failure ID that brought you here.		
53B1	Status store never responded to the Read Status Store RAM order.	<ol style="list-style-type: none"> Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." Check the cables in cable group 52. See FSI 1 for "Cable Group Table." See EAD 1 for "Cable and Board Interconnection Failures." Run Channel Adapter Function Test for failure isolation. See DIAG 1 for diagnostic EE64 "Channel Adapter Function Test." Run diagnostic section EE90 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3. <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	122 121 133 152 195 196	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Status store basic card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1F2 01A-A1G2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	SM001, 002 SS001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
53B2	Status store never responded to the Write Status Store RAM order.	<ol style="list-style-type: none"> Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." Check the cables in cable group 52. See FSI 1 for "Cable Group Table." See EAD 1 for "Cable and Board Interconnection Failures." Run Channel Adapter Function Test for failure isolation. See DIAG 1 for diagnostic EE64 "Channel Adapter Function Test." Run diagnostic section EE90 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3. <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	122 121 133 152 195 196	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Status store basic card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1F2 01A-A1G2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	SM001, 002 SS001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
53B3	Used by the support diagnostics to define added actions.	<ol style="list-style-type: none"> Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." Check the cables in cable group 30. See FSI 1 for "Cable Group Table." 	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
53B5	Status store did not respond to a Read or a Write RAM page four order.	<ol style="list-style-type: none"> Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." Check the cables in cable group 52. See FSI 1 for "Cable Group Table." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
53B6	The microcode detected a channel adapter error that cannot be reset.	<ol style="list-style-type: none"> Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." Check the cables in cable group 52. See FSI 1 for "Cable Group Table." 	122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002
			121	Status store basic card	01A-A1G2	SS001, 002
53B7	A module was started with an invalid order.	<p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p> <p>Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p> <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	121	Status store basic card	01A-A1G2	SS001, 002
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002
53B8	Status store never responded to an order.	<p>Note: Replace the FRUs in both control units.</p> <ol style="list-style-type: none"> Use the EAD for Status Store/Channel Adapter failure isolation. See EAD 1 for "Status Store/Channel Adapter." Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." <p>The cables associated with this failure are in cable groups 30 and 52. See FSI 1 for "Cable Group Table."</p>	121	Status store basic card	01A-A1G2	SS001, 002
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002
53C0	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
53C1	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
54nn	<p>The channel adapter returned an invalid response. The nn is the channel adapter interrupt code. Sense byte 9 contains the channel address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<ol style="list-style-type: none"> Check the cables in cable group 30. See FSI 1 for "Cable Group Table." See EAD 1 for "Cable and Board Interconnection Failures." Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002
			152	Channel adapter card (channel B)	01A-A2D2	CA101, 102
5580	<p>An internal MTI error occurred in the channel adapter. Sense byte 9 contains the channel address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<p>Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."</p>	195	Channel adapter card (channel C)	01A-A2E2	CA201, 202
			196	Channel adapter card (channel D)	01A-A2F2	CA301, 302
55nn	<p>The channel adapter detected an error. The nn is the value from the channel error register (CER). If this is a channel adapter error, the microcode will force the appropriate channel adapter offline. If this is not detected as a channel adapter error, the microcode will force a check 1 error. Sense byte 9 contains the channel address.</p> <p>80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D</p>	<ol style="list-style-type: none"> To determine the failing path, see "Error Path Isolation" on START 400. Use the EAD for Status Store/Channel Adapter failure isolation. See EAD 1 for "Status Store/Channel Adapter." Check the cables in cable group 30. See FSI 1 for "Cable Group Table." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	117	Microprocessor card	01A-A1D2	MP001, 002, 003
			121	Status store basic card	01A-A1G2	SS001, 002
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002
			197	Channel address switch for channel A, B, C, or D	See LOC 1 01A-A1K2	BA001, 002, 003

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
53B6	The microcode detected a channel adapter error that cannot be reset.	1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 2. Check the cables in cable group 52. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1F2	SM001, 002
			121	Status store basic card	01A-A1G2	SS001, 002
53B7	A module was started with an invalid order.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121	Status store basic card	01A-A1G2	SS001, 002
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1F2	SM001, 002
53B8	Status store never responded to an order.	Note: Replace the FRUs in both control units. 1. Use the EAD for Status Store/Channel Adapter failure isolation. See EAD 1 for "Status Store/Channel Adapter." 2. Use the EAD for Dual Control Unit failure isolation. See EAD 1 for "Dual Control Unit." The cables associated with this failure are in cable groups 30 and 52. See FSI 1 for "Cable Group Table."	121	Status store basic card	01A-A1G2	SS001, 002
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1F2	SM001, 002
53C0	This error should not occur.	Call your next level of support.				
53C1	This error should not occur.	Call your next level of support.				
54nn	The channel adapter returned an invalid response. The nn is the channel adapter interrupt code. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Check the cables in cable group 30. See FSI 1 for "Cable Group Table." See EAD 1 for "Cable and Board Interconnection Failures." 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002
			152	Channel adapter card (channel B)	01A-A2D2	CA101, 102
5580	An internal MTI error occurred in the channel adapter. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	195	Channel adapter card (channel C)	01A-A2E2	CA201, 202
			196	Channel adapter card (channel D)	01A-A2F2	CA301, 302
55nn	The channel adapter detected an error. The nn is the value from the channel error register (CER). If this is a channel adapter error, the microcode will force the appropriate channel adapter offline. If this is not detected as a channel adapter error, the microcode will force a check 1 error. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. To determine the failing path, see "Error Path Isolation" on START 400. 2. Use the EAD for Status Store/Channel Adapter failure isolation. See EAD 1 for "Status Store/Channel Adapter." 3. Check the cables in cable group 30. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	117	Microprocessor card	01A-A1D2	MP001, 002, 003
			121	Status store basic card	01A-A1G2	SS001, 002
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1F2	SM001, 002
			197	Channel address switch for channel A, B, C, or D		
			120	Buffer adapter card	See LOC 1 01A-A1K2	BA001, 002, 003

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
5602	An unexplained level 6 interrupt occurred.	<ol style="list-style-type: none"> To determine the failing path, see "Error Path Isolation" on START 400. Use the EAD for Status Store/Channel Adapter failure isolation. See EAD 1 for "Status Store/Channel Adapter." Check the cables in cable group 30. See FSI 1 for "Cable Group Table." 	133 152 195 196 117 121 122 197	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel address switch	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1D2 01A-A1G2 01A-A1F2 See LOC 1	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 SS001, 002 SM001, 002
5605	The channel adapter detected a parity error on a channel command. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. This error can be caused by a channel or channel cable problem. See SENSE 1 for "Format 19, 20, and 21 Sense Bytes 0-2 Description" to find the failing channel adapter. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	133 152 195 196 117 121 122 197	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel address switch for channel A, B, C, or D	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1D2 01A-A1G2 01A-A1F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 SS001, 002 SM001, 002
5606	The local control unit cannot take control of status store.	<ol style="list-style-type: none"> Check the cables in cable group 52. See FSI 1 for "Cable Group Table." See EAD 1 for "Cable and Board Interconnection Failures." Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	122 121	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Status store basic card	01A-A1F2 01A-A1G2	SM001, 002 SS001, 002
5607	This error should not occur.	Call your next level of support.				
57nn	A channel adapter returned an invalid response. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
5820	This error should not occur.	Call your next level of support.				
5900	The local control unit detected a status store communication error, a microprocessor error, or a remote control unit status store error. Sense byte 9 contains the value from the channel error register (CER). See DF 1 for "Channel Error Register (CER)."	<p>The FRUs called in this error code pertain to both control units.</p> <ol style="list-style-type: none"> Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The FRUs called in this error code pertain to both control units. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." Check the cables in cable group 30 and 52. See FSI 1 for "Cable Group Table." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	122 121 134	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Status store basic card Control store card	01A-A1F2 01A-A1G2 01A-A1C2	SM001, 002 SS001, 002 CS001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
5602	An unexplained level 6 interrupt occurred.	<ol style="list-style-type: none"> To determine the failing path, see "Error Path Isolation" on START 400. Use the EAD for Status Store/Channel Adapter failure isolation. See EAD 1 for "Status Store/Channel Adapter." Check the cables in cable group 30. See FSI 1 for "Cable Group Table." 	133 152 195 196 117 121 122	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel address switch	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1D2 01A-A1G2 01A-A1F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 SS001, 002 SM001, 002
5605	The channel adapter detected a parity error on a channel command. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. This error can be caused by a channel or channel cable problem. See SENSE 1 for "Format 19, 20, and 21 Sense Bytes 0-2 Description" to find the failing channel adapter. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	197 133 152 195 196 117 121 122 197	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel address switch for channel A, B, C, or D	See LOC 1 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1D2 01A-A1G2 01A-A1F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 SS001, 002 SM001, 002
5606	The local control unit cannot take control of status store.	<ol style="list-style-type: none"> Check the cables in cable group 52. See FSI 1 for "Cable Group Table." See EAD 1 for "Cable and Board Interconnection Failures." Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	122 121	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Status store basic card	01A-A1F2 01A-A1G2	SM001, 002 SS001, 002
57nn	A channel adapter returned an invalid response. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
5820	Microcode detected error.	Refer to SPROC 1 and perform procedure D. Set trace options as follows: CHANNEL, DRIVE, MODULE, LVL7.				
5900	The local control unit detected a status store communication error, a microprocessor error, or a remote control unit status store error. Sense byte 9 contains the value from the channel error register (CER). See DF 1 for "Channel Error Register (CER)."	<ol style="list-style-type: none"> The FRUs called in this error code pertain to both control units. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The FRUs called in this error code pertain to both control units. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." Check the cables in cable groups 30 and 52. See FSI 1 for "Cable Group Table." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p> <p>Note: Defective CU 0/1 switch could cause this error.</p>	122 121 134 118 133 152 195 196 141	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Status store basic card Control store card Drive adapter card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Control unit switch panel card	01A-A1F2 01A-A1G2 01A-A1C2 01A-A1Q2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 Control unit	SM001, 002 SS001, 002 CS001, 002 SI001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
5904	The channel adapter detected an error, but the microcode cannot reset the error. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121	Status store basic card	01A-A1G2	SS001, 002
			133	Channel adapter card (channel A)	01A-A2C2	CA001, 002
5906	The local control unit detected a parity error from the remote control unit. If the microcode can reset the status store error indication, a control unit error is indicated, otherwise, a check one error is set. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 2. Check the cables in cable group 52. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	152	Channel adapter card (channel B)	01A-A2D2	CA101, 102
			195	Channel adapter card (channel C)	01A-A2E2	CA201, 202
5907	The local control unit detected a channel adapter error. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Check the seating of the channel-type switch for the appropriate channel. See PANEL 1 for "Setting Address Switches." 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 3. Check the cables in cable group 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table."	196	Channel adapter card (channel D)	01A-A2F2	CA301, 302
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002
5908	The control unit microcode detected a channel adapter error that cannot be reset. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	121	Status store basic card	01A-A1G2	SS001, 002
			133	Channel adapter card (channel A)	01A-A2C2	CA001, 002
			152	Channel adapter card (channel B)	01A-A2D2	CA101, 102
			195	Channel adapter card (channel C)	01A-A2E2	CA201, 202
			196	Channel adapter card (channel D)	01A-A2F2	CA301, 302
			121	Status store basic card	01A-A1G2	SS001, 002

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FSC/ Error Code	Error Code Definition	Additional Actions/ Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
5901	The status store detected a channel adapter parity error, but the status store could not be reset. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. To determine the failing path, see "Error Path Isolation" on START 400. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 3. Check the cables in cable group 30 and 52. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122 133 152 195 196	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
5904	The channel adapter detected an error, but the microcode cannot reset the error. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 133 152 195 196 122	Status store basic card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1G2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1F2	SS001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302 SM001, 002
5905	Status store detected a parity error from the channel adapter when reading the channel adapter RAM. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. To determine the failing path, see "Error Path Isolation" on START 400. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 3. Check the cables in cable group 30 and 52. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	133 152 195 196 117 121 122 197	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel address switch for channel A, B, C, or D	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1D2 01A-A1G2 01A-A1F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 SS001, 002 SM001, 002
5906	The local control unit detected a parity error from the remote control unit. If the microcode can reset the status store error indication, a control unit error is indicated, otherwise, a check one error is set. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 2. Check the cables in cable group 52. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	122 121	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Status store basic card	01A-A1F2 01A-A1G2	SM001, 002 SS001, 002
5907	The local control unit detected a channel adapter error. Sense byte 9 contains the channel address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Check the seating of the channel-type switch for the appropriate channel. See PANEL 1 for "Setting Address Switches." 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 3. Check the cables in cable group 23A, 23B, 23C, and 23D. See FSI 1 for "Cable Group Table."	121 122 133 152 195 196	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
5908	The control unit microcode detected a channel adapter error that cannot be reset. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196 121	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
590A	The channel adapter detected an error and has been taken offline. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
590B	The status store and channel detected an error. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196 121 122	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A1F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002 SM001, 002
590C	This error should not occur.	Call your next level of support.				
5A03	The remote control unit raised 'collision detect' to force a check 1 condition in the local control unit.	1. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." 2. Check the cables in cable group 52. See FSI 1 for "Cable Group Table." 3. Run diagnostic section EE90 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3. TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	122 121	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Status store basic card	01A-A1F2 01A-A1G2	SM001, 002 SS001, 002
5A04	A 'collision detect' was sensed as this control unit was coming up. Status store is not operational and the other control unit has all the drives.	1. Run diagnostic section EE90 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3. 2. Use Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	122 121 134	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Status store basic card Control store card	01A-A1F2 01A-A1G2 01A-A1C2	SM001, 002 SS001, 002 CS001, 002
5A05	The local control unit failed to connect the status store interconnection to the remote control unit.	1. Run diagnostic section EE90 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3. 2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
5A06	This error should not occur.	Call your next level of support.				
5B00	The channel adapter in the local control unit is broken. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 2. Check the cables in cable group 30. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	133 152 195 196 117 121 122 197	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel address switch for channel A, B, C, or D	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1D2 01A-A1G2 01A-A1F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 SS001, 002 SM001, 002



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
590A	The channel adapter detected an error and has been taken offline. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002
			152	Channel adapter card (channel B)	01A-A2D2	CA101, 102
			195	Channel adapter card (channel C)	01A-A2E2	CA201, 202
			196	Channel adapter card (channel D)	01A-A2F2	CA301, 302
590B	The status store and channel detected and error. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002
			152	Channel adapter card (channel B)	01A-A2D2	CA101, 102
			195	Channel adapter card (channel C)	01A-A2E2	CA201, 202
			196	Channel adapter card (channel D)	01A-A2F2	CA301, 302
5A03	The remote control unit raised 'collision detect' to force a check 1 condition in the local control unit.	1. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." 2. Check the cables in cable group 52. See FSI 1 for "Cable Group Table." 3. Run diagnostic section EE90 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3.	122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002
			121	Status store basic card	01A-A1G2	SS001, 002
			TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG			
5A04	A 'collision detect' was sensed as this control unit was coming up. Status store is not operational and the other control unit has all the drives.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Run diagnostic section EE90 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3. 3. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002
			121	Status store basic card	01A-A1G2	SS001, 002
			134	Control store card	01A-A1C2	CS001, 002
			141	Control unit switch panel card	Control Unit	YF010
5A05	The local control unit failed to connect the status store interconnection to the remote control unit.	1. Run diagnostic section EE90 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3. 2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121	Status store basic card	01A-A1G2	SS001, 002
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002
5A06	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
5B00	The channel adapter in the local control unit is broken. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 2. Check the cables in cable group 30. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002
			152	Channel adapter card (channel B)	01A-A2D2	CA101, 102
			195	Channel adapter card (channel C)	01A-A2E2	CA201, 202
			196	Channel adapter card (channel D)	01A-A2F2	CA301, 302
			117	Microprocessor card	01A-A1D2	MP001, 002, 003
			121	Status store basic card	01A-A1G2	SS001, 002
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002
			197	Channel address switch for channel A, B, C, or D		

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name • EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
5B50	A timeout error has caused the channel adapter to go offline. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
5BB0	The buffer switch was made free, because of no activity on the channel path. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
5BB1	The buffer switch was made free, because of no activity on the channel path. The channel adapter has been disabled ('disconnect in'). Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
5BB2	The check in byte cannot be read successfully. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196 121	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002
5BB3	The channel adapter has not responded recently and a channel hang is probably the problem. A disconnect sequence is initiated and the channel adapter is taken offline. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196 121	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002
5BB4	The check in byte cannot be written successfully. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196 121	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002
5BB5	The channel adapter has not responded recently and is assumed to be bad. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196 121	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
5BBF	A buffer segment was deallocated for a device that is associated with this pass. This prevents a buffer segment from being allocated to a defective or stopped channel interface. Sense byte 9 contains the address of the failing channel. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	133 137 136 152 234 233 195 236 235 196 238 237	Channel adapter card (channel A) Tag shoe card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Tag shoe card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Tag shoe card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Tag shoe card (channel D) Bus shoe card (channel D)	01A-A2C2 01A-T1A3 01A-T1A1 01A-A2D2 01A-T1B3 01A-T1B1 01A-A2E2 01A-T1C3 01A-T1C1 01A-A2F2 01A-T1D3 01A-T1D1	CA001, 002 IT001, 002, 003 IB001, 002, 003 CA101, 002 IT001, 002, 003 IB001, 002, 003 CA201, 002 IT001, 002, 003 IB001, 002, 003 CA301, 002 IT001, 002, 003 IB001, 002, 003
5CB1	The channel adapter never responded to a channel adapter read type order. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122 133 152 195 196	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
5CB2	The channel adapter never responded to a read channel adapter order.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	121 122 133 152 195 196	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
5CB3	The channel adapter never processed an order successfully, and a Disconnect In order is then issued to the channel adapter. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	122 133 152 195 196 121	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card	01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2	SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002
5CB5	Status store did not respond to a previously sent order.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 152 195 196 121	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002
5CC1	The channel adapter never responded to a channel adapter write type order. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	1. To determine the failing path, see "Error Path Isolation" on START 400. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122 133 152 195 196	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
5F00	The channel adapter did not respond successfully to a Set Diagnostic Mode order. The microcode retried the order 256 times before setting the error. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
60B1	A drive is assigned to both control units in status store.	1. See SDISK 1 for "Device Assignments" to determine the channel adapter assignment for the drive. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	121	Status store basic card	01A-A1G2	SS001, 002
60E1	This error should not occur.	Call your next level of support.				
6451	This error should not occur.	Call your next level of support.				
6471	This error should not occur.	Call your next level of support.				
64D1	The new record mode and direction do not match the previous record.		133 152 195 196 121	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002
64D2	This error should not occur.	Call your next level of support.				
6551	This error should not occur.	Call your next level of support.				
6552	This error should not occur.	Call your next level of support.				
6661	This error should not occur.	Call your next level of support.				
6666	This error should not occur.	Call your next level of support.				
6810	This error should not occur.	Call your next level of support.				
6890	This error should not occur.	Call your next level of support.				
68F0	This error should not occur.	Call your next level of support.				
6E00	This error should not occur.	Call your next level of support.				
7041	A pattern sequence table (PST) error occurred during a read back check. The read data flow detected a tape mark, but a tape mark was not expected. Sense byte 9 contains the value from the PST.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	062* 064 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 DF001, 002 SI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001,002 BM100 BM200



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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
5F00	The channel adapter did not respond successfully to a Set Diagnostic Mode order. The microcode retried the order 256 times before setting the error. Sense byte 9 contains the channel adapter address. 80 = Channel adapter A 40 = Channel adapter B 20 = Channel adapter C 10 = Channel adapter D	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." The cables associated with this failure are in cable group 30. See FSI 1 for "Cable Group Table."	133 152 195 196	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	CA001, 002 CA101, 102 CA201, 202 CA301, 302
60B1	A drive is assigned to both control units in status store.	1. See SDISK 1 for "Device Assignments" to determine the channel adapter assignment for the drive. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	121	Status store basic card	01A-A1G2	SS001, 002
60E1	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
6111	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
6112	Microcode detected error.	Refer to SPROC 1 and perform procedure D. Set trace options as follows: CHANNEL, DRIVE, MODULE.				
6211	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
6212	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
6213	Microcode detected error.	Refer to SPROC 1 and perform procedure D. Set trace options as follows: CHANNEL, DRIVE, MODULE.				
6215	A buffer error occurred while trying to read the packet header.	Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 181 - 01A-A1P2Y 158 - 01A-A1XKL 188 - 01A-A1ZKL 159 - 01A-A1YKL	120 114 112** 113**	Buffer adapter card Buffer control card Buffer storage card Buffer storage card	01A-A1K2 01A-A1L2 01A-A1N2 01A-A1M2	BA001, 002, 003 BC001, 002, 003 BM100 BM200
6216 6217 6218	Microcode detected error.	Refer to SPROC 1 and perform procedure D. Set trace options as follows: CHANNEL, DRIVE, MODULE.				

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
6219	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
6451	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
6471	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
64D1	The new record mode and direction do not match the previous record.		133 152 195 196 121	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002
64D2	Microcode detected error.	Refer to SPROC 1 and perform procedure D. Set trace options as follows: CHANNEL, DRIVE, MODULE, LVL7.				
64D5 64D6	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
6551 6552	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
6555	A read write buffer operation failed. Sense byte 9 contains the return code. Return Codes: 1 = unable to read the packet header 2 = unable to write the packet header 3 = buffer error writing block trailer 4 = zero data bytes transferred 5 = zero length record 6 = negative free bytes	Use the EAD for error codes D6nn or D7nn for failure isolation. See EAD 1 for "Error Code D6nn or D7nn." Note: This error may be a program problem.	120 114 112** 113**	Buffer adapter card Buffer control card Buffer storage card Buffer storage card	01A-A1K2 01A-A1L2 01A-A1N2 01A-A1M2	BA001, 002, 003 BC001, 002, 003 BM100 BM200
6556 6661	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
6666	Microcode detected error.	Refer to SPROC 1 and perform procedure D. Set trace options as follows: CHANNEL, DRIVE, MODULE, LVL7.				



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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
6810 6890 68F0 6E00	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
7041	A pattern sequence table (PST) error occurred during a read back check. The read data flow detected a tape mark, but a tape mark was not expected. Sense byte 9 contains the value from the PST.	<p>1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn."</p> <p>2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."</p> <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z</p>	062* 064 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 DF001, 002 SI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
7042	A read back check of the tape mark determined that it did not meet the minimum length specification (0.7 mm).	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	062* 064 085* 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Drive control card Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 02A-A1B2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 DD000, 001, 002, 003 DF001, 002 SI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
7051	Failed to correctly start the read back check. Came up in interblock gap but never found the block preceding the first interblock gap.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	062* 064 085* 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Drive control card Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 02A-A1B2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 DD000, 001, 002, 003 DF001, 002 SI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
7052	Failed to correctly start the read back check. Timed out waiting for the interblock gap preceding the first block written.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	085* 063* 013 216 059 116 118 130 131 132 119 111 199 248 264 265	Drive control card Write card Head and guide assembly Tape lifter solenoid Power amplifier board Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read clock and format card Read ECC/CORR card Write bus terminator CU0 (local) Write bus terminator CU0 (remote) Write bus terminator CU1 (local) Write bus terminator CU1 (remote)	02A-A1B2 02A-A1J4 Base plate Drive Drive 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A1S2 01A-A1R2 See CARR-CU 1-8 See CARR-CU 1-8 See CARR-CU 1-8 See CARR-CU 1-8	DD000, 001, 002, 003 WR000 DF001, 002 SI001, 002 RD001 RD101 RD201 RC001, 002 EC001, 002
7061	A pattern sequence table (PST) error occurred during a read back check. The read data flow detected an interblock gap, but the interblock gap was not expected. Sense byte 9 contains the value from the PST register.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ	062* 064 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
7062	A buffer record table entry is being deleted while a write operation is still in progress.	<ol style="list-style-type: none"> Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ</p>	062* 064 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
7063	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
7064	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
7071	Timed out waiting for 'Beginning Sync' during the read back check of a record. A maximum time of 100 microseconds (for Model B22) or 200 microseconds (for Model B11) is allowed between detection of 'beginning of block' and the 'beginning sync' indication.	<ol style="list-style-type: none"> Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ</p>	062* 064 116 118 130 131 132 123 124 125 119 114 120 112** 113**	Read preamplifier card Write power card Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer control card Buffer adapter card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2	RP000 VP000 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BC001, 002, 003 BA001, 002, 003 BM200 BM100
7074	A pattern sequence table (PST) error occurred during read back check. The read data flow detected a record, but the record was not expected. Sense byte 9 contains the value from the PST.	<ol style="list-style-type: none"> Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ</p>	062* 064 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
7076	A write data flow error was detected while writing this record. FRU bits were on in the write status/error (WSE) register, or 'end write' did not come on in the WSE register. Sense byte 9 contains the value from the WSE register.	<ol style="list-style-type: none"> Use the EAD for error code D7nn for failure isolation. See EAD 1 for "Error Code D7nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 157 - 01A-A1WKL 184 - 01A-A1ZPQ 158 - 01A-A1XKL 188 - 01A-A1ZKL 159 - 01A-A1YKL 267* - 02A-A1B2Y 181 - 01A-A1P2Y 268* - 02A-A1B2Z</p>	085* 062* 064 116 118 114 120	Drive control card Read preamplifier card Write power card Write data card Drive-adapter card Buffer control card Buffer adapter card	02A-A1B2 02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A1L2 01A-A1K2	DD000, 001, 002, 003 RP000 VP000 DF001, 002 DI001, 002 BC001, 002, 003 BA001, 002, 003
7077	A buffer error was detected while writing this record. The error was indicated in the buffer device status and error (BDSE) register. BDSE error groups 0 and 1 are reported in sense byte 17. BDSE error groups 2 and 3 are reported in sense byte 9.	Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 181 - 01A-A1P2Y 158 - 01A-A1XKL 188 - 01A-A1ZKL 159 - 01A-A1YKL	114 120 112** 113** 111 116	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Read ECC/CORR card Write data card	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A1R2 01A-A1P2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 EC001, 002 DF001, 002

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
7078	'Device xfer complete' was not on in the buffer device status and error (BDSE) register at the end of the buffer to write data flow transfer. Sense byte 9 contains the value from the BDSE.	Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003
7081	'Gap in' and 'generate gap out' were indicated in the read status when a level 3 interrupt was signalled. 'Gap in' and 'generate gap out' occurring simultaneously causes a level 3 interrupt. Sense byte 9 contains the value from the read status register (RSR).	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ	118 119 117 116	Drive-adapter card Read clock and format card Microprocessor card Write data card	01A-A1Q2 01A-A1S2 01A-A1D2 01A-A1P2	DI001, 002 RC001, 002 MP001, 002, 003 DF001, 002
7091	Invalid condition at 'Gap In' time. It appears that another device is still selected ('Device Transfer Active' is already On).	See FSC 7081, items 1 and 2.	085* 108 106 118	Drive control card Drive address switch Address switch cable Drive-adapter card	02A-A1B2 Drive Drive 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
7093	In read mode, an interblock gap was not detected within 2 mm after 'gap in.' (The timer is not set for the first read after the disconnected part of a locate.)	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	064 062* 085* 130 116 216 059 117 131 132 118 119 063* 058 013 123 124 125 111 199 248 264 265	Write power card Read preamplifier card Drive control card Read detect card 1 Write data card Tape lifter solenoid Power amplifier board Microprocessor card Read detect card 2 Read detect card 3 Drive-adapter card Read clock and format card Write card Logic board Head and guide assembly Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read ECC/CORR card Write bus terminator CU0 (local) Write bus terminator CU0 (remote) Write bus terminator CU1 (local) Write bus terminator CU1 (remote)	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2R2 01A-A1P2 Drive Drive 01A-A1D2 01A-A2S2 01A-A2T2 01A-A1Q2 01A-A1S2 02A-A1J4 02A-A1 Base plate 01A-A1K2 01A-A1L2 01A-A1M2 01A-A1R2 See CARR-CU 1-8 See CARR-CU 1-8 See CARR-CU 1-8 See CARR-CU 1-8	VP000 RP000 DD000, 001, 002, 003 RD001 DF001, 002 YG010 PA000, 001 MP001, 002, 003 RD101 RD201 DI001, 002 RC001, 002 WR000 SB001, 002 SB101, 102 SB201, 202 EC001, 002
7094	At 'gap in' time of a write operation, status from the drive does not indicate 'beginning of tape' or 'density mark successfully written.' The control unit ERP will be called to rewind and retry the write density mark operation.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 130 131 132 119 118	Drive control card Read detect card 1 Read detect card 2 Read detect card 3 Read clock and format card Drive-adapter card	02A-A1B2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A1S2 01A-A1Q2	DD000, 001, 002, 003 RD001 RD101 RD201 RC001, 002 DI001, 002
70C1	After a read ID operation, an error was indicated in the buffer device status and error (BDSE) register. BDSE error groups 0 and 1 are reported in sense byte 17. BDSE error groups 2 and 3 are reported in sense byte 9.	Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 112** 113** 111 116	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Read ECC/CORR card Write data card	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A1R2 01A-A1P2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 EC001, 002 DF001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
70C2	Block ID mismatch on read forward. The block just read from the tape does not have the expected block ID sequence number.	This error can be caused by operating conditions. 1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ	062* 064 216 116 118 130 131 132 123 124 125 119 112** 113** 114 120 111 199 248 264 265	Read preamplifier card Write power card Tape lifter solenoid Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card Buffer control card Buffer adapter card Read ECC/CORR card Write bus terminator CU0 (local) Write bus terminator CU0 (remote) Write bus terminator CU1 (local) Write bus terminator CU1 (remote)	02A-A1H2 02A-A1G2 Base plate 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2 01A-A1L2 01A-A1K2 01A-A1R2 See CARR-CU 1-8 See CARR-CU 1-8 See CARR-CU 1-8 See CARR-CU 1-8	RP000 VP000 YB010, 110 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100 BC001, 002, 003 BA001, 002, 003 EC001, 002
70C3	Block ID mismatch on read backward. The block just read from the tape does not have the expected block ID sequence number.	This error can be caused by operating conditions. 1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ	062* 064 216 116 118 130 131 132 123 124 125 119 112** 113** 114 120	Read preamplifier card Write power card Tape lifter solenoid Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card Buffer control card Buffer adapter card	02A-A1H2 02A-A1G2 Base plate 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2 01A-A1L2 01A-A1K2	RP000 VP000 YB010, 110 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100 BC001, 002, 003 BA001, 002, 003
70C4	Block ID format error. Bit 0 and bits 8-11 of the 4-byte block ID are defined to always be 0. The block just read from the tape contains a block ID with at least one of these bits 1. Sense byte 9 contains the value from block ID byte 1.	This error can be caused by operating conditions. 1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ	062* 064 116 118 130 131 132 123 124 125 119 112** 113** 114 120	Read preamplifier card Write power card Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card Buffer control card Buffer adapter card	02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2 01A-A1L2 01A-A1K2	RP000 VP000 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100 BC001, 002, 003 BA001, 002, 003
70C5	Either the buffer pointers or the buffer tables are wrong. This error is set when there is more data to be sent to the buffer than there is space as determined by the microcode.	Use the EAD for error codes D5nn and D6nn for failure isolation. See EAD 1 for "Error Code D5nn and D6nn." Select the correct error code depending on whether it is a channel to buffer, or buffer to device problem. TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
70E1	This error should not occur.	Call your next level of support.				
70E2	This error should not occur.	Call your next level of support.				
70E3	Timed out waiting 100 microseconds for 'status in' in response to 'gap out.'	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
70C2	Block ID mismatch on read forward. The block just read from the tape does not have the expected block ID sequence number.	This error can be caused by operating conditions. 1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ	062* 064 216 116 118 130 131 132 123 124 125 119 112** 113** 114 120 111 199 248 264 265	Read preamplifier card Write power card Tape lifter solenoid Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card Buffer control card Buffer adapter card Read ECC/CORR card Write bus terminator CU0 (local) Write bus terminator CU0 (remote) Write bus terminator CU1 (local) Write bus terminator CU1 (remote)	02A-A1H2 02A-A1G2 Base plate 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2 01A-A1L2 01A-A1K2 01A-A1R2 See CARR-CU 1-8 See CARR-CU 1-8 See CARR-CU 1-8 See CARR-CU 1-8	RP000 VP000 YB010, 110 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100 BC001, 002, 003 BA001, 002, 003 EC001, 002
70C3	Block ID mismatch on read backward. The block just read from the tape does not have the expected block ID sequence number.	This error can be caused by operating conditions. 1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ	062* 064 216 116 118 130 131 132 123 124 125 119 112** 113** 114 120	Read preamplifier card Write power card Tape lifter solenoid Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card Buffer control card Buffer adapter card	02A-A1H2 02A-A1G2 Base plate 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2 01A-A1L2 01A-A1K2	RP000 VP000 YB010, 110 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100 BC001, 002, 003 BA001, 002, 003
70C4	Block ID format error. Bit 0 and bits 8-11 of the 4-byte block ID are defined to always be 0. The block just read from the tape contains a block ID with at least one of these bits 1. Sense byte 9 contains the value from block ID byte 1.	This error can be caused by operating conditions. 1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ	062* 064 116 118 130 131 132 123 124 125 119 112** 113** 114 120	Read preamplifier card Write power card Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card Buffer control card Buffer adapter card	02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2 01A-A1L2 01A-A1K2	RP000 VP000 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100 BC001, 002, 003 BA001, 002, 003
70C5	Either the buffer pointers or the buffer tables are wrong. This error is set when there is more data to be sent to the buffer than there is space as determined by the microcode.	Use the EAD for error codes D5nn and D6nn for failure isolation. See EAD 1 for "Error Code D5nn and D6nn." Select the correct error code depending on whether it is a channel to buffer, or buffer to device problem. TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
70D1	Block ID format error. Bit 0 in byte 0 of the 4 byte block is defined to always be 0, but it was on in the block just read from the tape.	This error can be caused by operating conditions. 1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."	062* 064 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
70D2	Block ID mismatch on read forward in the 3480 Improved Data Recording Capability. The block just read from the tape does not have the expected block ID sequence number.	This error can be caused by operating conditions. 1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ	062* 064 216 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Tape lifter solenoid Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 Base plate 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 YB010, 110 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
70D3	Block ID mismatch on read backward in the 3480 Improved Data Recording Capability. The block just read from the tape does not have the expected block ID sequence number.	This error can be caused by operating conditions. 1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ	062* 064 216 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Tape lifter solenoid Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 Base plate 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 YB010, 110 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
70D4	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
70D5	Block ID mismatch error; the block just read from the tape is in 3480 format, and the previous block was a FCM1 (Format Change Mark 1), which indicates this block should have been in 3480 Improved Data Recording Capability.	<ol style="list-style-type: none"> This error can indicate a compatibility problem. Check to see that the tape being read is compatible with all 3480 formats. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." 	062* 064 216 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Tape lifter solenoid Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 Base plate 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 YB010, 110 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
70D6	Block ID mismatch error; the block just read from the tape is in 3480 format, and the previous block was in 3480 Improved Data Recording Capability. A Format Change Mark 1 is required to change formats. This mark was not detected.	<ol style="list-style-type: none"> This error can indicate a compatibility problem. Check to see that the tape being read is compatible with all 3480 formats. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." 	062* 064 216 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Tape lifter solenoid Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 Base plate 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 YB010, 110 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
70D7	Block ID mismatch error; the block just read from the tape is in 3480 Improved Data Recording Capability. The control unit is not allowed to read blocks in this format.	<p>This error can be caused by operating conditions.</p> <ol style="list-style-type: none"> Check the dip switch settings on the card at 01A-A1K2. See CARR-CU 1140 for the switch setting procedure. If dip switch 3 is off, then the Improved Data Recording Capability is not allowed and the tape in the 3480 Improved Data Recording Capability cannot be read. If the card at 01A-A1K2 does not have dip switches, then the Improved Data Recording Capability feature is not installed and the tape in the 3480 Improved Data Recording Capability cannot be read. 	120	Buffer adapter card	01A-A1K2	BA001, 002, 003

0 0 0 0 0 0 0 0 0 0 0

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
70D8	Block ID mismatch error; the block just read from the tape is in 3480 Improved Data Recording Capability, and the previous block was a FCM2 (Format Change Mark 2), which indicates this block should have been in 3480 format.	<ol style="list-style-type: none"> This error can indicate a compatibility problem. Check to see that the tape being read is compatible with all 3480 formats. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." 	062* 064 216 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Tape lifter solenoid Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 Base plate 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 YB010, 110 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
70D9	Block ID mismatch error; the block just read from the tape is in 3480 Improved Data Recording Capability, and the previous block was in 3480 format. A Format Change Mark 2 is required to change formats. This mark was not detected.	<ol style="list-style-type: none"> This error can indicate a compatibility problem. Check to see that the tape being read is compatible with all 3480 formats. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." 	062* 064 216 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Tape lifter solenoid Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 Base plate 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 YB010, 110 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
70DA	Block ID mismatch error; the block just read from the tape is a special mark (FCM 1 or FCM 2) and this control unit is not allowed to read blocks in this format.	This error can be caused by operating conditions. <ol style="list-style-type: none"> Check the dip switch settings on the card at 01A-A1K2. See CARR-CU 1140 for the switch setting procedure. If dip switch 3 is off, then the Improved Data Recording Capability is not allowed and the tape in the 3480 Improved Data Recording Capability cannot be read. If the card at 01A-A1K2 does not have dip switches, then the Improved Data Recording Capability feature is not installed and the tape in the 3480 Improved Data Recording Capability cannot be read. 	120	Buffer adapter card	01A-A1K2	BA001, 002, 003

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
70DB	Block ID mismatch error; the block just read from the tape is an FCM 1 (Format Change Mark 1), and the previous block was neither 3480 format nor was it an FCM 2 (Format Change Mark 2).	<ol style="list-style-type: none"> This error can indicate a compatibility problem. Check to see that the tape being read is compatible with all 3480 formats. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." 	062* 064 216 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Tape lifter solenoid Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 Base plate 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 YB010, 110 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
70DC	Block ID mismatch error; the block just read from the tape is an FCM 2 (Format Change Mark 2) and the previous block was neither 3480 Improved Data Recording Capability nor was it an FCM 1 (Format Change Mark 1).	<ol style="list-style-type: none"> This error can indicate a compatibility problem. Check to see that the tape being read is compatible with all 3480 formats. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." 	062* 064 216 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Tape lifter solenoid Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 Base plate 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 YB010, 110 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
70DD	Block ID mismatch error; the block just read from the tape is an invalid special mark. It is not a FCM 1 (Format Change Mark 1) or an FCM 2 (Format Change Mark 2) which are the only valid special change marks.	<ol style="list-style-type: none"> This error can indicate a compatibility problem. Check to see that the tape being read is compatible with all 3480 formats. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." 	062* 064 216 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Tape lifter solenoid Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 Base plate 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 YB010, 110 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
70DE	Block ID mismatch error; the block just read from the tape has an invalid block ID flag field. The only valid block ID flags are 3480 format, 3480 Improved Data Recording Capability and special marks.	<ol style="list-style-type: none"> 1. This error can indicate a compatibility problem. Check to see that the tape being read is compatible with all 3480 formats. 2. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." 	062* 064 216 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Tape lifter solenoid Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 Base plate 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 YB010, 110 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
70E1	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
70E2	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
70E3	Timed out waiting 100 Microseconds for 'status in' response to 'gap out.'	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRU's associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 02A-A1Q2	DD000, 001, 002, 003 DI001, 002

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU.7.	Location	Logic Pages
70E4	A buffer error was detected while writing this record. The error was indicated in the buffer device status and error (BDSE) register. BDSE error groups 0 and 1 are reported in sense byte 17. BDSE error groups 2 and 3 are reported in sense byte 9.	Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 181 - 01A-A1P2Y 158 - 01A-A1XKL 188 - 01A-A1ZKL 159 - 01A-A1YKL	114 120 112** 113** 111 116	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Read ECC/CORR card Write data card	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A1R2 01A-A1P2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 EC001, 002 DF001, 002
70E5	A write data flow error was detected while writing this record. FRU bits were on in the write status/error (WSE) register, or 'end write' did not come on in the WSE in the maximum time allowed. Sense byte 9 contains the value from the WSE.	1. Use the EAD for error code D7nn for failure isolation. See EAD 1 for "Error Code D7nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 184 - 01A-A1ZPQ 158 - 01A-A1XKL 188 - 01A-A1ZKL 159 - 01A-A1Zkl 267* - 02A-A1B2Y 181 - 01A-A1P2Y 268* - 02A-A1B2Z	085* 062* 064 116 118 114 120	Drive control card Read preamplifier card Write power card Write data card Drive-adapter card Buffer control card Buffer adapter card	02A-A1B2 02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A1L2 01A-A1K2	DD000, 001, 002, 003 RP000 VP000 DF001, 002 DI001, 002 BC001, 002, 003 BA001, 002, 003
70E6	'Device xfer complete' was not on at the end of the buffer-to-write-data-flow transfer. Sense byte 9 contains the value from BDSE.	Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	120 114 117	Buffer adapter card Buffer control card Microprocessor card	01A-A1K2 01A-A1L2 01A-A1D2	BA001, 002, 003 BC001, 002, 003 MP001, 002, 003
7141	Density mark criterion not met after five retries. A valid density pattern must be detected in 40 out of 50 samples of the read pattern register (RPR).	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	064 062* 085* 130 116 216 059 117 131 132 118 119 063* 058 013	Write power card Read preamplifier card Drive control card Read detect card 1 Write data card Tape lifter solenoid Power amplifier board Microprocessor card Read detect card 2 Read detect card 3 Drive-adapter card Read clock and format card Write card Logic board Head and guide assembly	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2R2 01A-A1P2 Drive Drive 01A-A1D2 01A-A2S2 01A-A2T2 01A-A1Q2 01A-A1S2 02A-A1J4 02A-A1 Drive	VP000 RP000 DD000, 001, 002, 003 RD001 DF001, 002 MP001, 002, 003 RD101 RD201 DI001, 002 RC001, 002 WR000
7142	An error occurred when trying to write the Density Mark. Timed out waiting (2.5 milliseconds for Model B22 or 5.0 milliseconds for Model B11) for density separator (BOB interrupt). Timer was set when write data flow began writing the separator.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	064 062* 085* 130 116 216 059 117 131 132 118 119 063* 058 013	Write power card Read preamplifier card Drive control card Read detect card 1 Write data card Tape lifter solenoid Power amplifier board Microprocessor card Read detect card 2 Read detect card 3 Drive-adapter card Read clock and format card Write card Logic board Head and guide assembly	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2R2 01A-A1P2 Drive Drive 01A-A1D2 01A-A2S2 01A-A2T2 01A-A1Q2 01A-A1S2 02A-A1J4 02A-A1 Drive	VP000 RP000 DD000, 001, 002, 003 RD001 DF001, 002 MP001, 002, 003 RD101 RD201 DI001, 002 RC001, 002 WR000

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
7143	Timed out waiting (1.3 milliseconds for Model B22 or 2.6 milliseconds for Model B11) the interblock gap that follows the density separator.	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z</p>	064 062* 085* 130 116 216 059 117 131 132 118 119 063* 058 013	Write power card Read preamplifier card Drive control card Read detect card 1 Write data card Tape lifter solenoid Power amplifier board Microprocessor card Read detect card 2 Read detect card 3 Drive-adapter card Read clock and format card Write card Logic board Head and guide assembly	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2R2 01A-A1P2 Drive Drive 01A-A1D2 01A-A2S2 01A-A2T2 01A-A1Q2 01A-A1S2 02A-A1J4 02A-A1 Drive	VP000 RP000 DD000, 001, 002, 003 RD001 DF001, 002 MP001, 002, 003 RD101 RD201 DI001, 002 RC001, 002 WR000
7144	Timed out waiting for 'write end' in the write status/error (WSE) register when trying to write a density separator.	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Use the EAD for error code D7nn for failure isolation. See EAD 1 for "Error Code D7nn." <p>TCC FRU associated with this error code is: 181 - 01A-A1P2Y</p>	116	Write data card	01A-A1P2	DF001, 002
7145	Write data flow could not be successfully started for a density mark write operation. After the 'gap in,' 'write op' was not on in the write status/error (WSE) register.	<ol style="list-style-type: none"> Use the EAD for error code D7nn for failure isolation. See EAD 1 for "Error Code D7nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z</p>	064 062* 085* 130 116 216 059 117 131 132 118 119 063* 058 013	Write power card Read preamplifier card Drive control card Read detect card 1 Write data card Tape lifter solenoid Power amplifier board Microprocessor card Read detect card 2 Read detect card 3 Drive-adapter card Read clock and format card Write card Logic board Head and guide assembly	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2R2 01A-A1P2 Drive Drive 01A-A1D2 01A-A2S2 01A-A2T2 01A-A1Q2 01A-A1S2 02A-A1J4 02A-A1 Drive	VP000 RP000 DD000, 001, 002, 003 RD001 DF001, 002 MP001, 002, 003 RD101 RD201 DI001, 002 RC001, 002 WR000
7151	Read back check of an interblock gap detected that the interblock gap was too short. Minimum interblock gap length is 1.6 mm.	<ol style="list-style-type: none"> Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z</p>	064 062* 085* 130 116 216 059 117 131 132 118 119 063* 058 013	Write power card Read preamplifier card Drive control card Read detect card 1 Write data card Tape lifter solenoid Power amplifier board Microprocessor card Read detect card 2 Read detect card 3 Drive-adapter card Read clock and format card Write card Logic board Head and guide assembly	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2R2 01A-A1P2 Drive Drive 01A-A1D2 01A-A2S2 01A-A2T2 01A-A1Q2 01A-A1S2 02A-A1J4 02A-A1 Drive	VP000 RP000 DD000, 001, 002, 003 RD001 DF001, 002 MP001, 002, 003 RD101 RD201 DI001, 002 RC001, 002 WR000



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
7152	Read back check of an interblock gap detected that the interblock gap was too long. Maximum interblock gap length is 3.0 mm.	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z</p>	064 062* 085* 130 216 116 117 059 131 132 118 119 063* 058 013	Write power card Read preamplifier card Drive control card Read detect card 1 Tape lifter solenoid Write data card Microprocessor card Power amplifier board Read detect card 2 Read detect card 3 Drive-adapter card Read clock and format card Write card Logic board Head and guide assembly	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2R2 Drive 01A-A1P2 01A-A1D2 Drive 01A-A2S2 01A-A2T2 01A-A1Q2 01A-A1S2 02A-A1K4 02A-A1 Drive	VP000 RP000 DD000, 001, 002, 003 RD001 DF001, 002 MP001, 002, 003 RD101 RD201 DI001, 002 RC001, 002 WR000
7153	Void was detected during a read operation. A valid block, tape mark, or erase gap was not detected within 67 ms after 'gap in.'	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z</p>	064 062* 085* 130 216 116 059 117 131 132 118 119 063* 058 013	Write power card Read preamplifier card Drive control card Read detect card 1 Tape lifter solenoid Write data card Power amplifier board Microprocessor card Read detect card 2 Read detect card 3 Drive-adapter card Read clock and format card Write card Logic board Head and guide assembly	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2R2 Drive 01A-A1P2 Drive 01A-A1D2 01A-A2S2 01A-A2T2 01A-A1Q2 01A-A1S2 02A-A1J4 02A-A1 Drive	VP000 RP000 DD000, 001, 002, 003 RD001 DF001, 002 MP001, 002, 003 RD101 RD201 DI001, 002 RC001, 002 WR000
7154	Data transfer timeout was detected during a read operation. No valid interblock gap was detected within 67 ms after 'beg sync' was detected. (The timer is not set if the subsystem is in synchronous mode.)	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z</p>	064 062* 085* 130 216 116 059 117 131 132 118 119 063* 058 013	Write power card Read preamplifier card Drive control card Read detect card 1 Tape lifter solenoid Write data card Power amplifier board Microprocessor card Read detect card 2 Read detect card 3 Drive-adapter card Read clock and format card Write card Logic board Head and guide assembly	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2R2 Drive 01A-A1P2 Drive 01A-A1D2 01A-A2S2 01A-A2T2 01A-A1Q2 01A-A1S2 02A-A1J4 02A-A1 Drive	VP000 RP000 DD000, 001, 002, 003 RD001 DF001, 002 MP001, 002, 003 RD101 RD201 DI001, 002 RC001, 002 WR000
7155	Data transfer timeout was detected during a read back check operation. No valid interblock gap was detected within 67 ms after 'beg sync' was detected. (The timer is not set if the subsystem is in synchronous mode.)	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z</p>	064 062* 085* 130 216 116 059 117 131 132 118 119 063* 058 013	Write power card Read preamplifier card Drive control card Read detect card 1 Tape lifter solenoid Write data card Power amplifier board Microprocessor card Read detect card 2 Read detect card 3 Drive-adapter card Read clock and format card Write card Logic board Head and guide assembly	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2R2 Drive 01A-A1P2 Drive 01A-A1D2 01A-A2S2 01A-A2T2 01A-A1Q2 01A-A1S2 02A-A1J4 02A-A1 Drive	VP000 RP000 DD000, 001, 002, 003 RD001 DF001, 002 MP001, 002, 003 RD101 RD201 DI001, 002 RC001, 002 WR000

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4 ** EC sensitive FRU. See CARR-CU 7	Location	Logic Pages
7156	Read back check of a tape mark determined that the tape mark was too long. Maximum tape-mark length is 1.3 mm.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267 - 02A-A1B2Y 184 - 01A-A1ZPQ 268 - 02A-A1B2Z	064 062* 085* 130 216 116 059 117 131 132 118 119 063* 058 013	Write power card Read preamplifier card Drive control card Read detect card 1 Tape lifter solenoid Write data card Power amplifier board Microprocessor card Read detect card 2 Read detect card 3 Drive-adapter card Read clock and format card Write card Logic board Head and guide assembly	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2R2 Drive 01A-A1P2 Drive 01A-A1D2 01A-A2S2 01A-A2T2 01A-A1Q2 01A-A1S2 02A-A1J4 02A-A1 Drive	VP000 RP000 DD000, 001, 002, 003 RD001 DF001, 002 MP001, 002, 003 RD101 RD201 DI001, 002 RC001, 002 WR000
7159	Read back check timed out waiting for the interblock gap following an erase gap. Interblock gap must be detected within 5.9 milliseconds for Model B22 or 11.8 milliseconds for Model B11 after the erase gap is started to be written.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	064 062* 085* 130 216 116 059 117 131 132 118 119 063* 058 013	Write power card Read preamplifier card Drive control card Read detect card 1 Tape lifter solenoid Write data card Power amplifier board Microprocessor card Read detect card 2 Read detect card 3 Drive-adapter card Read clock and format card Write card Logic board Head and guide assembly	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2R2 Drive 01A-A1P2 Drive 01A-A1D2 01A-A2S2 01A-A2T2 01A-A1Q2 01A-A1S2 02A-A1J4 02A-A1 Drive	VP000 RP000 DD000, 001, 002, 003 RD001 DF001, 002 MP001, 002, 003 RD101 RD201 DI001, 002 RC001, 002 WR000
715A	The buffer did not interrupt to end a write erase gap operation. The subsystem timed out 6.4 milliseconds for Model B22 or 12.8 milliseconds for Model B11 after the write erase gap started.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
7161	Did not detect 'density separator' before 45 sets of samples were taken (1025 mm).	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ	062* 064 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
7163	Used by the support diagnostics to define added actions.	Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn."		FRUs are defined by the diagnostic failure ID that brought you here.		
7165	A 3480 device is not capable of reading this tape format because it is formatted as a CST2.	IBM Enhanced Capacity Cartridge System tapes should not be mounted in a 3480 subsystem.	232	Cartridge	Baseplate	
7169	A 3480 device is not capable of reading this tape format because of an insufficient number of tracks.	IBM Enhanced Capacity Cartridge System tapes should not be mounted in a 3480 subsystem.	232	Cartridge	Baseplate	



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name EC sensitive FRU. See CARR-DR 4. EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
7171	In synchronous mode and the device transfer overran the channel transfer.	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing to the next step. Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." This error could be caused by operating conditions. <p>TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL</p>	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
7172	The buffer indicated a device buffer overrun while doing a loop-write-to-read operation. This is an invalid condition.	<p>Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn."</p> <p>TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL</p>	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
7173	Device-buffer overrun occurred while reading and error recovery was in progress.	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing to the next step. Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn." <p>TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL</p>	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
7174	Maximum data buffer allocated to the MD is too small to read this record.	Record can only be read without using the MD.				
7181	Device-buffer overrun occurred twice while writing the same record.	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing to the next step. Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn." <p>TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL</p>	114 120 117	Buffer control card Buffer adapter card Microprocessor card	01A-A1L2 01A-A1K2 01A-A1D2	BC001, 002, 003 BA001, 002, 003 MP001, 002, 003
7182	Device-buffer transfer ended before the channel-buffer transfer of the same write record. Sense byte 9 contains the value from the buffer device status and error (BDSE) register.	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing to the next step. Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn." <p>TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL</p>	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
7191	This error should not occur.	Call your next level of support.				
7192	The write data flow could not be successfully started for a write operation that was not a beginning of tape. After 'gap in,' 'write op' was not on in the write status/error (WSE) register. Sense byte 9 contains the value from the WSE.	<p>Use the EAD for error code D7nn for failure isolation. See EAD 1 for "Error Code D7nn."</p> <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y</p>	116	Write data card	01A-A1P2	DF001, 002

FSC/ Error Code	Error Code Definition	Additional Actions / Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
71A1	A tape mark was detected during a read operation with the 'IBG timeout count' equal to a one. This indicates that a block of data was not read previous to the tape mark. The error recovery program (ERP) will re-read the previous block.	<p>Note: Suspect a possible tape media failure if only one volume is failing.</p> <ol style="list-style-type: none"> Run diagnostic section EEA0 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z</p>	062* 064 085* 063* 013 216 059 116 118 130 131 132 119	Read preamplifier card Write power card Drive control card Write card Head and guide assembly Tape lifter solenoid Power amplifier board Write data card Drive-adaptor card Read detect 1 Read detect 2 Read detect 3 Read clock and format card	02A-A1H2 02A-A1G2 02A-A1B2 02A-A1J4 Base plate Drive Drive 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A1S2	RP000 VP000 DD000, 001, 002, 003 WR000 DF001, 002 DI001, 002 RD001 RD101 RD201 RC001, 002
7420	This can be a normal condition. For some write conditions, the drive can have limited instantaneous speed variations (ISV), and when the speed is more than the limits, write errors can occur. The ISV can cause changes in the write data density. Based on a pre-determined limit of ISV, the acceleration check is turned on and the microcode repeats the write before a write error occurs.	<p>If this bit is on and write errors are occurring, troubleshoot the write errors. If this bit frequently occurs without any write error conditions, it can be an indication of wear of the tape media, mechanical tape path parts, or the read/write head.</p> <p>Note: Suspect a possible tape media failure if only one volume is failing.</p> <ol style="list-style-type: none"> Run diagnostic section EE54 or EEA0 for failure isolation. See the "Diagnostic Identification Code Table" on DIAG 3. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn" Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." 	012 277 013 014 130 131 132 119	Decoupler assembly Head compliant guides Head and guide assembly Tension transducer Read detect card 1 Read detect card 2 Read detect card 3 Read clock and format card	Drive Drive Drive Drive 01A-A2R2 01A-A2S2 01A-A2T4 01A-A1S2	RD001 RD101 RD201 RC001, 002
74nn	A read back check error occurred on the last record. The nn indicates the kind of error as follows: Bits 0-1 = Reserved Bit 2 = See FSC/Error Code 7420 Bit 3 = No 'end sync' was detected Bit 4 = FRU bits on in the read error register (RER) Bit 5 = 'Data check' (CRC error) on in the read status register (RSR) Bit 6 = 'Data check' (uncorrected error) on in the RSR Bit 7 = 'Multi-track error' on in the RSR Sense byte 9 contains the value from the read error register (RER).	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. To determine which EAD to use, see the bits that are on in 'nn,' in error code 74nn. Use the "No-End-Sync" (see EAD 1) first, if the corresponding bit is on. For error codes: 7401 - Use D0nn and D8nn EAD 7402 - Use D0nn and D8nn EAD 7404 - Use D0nn and D8nn EAD 7408 - Use D0nn and D8nn EAD 7410 - Use No-End-Sync EAD 7420 - See FSC/Error Code 7420 Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." This error may be caused on 50 Hz B22 without BM6460006 if the power supply blower stops. See CARR-DR 718 to check the blower running. <p>TCC FRUs associated with this error code are: 157 - 01A-A1WKL 184 - 01A-A1ZPQ 158 - 01A-A1XKL 185 - 01A-A1XRS 159 - 01A-A1YKL 186 - 01A-A1YRS 181 - 01A-A1P2Y 188 - 01A-A1ZKL</p>	062* 064 116 118 130 131 132 123 124 125 119 111 114 120 071	Read preamplifier card Write power card Write data card Drive-adaptor card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Read ECC/CORR card Buffer control card Buffer adaptor card Power supply blower (50 Hz B22 without BM6460006)	02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1R2 01A-A1L2 01A-A1K2 Tape unit base	RP000 VP000 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 EC001, 002 BC001, 002, 003 BA001, 002, 003

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
7501	Two-bit ID mismatch. The value in the read residual count (RRC) register is not equal to the value in the logical device table (LDT). Sense byte 9 contains the value from the RRC.	<p>1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn."</p> <p>2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."</p> <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z</p>	064 062* 085* 130 116 216 059 117 131 132 118 119 063* 058 013	Write power card Read preamplifier card Drive control card Read detect card 1 Write data card Tape lifter solenoid Power amplifier board Microprocessor card Read detect card 2 Read detect card 3 Drive-adapter card Read clock and format card Write card Logic board Head and guide assembly	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2R2 01A-A1P2 Drive Drive 01A-A1D2 01A-A2S2 01A-A2T2 01A-A1Q2 01A-A1S2 02A-A1J4 02A-A1 Drive	VP000 RP000 DD000, 001, 002, 003 RD001 DF001, 002 MP001, 002, 003 RD101 RD201 DI001, 002 RC001, 002 WR000
7502	Timed out waiting 100 microseconds for a 'status in' response to 'gap out.'	<p>Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."</p> <p>TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z</p>	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
7503	During read back check of a record, got an interrupt due to 'end sync', but timed out waiting for interblock gap (100 microseconds for Model B22 or 200 microseconds for Model B11).	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>2. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn."</p> <p>3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."</p> <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z</p>	064 062* 085* 130 116 216 059 117 131 132 118 119 063* 058 013	Write power card Read preamplifier card Drive control card Read detect card 1 Write data card Tape lifter solenoid Power amplifier board Microprocessor card Read detect card 2 Read detect card 3 Drive-adapter card Read clock and format card Write card Logic board Head and guide assembly	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2R2 01A-A1P2 Drive Drive 01A-A1D2 01A-A2S2 01A-A2T2 01A-A1Q2 01A-A1S2 02A-A1J4 02A-A1 Drive	VP000 RP000 DD000, 001, 002, 003 RD001 DF001, 002 MP001, 002, 003 RD101 RD201 DI001, 002 RC001, 002 WR000

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
7504	Excessive ECC errors while writing this tape.	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>2. To determine which EAD to use, see the bits that are on in 'nn,' in error code 74nn. Use the "No-End-Sync" (see EAD 1) first, if the corresponding bit is on.</p> <p>For error codes:</p> <p>7401 - Use D0nn and D8nn EAD 7402 - Use D0nn and D8nn EAD 7404 - Use D0nn and D8nn EAD 7408 - Use D0nn and D8nn EAD 7410 - Use No-End-Sync EAD 7420 - Use D0nn and D8nn EAD</p> <p>3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."</p> <p>TCC FRUs associated with this error code are: 157 - 01A-A1WKL 184 - 01A-A1ZPQ 158 - 01A-A1XKL 185 - 01A-A1XRS 159 - 01A-A1YKL 186 - 01A-A1YRS 181 - 01A-A1P2Y 188 - 01A-A1ZKL</p>	062 * 064 116 118 130 131 132 123 124 125 119 111 114 120	Read preamplifier card Write power card Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Read ECC/CORR card Buffer control card Buffer adapter card	02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1R2 01A-A1L2 01A-A1K2	RP000 VP000 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 EC001, 002 BC001, 002, 003 BA001, 002, 003

FSC/ Error Code	Error Code Definition	Additional Actions / Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
76nn	<p>A read error occurred on the last record. The nn indicates the cause of the error as follows:</p> <p>Bit 0 = Acceleration check on in read error register (RER) Bit 1 = 'Device xfr complete' not on in the buffer device status and error (BDSE) register Bit 2 = 'Data check' (CRC error) on in the read status register (RSR) Bit 3 = 'Data check' (uncorrected error) on in the RSR Bit 4 = 'Multi-track error' on in the RSR Bit 5 = FRU bits on in the read error register (RER) Bit 6 = BDSE error indicated Bit 7 = No 'end sync' was detected</p>	<p>The contents of sense byte 9 for the above nn bits are: Bit 0 = RER Bit 1 = BDSE group 2 and 3 Bit 2 = RER Bit 3 = RER Bit 4 = RER Bit 5 = RER Bit 6 = BDSE group 0 and 1 Bit 7 = RER</p> <ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. The cables associated with this failure are: <ul style="list-style-type: none"> Single drive failures - cable groups 66 and 67 Multiple drive failures - cable groups 61, 62, and 65 To determine which EAD to use, see the bits that are on in 'nn' of error code 76nn. Use the "No-End-Sync" EAD only, if bits 1 or 7 are on. For error codes: 7601 - Use the No-End-Sync EAD 7602 - Use the D6nn EAD 7603 - Use the D0nn and D8nn EAD 7608 - Use the D0nn and D8nn EAD 7610 - Use the D0nn and D8nn EAD 7620 - Use the D0nn and D8nn EAD 7640 - Use the No-End-Sync EAD 7680 - Use the D0nn and D8nn EAD Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." This error may be caused on 50 HZ B22 without BM 6460006 if the power supply blower stops. See CARR-DR 718 to check the blower running. TCC FRUs associated with this error code are: 157 - 01A-A1WKL 184 - 01A-A1ZPQ 158 - 01A-A1XKL 185 - 01A-A1XRS 159 - 01A-A1YKL 186 - 01A-A1YRS 181 - 01A-A1P2Y 	062* 064 116 118 130 131 132 123 124 125 119 120 114 111 071	Read preamplifier card Write power card Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer adapter card Buffer control card Read ECC/CORR card Power supply blower (50 Hz B22 without B/M 6460006)	02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1K2 01A-A1L2 01A-A1R2 Tape unit base	RP000 VP000 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BA001, 002, 003 BC001, 002, 003 EC001, 002
7701	<p>Timed out waiting 100 microseconds for 'status in' response to 'status in' response to 'gap out.'</p>	<p>Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."</p> <p>The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z</p>	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
7702	256 erase gaps have been read without detecting a block or tape mark.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." This error could result from operating conditions. TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ	062* 064 116 118 130 131 132 123 124 125 119 112** 113**	Read preamplifier card Write power card Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Buffer storage card Buffer storage card	02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
8000	This error should not occur.	Call your next level of support.				
8003	Requested device already selected.	Call your next level of support.	121	Status store basic card	01A-A1G2	SS001, 002
8005	The control unit raised 'select out' and waited for the bus to clear. The bus did not clear in 200 microseconds. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 199 248 265	Drive control card Drive-adapter card Write bus terminator CU0 local Write bus terminator CU0 remote Write bus terminator	02A-A1B2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002
8007	Timed out waiting 200 microseconds for 'address in' response from the drive. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 059 049 108 107 105 118 199 248 265	Drive control card Power amplifier board Logic board to pwr amp J2 cable Drive address switch Reset switch Online/Offline switch Drive-adapter card Write bus terminator CU0 local Write bus terminator CU0 remote Write bus terminator	02A-A1B2 Drive Drive Drive Drive Drive 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 PA000, 001 PA000, 001 DI001, 002
8009	Timed out waiting 200 microseconds for 'address in' to become not active during initial selection (control unit to drive). Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 199 248 265	Drive control card Drive-adapter card Write bus terminator CU0 local Write bus terminator CU0 remote Write bus terminator	02A-A1B2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002
800A	Hardware detected a drive adapter error. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 182 - 01A-A1E2W 268* - 02A-A1B2Z 267* - 02A-A1B2Y	085* 118 134 115	Drive control card Drive-adapter card Control store card Maintenance adapter card	02A-A1B2 01A-A1Q2 01A-A1C2 01A-A1E2	DD000, 001, 002, 003 DI001, 002 CS001, 002 MA001, 002, 003



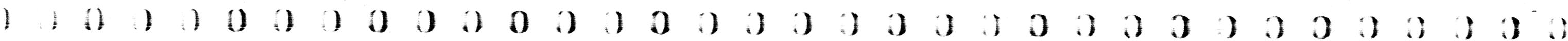
FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
7702	256 erase gaps have been read without detecting a block or tape mark.	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>2. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn."</p> <p>3. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."</p> <p>This error could result from operating conditions.</p> <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ</p>	062* 064 116 118 130 131 132 123 124 125 119 112** 113**	<p>Read preamplifier card</p> <p>Write power card</p> <p>Write data card</p> <p>Drive-adapter card</p> <p>Read detect card 1</p> <p>Read detect card 2</p> <p>Read detect card 3</p> <p>Read skew buffer card 1</p> <p>Read skew buffer card 2</p> <p>Read skew buffer card 3</p> <p>Read clock and format card</p> <p>Buffer storage card</p> <p>Buffer storage card</p>	02A-A1H2 02A-A1G2 01A-A1P2 01A-A1Q2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1N2 01A-A1M2	RP000 VP000 DF001, 002 DI001, 002 RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 RC001, 002 BM200 BM100
7710	A buffer timeout occurred while reversing the data in the buffer.	Use the EAD for error codes D6nn and D7nn for failure isolation. See EAD 1 for error codes D6nn and D7nn.	120 114 112** 113**	<p>Buffer adapter card</p> <p>Buffer control card</p> <p>Buffer storage card</p> <p>Buffer storage card</p>	01A-A1K2 01A-A1L2 01A-A1N2 01A-A1M2	BA001, 002, 003 BC001, 002, 003 BM100 BM200
7711	A buffer error occurred while reversing the data in the buffer.	Use the EAD for error codes D6nn and D7nn for failure isolation. See EAD 1 for error codes D6nn and D7nn.	120 114 112** 113**	<p>Buffer adapter card</p> <p>Buffer control card</p> <p>Buffer storage card</p> <p>Buffer storage card</p>	01A-A1K2 01A-A1L2 01A-A1N2 01A-A1M2	BA001, 002, 003 BC001, 002, 003 BM100 BM200
8000	This error should not occur.	Call your next level of support.				
8003	Requested device already selected.	Call your next level of support.	121	Status store basic card	01A-A1G2	SS001, 002
8005	The control unit raised 'select out' and waited for the bus to clear. The bus did not clear in 200 microseconds. Sense byte 9 contains the value from the device status/error (DSE) register.	<p>Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."</p> <p>The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z</p>	085* 118 199 248 265	<p>Drive control card</p> <p>Drive-adapter card</p> <p>Write bus terminator CU0 local</p> <p>Write bus terminator CU0 remote</p> <p>Write bus terminator</p>	02A-A1B2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002
8007	Timed out waiting 200 microseconds for 'address in' response from the drive. Sense byte 9 contains the value from the device status/error (DSE) register.	<p>Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."</p> <p>The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z</p>	085* 059 049 108 107 105 118 199 248 265	<p>Drive control card</p> <p>Power amplifier board</p> <p>Logic board to pwr amp J2 cable</p> <p>Drive address switch</p> <p>Reset switch</p> <p>Online/Offline switch</p> <p>Drive-adapter card</p> <p>Write bus terminator CU0 local</p> <p>Write bus terminator CU0 remote</p> <p>Write bus terminator</p>	02A-A1B2 Drive Drive Drive Drive Drive 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 PA000, 001 PA000, 001 DI001, 002
8009	Timed out waiting 200 microseconds for 'address in' to become not active during initial selection (control unit to drive). Sense byte 9 contains the value from the device status/error (DSE) register.	<p>Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."</p> <p>The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z</p>	085* 118 199 248 265	<p>Drive control card</p> <p>Drive-adapter card</p> <p>Write bus terminator CU0 local</p> <p>Write bus terminator CU0 remote</p> <p>Write bus terminator</p>	02A-A1B2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002
800A	Hardware detected a drive adapter error. Sense byte 9 contains the value from the device status/error (DSE) register.	<p>Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."</p> <p>The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 182 - 01A-A1E2W 268* - 02A-A1B2Z 267* - 02A-A1B2Y</p>	085* 118 134 115	<p>Drive control card</p> <p>Drive-adapter card</p> <p>Control store card</p> <p>Maintenance adapter card</p>	02A-A1B2 01A-A1Q2 01A-A1C2 01A-A1E2	DD000, 001, 002, 003 DI001, 002 CS001, 002 MA001, 002, 003

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Fault Symptom Index (FSI)

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
800C	The drive did not return the same address as the control unit requested. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
8100	No patches available for this drive EC level.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures."				
8101	Hardware incompatibility.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures."				
8102	Hardware incompatibility.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures."				
8104	No patches are present on the IML diskette for this drive, model, and EC.	You have down level hardware in the subsystem that is not supported by this level of microcode. Call your next level of support.	085*	Drive control card	02A-A1B2	
8202	The Unload switch was pressed.	This is a normal operating condition.				
8204	The Rewind switch was pressed.	This is a normal operating condition.				
8208	An error occurred while servicing the alert after an Autospace command.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
8210	This error should not occur.	Call your next level of support.				
8211	An alert was received from this drive. The Sense command was not successful, and the drive has not been microcode patched. The control unit sends a Reset A to reset this drive.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
8216	The patched bit is not set in the drive status. The drive must be patched to continue.	1. This is possibly an interconnection problem. Look for other error codes to troubleshoot first. 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	118 085*	Drive-adapter card Drive control card	01A-A1Q2 02A-A1B2	DI001, 002 DD000, 001, 002, 003
8300	Timed out waiting 750 microseconds for 'clock B' response from the drive during a drive to control unit data transfer. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 199 248 265	Drive control card Drive-adapter card Write bus terminator CU0 local Write bus terminator CU0 remote Write bus terminator	02A-A1B2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002
8301	An error occurred during a drive to control unit data transfer. Sense byte 9 contains the value from the device status/error register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 199 248 265	Drive control card Drive-adapter card Write bus terminator CU0 local Write bus terminator CU0 remote Write bus terminator	02A-A1B2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
840A	Timed out waiting for 'clock B' to become active. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 199 248 265	Drive control card Drive-adapter card Write bus terminator CU0 local Write bus terminator CU0 remote Write bus terminator	02A-A1B2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002
840C	'Clock B' did not become not active after a control unit to drive transfer. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 199 248 265	Drive control card Drive-adapter card Write bus terminator CU0 local Write bus terminator CU0 remote Write bus terminator	02A-A1B2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002
840D	The drive did not take the correct number of bytes. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 199 248 265	Drive control card Drive-adapter card Write bus terminator CU0 local Write bus terminator CU0 remote Write bus terminator	02A-A1B2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002
84D1	Microcode detected error.	Refer to SPROC 1 and perform procedure D. Set trace options as follows: CHANNEL, DRIVE, MODULE, no LVL7.				
85nn	A disk error occurred while attempting to read in drive patches.	See the FSI for FSC EDnn where the 'nn' of 85nn equals the low order byte of EDnn.	258 086 134 138	Media IML diskette drive Control store card V Regulator Card	See LOC 1 01A-A1C2 01A-A1T2	CS001, 002 RG001
8600	Timed out in the status sequence during initial selection. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
8601	Timed out in the status sequence during the ending sequence. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
86A0	Drive unit check on a Sense command. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
86C0	Bit 0 of status byte 2 from the drive did not indicate the correct control unit.	<ol style="list-style-type: none"> This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing to the next step. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." <p>TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z</p>	085* 108 118	* EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7. Drive control card Drive address switch Drive-adapter card	02A-A1B2 Tape unit 01A-A1Q2	DD000, 001, 002, 003 SN001, 002 DI001, 002
86F0	'Address in' was active during the beginning status transfer.	<ol style="list-style-type: none"> Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." See error code 8Fnn in this FSI. <p>TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z</p>	085* 118 199 248 265	Drive control card Drive-adapter card Write bus terminator CU0 local Write bus terminator CU0 remote Write bus terminator	02A-A1B2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002
86F1	'Address in' was active during the ending status transfer.	<ol style="list-style-type: none"> Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." See error code 8Fnn in this FSI. <p>TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z</p>	085* 118 199 248 265	Drive control card Drive-adapter card Write bus terminator CU0 local Write bus terminator CU0 remote Write bus terminator	02A-A1B2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002
8803	The control unit timed out during a serial sequence routine.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."				
8804	The 'repositioning in' line is active at the beginning of the serial sequence.	<p>This error may be the result of an error on a different drive on this bus (local or remote).</p> <p>Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."</p> <p>The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z</p>	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
8805	The serial interconnection is not assigned to this control unit.	<ol style="list-style-type: none"> See SDISK 1 for "Device Status" to display the device status. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG</p>	122 121	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Status store basic card	01A-A1F2 01A-A1G2	SM001, 002 SS001, 002

0 0 0 0 0 0 0 0 0 0 0

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
86C0	Bit 0 of status byte 2 from the drive did not indicate the correct control unit.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 108 118	Drive control card Drive address switch Drive-adapter card	02A-A1B2 Tape unit 01A-A1Q2	DD000, 001, 002, 003 SN001, 002 DI001, 002
86F0	'Address in' was active during the beginning status transfer.	1. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." 2. See error code 8Fnn in this FSI. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 199 248 265	Drive control card Drive-adapter card Write bus terminator CU0 local Write bus terminator CU0 remote Write bus terminator	02A-A1B2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002
86F1	'Address in' was active during the ending status transfer.	1. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." 2. See error code 8Fnn in this FSI. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 199 248 265	Drive control card Drive-adapter card Write bus terminator CU0 local Write bus terminator CU0 remote Write bus terminator	02A-A1B2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002
8803	The control unit timed out during a serial sequence routine.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."				
8804	The 'repositioning in' line is active at the beginning of the serial sequence.	This error may be the result of an error on a different drive on this bus (local or remote). Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
8805	The serial interconnection is not assigned to this control unit.	1. See SDISK 1 for "Device Status" to display the device status. 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	122 121	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Status store basic card	01A-A1F2 01A-A1G2	SM001, 002 SS001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
89nn	The control unit received check 1 from the drive. The 'nn' (bits 1-3) indicates the FRU code taken from the bus at the time of the error as follows: Bit 1 = Adapter card Bit 2 = Processor card Bit 3 = Digital servo card Any combination of the bits (or none) is valid. Sense byte 9 contains the value from the device/error (DSE) register. Note: The FRU code indicates which card detected the error, not necessarily the failing FRU.	1. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable group 80-86. See FSI 1 for "Cable Group Table" TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 199 248 265	Drive control card Drive-adapter card Write bus terminator CU0 Local Write bus terminator CU0 Remote Write bus terminator	02A-A1B2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002
8Ann	A disk error occurred while reading in the functional microcode.	For FRU list and additional comments, use FSC EDnn. The nn is same as 8Ann.	138	V Regulator Card	01A-A1T2	RG001
8Bnn	A device status/error (DSE) occurred during the ending sequence. The nn indicates the DSE contents. Sense byte 9 contains the value from the DSE.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	085* 118 116 134	Drive control card Drive-adapter card Write data card Control store card	02A-A1B2 01A-A1Q2 01A-A1P2 01A-A1C2	DD000, 001, 002, 003 DI001, 002 DF001, 002 CS001, 002
8C01	Unit check was detected in the drive status during the ending sequence. Sense byte 9 contains the value from the device status/error (DSE) register.	1. This error code must be accompanied by a drive error code. Use the FRU list from the drive error code (found in this FSI). 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	085* 118 116 134	Drive control card Drive-adapter card Write data card Control store card	02A-A1B2 01A-A1Q2 01A-A1P2 01A-A1C2	DD000, 001, 002, 003 DI001, 002 DF001, 002 CS001, 002
8C03	The control unit timed out waiting for the 'status in' line to become active during an ending sequence. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	085* 118 116 134	Drive control card Drive-adapter card Write data card Control store card	02A-A1B2 01A-A1Q2 01A-A1P2 01A-A1C2	DD000, 001, 002, 003 DI001, 002 DF001, 002 CS001, 002
8C07	The control unit timed out waiting for the 'status in' line to become not active during an ending sequence of a non class 3 operation. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	085* 118 116 134	Drive control card Drive-adapter card Write data card Control store card	02A-A1B2 01A-A1Q2 01A-A1P2 01A-A1C2	DD000, 001, 002, 003 DI001, 002 DF001, 002 CS001, 002
8CDF	This error should not occur.	Call your next level of support.				



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
89nn	The control unit received check 1 from the drive. The 'nn' (bits 1-3) indicates the FRU code taken from the bus at the time of the error as follows: Bit 1 = Adapter card Bit 2 = Processor card Bit 3 = Digital servo card Any combination of the bits (or none) is valid. Sense byte 9 contains the value from the device/error (DSE) register. Note: The FRU code indicates which card detected the error, not necessarily the failing FRU.	1. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table" TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118 199 248 265	Drive control card Drive-adapter card Write bus terminator CU0 local Write bus terminator CU0 remote Write bus terminator	02A-A1B2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002
8Ann	A disk error occurred while reading in the functional microcode.	For FRU list and additional comments, use FSC EDnn. The nn is same as 8Ann.	138	V Regulator Card	01A-A1T2	RG001
8Bnn	A device status/error (DSE) occurred during the ending sequence. The nn indicates the DSE contents. Sense byte 9 contains the value from the DSE.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	085* 118 116 134	Drive control card Drive-adapter card Write data card Control store card	02A-A1B2 01A-A1Q2 01A-A1P2 01A-A1C2	DD000, 001, 002, 003 DI001, 002 DF001, 002 CS001, 002
8C01	Unit check was detected in the drive status during the ending sequence. Sense byte 9 contains the value from the device status/error (DSE) register.	1. This error code must be accompanied by a drive error code. Use the FRU list from the drive error code (found in this FSI). 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	085* 118 116 134	Drive control card Drive-adapter card Write data card Control store card	02A-A1B2 01A-A1Q2 01A-A1P2 01A-A1C2	DD000, 001, 002, 003 DI001, 002 DF001, 002 CS001, 002
8C03	The control unit timed out waiting for the 'status in' line to become active during an ending sequence. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	085* 118 116 134	Drive control card Drive-adapter card Write data card Control store card	02A-A1B2 01A-A1Q2 01A-A1P2 01A-A1C2	DD000, 001, 002, 003 DI001, 002 DF001, 002 CS001, 002
8C07	The control unit timed out waiting for the 'status in' line to become not active during an ending sequence of a non class 3 operation. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	085* 118 116 134	Drive control card Drive-adapter card Write data card Control store card	02A-A1B2 01A-A1Q2 01A-A1P2 01A-A1C2	DD000, 001, 002, 003 DI001, 002 DF001, 002 CS001, 002
8CDF	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
8Dnn	An error occurred in the device status/error (DSE) register during initial selection. The nn indicates the contents of the DSE. Sense byte 9 contains the value from the DSE.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	085* 118 116 134	Drive control card Drive-adapter card Write data card Control store card	02A-A1B2 01A-A1Q2 01A-A1P2 01A-A1C2	DD000, 001, 002, 003 DI001, 002 DF001, 002 CS001, 002
8E05	The control unit timed out waiting for 'status in' from the drive. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	085* 118 109 116 134	Drive control card Drive-adapter card Operator panel switchboard Write data card Control store card	02A-A1B2 01A-A1Q2 Drive 01A-A1P2 01A-A1C2	DD000, 001, 002, 003 DI001, 002 WD000, 001 DF001, 002 CS001, 002
8E06	A unit check was detected in the status during initial selection. Sense byte 9 contains the value from the device status/error (DSE) register.	1. This error code must be accompanied by a drive error code. Use the FRU list from the drive error code in this FSI. 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	085* 118 116 134	Drive control card Drive-adapter card Write data card Control store card	02A-A1B2 01A-A1Q2 01A-A1P2 01A-A1C2	DD000, 001, 002, 003 DI001, 002 DF001, 002 CS001, 002
8EA7	The control unit has received an A7 error code from the drive for five retries. An A7 error code indicates a drive early start from an aborted command.	This is not a control unit hardware failure. 1. See CHK A7 in this FSI. 2. See "Diagnostic Identification Code Table" on DIAG 3, for diagnostic section EE40. TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	085* 118 116 134	Drive control card Drive-adapter card Write data card Control store card	02A-A1B2 01A-A1Q2 01A-A1P2 01A-A1C2	DD000, 001, 002, 003 DI001, 002 DF001, 002 CS001, 002
8EAC	The control unit has received an AC error code from the drive for five retries. The AC error code indicates a parallel motion command to the drive with a not completed disconnected command.	This is not a control unit hardware failure. See CHK AC in this FSI. 1. See "Diagnostic Identification Code Table" on DIAG 3, for diagnostic section EE40. TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	085* 118 116 134	Drive control card Drive-adapter card Write data card Control store card	02A-A1B2 01A-A1Q2 01A-A1P2 01A-A1C2	DD000, 001, 002, 003 DI001, 002 DF001, 002 CS001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
8Fnn	The control unit received a check 1 from the drive. The nn (bits 1-3) indicates the FRU code taken from the bus at the time of the error as follows: Bit 1 = Adapter card Bit 2 = Processor card Bit 3 = Digital servo card Any combination of the bits (or none) is valid. Sense byte 9 contains the value from the device status/error (DSE) register. Note: The FRU code indicates which card detected the error, not necessarily the failing FRU.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
9000	Two drives with logical addresses in sense bytes 9 and 30 are indicating the same physical address.	Ensure that the drive address switches are set correctly. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 129 118	Drive control card Physical address switch Drive-adapter card	02A-A1B2 See LOC 1 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
9010	The drive status byte indicates that Repositioning was on for more than 250 milliseconds. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
9011	A Rewind or Locate command was sent, but the Alert from the drive indicated that completion was not received. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
9015	This error should not occur.	Call your next level of support.				
9016	This error should not occur.	Call your next level of support.				
9017	This error should not occur.	Call your next level of support.				
9600	This error should not occur.	Call your next level of support.				
9601	The control unit timed out waiting for 'gap in' from the drive. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 182 - 01A-A1E2W 267* - 02A-A1B2Y 192 - 01A-A1XCDE 268* - 02A-A1B2Z 193 - 01A-A1YCDE	085* 118 117 134 115 199 248 265	Drive control card Drive-adapter card Microprocessor card Control store card Maintenance adapter card Write bus terminator CU0 Local Write bus terminator CU0 Remote Write bus terminator	02A-A1B2 01A-A1Q2 01A-A1D2 01A-A1C2 01A-A1E2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002 MP001, 002, 003 CS001, 002 MA001, 002, 003
9602	The drive serially started, but no prep move executed bit was shown in the drive status. Prep move executed indicates that the serial command has started.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
98nn	The microcode error match code was set to X'98nn' by the MD and a drive error command received a drive error code of X'nn'.	For FRU list and additional comments, use FSC 00nn. The nn is same as 98nn.				

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
8Fnn	The control unit received a check 1 from the drive. The nn (bits 1-3) indicates the FRU code taken from the bus at the time of the error as follows: Bit 1 = Adapter card Bit 2 = Processor card Bit 3 = Digital servo card Any combination of the bits (or none) is valid. Sense byte 9 contains the value from the device status/error (DSE) register. Note: The FRU code indicates which card detected the error, not necessarily the failing FRU.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
9000	Two drives are reporting the same physical address. Sense byte 30 shows the logical and physical address of one drive and sense byte 9 shows the logical address of the other drive.	Ensure that the physical address switches are set correctly. TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 129 118	Drive control card Physical address switch Drive-adapter card	02A-A1B2 See LOC 1 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
9010	The drive status byte indicates that Repositioning was on for more than 250 milliseconds. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
9011	A Rewind or Locate command was sent, but the Alert from the drive indicated that completion was not received. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
9012	A Data Security Erase command was sent, but the Alert from the drive indicating completion was not received.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
9015	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
9016	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
9017	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
9018	A tape mark is being written with records in the buffer. This error should not occur.	Call your next level of support.				
9600	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
9601	The control unit timed out waiting for 'gap in' from the drive. Sense byte 9 contains the value from the device status/error (DSE) register.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 182 - 01A-A1E2W 267* - 02A-A1B2Y 192 - 01A-A1XCDE 268* - 02A-A1B2Z 193 - 01A-A1YCDE	085* 118 117 134 115 199 248 265	Drive control card Drive-adapter card Microprocessor card Control store card Maintenance adapter card Write bus terminator CU0 local Write bus terminator CU0 remote Write bus terminator	02A-A1B2 01A-A1Q2 01A-A1D2 01A-A1C2 01A-A1E2 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 DI001, 002 MP001, 002, 003 CS001, 002 MA001, 002, 003

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Fault Symptom Index (FSI)

Fault Symptom Index (FSI) FSI 74-1

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
9602	The drive serially started, but no prep move executed bit was shown in the drive status. Prep move executed indicates that the serial command has started.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085* 118	Drive control card Drive-adapter card	02A-A1B2 01A-A1Q2	DD000, 001, 002, 003 DI001, 002
98nn	The microcode error match code was set to X'98nn' by the MD and a drive error command received a drive error code of X'nn'.	For FRU list and additional comments, use FSC 00nn. The nn is same as 98nn.				
A110	At the start of a buffer to channel transfer, a buffer error occurred while trying to read the packet header. The error is indicated in the buffer channel status and error (BCSE) register. BCSE error groups 0 and 1 are reported in sense byte 17. BCSE error groups 2 and 3 are reported in sense byte 9.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI for "Cable Group Table."	114 120 112** 113**	Buffer control card Buffer adapter card Buffer storage card Buffer storage card	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2	BC001, 002, 003 BA001, 002, 003 BM200 BM100
A111	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
A112	Packet ID sequence error; at the start of a buffer to channel transfer, the current packet does not have the expected packet ID sequence number.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. TCC FRU's associated with this failure are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 112** 113**	Buffer control card Buffer adapter card Buffer storage card Buffer storage card	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2	BC001, 002, 003 BA001, 002, 003 BM200 BM100
A113	The control unit timed out waiting for CMS Bit 0 to be turned off following a channel control reset.	The cables associated with this failure are in cable groups 28 and 50. See FSI for "Cable Group Table."	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003
A119	Bit 6 in the CMS register is on during a read operation. But, because this bit should always be off, a check 1 is initiated.	Check the dip switch settings on the 01A-A1K2 card. Switch position 3 should be off. See CARR-CU 1-2 "FRU120" for the location of the switch setting procedure.	120	Buffer adapter card	01A-A1K2	BA001, 002, 003
A11A	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
A120	The control unit timed out waiting for CMS Bit 0 to be turned off following a channel control reset.	The cables associated with this failure are in cable groups 28 and 50. See FSI for "Cable Group Table."	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003
A129	Bit 6 in the CMS register is on during a write operation. But, because this bit should always be off, a check 1 is initiated.	Check the dip switch settings on the 01A-A1K2 card. Switch position 3 should be off. See CARR-CU 1-2 "FRU120" for the location of the switch setting procedure.	120	Buffer adapter card	01A-A1K2	BA001, 002, 003

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
A130	A buffer-to-channel transfer caused a check 2 condition. The error is indicated in the buffer channel status and error (BCSE) register. BCSE error groups 0 and 1 are reported in sense byte 17. BCSE error groups 2 and 3 are reported in sense byte 9.	<p>1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step.</p> <p>2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."</p>	114 120 112** 113** 133 136 137 152 233 234 195 235 236 196 237 238 197	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter (channel A) Bus shoe card (channel A) Tag shoe card (channel A) Channel adapter (channel B) Bus shoe card (channel B) Tag shoe card (channel B) Channel adapter (channel C) Bus shoe card (channel C) Tag shoe card (channel C) Channel adapter (channel D) Bus shoe card (channel D) Tag shoe card (channel D) Channel address switch	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-T1A1 01A-T1A3 01A-A2D2 01A-T1B1 01A-T1B3 01A-A2E2 01A-T1C1 01A-T1C3 01A-A2F2 01A-T1D1 01A-T1D3 See LOC 1	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 IB001, 002, 003 IT001, 002, 003 CA101, 102 IB001, 002, 003 IT001, 002, 003 CA201, 202 IB001, 002, 003 IT001, 002, 003 CA301, 302 IB001, 002, 003 IT001, 002, 003
A131	At the end of a buffer-to-channel transfer, channel pointer equal stop was not on in the buffer channel status and error (BCSE) register, but any channel error was not on either. BCSE error groups 0 and 1 are reported in sense byte 17. BCSE error groups 2 and 3 are reported in sense byte 9.	<p>Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn."</p> <p>The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."</p>	117 114	Microprocessor card Buffer control card	01A-A1D2 01A-A1L2	MP001, 002, 003 BC001, 002, 003
A135	The channel adapter detected bad parity during data transfer from buffer-to-channel. The buffer did not detect bad parity on the same transfer.	<p>For error isolation, run the Support Diagnostics EE32 and EE33.</p> <p>The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."</p>	133 152 195 196 120	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Buffer adapter card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1K2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 BA001, 002, 003
A13A	At the end of a buffer-to-channel transfer, a buffer error occurred when deleting the current packet. BCSE error groups 0 and 1 are reported in sense byte 17. BCSE error groups 2 and 3 are reported in sense byte 9.	<p>Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn."</p> <p>The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."</p>	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003
A140	The control unit timed out waiting 100 microseconds for status from the buffer (write ID complete) during an MP Write operation.	<p>For error isolation, run the Support Diagnostics EE32 and EE33.</p> <p>The cables associated with this failure are in cable group 50. See FSI 1 for "Cable Group Table."</p> <p>The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL</p>	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003
A141	An error was indicated in the buffer channel status and error (BCSE) register after the MP Write operation following a channel-to-buffer transfer. BCSE error groups 0 and 1 are reported in sense byte 17. BCSE error groups 2 and 3 are reported in sense byte 9.	<p>Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn."</p> <p>The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL</p>	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003



Fault Symptom Index (FSI)

Fault Symptom Index (FSI) FSI 75-1

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
A142	A bad return code was received from Set Record Complete at the end of a channel-to-buffer transfer. Sense byte 9 gives the error type as follows: 4 = 0 bytes transferred—the block size is less than or equal to 4. This implies that the block has no data bytes. 5 = 0 length record—the block size is exactly 0. 6 = Negative free-bytes—the block size subtracted from the free-bytes caused a negative result.	For error isolation, run the Support Diagnostics EE32 and EE33. The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003
A143	MP write operation failure following a channel buffer transfer. BCR did not indicate the transfer of any bytes for the block ID.	The cables associated with this feature are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003
A149	At the end of a channel to buffer transfer, a Buffer timeout occurred while the control unit was writing the packet trailer. BCSE error groups 0 and 1 are reported in sense byte 17 and BCSE error groups 2 and 3 are reported in sense byte 9.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	120 114 112** 113**	Buffer adapter card Buffer control card Buffer storage card Buffer storage card	01A-A1K2 01A-A1L2 01A-A1N2 01A-A1M2	BA001, 002, 003 BC001, 002, 003 BM200 BM100
A14A	At the end of a channel-to-buffer transfer, a buffer error occurred while writing the packet trailer. BCSE error group 0 and 1 are reported in sense byte 17. BCSE error group 2 and 3 are reported in sense byte 9.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	120 114 112** 113**	Buffer adapter card Buffer control card Buffer storage card Buffer storage card	01A-A1K2 01A-A1L2 01A-A1N2 01A-A1M2	BA001, 002, 003 BC001, 002, 003 BM200 BM100
A14B	At the end of a channel-to-buffer transfer, a buffer error occurred while writing the packet header. BCSE error group 0 and 1 are reported in sense byte 17. BCSE error group 2 and 3 are reported in sense byte 9.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	120 114 112** 113**	Buffer adapter card Buffer control card Buffer storage card Buffer storage card	01A-A1K2 01A-A1L2 01A-A1N2 01A-A1M2	BA001, 002, 003 BC001, 002, 003 BM200 BM100
A14C	At the end of a channel-to-buffer transfer, a buffer error occurred while trying to set the packet complete. BCSE error group 0 and 1 are reported in sense byte 17. BCSE error group 2 and 3 are reported in sense byte 9.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	120 114 112** 113**	Buffer adapter card Buffer control card Buffer storage card Buffer storage card	01A-A1K2 01A-A1L2 01A-A1N2 01A-A1M2	BA001, 002, 003 BC001, 002, 003 BM200 BM100
A14D	A bad return code was received from Set Packet complete at the end of a channel-to-buffer transfer. Sense byte 9 gives the error type as follows: 4 = 0 bytes transferred—the block size is less than or equal to 4. This implies that the block has no data bytes. 5 = 0 length record—the block size is exactly 0. 6 = Negative free-bytes—the block size subtracted from the free-bytes caused a negative result.	For error isolation, run the Support Diagnostics EE32 and EE33. The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	120 114 112** 113**	Buffer adapter card Buffer control card Buffer storage card Buffer storage card	01A-A1K2 01A-A1L2 01A-A1N2 01A-A1M2	BA001, 002, 003 BC001, 002, 003 BM200 BM100
A14E	MP write operation failure following a channel-to-buffer transfer. The BCR did not indicate the transfer of any bytes.	For error isolation, run the Support Diagnostics EE32 and EE33. The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	120 114 112** 113**	Buffer adapter card Buffer control card Buffer storage card Buffer storage card	01A-A1K2 01A-A1L2 01A-A1N2 01A-A1M2	BA001, 002, 003 BC001, 002, 003 BM200 BM100
A14F	Exactly 0 bytes of data were transferred from the channel while in the enhanced data recording mode.	For error isolation, run the Support Diagnostics EE32 and EE33. The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	120 114 112** 113**	Buffer adapter card Buffer control card Buffer storage card Buffer storage card	01A-A1K2 01A-A1L2 01A-A1N2 01A-A1M2	BA001, 002, 003 BC001, 002, 003 BM200 BM100
A170	A channel-to-buffer transfer caused a check 2 condition. The error is indicated in the buffer channel status and error (BCSE) register. BCSE error groups 0 and 1 are reported in sense byte 17. BCSE error groups 2 and 3 are reported in sense byte 9.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 121 122 133 126 152 195 196 197	Buffer control card Buffer adapter card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel adapter card (channel A) Power/POR card Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Channel address switch	01A-A1L2 01A-A1K2 01A-A1G2 01A-A1F2 01A-A2C2 01A-A2H4 01A-A2D2 01A-A2E2 01A-A2F2 See LOC 1	BC001, 002, 003 BA001, 002, 003 SS001, 002 SM001, 002 CA001, 002 PR001 CA101, 102 CA201, 202 CA301, 302
A175	A channel adapter detected bad parity (BOPE) during a data transfer from Channel-to-Buffer.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. For error isolation, run the Support Diagnostics EE32 and EE33. The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	133 136 152 195 196 233 235 237	Channel adapter card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Bus shoe card (channel B) Bus shoe card (channel C) Bus shoe card (channel D)	01A-A2C2 01A-T1A1 01A-A2D2 01A-A2E2 01A-A2F2 01A-T1B1 01A-T1C1 01A-T1D1	CA001, 002 IB001, 002, 003 CA101, 102 CA201, 202 CA301, 302 IB001, 002, 003 IB001, 002, 003 IB001, 002, 003

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
A190	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
A191	A buffer error occurred while writing an FCM (Format Change Mark) into the buffer with an MP Write Op. BCSE error group 0 and 1 are reported in sense byte 17. BCSE error groups 2 and 3 are reported in sense byte 9.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	120 114 112** 113**	Buffer adapter card Buffer control card Buffer storage card Buffer storage card	01A-A1K2 01A-A1L2 01A-A1N2 01A-A1M2	BA001, 002, 003 BC001, 002, 003 BM200 BM200
A192	The control unit timed out waiting 100 microseconds for status from the buffer (Write ID complete) during an MP Write operation. BCSE error group 0 and 1 are reported in sense byte 17. BCSE error groups 2 and 3 are reported in sense byte 9.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	120 114 112** 113**	Buffer adapter card Buffer control card Buffer storage card Buffer storage card	01A-A1K2 01A-A1L2 01A-A1N2 01A-A1M2	BA001, 002, 003 BC001, 002, 003 BM200 BM200
A193	An error occurred while trying to put a FCM (Format Change Mark) in the buffer.	For error isolation, run the support diagnostics EE32 and EE33. The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	120 114 112** 113**	Buffer adapter card Buffer control card Buffer storage card Buffer storage card	01A-A1K2 01A-A1L2 01A-A1N2 01A-A1M2	BA001, 002, 003 BC001, 002, 003 BM200 BM200
A2nn	A channel-to-buffer transfer caused a check 2 condition. nn = Active error bits in the CTE0 register.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing with the next step. The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 121 122 133 126 152 195 196 197	Buffer control card Buffer adapter card Status store basic card Status store communications card (This FRU is a feature on 3480 Model 11 and standard on 3480 Model A22.) Channel adapter card (channel A) Power/POR card Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Channel address switch.	01A-A1L2 01A-A1K2 01A-A1G2 01A-A1F2 01A-A2C2 01A-A2H4 01A-A2D2 01A-A2E2 01A-A2F2 See LOC 1	BC001, 002, 003 BA001, 002, 003 SS001, 002 SM001, 002 CA001, 002 PR001 CA101, 102 CA201, 202 CA301, 302
A3nn	A buffer-to-channel transfer caused a check 2 condition. nn = Active error bits in the CTE0 register.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	114 120 112** 113** 133 136 137 152 233 234 195 235 236 196 237 238 197	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (Channel A) Bus shoe card (Channel A) Tag shoe card (Channel A) Channel adapter card (Channel B) Bus shoe card (Channel B) Tag shoe card (Channel B) Channel adapter card (Channel C) Bus shoe card (Channel C) Tag shoe card (Channel C) Channel adapter card (Channel D) Bus shoe card (Channel D) Tag shoe card (Channel D) Channel address switch	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-T1A1 01A-T1A3 01A-A2D2 01A-T1B1 01A-T1B3 01A-A2E2 01A-T1C1 01A-T1C3 01A-A2F2 01A-T1D1 01A-T1D3 See LOC 1	BC001, 002, 003 BA001, 002, 003 BM200 BM200 CA001, 002 IB001, 002, 003 IT001, 002, 003 CA101, 102 IB001, 002, 003 IT001, 002, 003 CA201, 202 IB001, 002, 003 IT001, 002, 003 CA301, 302 IB001, 002, 003 IT001, 002, 003
A431	During a read, the control unit timed out waiting for transfer complete and any channel error is not on in either the BCSE or the CMS registers.	For error isolation, run the support diagnostics EE32 and EE33. The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003

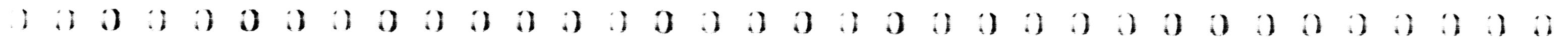


Fault Symptom Index (FSI)

Fault Symptom Index (FSI) FSI 75-3

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
A432	CMS Bit 0 (Improved Data Recording Capability format busy bit) remained active following a buffer-to-channel transfer.	The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003
A441	During a write, the control unit timed out waiting for transfer complete and any channel error is not on in the BCSE register. BCSE error group 0 and 1 are in sense byte 17, and BCSE error group 2 are in sense byte 9.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003
A442	CMS Bit 0 (Improved Data Recording Capability format busy bit) remained active following a channel-to-buffer transfer.	The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	120 114	Buffer adapter card Buffer control card	01A-A1K2 01A-A1L2	BA001, 002, 003 BC001, 002, 003
A5nn	A channel-to-buffer transfer caused a check 2 condition. nn = active error bits in the CTEO register and the CPEO register contents are reported in sense bytes 16 and 17 as DCnn.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing with the next step. The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 112** 113** 133 136 137 152 233 234 195 235 236 196 237 238 197	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Bus shoe card (channel A) Tag shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Tag shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Tag shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Tag shoe card (channel D) Channel address switch	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-T1A1 01A-T1A3 01A-A2D2 01A-T1B1 01A-T1B3 01A-A2E2 01A-T1C1 01A-T1C3 01A-A2F2 01A-T1D1 01A-T1D3 See LOC 1	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 IB001, 002, 003 IT001, 002, 003 CA101, 102 IB001, 002, 003 IT001, 002, 003 CA201, 202 IB001, 002, 003 IT001, 002, 003 CA301, 302 IB001, 002, 003 IT001, 002, 003
A6nn	A channel-to-buffer transfer caused a check 2 condition. nn = active error bits in the CTEO register and the CTXE register contents are reported in sense bytes 16 and 17 as DCnn.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing with the next step. The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 112** 113** 133 136 137 152 233 234 195 235 236 196 237 238 197	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Bus shoe card (channel A) Tag shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Tag shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Tag shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Tag shoe card (channel D) Channel address switch	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-T1A1 01A-T1A3 01A-A2D2 01A-T1B1 01A-T1B3 01A-A2E2 01A-T1C1 01A-T1C3 01A-A2F2 01A-T1D1 01A-T1D3 See LOC 1	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 IB001, 002, 003 IT001, 002, 003 CA101, 102 IB001, 002, 003 IT001, 002, 003 CA201, 202 IB001, 002, 003 IT001, 002, 003 CA301, 302 IB001, 002, 003 IT001, 002, 003
A7nn	A channel-to-buffer transfer caused a check 2 condition. nn = active error bits in the CTEO register and the CPEO register contents are reported in sense bytes 16 and 17 as DCnn.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing with the next step. The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 121 122 126 133 152 195 196 197	Buffer control card Buffer adapter card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Power/POR card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) channel address switch	01A-A1L2 01A-A1K2 01A-A1G2 01A-A1F2 01A-A2H2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 See LOC 1	BC001, 002, 003 BA001, 002, 003 SS001, 002 SM001, 002 PR001 CA001, 002 CA101, 102 CA201, 202 CA301, 302
A8nn	A buffer-to-channel transfer caused a check 2 condition. nn = active error bits in the CTEO register and the CTXE register contents are reported in sense bytes 16 and 17 as DCnn.	This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing with the next step. The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 121 122 126 133 152 195 196 197	Buffer control card Buffer adapter card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Power/POR card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) channel address switch	01A-A1L2 01A-A1K2 01A-A1G2 01A-A1F2 01A-A2H2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 See LOC 1	BC001, 002, 003 BA001, 002, 003 SS001, 002 SM001, 002 PR001 CA001, 002 CA101, 102 CA201, 202 CA301, 302

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
B010	<p>Statistical analysis of temporary hardware errors indicates a hardware malfunction in the control unit.</p> <p>If sense byte 14 = B1, then byte 15 = type of temporary errors that are unacceptable:</p> <p>Bit</p> <p>0 = Write criteria error threshold exceeded 1 = Write criteria event threshold exceeded 2 = Write ECC threshold exceeded 3 = Reserved 4 = Read criteria error threshold exceeded 5 = Read criteria event threshold exceeded 6 = Read ECC threshold exceeded 7 = Device Excessive Cleans</p>	<ol style="list-style-type: none"> Forced error logging may be turned on to change the logging of temporary error counts into format 19 sense records. Then use the indicated sense record and START REPAIR to correct the problem. Bit 7 of byte 15 (device excessive cleans) may be the result of operator not cleaning the drive OR deposits in the tape path that are not removed by the cleaning cartridge. 	132 131 130 123 124 125 119 111 116 118	<p>Read detect card 3 Read detect card 2 Read detect card 1 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Read ECC/CORR card Write data card Drive-adaptor card</p>	01A-A2T2 01A-A2S2 01A-A2R2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1R2 01A-A1P2 01A-A1Q2	RD201 RD101 RD001 SB001, 002 SB101, 102 SB201, 202 RC001, 002 EC001, 002 DF001, 002 DI001, 002
B011	<p>Statistical analysis of temporary hardware errors indicates a hardware malfunction in the string of drives addressed 0-7.</p> <p>Sense byte 12 identifies drives within the string that are failing:</p> <p>Bit Drive</p> <p>0 0 1 1 2 2 3 3 4 4 5 5 6 6 7 7</p> <p>If sense byte 14 = B1, then byte 15 = type of temporary errors that are unacceptable:</p> <p>Bit</p> <p>0 = Write criteria error threshold exceeded 1 = Write criteria event threshold exceeded 2 = Write ECC threshold exceeded 3 = Reserved 4 = Read criteria error threshold exceeded 5 = Read criteria event threshold exceeded 6 = Read ECC threshold exceeded 7 = Device Excessive Cleans</p>	<ol style="list-style-type: none"> Forced error logging may be turned on to change the logging of temporary error counts into format 19 sense records. Then use the indicated sense record and START REPAIR to correct the problem. The drive FRU listed as possible cause of this error may be located in any drive attached to the failing string of drives. Bit 7 of byte 15 (device excessive cleans) may be the result of operator not cleaning the drive OR deposits in the tape path that are not removed by the cleaning cartridge. 	132 131 130 062* 199	<p>Read detect card 3 Read detect card 2 Read detect card 1 Read preamplifier card Write bus terminator</p>	01A-A2T2 01A-A2S2 01A-A2R2 02A-A1H2 See LOC 1	RD201 RD101 RD001 RP000
B012	<p>Statistical analysis of temporary hardware errors indicates a hardware malfunction in the string of drives addressed 8-F.</p> <p>Sense byte 13 identifies drives within the string that are failing:</p> <p>Bit Drive</p> <p>0 8 1 9 2 A 3 B 4 C 5 D 6 E 7 F</p> <p>If sense byte 14 = B1, then byte 15 = type of temporary errors that are unacceptable:</p> <p>Bit</p> <p>0 = Write criteria error threshold exceeded 1 = Write criteria event threshold exceeded 2 = Write ECC threshold exceeded 3 = Reserved 4 = Read criteria error threshold exceeded 5 = Read criteria event threshold exceeded 6 = Read ECC threshold exceeded 7 = Device Excessive Cleans</p>	<ol style="list-style-type: none"> Forced error logging may be turned on to change the logging of temporary error counts into format 19 sense records. Then use the indicated sense record and START REPAIR to correct the problem. The drive FRU listed as possible cause of this error may be located in any drive attached to the failing string of drives. Bit 7 of byte 15 (device excessive cleans) may be the result of operator not cleaning the drive OR deposits in the tape path that are not removed by the cleaning cartridge. 	132 131 130 062* 199	<p>Read detect card 3 Read detect card 2 Read detect card 1 Read preamplifier card Write bus terminator</p>	01A-A2T2 01A-A2S2 01A-A2R2 02A-A1H2 See LOC 1	RD201 RD101 RD001 RP000
B013	<p>Statistical analysis of temporary hardware errors indicates a hardware malfunction in the drive unit.</p> <p>If sense byte 14 = B1, then byte 15 = type of temporary errors that are unacceptable:</p> <p>Bit</p> <p>0 = Write criteria error threshold exceeded 1 = Write criteria event threshold exceeded 2 = Write ECC threshold exceeded 3 = Reserved 4 = Read criteria error threshold exceeded 5 = Read criteria event threshold exceeded 6 = Read ECC threshold exceeded 7 = Device Excessive Cleans</p>	<ol style="list-style-type: none"> Forced error logging may be turned on to change the logging of temporary error counts into format 19 sense records. Then use the indicated sense record and START REPAIR to correct the problem. Bit 7 of byte 15 (device excessive cleans) may be the result of operator not cleaning the drive OR deposits in the tape path that are not removed by the cleaning cartridge. 	062* 063* 216 013 059 064 085*	<p>Read preamplifier card Write card Tape lifter solenoid Head and guide assembly Power amplifier board Write power card Drive control card</p>	02A-A1H2 02A-A1J4 Drive Drive Drive 02A-A1G2 02A-A1B2	RP000 WR000 VP000 DD000, 001, 002, 003



Fault Symptom Index (FSI)

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
C100	While trying to recover from an error, another error occurred.	This FSC is always preceded by another FSC. Use that FSC when troubleshooting this failure.				
C200	While trying to recover from an error, another error occurred.	This FSC is always preceded by another FSC. Use that FSC when troubleshooting this failure.				
C201	While trying to recover from an error, another error occurred.	This FSC is always preceded by another FSC. Use that FSC when troubleshooting this failure.				
C202	A Write error occurred that caused the CU ERP to position the device to a particular block. In the process of positioning, the device position became uncertain and a Refresh operation failed to locate the original failing block.	This error can be caused by microcode.	085 130 131 132 118 119	Drive control card Read detect card 1 Read detect card 2 Read detect card 3 Drive adapter card Read clock and format	02A-A1B2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A2G2 01A-A2S2	
C300	While trying to recover from an error, another error occurred.	This FSC is always preceded by another FSC. Use that FSC when troubleshooting this failure.				
C301	While trying to recover from an error, another error occurred.	This FSC is always preceded by another FSC. Use that FSC when troubleshooting this failure.				
C390	While trying to recover from an error, a tape mark was detected on a read but cannot be found while reading the other direction. No previous FSC was reported for this error.	Run diagnostic section EEA0 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3. TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ	062* 064 085* 063* 013 216 059 116 118 130 131 132 119	Read preamplifier card Write power card Drive control card Write card Head and guide assembly Tape lifter solenoid Power amplifier board Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read clock and format card	02A-A1H2 02A-A1G2 02A-A1B2 02A-A1J4 Baseplate Drive Drive 01A-A1P2 01A-A1G2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A1S2	RP000 VP000 DD000, 001, 002, 003 WR000 DF001, 002 DI001, 002 RD001 RD101 RD201 RC001, 002
C391	An error occurred while reading a record written in the improved Data Recording Capability mode, but the record was read successfully by reading it backwards. The data has been reversed to continue reading in a forward direction, but the &cu. is operating in a degraded mode.	Note: Suspect a possible tape media failure, if only one volume is failing. 1. Run diagnostic section EEA0 for failure isolation. See "Diagnostic Identification Code Table" on DIAG 3. 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	062* 064 085* 063* 013 216 059 116 118 130 131 132 119	Read preamplifier card Write power card Drive control card Write card Head and guide assembly Tape lifter solenoid Power amplifier board Write data card Drive-adapter card Read detect card 1 Read detect card 2 Read detect card 3 Read clock and format card	02A-A1H2 02A-A1G2 02A-A1B2 02A-A1J4 Baseplate Drive Drive 01A-A1P2 01A-A1G2 01A-A2R2 01A-A2S2 01A-A2T2 01A-A1S2	RP000 VP000 DD000, 001, 002, 003 WR000 DF001, 002 DI001, 002 RD001 RD101 RD201 RC001, 002
C401	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
C461	Refresh attempted on a CST2 Cartridge on an 18 track Device. Move Cartridge to a 36 track device.	IBM Enhanced Capacity Cartridge System tapes should not be mounted in a 3480 subsystem.	232	Cartridge	Baseplate	

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
CABC	This error code is set after finishing a successful refresh. This helps indicate successful refresh on write data checks and velocity errors.	This FSC is always preceded by another FSC. Use that FSC when troubleshooting this failure.				
CAFB	While trying to recover from an error, another error occurred.	This FSC is always preceded by another FSC. Use that FSC when troubleshooting this failure.				
CCBB	While trying to recover from an error, another error occurred.	This FSC is always preceded by another FSC. Use that FSC when troubleshooting this failure.				
CCBC	While trying to recover from an error, another error occurred.	This FSC is always preceded by another FSC. Use that FSC when troubleshooting this failure.				
CCCC	Error recovery is disabled.	This is an operating condition. This condition can only occur during error match code operation with the MD. If this condition occurs during customer operation, use the MD to turn off error matching. See SDISK 1 for "Trace/Match Control."				



Fault Symptom Index (FSI)

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
CCDD	Fifty consecutive errors have occurred.	Information message only. Using the host system console messages or EREP, look for other sense records with a different FSC for this control unit. The FSC is always preceded by another FSC for the failure. Use that FSC for troubleshooting the failure.				
CCEE	An error occurred during a Synchronous Read or Write operation. Note: Error recovery is not performed for errors that occur in 'sync mode.'	This FSC is always preceded by another FSC for the failure. Using the host system console messages or EREP, look for other sense records with a different FSC for this control unit. Use that FSC for troubleshooting the failure.				
CCF9	During a control unit error recovery a 'no ending sync error' occurred. Recovery stopped and a permanent error was generated.	This code is for information only. Use the FSC's in sense byte 10 through 13 to further analyze the problem.				
CCFA	While trying to recover from an error, another error occurred.	This FSC is always preceded by another FSC. Use that FSC when troubleshooting this failure.				
CCFB	A check 64 occurred in initial drive status during error recovery.	See the FSI for CHK 64.				
CCFC	While trying to recover from an error, another error occurred.	This FSC is always preceded by another FSC. Use that FSC when troubleshooting this failure.				
CCFD	While trying to recover from an error, another error occurred.	This FSC is always preceded by another FSC. Use that FSC when troubleshooting this failure.				
CCFE	While trying to recover from an error, another error occurred.	This FSC is always preceded by another FSC. Use that FSC when troubleshooting this failure.				
CCFF	While trying to recover from an error, another error occurred.	This FSC is always preceded by another FSC. Use that FSC when troubleshooting this failure.				
CF80	Serial interconnection errors/demark.	A problem has occurred on the serial bus and its use has been inhibited. Drive performance has been degraded. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	085*	Drive control card	02A-A1B2	DD000, 001, 002, 003
CF81	Microcode detected error.	Refer to SPROC 1 and perform procedure D. Set trace options as follows: CHANNEL, DRIVE, MODULE, LVL7.				
D0nn	The read status register (RSR) contains bits 5, 6, or 7 active. The nn indicates the error bits that are active in the RSR.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." The cables associated with this failure are in cable groups 61-67. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 185 - 01A-A1XRS 267* - 02A-A1B2Y 186 - 01A-A1YRS 268* - 02A-A1B2Z	062* 064 063* 085* 216 059 013 132 131 130 123 124 125 119 111 114 120 199 248 264 265	Read preamplifier card Write power card Write card Drive control card Tape lifter solenoid Power amplifier board Head and guide assembly Read detect card 3 Read detect card 2 Read detect card 1 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Read ECC/CORR card Buffer control card Buffer adapter card Write bus terminator CU0 (local) Write bus terminator CU0 (remote) Write bus terminator CU1 (local) Write bus terminator CU1 (remote)	02A-A1H2 02A-A1G2 02A-A1J4 02A-A1B2 Drive Drive Drive 01A-A2T2 01A-A2S2 01A-A2R2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1R2 01A-A1L2 01A-A1K2 See CARR-CU 1-8 See CARR-CU 1-8 See CARR-CU 1-8 See CARR-CU 1-8	RP000 VP000 WR000 DD000, 001, 002, 003 RD201 RD101 RD001 SB001, 002 SB101, 102 SB201, 202 RC001, 002 EC001, 002 BC001, 002, 003 BA001, 002, 003

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
D1nn	The Maintenance Tag In (MTI) register contains the active error bits. The nn indicates the active bits.	<ol style="list-style-type: none"> 1. Use the EAD for error code D1nn for failure isolation. See EAD 1 for "Error Code D1nn." 2. Call your next level of support. 	115 117 120 116 118 119 121 114 122	Maintenance adapter card Microprocessor card Buffer adapter card Write data card Drive-adapter card Read clock and format card Status store basic card Buffer control card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1E2 01A-A1D2 01A-A1K2 01A-A1P2 01A-A1Q2 01A-A1S2 01A-A1G2 01A-A1L2 01A-A1F2	MA001, 002, 003 MP001, 002, 003 BA001, 002, 003 DI001, 002 RC001, 002 BC001, 002, 003 SS001, 002 BC001, 002, 003 SM001, 002
D2nn	The channel error register contains active user FRU bits. Error code = D2nn, where nn = the contents of CER register. XXXX XXXX = nn 	The nn bits are pointers to suspected FRU's. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1.	133 152 195 196 117 122 121	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Microprocessor card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Status store basic card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1D2 01A-A1F2 01A-A1G2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 SM001, 002 SS001, 002
D4nn	The device status/error (DSE) register contains error bits 0, 1, or 2 active. The nn indicates the active bits.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Device Data Bus Problems - General." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	118 116 134 085*	Drive-adapter card Write data card Control store card Drive control card	01A-A1Q2 01A-A1P2 01A-A1C2 02A-A1B2	DI001, 002 DF001, 002 CS001, 002 DD000, 001, 002, 003



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
D1nn	The Maintenance Tag In (MTI) register contains the active error bits. The nn indicates the active bits.	<ol style="list-style-type: none"> Use the EAD for error code D1nn for failure isolation. See EAD 1 for "Error Code D1nn." Call your next level of support. 	115 117 120 116 118 119 121 114 122	Maintenance adapter card Microprocessor card Buffer adapter card Write data card Drive-adapter card Read clock and format card Status store basic card Buffer control card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1E2 01A-A1D2 01A-A1K2 01A-A1Q2 01A-A1S2 01A-A1S2 01A-A1G2 01A-A1L2 01A-A1F2	MA001, 002, 003 MP001, 002, 003 BA001, 002, 003 DI001, 002 RC001, 002 BC001, 002, 003 SS001, 002 BC001, 002, 003 SM001, 002
D4nn	The device status/error (DSE) register contains error bits 0, 1, or 2 active. The nn indicates the active bits.	Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Device Data Bus Problems - General." The cables associated with this failure are in cable groups 80-86. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 267* - 02A-A1B2Y 184 - 01A-A1ZPQ 268* - 02A-A1B2Z	118 116 134 085*	Drive-adapter card Write data card Control store card Drive control card	01A-A1Q2 01A-A1P2 01A-A1C2 02A-A1B2	DI001, 002 DF001, 002 CS001, 002 DD000, 001, 002, 003

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
D5nn	The buffer channel status and error (BCSE) register contains active error bits. The nn indicates the bits that are active in BCSE error groups 0 and 1. BCSE error groups 2 and 3 are reported in sense byte 9.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 187 - 01A-A1ZFG 158 - 01A-A1XKL 188 - 01A-A1ZKL 159 - 01A-A1YKL 189 - 01A-A1WFG 181 - 01A-A1P2Y 190 - 01A-A1XFG 184 - 01A-A1ZPQ 191 - 01A-A1YFG	114 120 112** 113** 133 136 137 152 233 234 195 235 236 196 237 238 119 118 116 126 134 121 122 197	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Bus shoe card (channel A) Tag shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Tag shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Tag shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Tag shoe card (channel D) Read clock and format card Drive-adapter card Write data card Power/POR card Control store card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel address switch	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-T1A1 01A-T1A3 01A-A2D2 01A-T1B1 01A-T1B3 01A-A2E2 01A-T1C1 01A-T1C3 01A-A2F2 01A-T1D1 01A-T1D3 01A-A1S2 01A-A1Q2 01A-A1P2 01A-A2H4 01A-A1C2 01A-A1G2 01A-A1F2 See LOC 1	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 IB001, 002, 003, WA013 IT001, 002, 003 CA101, 102 IB001, 002, 003, WA013 IT001, 002, 003 CA201, 202 IB001, 002, 003, WA013 IT001, 002, 003 CA301, 302 IB001, 002, 003, WA013 IT001, 002, 003 RC001, 002 DI001, 002 DF001, 002 PR001 CS001, 002 SS001, 002 SM001, 002
D6nn	The buffer device status and error (BDSE) register contains active error bits. The nn indicates BDSE error groups 0 and 1. BDSE error groups 2 and 3 are reported in sense byte 9.	Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 185 - 01A-A1XRS 158 - 01A-A1XKL 186 - 01A-A1YRS 159 - 01A-A1YKL 188 - 01A-A1ZKL 181 - 01A-A1P2Y 192 - 01A-A1XCDE 182 - 01A-A1E2W 193 - 01A-A1YCDE 184 - 01A-A1ZPQ	114 120 112** 113** 111 133 136 152 233 195 235 196 237 119 118 116 134 117	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Read ECC/CORR card Channel adapter card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Read clock and format card Drive-adapter card Write data card Control store card Microprocessor card	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A1R2 01A-A2C2 01A-T1A1 01A-A2D2 01A-T1B1 01A-A2E2 01A-T1C1 01A-A2F2 01A-T1D1 01A-A1S2 01A-A1Q2 01A-A1P2 01A-A1C2 01A-A1D2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 EC001, 002 CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 RC001, 002 DI001, 002 DF001, 002 CS001, 002 MP001, 002, 003
D7nn	The write status/error (WSE) register contains active error bits 3, 4, 5, 6, or 7. The nn indicates the active WSE bits.	Use the EAD for error code D7nn for failure isolation. See EAD 1 for "Error Code D7nn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 181 - 01A-A1P2Y 158 - 01A-A1XKL 188 - 01A-A1ZKL 159 - 01A-A1YKL 184 - 01A-A1ZPQ	116 120 114 117 118 139 134 119	Write data card Buffer adapter card Buffer control card Microprocessor card Drive-adapter card Logic board A1 Control store card Read clock and format card	01A-A1P2 01A-A1K2 01A-A1L2 01A-A1D2 01A-A1Q2 01A-A1 01A-A1C2 01A-A1S2	DF001, 002 BA001, 002, 003 BC001, 002, 003 MP001, 002, 003 DI001, 002 CS001, 002 RC001, 002

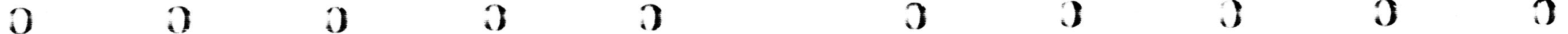
FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
D8nn	The read error register (RER) contains active bits 0, 1, 2, 4, 5, 6, or 7. The nn indicates the bits that are active in the RER.	<p>1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn."</p> <p>2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."</p> <p>TCC FRUs associated with this error code are: 185 - 01A-A1XRS 267* - 02A-A1B2Y 186 - 01A-A1YRS 268* - 02A-A1B2Z</p>	064 062* 085* 132 131 130 123 124 125 119 111 120 134 112** 113**	Write power card Read preamplifier card Drive control card Read detect card 3 Read detect card 2 Read detect card 1 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Read ECC/CORR card Buffer adapter card Control store card Buffer storage card Buffer storage card	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2T2 01A-A2S2 01A-A2R2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1R2 01A-A1K2 01A-A1C2 01A-A1N2 01A-A1M2	VP000 RP000 DD000, 001, 002, 003 RD201 RD101 RD001 SB001, 002 SB101, 102 SB201, 202 RC001, 002 EC001, 002 BA001, 002, 003 CS001, 002 BM200 BM100
D900	The microprocessor check-2 bit 0 is on in the processor status register (PSR) and no supporting FRU or errors were detected.	<p>Use the EAD for error code D900 for failure isolation. See EAD 1 for "Error Code D900."</p> <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 192 - 01A-A1XCDE 182 - 01A-A1E2W 193 - 01A-A1YCDE 184 - 01A-A1ZPQ</p>	115 116 117 118 119 114 121	Maintenance adapter card Write data card Microprocessor card Drive-adapter card Read clock and format card Buffer control card Status store basic card	01A-A1E2 01A-A1P2 01A-A1D2 01A-A1Q2 01A-A1S2 01A-A1L2 01A-A1G2	MA001, 002, 003 DF001, 002 MP001, 002, 003 DI001, 002 RC001, 002 BC001, 002, 003 SS001, 002
DAnn	The CMS register contains error bits. The nn indicates bits that are active in BCSE error groups 0 and 1. The CTXE register is in sense byte 9.	<p>This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing with the next step.</p> <p>The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 157 - 01A-A1WXL 187 - 01A-A1ZFG 158 - 01A-A1XKL 188 - 01A-A1ZKL 159 - 01A-A1YKL 189 - 01A-A1WFG 181 - 01A-A1P2Y 190 - 01A-A1XFG 184 - 01A-A1ZPQ 191 - 01A-A1YFG</p>	114 120 112** 113** 133 136 152 233 195 235 196 237 119 118 116 126 134 121 122	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Read clock and format card Drive adapter card Write data card Power/POR card Control store card Status store basic card Status store communications card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-T1A1 01A-A2D2 01A-T1B1 01A-A2E2 01A-T1C1 01A-A2F2 01A-T1D1 01A-A1S2 01A-A1Q2 01A-A1P2 01A-A2H2 01A-A1C2 01A-A1G2 01A-A1F2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 RC001, 002 DI001, 002 DF001, 002 PR001 CS001, 002 SS001, 002 SM001, 002
DCnn	The CMS register contains active error bits. The nn indicates bits that are active in the CTXE or CPEO registers.	<p>This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing with the next step.</p> <p>The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 157 - 01A-A1WXL 187 - 01A-A1ZFG 158 - 01A-A1XKL 188 - 01A-A1ZKL 159 - 01A-A1YKL 189 - 01A-A1WFG 181 - 01A-A1P2Y 190 - 01A-A1XFG 184 - 01A-A1ZPQ 191 - 01A-A1YFG</p>	114 120 112** 113** 133 136 152 233 195 235 196 237 119 118 116 126 134 121 122	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Read clock and format card Drive adapter card Write data card Power/POR card Control store card Status store basic card Status store communications card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-T1A1 01A-A2D2 01A-T1B1 01A-A2E2 01A-T1C1 01A-A2F2 01A-T1D1 01A-A1S2 01A-A1Q2 01A-A1P2 01A-A2H2 01A-A1C2 01A-A1G2 01A-A1F2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 RC001, 002 DI001, 002 DF001, 002 PR001 CS001, 002 SS001, 002 SM001, 002

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Fault Symptom Index (FSI)

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
D8nn	The read error register (RER) contains active bits 0, 1, 2, 4, 5, 6, or 7. The nn indicates the bits that are active in the RER.	<p>1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn."</p> <p>2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."</p> <p>TCC FRUs associated with this error code are: 185 - 01A-A1XRS 267* - 02A-A1B2Y 186 - 01A-A1YRS 268* - 02A-A1B2Z</p>	064 062* 085* 132 131 130 123 124 125 119 111 120 134 112** 113**	Write power card Read preamplifier card Drive control card Read detect card 3 Read detect card 2 Read detect card 1 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Read ECC/CORR card Buffer adapter card Control store card Buffer storage card Buffer storage card	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2T2 01A-A2S2 01A-A2R2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1R2 01A-A1K2 01A-A1C2 01A-A1N2 01A-A1M2	VP000 RP000 DD000, 001, 002, 003 RD201 RD101 RD001 SB001, 002 SB101, 102 SB201, 202 RC001, 002 EC001, 002 BA001, 002, 003 CS001, 002 BM200 BM100
D900	The microprocessor check-2 bit 0 is on in the processor status register (PSR) and no supporting FRU or errors were detected.	<p>Use the EAD for error code D900 for failure isolation. See EAD 1 for "Error Code D900."</p> <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 192 - 01A-A1XCDE 182 - 01A-A1E2W 193 - 01A-A1YCDE 184 - 01A-A1ZPQ</p>	115 116 117 118 119 114 121	Maintenance adapter card Write data card Microprocessor card Drive-adapter card Read clock and format card Buffer control card Status store basic card	01A-A1E2 01A-A1P2 01A-A1D2 01A-A1Q2 01A-A1S2 01A-A1L2 01A-A1G2	MA001, 002, 003 DF001, 002 MP001, 002, 003 DI001, 002 RC001, 002 BC001, 002, 003 SS001, 002
DAnn	The CMS register contains error bits. The nn indicates bits that are active in BCSE error groups 0 and 1. The CTXE register is in sense byte 9.	<p>This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing with the next step.</p> <p>The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."</p> <p>TCC FRUs associated with this error code are: 157 - 01A-A1WXL 187 - 01A-A1ZFG 158 - 01A-A1XKL 188 - 01A-A1ZKL 159 - 01A-A1YKL 189 - 01A-A1WFG 181 - 01A-A1P2Y 190 - 01A-A1XFG 184 - 01A-A1ZPQ 191 - 01A-A1YFG</p>	114 120 112** 113** 133 136 152 233 195 235 196 237 119 118 116 126 134 121 122	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Read clock and format card Drive adapter card Write data card Power/POR card Control store card Status store basic card Status store communications card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-T1A1 01A-A2D2 01A-T1B1 01A-A2E2 01A-T1C1 01A-A2F2 01A-T1D1 01A-A1S2 01A-A1Q2 01A-A1P2 01A-A2H2 01A-A1C2 01A-A1G2 01A-A1F2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 RC001, 002 DI001, 002 DF001, 002 PR001 CS001, 002 SS001, 002 SM001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
DF00	This error should not occur.	Call your next level of support.				
DF01	This error should not occur.	Call your next level of support.				
DF02	This error should not occur.	Call your next level of support.				
DF03	This error should not occur.	Call your next level of support.				
DF10	This error should not occur.	Call your next level of support.				
DF11	This error should not occur.	Call your next level of support.				
DF12	This error should not occur.	Call your next level of support.				
DF13	This error should not occur.	Call your next level of support.				
DF14	This error should not occur.	Call your next level of support.				
DF16	This error should not occur.	Call your next level of support.				
DF20	This error should not occur.	Call your next level of support.				
DF21	This error should not occur.	Call your next level of support.				
DF22	This error should not occur.	Call your next level of support.				
DF23	This error should not occur.	Call your next level of support.				
DFF1	This error should not occur.	Call your next level of support.				
DFF2	This error should not occur.	Call your next level of support.				
E040	This error should not occur.	Call your next level of support.				
E041	This error should not occur.	Call your next level of support.				
E042	This error should not occur.	Call your next level of support.				
E043	This error should not occur.	Call your next level of support.				
E044	This error should not occur.	Call your next level of support.				
E045	This error should not occur.	Call your next level of support.				
E046	This error should not occur.	Call your next level of support.				
E047	This error should not occur.	Call your next level of support.				
E048	This error should not occur.	Call your next level of support.				
E049	This error should not occur.	Call your next level of support.				
E04A	The diagnostic monitor has attempted to reserve the buffer switch (necessary for this command), but the switch was in use.	This is a normal occurrence during concurrent maintenance. Reissue the command. If the problem persists during a stand-alone operation, a faulty component may exist. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122 133 152 195 196 126	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Power/POR card	01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A2H4	SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302 PR001
E04B	An error occurred in processing the Write Channel Adapter Request Register order. The channel command was not performed.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 188 - 01A-A1ZKL 158 - 01A-A1XKL 189 - 01A-A1WFG 159 - 01A-A1YKL 190 - 01A-A1XFG 187 - 01A-A1ZFG 191 - 01A-A1YFG	133 152 195 196 121 122 120 114	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Buffer adapter card Buffer control card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A1F2 01A-A1K2 01A-A1L2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002 SM001, 002 BA001, 002, 003 BC001, 002, 003



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
DF00	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
DF10	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
DF11	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
DF12	Microcode detected error.	Refer to SPROC 1 and perform procedure D. Set trace options as follows: CHANNEL, DRIVE, MODULE, LVL7.				
DF13	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
DF14	Microcode detected error.	Refer to SPROC 1 and perform procedure D. Set trace options as follows: MODULE + LVL7.				
DF16	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
DF20	Microcode detected error.	Refer to SPROC 1 and perform procedure D. Set trace options as follows: CHANNEL, DRIVE, MODULE, LVL7.				
DF21	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
DF22	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
DF23	Microcode detected error.	Refer to SPROC 1 and perform procedure D. Set trace options as follows: CHANNEL, DRIVE, MODULE, LVL7.				
DF50	A buffered log overflow has occurred in a Control Unit supporting the extended buffer log. A read buffered log command is requested.	This is a normal operating condition.				
DF52	A rewind unload command has completed in a Control Unit supporting the extended buffer log. A read buffered log command is requested.	This is a normal operating condition.				
DFF1	Microcode detected error. An unsolicited sense or read buffered log command has been received.	Call your next level of support. This code is a trace tool and never appears in the sense data. It is found only in the SNERH table.				
DFF2	Microcode detected error. A sense command has been received and sense data has been presented in response to UNIT CHECK status.	Call your next level of support. This code is a trace tool and never appears in the sense data. It is found only in the SNERH table.				
DFFD	Microcode detected error. This code is posted when an ERROR MATCH is detected and the option to force a Control unit dump is set.	Call your next level of support. Usually posted when SPROC procedure D has been involved. Perform SPROC procedure A and then call your next level of support.				
E040	Microcode detected error. This is a normal completion code for the diagnostic monitor.	Refer to SPROC 1 and perform procedure E. After completing procedure E, call your next level of support.				
E041	Incorrect number of data bytes in command parms.	Refer to SPROC 1 and perform procedure E.				
E042	Device requested by the MD is busy.	Refer to SPROC 1 and perform procedure E.				
E043	Invalid command data byte from the MD.	Refer to SPROC 1 and perform procedure E.				
E044	Invalid command sequence.	Refer to SPROC 1 and perform procedure E.				
E045	Drive must be reserved for this command.	Refer to SPROC 1 and perform procedure E.				
E046	Invalid command received.	Refer to SPROC 1 and perform procedure E.				
E047	Invalid channel command received.	Refer to SPROC 1 and perform procedure E.				
E048	Sense data available prior to executing this command.	Refer to SPROC 1 and perform procedure E.				
E049	Sense data available after executing last command.	Refer to SPROC 1 and perform procedure E.				
E04A	The diagnostic monitor has attempted to reserve the buffer switch (necessary for this command), but the switch was in use.	This is a normal occurrence during concurrent maintenance. Reissue the command. If the problem persists during a stand-alone operation, a faulty component may exist. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
E04B	An error occurred in processing the Write Channel Adapter Request Register order. The channel command was not performed.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 188 - 01A-A1ZKL 158 - 01A-A1XKL 189 - 01A-A1WFG 159 - 01A-A1YKL 190 - 01A-A1XFG 187 - 01A-A1ZFG 191 - 01A-A1YFG	133 152 195 196 126 133 152 195 196 121 122 120 114	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Power/POR card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Buffer adapter card Buffer control card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A2H4 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A1F2 01A-A1K2 01A-A1L2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 PR001 CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002 SM001, 002 BA001, 002, 003 BC001, 002, 003

0 0 0 0 0 0 0 0 0 0 0

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages			
E04C	An error occurred in processing the Write Channel Adapter Channel Command order. The channel command was not performed.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 188 - 01A-A1ZKL 158 - 01A-A1XKL 189 - 01A-A1WFG 159 - 01A-A1YKL 190 - 01A-A1XFG 187 - 01A-A1ZFG 191 - 01A-A1YFG	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002			
			152	Channel adapter card (channel B)	01A-A2D2	CA101, 102			
			195	Channel adapter card (channel C)	01A-A2E2	CA201, 202			
			196	Channel adapter card (channel D)	01A-A2F2	CA301, 302			
			121	Status store basic card	01A-A1G2	SS001, 002			
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002			
			120	Buffer adapter card	01A-A1K2	BA001, 002, 003			
			114	Buffer control card	01A-A1L2	BC001, 002, 003			
			133	Channel adapter card (channel A)	01A-A2C2	CA001, 002			
			152	Channel adapter card (channel B)	01A-A2D2	CA101, 102			
E04D	An error occurred in processing the Diagnostic Interrupt Channel Adapter order. The channel command was not performed.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 188 - 01A-A1ZKL 158 - 01A-A1XKL 189 - 01A-A1WFG 159 - 01A-A1YKL 190 - 01A-A1XFG 187 - 01A-A1ZFG 191 - 01A-A1YFG	195	Channel adapter card (channel C)	01A-A2E2	CA201, 202			
			196	Channel adapter card (channel D)	01A-A2F2	CA301, 302			
			121	Status store basic card	01A-A1G2	SS001, 002			
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002			
			120	Buffer adapter card	01A-A1K2	BA001, 002, 003			
			114	Buffer control card	01A-A1L2	BC001, 002, 003			
			115	Maintenance adapter card	01A-A1E2	MA001, 002, 003			
			117	Microprocessor card	01A-A1D2	MP001, 002, 003			
			E04E	The MA card did not respond to functional microcode.	Run MD/MA and BCU diagnostics. (See DIAG 1.)				
			E04F	The MD tried to execute a new command before the old command was complete.	Refer to SPROC 1 and perform procedure E.				
E051	Unit check-device not ready (sense data available).	Refer to SPROC 1 and perform procedure E.							
E052	Channel command retry status. The buffer does not currently contain the correct data to execute this command. Issue the RDCHST command until a device end is received, then reissue the command.	TCC FRUs associated with this error code are: 157 - 01A-A1WKL 189 - 01A-A1WFG 158 - 01A-A1XKL 190 - 01A-A1XFG 159 - 01A-A1YKL 191 - 01A-A1YFG 187 - 01A-A1ZFG 267* - 02A-A1B2Y 188 - 01A-A1ZKL 268* - 02A-A1B2Z	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002			
			152	Channel adapter card (channel B)	01A-A2D2	CA101, 102			
			195	Channel adapter card (channel C)	01A-A2E2	CA201, 202			
			196	Channel adapter card (channel D)	01A-A2F2	CA301, 302			
			121	Status store basic card	01A-A1G2	SS001, 002			
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002			
			120	Buffer adapter card	01A-A1K2	BA001, 002, 003			
			114	Buffer control card	01A-A1L2	BC001, 002, 003			
			085*	Drive control card	02A-A1B2	DD000, 001, 002, 003			
			E053	A Read Buffer Pointer (RBP) command was received and there are no complete records in the buffer.	TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114	Buffer control card	01A-A1L2	BC001, 002, 003
120	Buffer adapter card	01A-A1K2				BA001, 002, 003			
112**	Buffer storage card	01A-A1N2				BM200			
113**	Buffer storage card	01A-A1M2				BM100			
133	Channel adapter card (channel A)	01A-A2C2				CA001, 002			
152	Channel adapter card (channel B)	01A-A2D2				CA101, 102			
195	Channel adapter card (channel C)	01A-A2E2				CA201, 202			
196	Channel adapter card (channel D)	01A-A2F2				CA301, 302			
136	Bus shoe card (channel A)	01A-T1A1				IB001, 002, 003, WA013			
233	Bus shoe card (channel B)	01A-T1B1				IB001, 002, 003, WA013			
235	Bus shoe card (channel C)	01A-T1C1	IB001, 002, 003, WA013						
237	Bus shoe card (channel D)	01A-T1D1	IB001, 002, 003, WA013						
119	Read clock and format card	01A-A1S2	RC001, 002						

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FSC/ Error Code	Error Code Definition	Additional Actions / Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E04C	An error occurred in processing the Write Channel Adapter Channel Command order. The channel command was not performed.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 188 - 01A-A1ZKL 158 - 01A-A1XKL 189 - 01A-A1WFG 159 - 01A-A1YKL 190 - 01A-A1XFG 187 - 01A-A1ZFG 191 - 01A-A1YFG	133 152 195 196 121 122 120 114	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Buffer adapter card Buffer control card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A1F2 01A-A1K2 01A-A1L2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002 SM001, 002 BA001, 002, 003 BC001, 002, 003
E04D	An error occurred in processing the Diagnostic Interrupt Channel Adapter order. The channel command was not performed.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 188 - 01A-A1ZKL 158 - 01A-A1XKL 189 - 01A-A1WFG 159 - 01A-A1YKL 190 - 01A-A1XFG 187 - 01A-A1ZFG 191 - 01A-A1YFG	133 152 195 196 121 122 120 114	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Buffer adapter card Buffer control card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A1F2 01A-A1K2 01A-A1L2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002 SM001, 002 BA001, 002, 003 BC001, 002, 003
E04E	This error should not occur.	Call your next level of support.	115 117	Maintenance adapter card Microprocessor card	01A-A1E2 01A-A1D2	MA001, 002, 003 MP001, 002, 003
E04F	This error should not occur.	Call your next level of support.				
E051	This error should not occur.	Call your next level of support.				
E052	Channel command retry status. The buffer does not currently contain the correct data to execute this command. Issue the RDCHST command until a device end is received, then reissue the command.	TCC FRUs associated with this error code are: 157 - 01A-A1WKL 189 - 01A-A1WFG 158 - 01A-A1XKL 190 - 01A-A1XFG 159 - 01A-A1YKL 191 - 01A-A1YFG 187 - 01A-A1ZFG 267* - 02A-A1B2Y 188 - 01A-A1ZKL 268* - 02A-A1B2Z	133 152 195 196 121 122 120 114 085*	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Buffer adapter card Buffer control card Drive control card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A1F2 01A-A1K2 01A-A1L2 02A-A1B2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002 SM001, 002 BA001, 002, 003 BC001, 002, 003 DD000, 001, 002, 003
E053	A Read Buffer Pointer (RBP) command was received and there are no complete records in the buffer.	TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 112** 113** 133 152 195 196 136 233 235 237 119	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Bus shoe card (channel A) Bus shoe card (channel B) Bus shoe card (channel C) Bus shoe card (channel D) Read clock and format card	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-T1A1 01A-T1B1 01A-T1C1 01A-T1D1 01A-A1S2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 CA101, 102 CA201, 202 CA301, 302 IB001, 002, 003, WA013 IB001, 002, 003, WA013 IB001, 002, 003, WA013 IB001, 002, 003, WA013 RC001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E054	Device reservation was attempted, but the buffer is already marked as allocated. This status may be an indication that the host has this device in use. End all host activity and retry the command.	TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 112** 113** 133 152 195 196 136 233 235 237 119	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Bus shoe card (channel A) Bus shoe card (channel B) Bus shoe card (channel C) Bus shoe card (channel D) Read clock and format card	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-T1A1 01A-T1B1 01A-T1C1 01A-T1D1 01A-A1S2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 CA101, 102 CA201, 202 CA301, 302 IB001, 002, 003, WA013 IB001, 002, 003, WA013 IB001, 002, 003, WA013 IB001, 002, 003, WA013 RC001, 002
E055	There was not enough buffer table area to create a buffer entry. Reissue this command.	TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 112** 113** 133 152 195 196 136 233 235 237 119	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Bus shoe card (channel A) Bus shoe card (channel B) Bus shoe card (channel C) Bus shoe card (channel D) Read clock and format card	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-T1A1 01A-T1B1 01A-T1C1 01A-T1D1 01A-A1S2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 CA101, 102 CA201, 202 CA301, 302 IB001, 002, 003, WA013 IB001, 002, 003, WA013 IB001, 002, 003, WA013 IB001, 002, 003, WA013 RC001, 002
E056	This error should not occur.	Call your next level of support				
E057	The buffer is empty, or the data is not the correct type to perform this command, for example, attempting a Loop Write to Read command with no data in the buffer. Place the appropriate data in the buffer and reissue the command.	TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 112** 113** 133 152 195 196 136 233 235 237 119	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Bus shoe card (channel A) Bus shoe card (channel B) Bus shoe card (channel C) Bus shoe card (channel D) Read clock and format card	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-T1A1 01A-T1B1 01A-T1C1 01A-T1D1 01A-A1S2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 CA101, 102 CA201, 202 CA301, 302 IB001, 002, 003, WA013 IB001, 002, 003, WA013 IB001, 002, 003, WA013 IB001, 002, 003, WA013 RC001, 002



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E054	Device reservation was attempted, but the buffer is already marked as allocated. This status may be an indication that the host has this device in use. End all host activity and retry the command.	TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 112** 113** 133 152 195 196 136 233 235 237	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Bus shoe card (channel A) Bus shoe card (channel B) Bus shoe card (channel C) Bus shoe card (channel D)	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-T1A1 01A-T1B1 01A-T1C1 01A-T1D1	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 CA101, 102 CA201, 202 CA301, 302 IB001, 002, 003, WA013 IB001, 002, 003, WA013 IB001, 002, 003, WA013 IB001, 002, 003, WA013 RC001, 002
E055	There was not enough buffer table area to create a buffer entry. Reissue this command.	TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 112** 113** 133 152 195 196 136 233 235 237	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Bus shoe card (channel A) Bus shoe card (channel B) Bus shoe card (channel C) Bus shoe card (channel D)	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-T1A1 01A-T1B1 01A-T1C1 01A-T1D1	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 CA101, 102 CA201, 202 CA301, 302 IB001, 002, 003, WA013 IB001, 002, 003, WA013 IB001, 002, 003, WA013 RC001, 002
E056	Microcode cannot communicate with the addressed device.	Refer to SPROC 1 and perform procedure E.	119	Read clock and format card	01A-A1S2	
E057	The buffer is empty, or the data is not the correct type to perform this command, for example, attempting a Loop Write to Read command with no data in the buffer. Place the appropriate data in the buffer and reissue the command.	TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 112** 113** 133 152 195 196 136 233 235 237 119	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Bus shoe card (channel A) Bus shoe card (channel B) Bus shoe card (channel C) Bus shoe card (channel D) Read clock and format card	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-T1A1 01A-T1B1 01A-T1C1 01A-T1D1 01A-A1S2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 CA101, 102 CA201, 202 CA301, 302 IB001, 002, 003, WA013 IB001, 002, 003, WA013 IB001, 002, 003, WA013 RC001, 002

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E058	An external register error has occurred prior to or during performance of this command.	Use the EAD for error codes D1nn and Fnnn for failure isolation. See EAD 1 for "Error Code D1nn" and "Error Code Fnnn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 184 - 01A-A1ZPQ 158 - 01A-A1XKL 188 - 01A-A1ZKL 159 - 01A-A1YKL 192 - 01A-A1XCDE 181 - 01A-A1P2Y 193 - 01A-A1YCDE 182 - 01A-A1E2W	117 115 114 118 121 119 116 120	Microprocessor card Maintenance adapter card Buffer control card Drive-adapter card Status store basic card Read clock and format card Write data card Buffer adapter card	01A-A1D2 01A-A1E2 01A-A1L2 01A-A1Q2 01A-A1G2 01A-A1S2 01A-A1P2 01A-A1K2	MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 DI001, 002 SS001, 002 RC001, 002 DF001, 002 BA001, 002, 003
E059	Deferred unit check active for reserved device.	Refer to SPROC 1 and perform procedure E.				
E05A	CU tried to execute a channel command while previous command was still in progress.	Refer to SPROC 1 and perform procedure E.				
E05B	An error match code was set by the MD and that error code was detected.	This is an operating condition. This condition can only occur during error match code operation with the MD. If this condition occurs during customer operation, use the MD to turn off error matching. See SDISK 1 for "Trace/Match Control."	121	Status store basic card	01A-A1G2	SS001, 002
E05C	Status store did not process a Reset Buffer Switch order. The channel may be unable to access the buffer because of the failure.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	121	Status store basic card	01A-A1G2	SS001, 002
E05D	The channel adapter was unable to go into diagnostic mode at this time.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 137 136 152 234 233 195 236 235 196 238 237 126 122 141 121 120	Channel adapter card (channel A) Tag shoe card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Tag shoe card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Tag shoe card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Tag shoe card (channel D) Bus shoe card (channel D) Power/POR card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Control unit switch panel card Status store basic card Buffer adapter card	01A-A2C2 01A-T1A3 01A-T1A1 01A-A2D2 01A-T1B3 01A-T1B1 01A-A2E2 01A-T1C3 01A-T1C1 01A-A2F2 01A-T1D3 01A-T1D1 01A-A2H4 01A-A1F2	CA001, 002 IT001, 002, 003, WA003 IB001, 002, 003, WA013 CA101, 102 IT001, 002, 003, WA003 IB001, 002, 003, WA013 CA201, 202 IT001, 002, 003, WA003 IB001, 002, 003, WA013 CA301, 302 IT001, 002, 003, WA003 IB001, 002, 003, WA013 PR001 SM001, 002
E05E	A Reserve command was issued without first specifying a valid channel adapter.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 188 - 01A-A1ZKL 158 - 01A-A1XKL 189 - 01A-A1WFG 159 - 01A-A1YKL 190 - 01A-A1XFG 187 - 01A-A1ZFG 191 - 01A-A1YFG	133 152 195 196 121 122 120 114	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Buffer adapter card Buffer control card	Control unit 01A-A1G2 01A-A1K2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A1F2 01A-A1K2 01A-A1L2	SS001, 002 BA001, 002, 003 CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002 SM001, 002 BA001, 002, 003 BC001, 002, 003

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Fault Symptom Index (FSI)

FSC/ Error Code	Error Code Definition	Additional Actions / Comments	FRU NUM	FRU Name • EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E058	An external register error has occurred prior to or during performance of this command.	Use the EAD for error codes D1nn and Fnnn for failure isolation. See EAD 1 for "Error Code D1nn" and "Error Code Fnnn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 184 - 01A-A1ZPQ 158 - 01A-A1XKL 188 - 01A-A1ZKL 159 - 01A-A1YKL 192 - 01A-A1XCDE 181 - 01A-A1P2Y 193 - 01A-A1YCDE 182 - 01A-A1E2W	117 115 114 118 121 119 116 120	Microprocessor card Maintenance adapter card Buffer control card Drive-adapter card Status store basic card Read clock and format card Write data card Buffer adapter card	01A-A1D2 01A-A1E2 01A-A1L2 01A-A1Q2 01A-A1G2 01A-A1S2 01A-A1P2 01A-A1K2	MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 DI001, 002 SS001, 002 RC001, 002 DF001, 002 BA001, 002, 003
E059	This error should not occur.	Call your next level of support.				
E05A	This error should not occur.	Call your next level of support.				
E05B	An error match code was set by the MD and that error code was detected.	This is an operating condition. This condition can only occur during error match code operation with the MD. If this condition occurs during customer operation, use the MD to turn off error matching. See SDISK 1 for "Trace/Match Control."	121	Status store basic card	01A-A1G2	SS001, 002
E05C	Status store did not process a Reset Buffer Switch order. The channel may be unable to access the buffer because of the failure.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	121	Status store basic card	01A-A1G2	SS001, 002
E05D	The channel adapter was unable to go into diagnostic mode at this time.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	133 137 136 152 234 233 195 236 235 196 238 237 126 122 141 120 121	Channel adapter card (channel A) Tag shoe card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Tag shoe card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Tag shoe card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Tag shoe card (channel D) Bus shoe card (channel D) Power/POR card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Control unit switch panel card Buffer adapter card Status store basic card	01A-A2C2 01A-T1A3 01A-T1A1 01A-A2D2 01A-T1B3 01A-T1B1 01A-A2E2 01A-T1C3 01A-T1C1 01A-A2F2 01A-T1D3 01A-T1D1 01A-A2H4 01A-A1F2 01A-A1L2 Control unit 01A-A1G2	CA001, 002 IT001, 002, 003, WA003 IB001, 002, 003, WA013 CA101, 102 IT001, 002, 003, WA003 IB001, 002, 003, WA013 CA201, 202 IT001, 002, 003, WA003 IB001, 002, 003, WA013 CA301, 302 IT001, 002, 003, WA003 IB001, 002, 003, WA013 PRO01 SM001, 002 BA001, 002, 003 SS001, 002
E05E	A Reserve command was issued without first specifying a valid channel adapter.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 188 - 01A-A1ZKL 158 - 01A-A1XKL 189 - 01A-A1WFG 159 - 01A-A1YKL 190 - 01A-A1XFG 187 - 01A-A1ZFG 191 - 01A-A1YFG	133 152 195 196 121 122 120 114	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Buffer adapter card Buffer control card	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A1F2 01A-A1K2 01A-A1L2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002 SM001, 002 BA001, 002, 003 BC001, 002, 003

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name • EC sensitive FRU. See CARR-DR 4. •• EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E05F	A message was sent to the remote control unit with no response. The failure could be in the other control unit.	1. Run diagnostic section EE90 for failure isolation. See "Diagnostic Code Identification Table" on DIAG 3. 2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1F2	SM001, 002
			121	Status store basic card	01A-A1G2	SS001, 002
E060	This error should not occur.	Call your next level of support.				
E061	This error should not occur.	Call your next level of support.				
E062	This error should not occur.	Call your next level of support.				
E063	Status store was unable to process a Set Buffer Writing order.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	121	Status store basic card	01A-A1G2	SS001, 002
E064	Status store was unable to process a Reset Buffer Empty order.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	121	Status store basic card	01A-A1G2	SS001, 002
E065	The channel adapter was unable to process a Read Channel Adapter Device Condition order. The channel command was not performed.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 188 - 01A-A1ZKL 158 - 01A-A1XKL 189 - 01A-A1WFG 159 - 01A-A1YKL 190 - 01A-A1XFG 187 - 01A-A1ZFG 191 - 01A-A1YFG	133	Channel adapter card (channel A)	01A-A2C2	CA001, 002
			152	Channel adapter card (channel B)	01A-A2D2	CA101, 102
E066	The channel adapter was unable to process a Write Channel Adapter Device Status order. The channel command was not performed.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ	195	Channel adapter card (channel C)	01A-A2E2	CA201, 202
			196	Channel adapter card (channel D)	01A-A2F2	CA301, 302
			121	Status store basic card	01A-A1G2	SS001, 002
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1F2	SM001, 002
			120	Buffer adapter card	01A-A1K2	BA001, 002, 003
			114	Buffer control card	01A-A1L2	BC001, 002, 003
			117	Microprocessor card	01A-A1D2	MP001, 002, 003
			120	Buffer adapter card	01A-A1K2	BA001, 002, 003
			116	Write data card	01A-A1P2	DF001, 002
			118	Drive-adapter card	01A-A1Q2	DI001, 002
119	Read clock and format card	01A-A1S2	RC001, 002			
121	Status store basic card	01A-A1G2	SS001, 002			
133	Channel adapter card (channel A)	01A-A2C2	CA001, 002			
152	Channel adapter card (channel B)	01A-A2D2	CA101, 102			
195	Channel adapter card (channel C)	01A-A2E2	CA201, 202			
196	Channel adapter card (channel D)	01A-A2F2	CA301, 302			
126	Power/POR card	01A-A2H4	PR001			
E067	The leading interblock gap was not detected during performance of a Loop Write to Read command.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	064	Write power card	02A-A1G2	VP000
			062*	Read preamplifier card	02A-A1H2	RP000
			085*	Drive control card	02A-A1B2	IF000, 001
			130	Read detect card 1	01A-A2R2	DD000, 001, 002, 003
			131	Read detect card 2	01A-A2S2	RB000
			132	Read detect card 3	01A-A2T2	RD001
			118	Drive-adapter card	01A-A1Q2	RD101
			119	Read clock and format card	01A-A1S2	RD201
			035	Vacuum hose assembly	Drive	DI001, 002
			043	Decoupler vacuum hose	Drive	RC001, 002
			047	Cleaner supply hose	Drive	
			212	Vacuum supply hose	Drive	
			219	Vacuum distribution tee	Drive	
			063*	Write card	02A-A1K4	
			058	Logic board	02A-A1	
			013	Head and guide assembly	Base plate	WR000

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E068	An error was detected on the channel port of the buffer. An RDDGNST command can be issued to retrieve the channel buffer error groups (4 bytes).	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 182 - 01A-A1E2W 158 - 01A-A1XKL 184 - 01A-A1ZPQ 159 - 01A-A1YKL 188 - 01A-A1ZKL 181 - 01A-A1P2Y	114 120 112** 113** 117 116 118 115 119 121	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Microprocessor card Write data card Drive-adapter card Maintenance adapter card Read clock and format card Status store basic card	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A1D2 01A-A1P2 01A-A1Q2 01A-A1E2 01A-A1S2 01A-A1G2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 MP001, 002, 003 DF001, 002 DI001, 002 MA001, 002, 003 RC001, 002 SS001, 002
E069	An error was detected on the device port of the buffer. An RDDGNST command can be issued to retrieve the device buffer error groups (4 bytes).	Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 112** 113** 133 136 152 233 195 235 196 237 119 118 116 134	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Read clock and format card Drive adapter card Write data card Control store card	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-T1A1 01A-A2D2 01A-T1B1 01A-A2E2 01A-T1C1 01A-A2F2 01A-T1D1 01A-A1S2 01A-A1Q2 01A-A1P2 01A-A1C2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 RC001, 002 DI001, 002 DF001, 002 CS001, 002
E06B	A recovered CK1 has occurred in this Control Unit	Refer to SPROC 1 and perform procedure E.				
E06C	A read buffer pointer command was issued and the first record in the buffer is a tape mark.	Refer to SPROC 1 and perform procedure E.				
E06D	Status store could not process a Set Buffer Empty order.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	121	Status store basic card	01A-A1G2	SS001, 002
E06E	An error occurred during the process of the set diagnose command during the long LWR.	Refer to SPROC 1 and perform procedure E.				
E06F	An error occurred during device selection sequence of the long LWR.	Refer to SPROC 1 and perform procedure E.				
E070	An error occurred during the device command sequence of the long LWR.	Refer to SPROC 1 and perform procedure E.				
E071	An error occurred during the set diagnose command taking the drive out of the long LWR.	Refer to SPROC 1 and perform procedure E.				
E072	A Read Buffer Pointer (RBP) command is required before the record can be deleted.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	121	Status store basic card	01A-A1G2	SS001, 002
E073	The diagnostic monitor timed out waiting for completion of a Loop Write to Read command.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 185 - 01A-A1XRS 267* - 02A-A1B2Y 186 - 01A-A1YRS 268* - 02A-A1B2Z	064 062* 085* 132 131 130 123 124 125 119 111	Write power card Read preamplifier card Drive control card Read detect card 3 Read detect card 2 Read detect card 1 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Read ECC/CORR card	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2T2 01A-A2S2 01A-A2R2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1R2	VP000 RP000 DD000, 001, 002, 003 RD201 RD101 RD001 SB001, 002 SB101, 102 SB201, 202 RC001, 002 EC001, 002
E074	Microcode detected error.	Refer to SPROC 1 and perform procedure E.				

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E068	An error was detected on the channel port of the buffer. An RDDGNST command can be issued to retrieve the channel buffer error groups (4 bytes).	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 182 - 01A-A1E2W 158 - 01A-A1XKL 184 - 01A-A1ZPQ 159 - 01A-A1YKL 188 - 01A-A1ZKL 181 - 01A-A1P2Y	114 120 112** 113** 117 116 118 115 119 121	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Microprocessor card Write data card Drive-adapter card Maintenance adapter card Read clock and format card Status store basic card	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A1D2 01A-A1P2 01A-A1Q2 01A-A1E2 01A-A1S2 01A-A1G2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 MP001, 002, 003 DF001, 002 DI001, 002 MA001, 002, 003 RC001, 002 SS001, 002
E069	An error was detected on the device port of the buffer. An RDDGNST command can be issued to retrieve the device buffer error groups (4 bytes).	Use the EAD for error code D6nn for failure isolation. See EAD 1 for "Error Code D6nn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120 112** 113** 133 136 152 233 195 235 196 237 119 118 116 134	Buffer control card Buffer adapter card Buffer storage card Buffer storage card Channel adapter card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Read clock and format card Drive adapter card Write data card Control store card	01A-A1L2 01A-A1K2 01A-A1N2 01A-A1M2 01A-A2C2 01A-T1A1 01A-A2D2 01A-T1B1 01A-A2E2 01A-T1C1 01A-A2F2 01A-T1D1 01A-A1S2 01A-A1Q2 01A-A1P2 01A-A1C2	BC001, 002, 003 BA001, 002, 003 BM200 BM100 CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 IB001, 002, 003, WA013 RC001, 002 DI001, 002 DF001, 002 CS001, 002
E06B	This error should not occur.	Call your next level of support.				
E06C	This error should not occur.	Call your next level of support.				
E06D	Status store could not process a Set Buffer Empty order.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	121	Status store basic card	01A-A1G2	SS001, 002
E06E	This error should not occur.	Call your next level of support.				
E06F	This error should not occur.	Call your next level of support.				
E070	This error should not occur.	Call your next level of support.				
E071	This error should not occur.	Call your next level of support.				
E072	A Read Buffer Pointer (RBP) command is required before the record can be deleted.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	121	Status store basic card	01A-A1G2	SS001, 002
E073	The diagnostic monitor timed out waiting for completion of a Loop Write to Read command.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 185 - 01A-A1XRS 267* - 02A-A1B2Y 186 - 01A-A1YRS 268* - 02A-A1B2Z	064 062* 085* 132 131 130 123 124 125 119 111	Write power card Read preamplifier card Drive control card Read detect card 3 Read detect card 2 Read detect card 1 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Read ECC/CORR card	02A-A1G2 02A-A1H2 02A-A1B2 01A-A2T2 01A-A2S2 01A-A2R2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1R2	VP000 RP000 DD000, 001, 002, 003 RD201 RD101 RD001 SB001, 002 SB101, 102 SB201, 202 RC001, 002 EC001, 002
E074	This error should not occur.	Call your next level of support.				

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E075	An MD device reserve request was sent to the other control unit, but this control unit did not receive a response from the other control unit. The failure may be in the other control unit.	1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122 133 152 195 196	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
E076	The channel adapter did not respond to a Diagnostic Mode order.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	154 133 136 152 233 195 235 196 237 121 126	Channel timeout card Channel adapter card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Status store basic card Power/POR card	01A-A2G2 01A-A2C2 01A-T1A1 01A-A2D2 01A-T1B1 01A-A2E2 01A-T1C1 01A-A2F2 01A-A1D1 01A-A1G2 01A-A2H4	CR001 CA001, 002 1B001, 002 003, WAO13 CA101, 102 IB001, 002, 003, WAO13 CA201, 202, 1B001, 002 003, WAO13, CA301, 302 IB001, 002, 003, WAO13 SS001, 002 PROO1
E077	This error should not occur.	Call your next level of support.				
E078	This error should not occur.	Call your next level of support.				
E079	This error should not occur.	Call your next level of support				
E07A	Write data flow end not on in WSE	TCC FRUs associated with this error code are: 181 - 01A-A1P2Y	116 130 131 132	Write data flow card Read detect card 1 Read detect card 2 Read detect card 3	01A-A1P2 01A-A2R2 01A-A2S2 01A-A2T2	DF001, 002 RD001 RD101 RD201
E07B	A message was sent to the remote control unit and no response was received. The problem may be in the other control unit.	TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	122 121	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Status store basic card	01A-A1F2 01A-A1G2	SM001, 002 SS001, 002
E07C	IML diskette failure.	See Comtable for further isolation.	258 086 134	IML diskette IML diskette drive Control storage card	See LOC 1 See LOC 1 01A-A1C2	CS001, 002
E07D	Drive still has active path assignment.	Information Message - This device may not be varied offline from all hosts systems. Verify that all paths are varied offline before proceeding.	121 122	Store status card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
E0FE	The maintenance package timed out waiting for a response.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	117 121 122 133 152 195 196	Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1D2 01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	MP001, 002, 003 SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E075	An MD device reserve request was sent to the other control unit, but this control unit did not receive a response from the other control unit. The failure may be in the other control unit.	1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122 133 152 195 196	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
E076	The channel adapter did not respond to a Diagnostic Mode order.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	154 133 136 152 233 195 235 196 237 121 126	Channel timeout card Channel adapter card (channel A) Bus shoe card (channel A) Channel adapter card (channel B) Bus shoe card (channel B) Channel adapter card (channel C) Bus shoe card (channel C) Channel adapter card (channel D) Bus shoe card (channel D) Status store basic card STI dc power supply Power/POR card	01A-A2G2 01A-A2C2 01A-T1A1 01A-A2D2 01A-T1B1 01A-A2E2 01A-T1C1 01A-A2F2 01A-A1D1 01A-A1G2 01A-A2H4	CR001 CA001, 002 1B001, 002 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202, 1B001, 002 003, WA013, CA301, 302 IB001, 002, 003, WA013 SS001, 002 PR001
E077	Device already had an operation in progress at the time of this command.	Refer to SPROC 1 and perform procedure E.				
E078	IML complete.	Refer to SPROC 1 and perform procedure E.				
E079	Requested device is allocated to the other Control Unit.	Refer to SPROC 1 and perform procedure E.				
E07A	Write data flow end not on in WSE	TCC FRUs associated with this error code are: 181 - 01A-A1P2Y	116 130 131 132	Write data flow card Read detect card 1 Read detect card 2 Read detect card 3	01A-A1P2 01A-A2R2 01A-A2S2 01A-A2T2	DF001, 002 RD001 RD101 RD201
E07B	A message was sent to the remote control unit and no response was received. The problem may be in the other control unit.	TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1F2	SM001, 002
E07C	IML diskette failure.	See COMTABLE for further isolation.	121 258 086 134	Status store basic card IML diskette IML diskette drive Control storage card	01A-A1G2 See LOC 1 See LOC 1 01A-A1C2	SS001, 002 CS001, 002
E07D	Drive still has active path assignment.	Information Message: This device may not be varied offline from all host systems. Verify that all paths are varied offline before proceeding.	121 122	Store status card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
E0FE	The maintenance package timed out waiting for a response.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	117 121 122 133 152 195 196	Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1D2 01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	MP001, 002, 003 SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E0FF	The maintenance package timed out waiting for device end.	1. Use the EAD for Status Store/Channel Adapter and Device Data Bus for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."	117 121 122 133 152 195 196	Microprocessor card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D)	01A-A1D2 01A-A1G2 01A-A1F2 01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2	MP001, 002, 003 SS001, 002 SM001, 002 CA001, 002 CA101, 102 CA201, 202 CA301, 302
E100	A check 1 error was detected.	Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 188 - 01A-A1ZKL 158 - 01A-A1XKL 189 - 01A-A1WFG 159 - 01A-A1YKL 190 - 01A-A1ZFG 181 - 01A-A1P2Y 191 - 01A-A1YFG 182 - 01A-A1E2W 192 - 01A-A1XCDE 184 - 01A-A1ZPQ 193 - 01A-A1YCDE 187 - 01A-A1ZFG	117 115 114 118 121 119 116 120 122 134 135	Microprocessor card Maintenance adapter card Buffer control card Drive-adapter card Status store basic card Read clock and format card Write data card Buffer adapter card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Control store card Control storage array card	01A-A1D2 01A-A1E2 01A-A1L2 01A-A1Q2 01A-A1G2 01A-A1S2 01A-A1P2 01A-A1K2 01A-A1F2 01A-A1C2 01A-A1B2	MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 DI001, 002 SS001, 002 RC001, 002 DF001, 002 BA001, 002, 003 SM001, 002 CS001, 002 MS001, 002
E101	FRU bits are on in the maintenance tag in (MTI) register.	Use the EAD for error code D1nn for failure isolation. See EAD 1 for "Error Code D1nn." TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE	115 117	Maintenance adapter card Microprocessor card.	01A-A1E2 01A-A1D2	MA001, 002, 003 MP001, 002, 003
E102	Maintenance tag in (MTI) register failure.	Use error code D1nn for failure isolation. See EAD 1 for "Error Code D1nn." TCC FRUs associated with this error code are: 182 - 01A-A1E2W	115	Maintenance adapter card	01A-A1E2	MA001, 002, 003
E103	Cannot communicate with the functional microcode.	Use the EAD for error code E103 for failure isolation. See EAD 1 for "Error Code E103." TCC FRUs associated with this error code are: 182 - 01A-A1E2W 191 - 01A-A1YFG 187 - 01A-A1ZFG 192 - 01A-A1XCDE 189 - 01A-A1WFG 193 - 01A-A1YCDE 190 - 01A-A1ZFG	117 115 121 122	Microprocessor card. Maintenance adapter card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1D2 01A-A1E2 01A-A1G2 01A-A1F2	MP001, 002, 003 MA001, 002, 003 SS001, 002 SM001, 002
E104	Timed out waiting for diagnostic monitor status.	Run diagnostic Basic CU Tests for failure isolation. TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE	115 117	Maintenance adapter card Microprocessor card	01A-A1E2 01A-A1D2	MA001, 002, 003 MP001, 002, 003
E105	Monitor status does not equal 40.	Run diagnostic Basic CU Tests for failure isolation. TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE	115 117	Maintenance adapter card Microprocessor card	01A-A1E2 01A-A1D2	MA001, 002, 003 MP001, 002, 003
E106	D register failure.	Run diagnostic Basic CU Tests for failure isolation. TCC FRUs associated with this error code are: 182 - 01A-A1E2W	115	Maintenance adapter card	01A-A1E2	MA001, 002, 003

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E108	Microprocessor stopped.	Run diagnostic Basic CU Tests for failure isolation.	117 134 115	Microprocessor card Control store card Maintenance adapter card	01A-A1D2 01A-A1C2 01A-A1E2	MP001, 002, 003 CS001, 002 MA001, 002, 003
E109	Microprocessor will not stop.	Run diagnostic Basic CU Tests for failure isolation. TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE	115 117	Maintenance adapter card Microprocessor card	01A-A1E2 01A-A1D2	MA001, 002, 003 MP001, 002, 003
E110	The A register failed.	Run diagnostic Basic CU Tests for failure isolation. TCC FRUs associated with this error code are: 182 - 01A-A1E2W	115	Maintenance adapter card	01A-A1E2	MA001, 002, 003
E111	Control storage data did not match.	Run diagnostic Basic CU Tests for failure isolation. TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE	115 117 169	Maintenance adapter card Microprocessor card A1Y1 to MD connector cable	01A-A1E2 01A-A1D2 01A-A1Y1	MA001, 002, 003 MP001, 002, 003 WX001
E112	The maintenance adapter will not perform a maintenance adapter command.	Run diagnostic Basic CU Tests for failure isolation. TCC FRUs associated with this error code are: 180 - 01A-A1ZCD 192 - 01A-A1XCDE 182 - 01A-A1E2W 193 - 01A-A1YCDE 183 - 01A-A1WCD	115 117 134 135 169	Maintenance adapter card Microprocessor card Control store card Control storage array card A1Y1 to MD connector cable	01A-A1E2 01A-A1D2 01A-A1C2 01A-A1B2 01A-A1Y1	MA001, 002, 003 MP001, 002, 003 CS001, 002 MS001, 002 WX001
E113	The local status store cannot communicate with the remote status store.	1. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 2. Use the EAD for Dual Control Unit for failure isolation. See EAD 1 for "Dual Control Unit." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1G2 01A-A1F2	SS001, 002 SM001, 002
E114	The local status store failed.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	121 122 117	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Microprocessor card	01A-A1G2 01A-A1F2 01A-A1D2	SS001, 002 SM001, 002 MP001, 002, 003
E115	Maintenance adapter to microprocessor connection error.	Use the EAD for error codes Fnnn and D1nn for failure isolation. See EAD 1 for "Error Code Fnnn" and "Error Code D1nn." TCC FRUs associated with this error code are: 180 - 01A-A1ZCD 192 - 01A-A1XCDE 182 - 01A-A1E2W 193 - 01A-A1YCDE 183 - 01A-A1WCD	117 115 134 135 118	Microprocessor card Maintenance adapter card Control store card Control storage array card Drive-adapter card	01A-A1D2 01A-A1E2 01A-A1C2 01A-A1B2 01A-A1Q2	MP001, 002, 003 MA001, 002, 003 CS001, 002 MS001, 002 DIO01, 002
E116	Invalid interrupt.	Use the EAD for error code D1nn for failure isolation. See EAD 1 for "Error Code D1nn." TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE	117 115	Microprocessor card Maintenance adapter card	01A-A1D2 01A-A1E2	MP001, 002, 003 MA001, 002, 003
E117	Control store error.	Run diagnostic Basic CU Tests for failure isolation.	134	Control store card	01A-A1C2	CS001, 002



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages					
E118	Check 1 is on and the microprocessor is running.	Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100." Check the power supply voltages for proper dc value and ripple values. TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE	115	Maintenance adapter card	01A-A1E2 01A-A1D2 01A-A1C2	MA001, 002, 003 MP001, 002, 003 CS001, 002					
			117	Microprocessor card							
			134	Control storage card							
E119	A recovered check 1 was detected by the hardware.	Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100." TCC FRUs associated with this error code are: 180 - 01A-A1ZCD 192 - 01A-A1XCDE 182 - 01A-A1E2W 193 - 01A-A1YCDE 183 - 01A-A1WCD	117	Microprocessor card	01A-A1D2 01A-A1E2 01A-A2C2 01A-A1B2	MP001, 002, 003 MA001, 002, 003 CS001, 002 MS001, MP002					
			115	Maintenance adapter card							
			134	Control store card							
E11A	MD port failed to open.	Run diagnostic basic CU tests for failure isolation. Check the power supply voltages for proper dc values and ripple values. TCC FRUs associated with this error code are: 182 - 01A-A1E2W	115	Maintenance adapter card	01A-A1E2 01A-A1C2 01A-A1B2	MA001, 002, 003 CS001, 002 MS001, MP002					
			134	Control store card							
			135	Control store array card							
E11F	Invalid diagnostic monitor return code.	Run diagnostic Basic CU (BCU) Tests for failure isolation. TCC FRU's associated with this error are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE	115	Maintenance adapter card	01A-A1E2 01A-A1D2	MA001, 002, 003 MP001, 002, 003					
			117	Microprocessor card							
E120	This error code is generated by the product maintenance package. It is a result of the ERA register equaling the ERB register in an EDB3 error. See error code EDB3 for the error definition.	TCC FRUs associated with this error code are: 157 - 01A-A1WKL 189 - 01A-A1WFG 158 - 01A-A1XKL 190 - 01A-A1ZFG 159 - 01A-A1YKL 191 - 01A-A1YFG 182 - 01A-A1E2W 192 - 01A-A1XCDE 187 - 01A-A1ZFG 193 - 01A-A1YCDE 188 - 01A-A1ZKL	135	Control storage array card	01A-A1B2 01A-A1C2 01A-A1D2 01A-A1E2 01A-A1L2 01A-A1Q2 01A-A1G2 01A-A1F2 01A-A1S2 01A-A1P2 01A-A1K2	MS001, 002 CS001, 002 MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 DI001, 002 SS001, 002 SM001, 002 RC001, 002 DF001, 002 BA001, 002, 003					
			134	Control store card							
			117	Microprocessor card							
			115	Maintenance adapter card							
			114	Buffer control card							
			118	Drive-adapter card							
			121	Status store basic card							
			122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)							
			119	Read clock and format card							
			116	Write data card							
			120	Buffer adapter card							
			E201	Bar LEDs fail to turn on or fail to turn off.			TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	060	Message display board	Drive 02A-A1B2 02A-A1Y2	WD000, 001 DD000, 001, 002, 003 WD000, 001
								085*	Drive control card		
								210	Message display cable (02A-A1Y2 to P1-DISP-P1)		
								211	Message display cable (P1-DISP-P1 to MDJ1)		
E202	Select indicator does not turn on.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	060	Message display board	Drive 02A-A1B2 02A-A1Y2	WD000, 001 DD000, 001, 002, 003 WD000, 001					
			085*	Drive control card							
			210	Message display cable (02A-A1Y2 to P1-DISP-P1)							
			211	Message display cable (P1-DISP-P1 to MDJ1)							
E203	The display is blank.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	060	Message display board	Drive Drive 02A-A1B2 02A-A1Y2	WD000, 001 WD000, 001 DD000, 001, 002, 003 WD000, 001					
			090	Message display dc power cable							
			085*	Drive control card							
			210	Message display cable (02A-A1Y2 to P1-DISP-P1)							
			211	Message display cable (P1-DISP-P1 to MDJ1)							
E204	The display shows eight rectangles.		060	Message display board	Drive	WD000, 001					

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FSC/ Error Code	Error Code Definition	Additional Actions/ Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E118	Check 1 is on and the microprocessor is running.	Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100." Check the power supply voltages for proper dc value and ripple values. TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE	115 117 134	Maintenance adapter card Microprocessor card Control storage card	01A-A1E2 01A-A1D2 01A-A1C2	MA001, 002, 003 MP001, 002, 003 CS001, 002
E119	A recovered check 1 was detected by the hardware.	Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100." TCC FRUs associated with this error code are: 180 - 01A-A1ZCD 192 - 01A-A1XCDE 182 - 01A-A1E2W 193 - 01A-A1YCDE 183 - 01A-A1WCD	117 115 134 135	Microprocessor card Maintenance adapter card Control store card Control store array card	01A-A1D2 01A-A1E2 01A-A2C2 01A-A1B2	MP001, 002, 003 MA001, 002, 003 CS001, 002 MS001, MP002
E11A	MD port failed to open.	Run diagnostic basic CU tests for failure isolation. Check the power supply voltages for proper dc values and ripple values. TCC FRUs associated with this error code are: 182 - 01A-A1E2W	115 134	Maintenance adapter card Control store card	01A-A1E2 01A-A1C2	MA001, 002, 003 CS001, 002,
E120	This error code is generated by the product maintenance package. It is a result of the ERA register equaling the ERB register in a EDB3 error. See error code EDB3 for the error definition.	TCC FRUs associated with this error code are: 157 - 01A-A1WKL 189 - 01A-A1WFG 158 - 01A-A1XKL 190 - 01A-A1ZFG 159 - 01A-A1YKL 191 - 01A-A1YFG 182 - 01A-A1E2W 192 - 01A-A1XCDE 187 - 01A-A1ZFG 193 - 01A-A1YCDE 188 - 01A-A1ZKL	135 134 117 115 114 118 121 122 119 116 120	Control storage array card Control store card Microprocessor card Maintenance adapter card Buffer control card Drive-adapter card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Read clock and format card Write data card Buffer adapter card	01A-A1B2 01A-A1C2 01A-A1D2 01A-A1E2 01A-A1L2 01A-A1Q2 01A-A1G2 01A-A1F2 01A-A1S2 01A-A1P2 01A-A1K2	MS001, 002 CS001, 002 MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 DI001, 002 SS001, 002 SM001, 002 RC001, 002 DF001, 002 BA001, 002, 003
E201	Bar LEDs fail to turn on or fail to turn off.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	060 085* 210 211	Message display board Drive control card Message display cable (02A-A1Y2 to P1-DISP-P1) Message display cable (P1-DISP-P1 to MDJ1)	Drive 02A-A1B2 02A-A1Y2 Drive	WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001
E202	Select indicator does not turn on.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	060 085* 210 211	Message display board Drive control card Message display cable (02A-A1Y2 to P1-DISP-P1) Message display cable (P1-DISP-P1 to MDJ1)	Drive 02A-A1B2 02A-A1Y2 Drive	WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001
E203	The display is blank.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	060 090 085* 210 211	Message display board Message display dc power cable Drive control card Message display cable (02A-A1Y2 to P1-DISP-P1) Message display cable (P1-DISP-P1 to MDJ1)	Drive Drive 02A-A1B2 02A-A1Y2 Drive	WD000, 001 WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001
E204	The display shows eight rectangles.		060	Message display board	Drive	WD000, 001

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E205	One LED is blank or not correct.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	021 060 085* 210 211	Message display LEDs (LEDs 1-8) Message display board Drive control card Message display cable (02A-A1Y2 to P1-DISP-P1) Message display cable (P1-DISP-P1 to MDJ1)	Drive Drive 02A-A1C2 02A-A1Y2 Drive	WD000, 001 WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001
E206	SR and MD actions have determined that the wrong language is displayed.	Check the switch settings on the drive adapter card for the desired language.	118	Drive-adapter card	01A-A1Q2	DI001, 002
E207	An invalid message is displayed.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	060 085* 210 211	Message display board Drive control card Message display cable (02A-A1Y2 to P1-DISP-P1) Message display cable (P1-DISP-P1 to MDJ1)	Drive 02A-A1B2 02A-A1Y2 Drive	WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001
E210	The Rewind switch does not work.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	109 085* 060 213 211 210	Operator panel switch board Drive control card Message display board Message display board to message display switch board cable Message display cable (02A-A1Y2 to P1-DISP-P1) Message display cable (P1-DISP-P1 to MDJ1)	Drive 02A-A1B2 Drive Drive 02A-A1Y2 Drive	WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001 WD000, 001 WD000, 001
E211	The Unload switch does not work.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	109 085* 060 213 210 211	Operator panel switch board Drive control card Message display board Message display board to message display switch board cable Message display cable (02A-A1Y2 to P1-DISP-P1) Message display cable (P1-DISP-P1 to MDJ1)	Drive 02A-A1B2 Drive Drive 02A-A1Y2 Drive	WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001 WD000, 001 WD000, 001
E212	The Ready/Not Ready switch will not operate to not ready.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	109 085* 060 213 210 211	Operator panel switch board Drive control card Message display board Message display board to message display switch board cable Message display cable (02A-A1Y2 to P1-DISP-P1) Message display cable (P1-DISP-P1 to MDJ1)	Drive 02A-A1B2 Drive Drive 02A-A1Y2 Drive	WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001 WD000, 001 WD000, 001
E213	The cartridge latch assembly will not remain latched.		016 008	Latch spring Cartridge latch assembly	Base plate Base plate	Mechanical part Mechanical part
E214	The cartridge latch assembly will not release.		008 018	Cartridge latch assembly Compression spring	Base plate Base plate	Mechanical part Mechanical part
E215	The cartridge does not pop up.		018 008	Compression spring Cartridge latch assembly	Base plate Base plate	Mechanical part Mechanical part
E216	Online/Offline switch does not cause the drive to go offline.		105 106	Online/Offline switch Address switch cable to J4	Drive Drive	SN001, 002 SN001, 002
E217	The Reset switch does not cause the drive to reset.		107 106	Reset switch Address switch cable to J4	Drive Drive	SN001, 002 SN001, 002
E220	The tape unit will not power off.		218	AC power circuit breaker	Tape unit	YF050, 060



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
E205	One LED is blank or not correct.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	060 085* 210	* EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7. Message display board Drive control card Message display cable (02A-A1Y2 to P1-DISP-P1)	Drive 02A-A1C2 02A-A1Y2	WD000, 001 DD000, 001, 002, 003 WD000, 001
E206	SR and MD actions have determined that the wrong language is displayed.	Check the switch settings on the drive adapter card for the desired language.	211	Message display cable (P1-DISP-P1 to MDJ1)	Drive	WD000, 001
E207	An invalid message is displayed.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	118	Drive-adapter card	01A-A1Q2	DI001, 002
E210	The Rewind switch does not work.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	060 085* 210	Message display board Drive control card Message display cable (02A-A1Y2 to P1-DISP-P1)	Drive 02A-A1B2 02A-A1Y2	WD000, 001 DD000, 001, 002, 003 WD000, 001
E211	The Unload switch does not work.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	211	Message display cable (P1-DISP-P1 to MDJ1)	Drive	WD000, 001
E212	The Ready/Not Ready switch will not operate to not ready.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	109 085* 060 213	Operator panel switch board Drive control card Message display board Message display board to message display switch board cable	Drive 02A-A1B2 Drive Drive	WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001
E213	The cartridge latch assembly will not remain latched.		211	Message display cable (02A-A1Y2 to P1-DISP-P1)	02A-A1Y2	WD000, 001
E214	The cartridge latch assembly will not release.		210	Message display cable (P1-DISP-P1 to MDJ1)	Drive	WD000, 001
E215	The cartridge does not pop up.		109 085* 060 213	Operator panel switch board Drive control card Message display board Message display board to message display switch board cable	Drive 02A-A1B2 Drive Drive	WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001
E216	The Online/Offline switch does not cause the drive to go offline.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	210	Message display cable (02A-A1Y2 to P1-DISP-P1)	02A-A1Y2	WD000, 001
E217	The Reset switch does not cause the drive to reset.		211	Message display cable (P1-DISP-P1 to MDJ1)	Drive	WD000, 001
E220	The tape unit will not power off.		016 008	Latch spring Cartridge latch assembly	Base plate Base plate	Mechanical part Mechanical part
			008 018	Cartridge latch assembly Compression spring	Base plate Base plate	Mechanical part Mechanical part
			018 008	Compression spring Cartridge latch assembly	Base plate Base plate	Mechanical part Mechanical part
			105 106	Online/Offline switch Address switch cable to J4	Drive Drive	SN001, 002 SN001, 002
			107 106	Reset switch Address switch cable to J4	Drive Drive	SN001, 002 SN001, 002
			218	AC power circuit breaker	Tape unit	YF050, 060

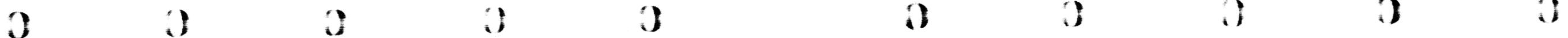
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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E221	The drive will not power off.		104 059 079* 080	Drive power switch Power amplifier board DC power distribution cable, drive internal J1, J2 DC power distribution cable	Drive Drive Drive Drive	YF020 PA000, 001 ZZ010, 020, 110, 120
E230	Drive operation is noisy.		232 001 003 004	Cartridge Threader assembly File reel motor Machine reel motor and hub mount	Base plate Base plate Base plate Base plate	Mechanical part YG010, 110 YG010, 110 YG010, 110
E231	Air leak noise.		030 039 041 042 044 045	Pump motor Plenum supply hose Plenum assembly Decoupler pressure hose Right guide bearing hose Left guide bearing hose	Tape unit base Tape unit base Base plate Base plate Base plate Base plate	YF050, 060 Mechanical part Mechanical part Mechanical part Mechanical part Mechanical part
E232	The tape unit power supply is noisy.		095	DC power supply	Tape unit base	YF100
E233	The drive's blower motor is noisy.		020	Blower assembly	Drive	YG010, 110
E234	The file reel motor is noisy.		003	File reel motor	See LOC 1	
E235	The machine reel motor is noisy.		005 054 227 231 004	Flange Upper flange Machine reel tape guide Center tape guide Machine reel motor and hub	See LOC 1 See LOC 1 See LOC 1 See LOC 1 Base plate	
E240	The control unit has a noisy fan.		150 151	Blower assembly 1 Blower assembly 2	Control unit Control unit	
E241	The control unit has a noisy dc power supply.		145	DC power supply	Control unit	
E242	The control unit has a noisy ac power supply.		144	AC power supply	Control unit	
E243	The control unit is noisy.		145 144 151 150	DC power supply AC power supply Blower assembly 2 Blower assembly 1	Control unit Control unit Control unit Control unit	
E250	The EPO switch does not cause the subsystem to power off.		198	UEPO switch	Control unit	
E251	The control unit Power On/Off switch does not cause the control unit to power off.		142	Control unit operator panel printed circuit board	Control unit	
E252	The Channel Address switch does not operate.		197	Channel address switch	See LOC 1	
E253	The Channel Enable switch will not move to the Disable position.		141	Control unit switch panel card	Control unit	
E254	The Normal/Test switch will not move.		141	Control unit switch panel card	Control unit	
E255	The CU0/CU1 switch will not move.		141	Control unit switch panel card	Control unit	
E256	The Online/Offline switch will not move to Offline.		141	Control unit switch panel card	Control unit	
E257	The IML switch will not move.		141	Control unit switch panel card	Control unit	
E259	The Local Power Enable switch will not move.		141	Control unit switch panel card	Control unit	
E25A	The Local/Remote switch will not move.		084	Local/remote switch	Control unit	
E25B	The Power On LED does not light when power is on.		142	Control unit operator panel printed circuit board	Control unit	
E25C	The CU Offline LED does not light when the control unit is offline.		141	Control unit switch panel card	Control unit	
E25D	The Channel Disabled LED does not light when the channel is disabled.		141	Control unit switch panel card	Control unit	
E25E	The Error LED does not light for a Check 1 error.		141	Control unit switch panel card	Control unit	
E25F	The Wait LED does not light during a wait condition.		141	Control unit switch panel card	Control unit	

FSC/ Error Code	Error Code Definition	Additional Actions/ Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E260	The DC Power LED does not light when the power sequence is complete.		141	Control unit switch panel card	Control unit	
E261	An IML diskette drive error occurred.		086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	
E301	Pointer failure in track group 1.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."	130 123 111	Read detect card 1 Read skew buffer card 1 Read ECC/CORR card	01A-A2R2 01A-A2K2 01A-A1R2	RD001 SB001, 002 EC001, 002
E302	Pointer failure in track group 2.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."	131 124 111	Read detect card 2 Read skew buffer card 2 Read ECC/CORR card	01A-A2S2 01A-A2L2 01A-A1R2	RD101 SB101, 102 EC001, 002
E303	Pointer failure in track groups 1 and 2.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."	130 131 123 124 111	Read detect card 1 Read detect card 2 Read skew buffer card 1 Read skew buffer card 2 Read ECC/CORR card	01A-A2R2 01A-A2S2 01A-A2K2 01A-A2L2 01A-A1R2	RD001 RD101 SB001, 002 SB101, 102 EC001, 002
E304	Pointer failure in track group 3.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."	132 125 111	Read detect card 3 Read skew buffer card 3 Read ECC/CORR card	01A-A2T2 01A-A2M2 01A-A1R2	RD201 SB201, 202 EC001, 002
E305	Pointer failure in track groups 1 and 3.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."	130 132 123 125 111	Read detect card 1 Read detect card 3 Read skew buffer card 1 Read skew buffer card 3 Read ECC/CORR card	01A-A2R2 01A-A2T2 01A-A2K2 01A-A2M2 01A-A1R2	RD001 RD201 SB001, 002 SB201, 202 EC001, 002
E306	Pointer failure in track groups 2 and 3.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."	131 132 124 125 111	Read detect card 2 Read detect card 3 Read skew buffer card 2 Read skew buffer card 3 Read ECC/CORR card	01A-A2S2 01A-A2T2 01A-A2L2 01A-A2M2 01A-A1R2	RD101 RD201 SB101, 102 SB201, 202 EC001, 002
E307	Pointer failure in track groups 1, 2, and 3.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections."	130 131 132 123 124 125 111	Read detect card 1 Read detect card 2 Read detect card 3 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read ECC/CORR card	01A-A2R2 01A-A2S2 01A-A2T2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1R2	RD001 RD101 RD201 SB001, 002 SB101, 102 SB201, 202 EC001, 002
E308	Buffer failed to load pointer information in diagnostic mode.	TCC FRUs associated with this error code are: 185 - 01A-A1XRS 186 - 01A-A1YRS	119 111	Read clock and format card Read ECC/CORR card	01A-A1S2 01A-A1R2	RC001, 002 EC001, 002
E4E0	The Ready switch is always off.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	109 085* 213 211 210	Operator panel switch board Drive control card Message display board to message display switch board cable Message display cable (P1-DISP-P1 to MDJ1) Message display cable (02A-A1Y2 to P1-DISP-P1)	Drive 02A-A1B2 Drive Drive 02A-A1Y2	WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001 WD000, 001

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E4E1	The Ready switch is always on.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	109 085* 213 211 210	Operator panel switch board Drive control card Message display board to message display switch board cable Message display cable (P1-DISP-P1 to MDJ1) Message display cable (02A-A1Y2 to P1-DISP-P1)	Drive 02A-A1B2 Drive Drive 02A-A1Y2	WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001 WD000, 001
E4E2	The Unload switch is always off.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	109 085* 213 211 210	Operator panel switch board Drive control card Message display board to message display switch board cable Message display cable (P1-DISP-P1 to MDJ1) Message display cable (02A-A1Y2 to P1-DISP-P1)	Drive 02A-A1B2 Drive Drive 02A-A1Y2	WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001 WD000, 001
E4E3	The Unload switch is always on.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	109 085* 213 211 210	Operator panel switch board Drive control card Message display board to message display switch board cable Message display cable (P1-DISP-P1 to MDJ1) Message display cable (02A-A1Y2 to P1-DISP-P1)	Drive 02A-A1B2 Drive Drive 02A-A1Y2	WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001 WD000, 001
E4E4	The Rewind switch is always off.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	109 085* 213 211 210	Operator panel switch board Drive control card Message display board to message display switch board cable Message display cable (P1-DISP-P1 to MDJ1) Message display cable (02A-A1Y2 to P1-DISP-P1)	Drive 02A-A1B2 Drive Drive 02A-A1Y2	WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001 WD000, 001
E4E5	The Rewind switch is always on.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	109 085* 213 211 210	Operator panel switch board Drive control card Message display board to message display switch board cable Message display cable (P1-DISP-P1 to MDJ1) Message display cable (02A-A1Y2 to P1-DISP-P1)	Drive 02A-A1B2 Drive Drive 02A-A1Y2	WD000, 001 DD000, 001, 002, 003 WD000, 001 WD000, 001 WD000, 001
E4E6	The cartridge is not inserted or the cartridge present sensor is always off.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z This error can be caused by the service representative using a cleaning cartridge at the wrong time.	010 085* 081	Cartridge present sensor Drive control card Tachometer sensor cable	Base plate 02A-A1B2 Base plate	SN001, 002 DD000, 001, 002, 003 SN001, 002
E4E7	The cartridge is not removed from the tray or the cartridge present sensor is always on.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	010 085* 081	Cartridge present sensor Drive control card Tachometer sensor cable	Base plate 02A-A1B2 Base plate	SN001, 002 DD000, 001, 002, 003 SN001, 002
E4E8	The cartridge latched sensor is always off.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	011 085* 016 008 081	Cartridge latched sensor Drive control card Latch spring Cartridge latch assembly Tachometer sensor cable	Base plate 02A-A1B2 Drive Base plate Base plate	SN001, 002 DD000, 001, 002, 003 Mechanical part Mechanical part SN001, 002
E4E9	The cartridge latched sensor is always on.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	011 085* 081	Cartridge latched sensor Drive control card Tachometer sensor cable	Base plate 02A-A1B2 Base plate	SN001, 002 DD000, 001, 002, 003 SN001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/ Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E4EA	The file protect switch is always off.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	009 085* 064 107 059 081 106 058	File protect switch Drive control card Write power card Reset switch Power amplifier board Tachometer sensor cable Address switch cable to J4 Logic board	Base plate 02A-A1B2 02A-A1G2 Drive Drive Drive Drive 02A-A1	SN001, 002 DD000, 001, 002, 003 VP000 SN001, 002 PA000, 001 SN001, 002 SN001, 002 AA000, 100
E4EB	The file protect switch is always on.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	009 085* 081	File protect switch Drive control card Tachometer sensor cable	Base plate 02A-A1B2 Base plate	SN001, 002 DD000, 001, 002, 003 SN001, 002
E4EC	Tape path sensor A is always off.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	006 001 007 085* 081	Tape path sensor A Threader assembly Tape path sensor B Drive control card Tachometer sensor cable	Base plate Base plate Base plate 02A-A1B2 Base plate	SN001, 002 YG010, 110 SN001, 002 DD000, 001, 002, 003 SN001, 002
E4ED	Tape path sensor A is always on.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	006 085* 081	Tape path sensor A Drive control card Tachometer sensor cable	Base plate 02A-A1B2 Base plate	SN001, 002 DD000, 001, 002, 003 SN001, 002
E4EE	Tape path sensor B is always off.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	007 085* 081	Tape path sensor B Drive control card Tachometer sensor cable	Base plate 02A-A1B2 Base plate	SN001, 002 DD000, 001, 002, 003 SN001, 002
E4EF	Tape path sensor B is always on.	TCC FRUs associated with this error code are: 267* - 02A-A1B2Y 268* - 02A-A1B2Z	007 085* 081	Tape path sensor B Drive control card Tachometer sensor cable	Base plate 02A-A1B2 Base plate	SN001, 002 DD000, 001, 002, 003 SN001, 002
E501	A CC3 or a path not operating condition occurred.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." 3. If RPQ 8B3006 or RPQ 8B3007 are installed, the external circuit for the RPQ may cause this error. Disconnect the RPQ cable from the 3480 control unit (see logic page YF021) to see if the customer owned circuit is the cause of this error. TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	136 137 133 233 234 152 235 236 195 237 238 196 154 121 122 197 126 141	Bus shoe card (channel A) Tag shoe card (channel A) Channel adapter card (channel A) Bus shoe card (channel B) Tag shoe card (channel B) Channel adapter card (channel B) Bus shoe card (channel C) Tag shoe card (channel C) Channel adapter card (channel C) Bus shoe card (channel D) Tag shoe card (channel D) Channel adapter card (channel D) Channel timeout card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Channel address switch Power/POR card Control unit switch panel card	01A-T1A1 01A-T1A3 01A-A2C2 01A-T1B1 01A-T1B3 01A-A2D2 01A-T1C1 01A-T1C3 01A-A2E2 01A-T1D1 01A-T1D3 01A-A2F2 01A-A2G2 01A-A1G2 01A-A1F2 See LOC 1 01A-A2H4 Control unit	IB001, 002, 003, WA013 IT001, 002, 003, WA003 CA001, 002 IB001, 002, 003, WA013 IT001, 002, 003, WA003 CA101, 102 IB001, 002, 003, WA013 IT001, 002, 003, WA003 CA201, 202 IB001, 002, 003, WA013 IT001, 002, 003, WA003 CA301, 302 CR001 SS001, 002 SM001, 002 PR001



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages				
E502	A CC3 or a path not operating condition occurred. The control unit will not go online.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1F2	SM001, 002				
			121	Status store basic card	01A-A1G2	SS001, 002				
E503	A CC3 or a path not operating condition occurred. Multiple channel adapters will not enable.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	121	Status store basic card	01A-A1G2	SS001, 002				
E504	A CC3 or a path not operating condition occurred and one channel adapter will not enable.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." If RPO 8B3006 or RPO 8B3007 are installed, the external circuit for the RPO may cause this error. Disconnect the RPO cable from the 3480 control unit (see logic page YF021) to see if the customer owned circuit is the cause of this error.	133 152 195 196 121 154 126 197	Channel adapter card (channel A) Channel adapter card (channel B) Channel adapter card (channel C) Channel adapter card (channel D) Status store basic card Channel timeout card Power/POR card Channel address switch	01A-A2C2 01A-A2D2 01A-A2E2 01A-A2F2 01A-A1G2 01A-A2G2 01A-A2H4 See LOC 1	CA001, 002 CA101, 102 CA201, 202 CA301, 302 SS001, 002 CRO01 PRO01				
E505	A continuous CC3 or a path not operating condition occurred. The channel adapters are enabled.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter."	136	Bus shoe card (channel A)	01A-T1A1	IBO01, 002, 003, WA013 IT001, 002, 003, WA003 CA001, 002 IBO01, 002, 003, WA013 IT001, 002, 003, WA003 CA101, 102 IBO01, 002, 003, WA013 IT001, 002, 003, WA003 CA201, 202 IBO01, 002, 003, WA013 IT001, 002, 003, WA003 CA301, 302 PRO01				
			137	Tag shoe card (channel A)	01A-T1A3					
			133 233	Channel adapter card (channel A) Bus shoe card (channel B)	01A-A2C2 01A-T1B1					
			234	Tag shoe card (channel B)	01A-T1B3					
			152 235	Channel adapter card (channel B) Bus shoe card (channel C)	01A-A2D2 01A-T1C1					
			236	Tag shoe card (channel C)	01A-T1C3					
			195 237	Channel adapter card (channel C) Bus shoe card (channel D)	01A-A2E2 01A-T1D1					
			238	Tag shoe card (channel D)	01A-T1D3					
			196 197 126	Channel adapter card (channel D) Channel address switch Power/POR card	01A-A2F2 See LOC 1 01A-A2H4					
			E510	A check 1 condition was reset which caused a 'disconnect in' error.	Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 180 - 01A-A1ZCD 190 - 01A-A1XFG 182 - 01A-A1E2W 191 - 01A-A1YFG 183 - 01A-A1WCD 192 - 01A-A1XCDE 187 - 01A-A1ZFG 193 - 01A-A1YCDE 189 - 01A-A1WFG		133	Channel adapter card (channel A)	01A-A2C2	CA001, 002 CA101, 102 CA201, 202 CA301, 302 MP001, 002, 003 MA001, 002, 003 CS001, 002 SS001, 002 SM001, 002 PRO01
							152	Channel adapter card (channel B)	01A-A2D2	
195	Channel adapter card (channel C)	01A-A2E2								
196	Channel adapter card (channel D)	01A-A2F2								
117	Microprocessor card	01A-A1D2								
115	Maintenance adapter card	01A-A1E2								
134	Control store card	01A-A1C2								
121	Status store basic card	01A-A1G2								
122	Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1F2								
126	Power/POR card	01A-A2H4								

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E511	An interface control check occurred.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	136	Bus shoe card (channel A)	01A-T1A1	IB001, 002, 003, WA013 IT001, 002, 003, WA003 CA001, 002 IB001, 002, 003, WA013 IT001, 002, 003, WA003 CA101, 102 IB001, 002, 003, WA013 IT001, 002, 003, WA003 CA201, 202 IB001, 002, 003, WA013 IT001, 002, 003, WA003 CA301, 302 BA001, 002, 003 BC001, 002, 003 PR001
			137	Tag shoe card (channel A)	01A-T1A3	
			133	Channel adapter card (channel A)	01A-A2C2	
			233	Bus shoe card (channel B)	01A-T1B1	
			234	Tag shoe card (channel B)	01A-T1B3	
			152	Channel adapter card (channel B)	01A-A2D2	
			235	Bus shoe card (channel C)	01A-T1C1	
			236	Tag shoe card (channel C)	01A-T1C3	
			195	Channel adapter card (channel C)	01A-A2E2	
			237	Bus shoe card (channel D)	01A-T1D1	
			238	Tag shoe card (channel D)	01A-T1D3	
			196	Channel adapter card (channel D)	01A-A2F2	
			120	Buffer adapter card	01A-A1K2	
			114	Buffer control card	01A-A1L2	
197	Channel address switch	See LOC 1				
126	Power/POR card	01A-A2H4				
141	Control unit switch panel card	Control unit				
E513	An interface control check, or a channel data check, or a tag failure occurred.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	137	Tag shoe card (channel A)	01A-T1A3	IT001, 002, 003, WA003 CA001, 002 IT001, 002, 003, WA003 CA101, 102 IT001, 002, 003, WA003 CA201, 202 IT001, 002, 003, WA003 CA301, 302 BA001, 002, 003 BC001, 002, 003 PR001
			133	Channel adapter card (channel A)	01A-A2C2	
			234	Tag shoe card (channel B)	01A-T1B3	
			152	Channel adapter card (channel B)	01A-A2D2	
			236	Tag shoe card (channel C)	01A-T1C3	
			195	Channel adapter card (channel C)	01A-A2E2	
			238	Tag shoe card (channel D)	01A-T1D3	
			196	Channel adapter card (channel D)	01A-A2F2	
			120	Buffer adapter card	01A-A2K2	
			114	Buffer control card	01A-A1L2	
			197	Channel address switch	See LOC 1	
			126	Power/POR card	01A-A2H4	
			141	Control unit switch panel card	Control unit	
			E514	An interface control check, or a channel data check, or a bus failure occurred.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	
133	Channel adapter card (channel A)	01A-A2C2				
233	Bus shoe card (channel B)	01A-T1B1				
152	Channel adapter card (channel B)	01A-A2D2				
235	Bus shoe card (channel C)	01A-T1C1				
195	Channel adapter card (channel C)	01A-A2E2				
237	Bus shoe card (channel D)	01A-T1D1				
196	Channel adapter card (channel D)	01A-A2F2				
120	Buffer adapter card	01A-A2K2				
114	Buffer control card	01A-A1L2				
197	Channel address switch	See LOC 1				
126	Power/POR card	01A-A2H4				
141	Control unit switch panel card	Control unit				

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
E511	An interface control check occurred.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 187 - 01A-A1ZFG 190 - 01A-A1XFG 189 - 01A-A1WFG 191 - 01A-A1YFG	136	Bus shoe card (channel A)	01A-T1A1	IB001, 002, 003, WA013 IT001, 002, 003, WA003 CA001, 002 IB001, 002, 003, WA013 IT001, 002, 003, WA003 CA101, 102 IB001, 002, 003, WA013 IT001, 002, 003, WA003 CA201, 202 IB001, 002, 003, WA013 IT001, 002, 003, WA003 CA301, 302 BA001, 002, 003 BC001, 002, 003 PR001
			137	Tag shoe card (channel A)	01A-T1A3	
			133	Channel adapter card (channel A)	01A-A2C2	
			233	Bus shoe card (channel B)	01A-T1B1	
			234	Tag shoe card (channel B)	01A-T1B3	
			152	Channel adapter card (channel B)	01A-A2D2	
			235	Bus shoe card (channel C)	01A-T1C1	
			236	Tag shoe card (channel C)	01A-T1C3	
			195	Channel adapter card (channel C)	01A-A2E2	
			237	Bus shoe card (channel D)	01A-T1D1	
			238	Tag shoe card (channel D)	01A-T1D3	
			E513	An interface control check, or a channel data check, or a tag failure occurred.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	
133	Channel adapter card (channel A)	01A-A2C2				
234	Bus shoe card (channel B)	01A-T1B3				
152	Channel adapter card (channel B)	01A-A2D2				
236	Tag shoe card (channel C)	01A-T1C3				
195	Channel adapter card (channel C)	01A-A2E2				
238	Tag shoe card (channel D)	01A-T1D3				
196	Channel adapter card (channel D)	01A-A2F2				
120	Buffer adapter card	01A-A1K2				
114	Buffer control card	01A-A1L2				
197	Channel address switch	See LOC 1				
126	Power/POR card	01A-A2H4				
141	Control unit switch panel card	Control unit				
E514	An interface control check, or a channel data check, or a bus failure occurred.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	136	Bus shoe card (channel A)	01A-T1A1	IB001, 002, 003, WA013 CA001, 002 IB001, 002, 003, WA013 CA101, 102 IB001, 002, 003, WA013 CA201, 202 IB001, 002, 003, WA013 CA301, 302 BA001, 002, 003 BC001, 002, 003 PR001
			133	Channel adapter card (channel A)	01A-A2C2	
			233	Bus shoe card (channel B)	01A-T1B1	
			152	Channel adapter card (channel B)	01A-A2D2	
			235	Bus shoe card (channel C)	01A-T1C1	
			195	Channel adapter card (channel C)	01A-A2E2	
			237	Bus shoe card (channel D)	01A-T1D1	
			196	Channel adapter card (channel D)	01A-A2F2	
			120	Buffer adapter card	01A-A1K2	
			114	Buffer control card	01A-A1L2	
			197	Channel address switch	See LOC 1	
			126	Power/POR card	01A-A2H4	
141	Control unit switch panel card	Control unit				

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages				
E520	A channel timeout or hang condition occurred.	1. This error can be caused by other than 3480 hardware. See START 1 for "FSC Caused by Other Than 3480 Hardware Failures," before continuing the next step. 2. Use the EAD for Status Store/Channel Adapter for failure isolation. See EAD 1 for "Status Store/Channel Adapter." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	136	Bus shoe card (channel A)	01A-T1A1	IB001, 002, 003, WA013 IT001, 002, 003, WA003 CA001, 002 IB001, 002, 003, WA013 IT001, 002, 003, WA003 CA101, 102 IB001, 002, 003, WA013 IT001, 002, 003, WA003 CA201, 202 IB001, 002, 003, WA013 IT001, 002, 003, WA013 CA301, 302 BA001, 002, 003 BC001, 002, 003 PR001				
			137	Tag shoe card (channel A)	01A-T1A3					
			133	Channel adapter card (channel A)	01A-A2C2					
			233	Bus shoe card (channel B)	01A-T1B1					
			234	Tag shoe card (channel B)	01A-T1B3					
			152	Channel adapter card (channel B)	01A-A2D2					
			235	Bus shoe card (channel C)	01A-T1C1					
			236	Tag shoe card (channel C)	01A-T1C3					
			195	Channel adapter card (channel C)	01A-A2E2					
			237	Bus shoe card (channel D)	01A-T1D1					
			238	Tag shoe card (channel D)	01A-T1D3					
			196	Channel adapter card (channel D)	01A-A2F2					
			120	Buffer adapter card	01A-A1K2					
			114	Buffer control card	01A-A1L2					
197	Channel address switch	See LOC 1								
126	Power/POR card	01A-A2H4								
141	Control Unit switch panel card	Control Unit								
E5FF	An external register (XR) error was detected while running the verification test.	Use the EAD for error code Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 184 - 01A-A1ZPQ 158 - 01A-A1XKL 188 - 01A-A1ZKL 159 - 01A-A1YKL 192 - 01A-A1XCDE 181 - 01A-A1P2Y 193 - 01A-A1YCDE 182 - 01A-A1E2W	121	Status store basic card	01A-A1G2	SS001, 002 MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 DI001, 002 RC001, 002 DF001, 002 BA001, 002, 003				
			117	Microprocessor card	01A-A1D2					
			115	Maintenance adapter card	01A-A1E2					
			114	Buffer control card	01A-A1L2					
			118	Drive-adapter card	01A-A1Q2					
			119	Read clock and format card	01A-A1S2					
			116	Write data card	01A-A1P2					
			120	Buffer adapter card	01A-A1K2					
			E601	The automatic cartridge loader processor is not operational.	None		281	Loader control card	Loader	AL001
			E602	The automatic cartridge loader stack is full with no attention light or it is empty with the attention light on.	None		298	Loader operator panel	Loader	AL002
289	Stack low position sensor	Loader				SN003				
E604	The automatic cartridge loader stack low position sensor has failed.	None	289	Stack low position sensor	Loader	SN003				
			281	Loader control card	Loader	AL001				
E605	The automatic cartridge loader has an open or shorted switch on its operator panel.	None	298	Loader operator panel	Loader	AL002				
E6E0	The automatic cartridge loader input sensor did not indicate a cartridge when one was inserted.	Could be caused by bad response to MD question.	298	Loader operator panel	Loader	AL002				
			291	Cartridge in stack sensor	Loader	SN003				
E6E1	The cartridge present sensor did not indicate a cartridge had been loaded after the service representative had been told to load a cartridge into the 3480 with an automatic cartridge loader.	Could be caused by running the automatic cartridge loader test with cleaning cartridge(s).	010	Cartridge present sensor	Base plate	SN001, 002				
			085	Drive control card	02A-A1B2	DD000, 001 002, 003				
			281	Loader control card	Loader	AL001				
E700	The service representative is here to service the automatic cartridge loader but no problem can be found using diagnostics (intermittent).	None	281	Loader control card	Loader	AL001				
			285	Loader mechanical assembly	Loader	DD000, 001, 002, 003				
			282	Load assembly	Loader					
			085	Drive control card	02A-A1B2					
E701	The automatic cartridge loader control card has detected the wrong polarity of the solenoid latch signal.	Wires in connector J5 may be reversed. To correct the problem reverse wires 1 and 2 in the Power Amplifier Board connector P4.	281	Loader control card	Loader	AL001				
E702	The automatic cartridge loader control card has detected a +24V dc problem.	If the loader power on LED is off, use the PWR section of the MI to troubleshoot.	281	Loader control card	Loader	AL001				

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E703	The automatic cartridge loader has timed out before a "Load Request" from the drive was received.	None	281 085	Loader Control Card Drive control card	Loader 02A-A1B2	AL001 DD000, 001 002, 003
E704	The automatic cartridge loader control card has detected the latch solenoid signal while loading a cartridge.	Can be caused by pressing the unload switch while the drive is loading.	281 085	Loader Control Card Drive control card	Loader 02A-A1B2	AL001 DD0001, 001, 002, 003
E720	The automatic cartridge loader detected an unexpected condition of either the cartridge present sensor or the file protect switch.	Additional FRUs that may cause this error are: 282 Load ASM 295 Feed ASM 293 L Input Rail ASM	010 009	Cart Present SNS File Protect SW	Base Plate Base Plate	SN001, 002 SN001, 002
E721	The automatic cartridge loader detected an unexpected condition of the stack up position sensor.	Additional FRUs that may cause this error are: 282 Load ASM 295 Feed ASM 293 L Input Rail ASM	296	Stack up Pos SNS	Loader	SN003
E722	The automatic cartridge loader detected an unexpected condition of the input complete sensor.	Additional FRUs that may cause this error are: 282 Load ASM 295 Feed ASM	293	L Input Rail ASM	Loader	
E723	The automatic cartridge loader detected an unexpected condition of the load motor complete sensor.	Additional FRUs that may cause this error are: 282 Load ASM 295 Feed ASM 293 L Input Rail ASM	284	Load Mtr Com SNS	Loader	SN003
E724	The automatic cartridge loader detected an unexpected condition of the feed complete sensor.	Additional FRUs that may cause this error are: 282 Load ASM 293 L Input Rail ASM	295	Feed ASM	Loader	SN003
E725	The automatic cartridge loader detected an unexpected condition of the cartridge latched sensor.	Additional FRUs that may cause this error are: 282 Load ASM 295 Feed ASM 293 L Input Rail ASM	011	Cart Latched SNS	Base Plate	SN001, 002
E726	The automatic cartridge loader detected an unexpected condition of the tracks closed sensor.	Additional FRUs that may cause this error are: 282 Load ASM 293 L Input Rail ASM	295	Feed ASM	Loader	SN003
E727	The automatic cartridge loader detected an unexpected condition of the tracks feed sensor.	Additional FRUs that may cause this error are: 282 Load ASM 293 L Input Rail ASM	295	Feed ASM	Loader	SN003
E728	The automatic cartridge loader detected an unexpected condition of the extract complete sensor.	Additional FRUs that may cause this error are: 282 Load ASM 293 L Input Rail ASM	295	Feed ASM	Loader	SN003
E740	The automatic cartridge loader has detected a processor error.	None	281	Loader control card	Loader	AL001
E741	The automatic cartridge loader test of the LED checkers has failed.	None	281	Loader control card	Loader	AL001
E742	The automatic cartridge loader wrap bits test has failed.	None	281	Loader control card	Loader	AL001



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E743	The automatic cartridge loader motor checker test has failed.	This error may be caused by missing +24V dc at the automatic cartridge loader. Additional FRUs that may cause this error are: 288 Loader Fuse +24V dc 285 Loader Mechanical Assembly 282 Load Assembly	281	Loader control card	Loader	AL001
E744	The automatic cartridge loader motor control has failed.	None	281	Loader control card	Loader	AL001
E745	The automatic cartridge loader control card single shot has failed.	None	281	Loader control card	Loader	AL001
E746	The automatic cartridge loader control card has detected a checker failure during retry.	None	281	Loader control card	Loader	AL001
E747	The automatic cartridge loader control card single shot timeout reset failed.	None	281	Loader control card	Loader	AL001
E74F	The automatic cartridge loader control card has detected a memory error.	None	281	Loader control card	Loader	AL001
E77E	A program error has been detected in the automatic cartridge loader (no spare timers).	Call your next level of support.				
E77F	A program error has been detected in the automatic cartridge loader.	Call your next level of support.				
E781	The automatic cartridge loader extract complete sensor has failed.	None	295 281	Feed assembly Loader control card	Loader Loader	AL001
E782	The automatic cartridge loader tracks feed sensor has failed.	None	295 281	Feed assembly Loader control card	Loader Loader	AL001
E783	The automatic cartridge loader tracks close sensor has failed.	None	295 281	Feed assembly Loader control card	Loader Loader	AL001
E784	The automatic cartridge loader stack up position sensor has failed.	None	296 281	Stack up position sensor Loader control card	Loader Loader	SN003 AL001
E785	The automatic cartridge loader cartridge staged sensor has failed.	None	292 281	Cartridge staged sensor Loader control card	Loader Loader	SN003 AL001
E786	The automatic cartridge loader stack low position sensor has failed.	None	289 281	Stack low position sensor Loader control card	Loader Loader	SN003 AL001
E787	The automatic cartridge loader input complete sensor has failed.	None	293 281	Left input rail Loader control card	Loader Loader	AL001
E788	The automatic cartridge loader cartridge in stack sensor has failed.	None	291 281	Cartridge in stack sensor Loader control card	Loader Loader	SN003 AL001
E789	The automatic cartridge loader load motor complete sensor has failed.	None	284 281	Load motor complete sensor Loader control card	Loader Loader	SN003 AL001
E78A	The automatic cartridge loader tracks feed, tracks closed, or load motor complete sensor has failed.	None	295 282 281	Feed assembly Load assembly Loader control card	Loader Loader Loader	AL001
E78B	The automatic cartridge loader is attempting to open the load assembly and one of the following sensors/switches is in the wrong state: Cartridge Latched, Cartridge Present, File Protect, Feed Complete, Load Motor Complete, Tracks Feed, Tracks Closed, or Extract Complete.	None	282 295	Load assembly Feed assembly	Loader Loader	
E78C	The automatic cartridge loader is beginning the cartridge staged test routine and one of the following sensors/switches is in the wrong state: Cartridge Latched, Cartridge Present, File Protect, Feed Complete, Input Complete, Tracks Feed, Tracks Closed, or Extract Complete.	None	282 295 293	Load assembly Feed assembly Left input rail assembly	Loader Loader Loader	

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E78D	The automatic cartridge loader is in the cartridge staged test routine and one of the following sensors/switches is in the wrong state: Cartridge Latched, Cartridge Present, File Protect, Feed Complete, Input Complete, Tracks Feed, or Tracks Closed.	None	282 295 293	Load assembly Feed assembly Left input rail assembly	Loader Loader Loader	
E78E	The automatic cartridge loader input stack either did not move or sense that it did move.	Inspect the left or right input rail assembly for damage. Exchange damaged FRU.	290	Input stack assembly	Loader	
E78F	The automatic cartridge loader detected the extract complete sensor in the middle of moving the input stack.	None	295	Feed assembly	Loader	
E790	The automatic cartridge loader input either stopped or did not sense the completion of the input cycle after it started moving.	Inspect the left or right input rail assembly for damage. Exchange damaged FRU.	290	Input stack assembly	Loader	
E791	The automatic cartridge loader detected the tracks feed sensor in the wrong state at the end of the test for a cartridge staged.	None	295	Feed assembly	Loader	
E792	The automatic cartridge loader is in the cartridge load (from the feed assembly to the load assembly) routine and one of the following sensors/switches is in the wrong state: Cartridge Latched, Cartridge Present, File Protect, Feed Complete, Input Complete, Tracks Feed, Tracks Closed, Extract Complete or Load Motor Complete.	None	282 295 293	Load assembly Feed assembly Left input rail assembly	Loader Loader Loader	
E793	The automatic cartridge loader detected the staged sensor but tracks closed sensor indicates no cartridge is staged.	Can be caused by not having the cartridge inserted far enough into the feed.	292 295	Cartridge staged sensor Feed assembly	Loader Loader	SN003
E794	At the end of the test for a cartridge staged, the automatic cartridge loader detected the tracks closed sensor.	None	295	Feed assembly	Loader	
E795	The automatic cartridge loader did not detect extract complete sensor after starting to feed a cartridge.	This error may be caused by the left and right input rail assemblies not being aligned correctly. See CARR-DR for FRU 293 for the alignment procedure.	295	Feed assembly	Loader	
E796	The automatic cartridge loader has timed out waiting for "Feed Complete" while moving the cartridge from the feed to the load assembly.	1. Can be caused by having a cartridge upside down in the feed station. 2. This error may be caused by the left and right input rail assemblies not being aligned correctly. See CARR-DR for FRU 293 for the alignment procedure.	282 295	Load assembly Feed assembly	Loader Loader	
E797	The automatic cartridge loader did not detect extract complete sensor open after feed complete sensor closed while feeding a cartridge.	None	295	Feed assembly	Loader	
E798	The automatic cartridge loader did not detect tracks feed sensor open after a completed feed.	None	295	Feed assembly	Loader	
E799	The automatic cartridge loader is attempting to close the load assembly and one of the following sensors/switches is in the wrong state: Cartridge Latched, Cartridge Present, File Protect, Feed Complete, Load Motor Complete, Tracks Feed, Tracks Closed, or Extract Complete.	None	282 295	Load assembly Feed assembly	Loader Loader	



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E79A	The automatic cartridge loader did not detect a change in the load motor complete sensor but the load assembly should be moving down.	None	282	Load assembly	Loader	
E79B	The automatic cartridge loader did not detect the cartridge latched sensor closed after the load assembly has closed.	None	011	Cartridge latched sensor	Base plate	SN001, 002
E79C	The automatic cartridge loader did not detect a change in the load motor complete sensor OR after the load motor complete sensor is uncovered, the cartridge latched sensor was NOT covered. The tray should coast down far enough to activate the cartridge latched sensor.	If the tray has moved down, check the adjustment of the cartridge latched sensor (see CARR-DR 110).	282	Load assembly	Loader	
E79D	The automatic cartridge loader did not detect a change in the load motor complete sensor but the load assembly should be moving up.	None	282	Load assembly	Loader	
E79E	The automatic cartridge loader did not detect a cartridge latched sensor open after the load assembly was opened.	None	011	Cartridge latched sensor	Base plate	SN001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E79F	The automatic cartridge loader is beginning the routine to move the cartridge from the load assembly to the feed assembly and one of the following sensors/switches is in the wrong state: Cartridge latched, input complete, tracks feed, tracks closed, extract complete, or load motor complete.	Can be caused if a cartridge is put into the feed station while one is in the drive.	282 295 293	Load assembly Feed assembly Left input rail assembly	Loader Loader Loader	
E7A0	The automatic cartridge loader did not detect a change in the load motor complete sensor but the load assembly should be open.	None	282	Load assembly	Loader	
E7A1	The automatic cartridge loader detected the wrong state of the tracks feed or tracks closed sensors while attempting to remove a cartridge.	None	295	Feed assembly	Loader	
E7A2	The automatic cartridge loader detected the cartridge staged sensor closed while removing the while cartridge.	Can be caused if a cartridge is put into the feed station while one is in the drive.	292 295	Cartridge staged sensor Feed assembly	Loader Loader	SN003
E7A3	The automatic cartridge loader did not detect the feed complete sensor open while removing the cartridge.	This error may be caused by the left and right input rail assemblies not being aligned correctly. See CARR-DR for FRU 293 for the alignment procedure.	295 282	Feed assembly Load assembly	Loader Loader	
E7A4	The automatic cartridge loader detected the cartridge staged sensor closed while removing the cartridge.	1. Can be caused if a cartridge is put into the feed station while one is in the drive. 2. This error may be caused by the left and right input rail assemblies not being aligned correctly. See CARR-DR for FRU 293 for the alignment procedure.	292 295	Cartridge staged sensor Feed assembly	Loader Loader	SN003
E7A5	The automatic cartridge loader detected the cartridge staged sensor closed while removing the cartridge.	Can be caused if a cartridge is put into the feed station while one is in the drive.	292 295	Cartridge staged sensor Feed assembly	Loader Loader	SN003
E7A6	The automatic cartridge loader did not detect extract complete sensor closed while attempting to removing a cartridge.	1. This error may be caused by the left and right input rail assemblies not being aligned correctly. See CARR-DR for FRU 293 for the alignment procedure. 2. This error can be caused by having the cartridge upside down.	295	Feed assembly	Loader	
E7A7	The automatic cartridge loader did not detect extract complete sensor open while attempting to removing a cartridge.	None	295	Feed assembly	Loader	
E7A8	The automatic cartridge loader did not detect tracks feed sensor open after removing a cartridge and releasing the solenoid.	None	295	Feed assembly	Loader	
E7A9	The automatic cartridge loader did not detect stack up position sensor open while moving the output stack down.	None	297 296 289	Output stack assembly Stack up position sensor Stack low position sensor	Loader Loader Loader	SN003 SN003
E7AA	The automatic cartridge loader is in the start input moving routine and one of the following sensors/switches is in the wrong state. Input complete, tracks feed, tracks closed, or stack up position sensor.	None	295 293	Feed assembly Left input rail assembly	Loader Loader	
E7AB	The automatic cartridge loader detected the extract complete sensor before an input stack move operation.	None	295	Feed assembly	Loader	
E7AC	The automatic cartridge loader input stack cycled 13 times without detecting a cartridge at the feed station.	Could be caused by a stuck cartridge in stack sensor or by removing cartridge from the stack while loading.	290	Input stack assembly	Loader	



E7AD	The automatic cartridge loader did not detect stack up position sensor closed while moving the output stack up.	None	297 296	Output stack assembly Stack up position sensor	Loader Loader	SN003
E7AE	The automatic cartridge loader is in the cartridge to drive routine and one of the following sensors/switches is in the wrong state. Cartridge latched, cartridge present, file protect, feed complete, input complete, tracks feed, tracks closed, or load motor complete.	None	282 295 293	Load assembly Feed assembly Left input rail assembly	Loader Loader Loader	
E7AF	The automatic cartridge loader initialization/recovery code did not detect tracks closed sensor after cartridge present was detected.	None	010 009 295	Cartridge present sensor File protect switch Feed assembly	Base plate Base plate Loader	SN001, 002 SN001, 002
E7B0	The automatic cartridge loader initialization/recovery code should reposition and move the input but the extract complete sensor is on.	None	295 281	Feed assembly Loader control card	Loader Loader	AL001
E7B1	The automatic cartridge loader initialization/recovery code is in the reposition code but the extract complete sensor is on.	None	295 281	Feed assembly Loader control card	Loader Loader	AL001
E7B2	The automatic cartridge loader initialization/recovery code should reposition and move the input but the extract complete sensor is on.	This error may be caused by the left and right input rail assemblies not being aligned correctly. See CARR-DR for FRU 293 for the alignment procedure.	295 281	Feed assembly Loader control card	Loader Loader	AL001
E7B3	The automatic cartridge loader initialization/recovery code does not see the load assembly in the up (home) position.	If the load assembly is all the way up, suspect the load motor complete sensor.	282	Load assembly	Loader	
E7B4	The automatic cartridge loader initialization/recovery code is in the reposition code but the extract complete sensor is on.	None	295 281	Feed assembly Loader control card	Loader Loader	AL001
E7B5	The automatic cartridge loader initialization/recovery code is attempting to move the input down but did not see the input complete sensor.	None	293	Left input rail assembly	Loader	
E7B6	The automatic cartridge loader initialization/recovery code has timed out attempting to feed a cartridge into the drive.	This error may be caused by the left and right input rail assemblies not being aligned correctly. See CARR-DR for FRU 293 for the alignment procedure.	295 282	Feed assembly Load assembly	Loader Loader	
E7B7	The automatic cartridge loader cartridge staged sensor has failed.	None	292 281	Cartridge Staged Sensor Loader Control Card	Loader Loader	SN003 AL001
E7B8	The automatic cartridge loader initialization/recovery code has timed out trying to extract a cartridge from the drive.	1. This error may be caused by the left and right input rail assemblies not being aligned correctly. See CARR-DR for FRU 293 for the alignment procedure. 2. This error can be caused by having the cartridge upside down.	295	Feed ASM	Loader	
E7B9	The automatic cartridge loader initialization/recovery code detected the feed complete sensor but before that next operation was started the the feed complete sensor was open.	The file protect switch may be out of adjustment causing the cartridge to move when the driving force is removed from the cartridge. Check the adjustment - see CARR-DR 90.	282	Load assembly	Loader	
E7CF	The automatic cartridge loader has detected a failure it cannot isolate.	None	281	Loader control card	Loader	AL001

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
E800	The service representative informed the MD that there were too many temporary data errors based on Format 21 sense records from EREP or the system console message information.	<ol style="list-style-type: none"> Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ</p>	085* 063* 064 062* 120 216 059 013 132 131 130 123 124 125 119 111 116 118 199 248 264 265	Drive control card Write card Write power card Read preamplifier card Buffer adapter card Tape lifter solenoid Power amplifier board Head and guide assembly Read detect card 3 Read detect card 2 Read detect card 1 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Read ECC/CORR card Write data card Drive-adapter card Write bus terminator CU0 local Write bus terminator CU0 remote Write bus terminator CU1 local Write bus terminator CU1 remote	02A-A1B2 02A-A1K4 02A-A1G2 02A-A1H2 01A-A1K2 Drive Drive Drive 01A-A2T2 01A-A2S2 01A-A2R2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1R2 01A-A1P2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 WR000 VP000 RP000 BA001, 002, 003 RD201 RD101 RD001 SB001, 002 SB101, 102 SB201, 202 RC001, 002 EC001, 002 DF001, 002 DI001, 002
E810	The data read during the read routine of the verification test did not match the data written during the write routine.	<ol style="list-style-type: none"> Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 186 - 01A-A1YRS 184 - 01A-A1ZPQ 267* - 02A-A1B2Y 185 - 01A-A1XRS 268* - 02A-A1B2Z</p>	064 062* 085* 063* 120 216 059 013 132 131 130 123 124 125 119 111 116 118	Write power card Read preamplifier card Drive control card Write card Buffer adapter card Tape lifter solenoid Power amplifier board Head and guide assembly Read detect card 3 Read detect card 2 Read detect card 1 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Read ECC/CORR card Write data card Drive-adapter card	02A-A1G2 02A-A1H2 02A-A1B2 02A-A1J4 01A-A1K2 Drive Drive Drive 01A-A2T2 01A-A2S2 01A-A2R2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1R2 01A-A1P2 01A-A1Q2	VP000 RP000 DD000, 001, 002, 003 WR000 BA001, 002, 003 RD201 RD101 RD001 SB001, 002 SB101, 102 SB201, 202 RC001, 002 EC001, 002 DF001, 002 DI001, 002
E815	This error should not occur.	Call your next level of support.				
E830	Problem found during Tape Lifter Solenoid tests.		215 216 059 085* 013	Tape lifter solenoid input hose Tape lifter solenoid Power amplifier board Drive control card Head and guide assembly	Drive Drive Drive 02A-A1B2 Base plate	DD000, 001, 002, 003 WR000
ECnn	These errors are reserved for the power-on diagnostic check-the-checkers routine. The error code and the expected and received data are stored in 'COMTABLE.'	Power-on errors are checked by the product diskette. <ol style="list-style-type: none"> If errors are suspected, connect the MD to the control unit and IML the product diskette. Use the EAD for error codes D5nn and D6nn for failure isolation. See EAD 1 for "Error Code D5nn" and "Error Code D6nn." If BCSE, use D5nn. If BDSE, use D6nn. <p>TCC FRUs associated with this error code are: 157 - 01A-A1WKL 181 - 01A-A1P2Y 158 - 01A-A1XKL 184 - 01A-A1ZPQ 159 - 01A-A1YKL 188 - 01A-A1ZKL</p>	120 116 119 118 121 114	Buffer adapter card Write data card Read clock and format card Drive-adapter card Status store basic card Buffer control card	01A-A1K2 01A-A1P2 01A-A1S2 01A-A1Q2 01A-A1G2 01A-A1L2	BA001, 002, 003 DF001, 002 RC001, 002 DI001, 002 SS001, 002 BC001, 002, 003

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name	Location	Logic Pages
E800	The service representative informed the MD that there were too many temporary data errors based on Format 21 sense records from EREP or the system console message information.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 184 - 01A-A1ZPQ	085* 063* 064 062* 120 216 059 013 132 131 130 123 124 125 119 111 116 118 199 248 264 265	Drive control card Write card Write power card Read preamplifier card Buffer adapter card Tape lifter solenoid Power amplifier board Head and guide assembly Read detect card 3 Read detect card 2 Read detect card 1 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Read ECC/CORR card Write data card Drive-adapter card Write bus terminator CU0 local Write bus terminator CU0 remote Write bus terminator CU1 local Write bus terminator CU1 remote	02A-A1B2 02A-A1J4 02A-A1G2 02A-A1H2 01A-A1K2 Drive Drive Drive 01A-A2T2 01A-A2S2 01A-A2R2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1R2 01A-A1P2 01A-A1Q2 See LOC 1 See LOC 1 See LOC 1 See LOC 1	DD000, 001, 002, 003 WR000 VP000 RP000 BA001, 002, 003 RD201 RD101 RD001 SB001, 002 SB101, 102 SB201, 202 RC001, 002 EC001, 002 DF001, 002 DI001, 002
E810	The data read during the read routine of the verification test did not match the data written during the write routine.	1. Use the EAD for error codes D0nn and D8nn for failure isolation. See EAD 1 for "Error Codes D0nn and D8nn." 2. Use the EAD for Drive Interconnections for failure isolation. See EAD 1 for "Drive Interconnections." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 186 - 01A-A1YRS 184 - 01A-A1ZPQ 267* - 02A-A1B2Y 185 - 01A-A1XRS 268* - 02A-A1B2Z	064 062* 085* 063* 120 216 059 013 132 131 130 123 124 125 119 111 116 118	Write power card Read preamplifier card Drive control card Write card Buffer adapter card Tape lifter solenoid Power amplifier board Head and guide assembly Read detect card 3 Read detect card 2 Read detect card 1 Read skew buffer card 1 Read skew buffer card 2 Read skew buffer card 3 Read clock and format card Read ECC/CORR card Write data card Drive-adapter card	02A-A1G2 02A-A1H2 02A-A1B2 02A-A1J4 01A-A1K2 Drive Drive Drive 01A-A2T2 01A-A2S2 01A-A2R2 01A-A2K2 01A-A2L2 01A-A2M2 01A-A1S2 01A-A1R2 01A-A1P2 01A-A1Q2	VP000 RP000 DD000, 001, 002, 003 WR000 BA001, 002, 003 RD201 RD101 RD001 SB001, 002 SB101, 102 SB201, 202 RC001, 002 EC001, 002 DF001, 002 DI001, 002
E815	This error should not occur.	Call your next level of support.				
E830	Problem found during Tape Lifter Solenoid tests.		215 216 059 085* 013	Tape lifter solenoid input hose Tape lifter solenoid Power amplifier board Drive control card Head and guide assembly	Drive Drive Drive 02A-A1B2 Base plate	DD000, 001, 002, 003 WR000
ECnn	These errors are reserved for the power-on diagnostic check-the-checkers routine. The error code and the expected and received data are stored in 'COMTABLE.'	Power-on errors are checked by the product diskette. 1. If errors are suspected, connect the MD to the control unit and IML the product diskette. 2. Use the EAD for error codes D5nn and D6nn for failure isolation. See EAD 1 for "Error Code D5nn" and "Error Code D6nn." If BCSE, use D5nn. If BDSE, use D6nn. TCC FRUs associated with this error code are: 157 - 01A-A1WKL 181 - 01A-A1P2Y 158 - 01A-A1XKL 184 - 01A-A1ZPQ 159 - 01A-A1YKL 188 - 01A-A1ZKL	120 116 119 118 121 114	Buffer adapter card Write data card Read clock and format card Drive-adapter card Status store basic card Buffer control card	01A-A1K2 01A-A1P2 01A-A1S2 01A-A1Q2 01A-A1G2 01A-A1L2	BA001, 002, 003 DF001, 002 RC001, 002 DI001, 002 SS001, 002 BC001, 002, 003

0 0 0 0 0 0 0 0 0 0 0

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
ED41	A BCSE group 0 error occurred.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
ED42	A BCSE group 1 error occurred.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
ED43	A BCSE group 2 error occurred.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
ED44	A BCSE group 3 error occurred.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
ED45	A channel CRC checker error occurred.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
ED46	A BDSE group 0 error occurred.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
ED47	A BDSE group 1 error occurred.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
ED48	A BDSE group 2 error occurred.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
ED49	A BDSE group 3 error occurred.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
ED4A	A device CRC checker error occurred.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
ED4C	A buffer XR check 2 error occurred.	TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	115 114 117	Maintenance adapter card Buffer control card Microprocessor card	01A-A1E2 01A-A1L2 01A-A1D2	MA001, 002, 003 BC001, 002, 003 MP001, 002, 003
ED4D	A timeout occurred waiting for 'service in'.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
ED4E	A device CRC checker error occurred (WSE).	TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL Use the EAD for error code D7nn for failure isolation. See EAD 1 for "Error Code D7nn." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y	116 114 120	Write data card Buffer control card Buffer adapter card	01A-A1P2 01A-A1L2 01A-A1K2	DF001, 002 BC001, 002, 003 BA001, 002, 003
ED4F	A device parity checker error occurred.	Use the EAD for error code D7nn for failure isolation. See EAD 1 for "Error Code D7nn." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y	116	Write data card	01A-A1P2	DF001, 002
ED50	A buffer XR check 2 error occurred (WDF).	Use the EAD for error code D7nn for failure isolation. See EAD 1 for "Error Code D7nn." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y	116 114 120	Write data card Buffer control card Buffer adapter card	01A-A1P2 01A-A1L2 01A-A1K2	DF001, 002 BC001, 002, 003 BA001, 002, 003
ED51	A device parity checker error occurred.		119	Read clock and format card	01A-A1S2	RC001, 002
ED52	A timeout occurred waiting for beginning sync.		119	Read clock and format card	01A-A1S2	RC001, 002
ED53	A timeout occurred waiting for BOB.	Use EAD for D0nn and D8nn. See EAD 1 for error codes D0nn and D8nn.	119	Read clock and format card	01A-A1S2	RC001, 002
ED54	A timeout occurred waiting for IBG.	Use EAD for D0nn and D8nn. See EAD 1 for error codes D0nn and D8nn.	119	Read clock and format card	01A-A1S2	RC001, 002

0 0 0 0 0 0 0 0 0 0 0

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
ED49	A BDSE group 3 error occurred.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table."	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
ED4A	A device CRC checker error occurred.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
ED4C	A buffer XR check 2 error occurred.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE	115 114 117	Maintenance adapter card Buffer control card Microprocessor card	01A-A1E2 01A-A1L2 01A-A1D2	MA001, 002, 003 BC001, 002, 003 MP001, 002, 003
ED4D	A timeout occurred waiting for 'service in'.	Use the EAD for error code D5nn for failure isolation. See EAD 1 for "Error Code D5nn." The cables associated with this failure are in cable groups 28 and 50. See FSI 1 for "Cable Group Table." TCC FRUs associated with this error code are: 157 - 01A-A1WKL 159 - 01A-A1YKL 158 - 01A-A1XKL 188 - 01A-A1ZKL	114 120	Buffer control card Buffer adapter card	01A-A1L2 01A-A1K2	BC001, 002, 003 BA001, 002, 003
ED4E	A device CRC checker error occurred (WSE).	Use the EAD for error code D7nn for failure isolation. See EAD 1 for "Error Code D7nn." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y	116 114 120	Write data card Buffer control card Buffer adapter card	01A-A1P2 01A-A1L2 01A-A1K2	DF001, 002 BC001, 002, 003 BA001, 002, 003
ED4F	A device parity checker error occurred.	Use the EAD for error code D7nn for failure isolation. See EAD 1 for "Error Code D7nn." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y	116	Write data card	01A-A1P2	DF001, 002
ED50	A buffer XR check 2 error occurred (WDF).	Use the EAD for error code D7nn for failure isolation. See EAD 1 for "Error Code D7nn." TCC FRUs associated with this error code are: 181 - 01A-A1P2Y	116 114 120	Write data card	01A-A1P2	DF001, 002
ED51	A device parity checker error occurred.		119	Read clock and format card	01A-A1S2	RC001, 002
ED52	A timeout occurred waiting for beginning sync.		119	Read clock and format card	01A-A1S2	RC001, 002
ED53	A timeout occurred waiting for BOB.	Use EAD for D0nn and D8nn. See EAD 1 for error codes D0nn and D8nn.	119	Read clock and format card	01A-A1S2	RC001, 002
ED54	A timeout occurred waiting for IBG.	Use EAD for D0nn and D8nn. See EAD 1 for error codes D0nn and D8nn.	119	Read clock and format card	01A-A1S2	RC001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
ED80	The IML was successful.	This is the normal operation condition.				
ED81	This error should not occur.	Call your next level of support.				
ED82	This error should not occur.	Call your next level of support.				
ED83	This error should not occur.	Call your next level of support.				
ED84	This error should not occur.	Call your next level of support.				
ED85	This error should not occur.	Call your next level of support.				
ED86	This error should not occur.	Call your next level of support.				
ED87	This error should not occur.	Call your next level of support.				
ED88	This error should not occur.	Call your next level of support.				
ED89	This error should not occur.	Call your next level of support.				
ED8A	This error should not occur.	Call your next level of support.				
ED8B	This error should not occur.	Call your next level of support.				
ED8C	This error should not occur.	Call your next level of support.				
ED8D	This error should not occur.	Call your next level of support.				
ED8E	This error should not occur.	Call your next level of support.				
ED90	A diskette read error occurred. Diskette controller status registers 0, 1, 2, and the cylinder number are set in the next two words.	Use the EAD for IML or POR failure. See EAD 1.	258 086 134	Media IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
ED91	A diskette write error occurred. Diskette controller status registers 0, 1, 2, and the cylinder number are set in the next two words.	Use the EAD for IML or POR failure. See EAD 1.	258 086 134	Media IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
ED92	A diskette read error occurred. Diskette controller status registers 0, 1, 2, and the cylinder number are set in the next two words.	Use the EAD for IML or POR failure. See EAD 1.	258 086 134	Media IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
ED93	A diskette seek error occurred. Diskette controller status registers 0, 1, 2, and the cylinder number are set in the next two words.	Use the EAD for IML or POR failure. See EAD 1.	086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
ED94	A diskette recalibrate error occurred. Diskette controller status registers 0, 1, 2, and the cylinder number are set in the next two words.	Use the EAD for IML or POR failure. See EAD 1.	086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
ED95	This error should not occur.	Call your next level of support.				
ED96	A timeout occurred while trying to read the diskette controller data register.		086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
ED97	A timeout occurred while trying to write the diskette controller data register.		086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
ED98	A timeout occurred while trying to perform a diskette (read, write, readback, seek, or recalibrate) operation. This is possibly due to no diskette or the diskette is not being loaded correctly.		086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
EDB1	Swap to level 0 failed.	TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE	117 115	Microprocessor card Maintenance adapter card	01A-A1D2 01A-A1E2	MP001, 002, 003 MA001, 002, 003
EDB2	A control store read/write failure occurred. The failure control store address and the pattern are set in the next two words.		135 134	Control storage array card Control store card	01A-A1B2 01A-A1C2	MS001, 002 CS001, 002
EDB3	A check 1 error occurred during a control store read/write check. The control store address and the ERA and ERB registers are set in the next two words.		135 134	Control storage array card Control store card	01A-A1B2 01A-A1C2	MS001, 002 CS001, 002
EDB4	The second 'bootstrap' did not load. The diskette controller status registers (0, 1, 2, and 3) are set in the next two words.		086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
EDB5	The second 'bootstrap' is invalid.		086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
ED80	The IML was successful.	This is the normal operation condition.				
ED81	Microcode detected error.	Bad IML diskette. Use a different diskette, save the bad diskette for analysis, then call your next level of support.	258	Media		
ED82	Microcode detected error.	Bad IML diskette. Use a different diskette, save the bad diskette for analysis, then call your next level of support.	258	Media		
ED83	Microcode detected error.	Bad IML diskette. Use a different diskette, save the bad diskette for analysis, then call your next level of support.	258	Media		
ED84	Microcode detected error.	Bad IML diskette. Use a different diskette, save the bad diskette for analysis, then call your next level of support.	258	Media		
ED85	Microcode detected error.	Bad IML diskette. Use a different diskette, save the bad diskette for analysis, then call your next level of support.	258	Media		
ED86	Microcode detected error.	Bad IML diskette. Use a different diskette, save the bad diskette for analysis, then call your next level of support.	258	Media		
ED87	Microcode detected error.	Bad IML diskette. Use a different diskette, save the bad diskette for analysis, then call your next level of support.	258	Media		
ED88	Microcode detected error.	Bad IML diskette. Use a different diskette, save the bad diskette for analysis, then call your next level of support.	258	Media		
ED89	Microcode detected error.	Bad IML diskette. Use a different diskette, save the bad diskette for analysis, then call your next level of support.	258	Media		
ED8A	Microcode detected error.	Bad IML diskette. Use a different diskette, save the bad diskette for analysis, then call your next level of support.	258	Media		
ED8B	Microcode detected error.	Bad IML diskette. Use a different diskette, save the bad diskette for analysis, then call your next level of support.	258	Media		
ED8C	Microcode detected error.	Bad IML diskette. Use a different diskette, save the bad diskette for analysis, then call your next level of support.	258	Media		
ED8D	Microcode detected error.	Bad IML diskette. Use a different diskette, save the bad diskette for analysis, then call your next level of support.	258	Media		
ED8E	Microcode detected error.	Bad IML diskette. Use a different diskette, save the bad diskette for analysis, then call your next level of support.	258	Media		
ED90	A diskette read error occurred. Diskette controller status registers 0, 1, 2, and the cylinder number are set in the next two words.	Use the EAD for IML or POR failure. See EAD 1.	258 086 134	Media IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
ED91	A diskette write error occurred. Diskette controller status registers 0, 1, 2, and the cylinder number are set in the next two words.	Use the EAD for IML or POR failure. See EAD 1.	258 086 134	Media IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
ED92	A diskette read back compare error occurred. Diskette controller status registers 0, 1, 2, and the cylinder number are set in the next two words.	Use the EAD for IML or POR failure. See EAD 1.	258 086 134	Media IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
ED93	A diskette seek error occurred. Diskette controller status registers 0, 1, 2, and the cylinder number are set in the next two words.	Use the EAD for IML or POR failure. See EAD 1.	086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
ED94	A diskette recalibrate error occurred. Diskette controller status registers 0, 1, 2, and the cylinder number are set in the next two words.	Use the EAD for IML or POR failure. See EAD 1.	086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
ED95	This error should not occur.	Call your next level of support.				
ED96	A timeout occurred while trying to read the diskette controller data register.		086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
ED97	A timeout occurred while trying to write the diskette controller data register.		086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
ED98	A timeout occurred while trying to perform a diskette (read, write, readback, seek, or recalibrate) operation. This is possibly due to no diskette or the diskette is not being loaded correctly.		086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
EDB1	Swap to level 0 failed.	TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE	117 115	Microprocessor card Maintenance adapter card	01A-A1D2 01A-A1E2	MP001, 002, 003 MA001, 002, 003
EDB2	A control store read/write failure occurred. The failure control store address and the pattern are set in the next two words.		135 134	Control storage array card Control store card	01A-A1B2 01A-A1C2	MS001, 002 CS001, 002
EDB3	A check 1 error occurred during a control store read/write check. The control store address and the ERA and ERB registers are set in the next two words.		135 134	Control storage array card Control store card	01A-A1B2 01A-A1C2	MS001, 002 CS001, 002
EDB4	The second 'bootstrap' did not load. The diskette controller status registers (0, 1, 2, and 3) are set in the next two words.		086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
EDB5	The second 'bootstrap' is invalid.		086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002

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FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
EDB6	The microprocessor did not reset to level 7.	TCC FRUs associated with this error code are: 182 - 01A-A1E2W 193 - 01A-A1YCDE 192 - 01A-A1XCDE	117 115	Microprocessor card Maintenance adapter card	01A-A1D2 01A-A1E2	MP001, 002, 003 MA001, 002, 003
EDB7	A diskette controller write timeout occurred.		086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
EDB8	A diskette controller read timeout occurred.		086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
EDB9	A diskette data transfer timeout occurred.		086 134	IML diskette drive Control store card	See LOC 1 01A-A1C2	CS001, 002
EDBA	An external register error occurred.	1. Run diagnostic section Basic Control Unit test (BCU) for failure isolation. 2. Use the EAD for error codes D1nn and Fnnn for failure isolation. See EAD 1 for "Error Code D1nn" and "Error Code Fnnn." TCC FRUs associated with this error code are: 159 - 01A-A1YKL 188 - 01A-A1ZKL	117 115 114 118 121 122 119 116 120	Microprocessor card Maintenance adapter card Buffer control card Drive-adapter card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Read clock and format card Write data card Buffer adapter card	01A-A1D2 01A-A1E2 01A-A1L2 01A-A1Q2 01A-A1G2 01A-A1F2 01A-A1S2 01A-A1P2 01A-A1K2	MP001, 002, 002 MA001, 002, 002 BC001, 002, 002 DI001, 002 SS001, 002 SM001, 002 RC001, 002 DF001, 002 BA001, 002, 003
EDBB	An unidentified level 0 interrupt occurred.	TCC FRUs associated with this error code are: 180 - 01A-A1ZCD 192 - 01A-A1XCDE 182 - 01A-A1E2W 193 - 01A-A1YCDE 183 - 01A-A1WCD	115 134 120 117 258 135	Maintenance adapter card Control store card Buffer adapter card Microprocessor card Media Control storage array card	01A-A1E2 01A-A1C2 01A-A1K2 01A-A1D2 01A-A1B2	MA001, 002, 002 CS001, 002 BA001, 002, 003 MP001, 002, 002 MS001, 002
EDBC	A checksum error occurred.		258	Media		
EDBD	A 'collision detect' error occurred during IML.	'Collision detect' is set by the other control unit. Check it for the cause of this error. All FRUs should be replaced in both control units.	134 117 121 251 261 026 027	Control store card Microprocessor card Status store basic card Cable - 01A-A1Z3 to 01A-A2Y3 Cable - CU to CU write Cable - device data bus - remote Cable - device data bus - remote	01A-A1C2 01A-A1D2 01A-A1G2	CS001, 002 MP001, 002, 002 SS001, 002
EDBE	A hardware check 1 error occurred followed by a diskette I/O error when the second 'bootstrap' was loading.	Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100." TCC FRUs associated with this error code are: 180 - 01A-A1ZCD 188 - 01A-A1ZKL 181 - 01A-A1P2Y 189 - 01A-A1WFG 182 - 01A-A1E2W 190 - 01A-A1XFG 183 - 01A-A1WCD 191 - 01A-A1YFG 184 - 01A-A1ZPQ 192 - 01A-A1XCDE 187 - 01A-A1ZFG 193 - 01A-A1YCDE	117 115 114 118 121 119 116 120 122 134 135	Microprocessor card Maintenance adapter card Buffer control card Drive-adapter card Status store basic card Read clock and format card Write data card Buffer adapter card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Control store card Control storage array card	01A-A1D2 01A-A1E2 01A-A1L2 01A-A1Q2 01A-A1G2 01A-A1S2 01A-A1P2 01A-A1K2 01A-A1F2 01A-A1C2 01A-A1B2	MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 DI001, 002 SS001, 002 RC001, 002 DF001, 002 BA001, 002, 003 SM001, 002 CS001, 002 MS001, 002
EDBF	A hardware check 1 error occurred.	Use the EAD for error code E100 for failure isolation. See EAD 1 for "Error Code E100." TCC FRUs associated with this error code are: 180 - 01A-A1ZCD 188 - 01A-A1ZKL 181 - 01A-A1P2Y 189 - 01A-A1WFG 182 - 01A-A1E2W 190 - 01A-A1XFG 183 - 01A-A1WCD 191 - 01A-A1YFG 184 - 01A-A1ZPQ 192 - 01A-A1XCDE 187 - 01A-A1ZFG 193 - 01A-A1YCDE	117 115 114 118 121 119 116 120 122 134 135	Microprocessor card Maintenance adapter card Buffer control card Drive-adapter card Status store basic card Read clock and format card Write data card Buffer adapter card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Control store card Control storage array card	01A-A1D2 01A-A1E2 01A-A1L2 01A-A1Q2 01A-A1G2 01A-A1S2 01A-A1P2 01A-A1K2 01A-A1F2 01A-A1C2 01A-A1B2	MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 DI001, 002 SS001, 002 RC001, 002 DF001, 002 BA001, 002, 003 SM001, 002 CS001, 002 MS001, 002

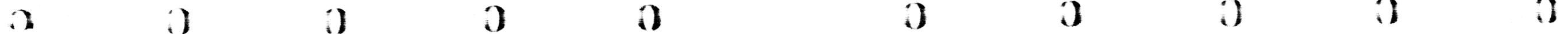
FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
EDC2	The Power On Diagnostics (POR) detected a hardware error during IML.	<ul style="list-style-type: none"> For check 1 errors, use FSC E100 for additional actions, comments, or FRUs. For external register errors, use the EAD Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn." Run the Basic CU Test. See DIAG 1 for "Basic CU Tests." 				
F00D	The microprocessor received a level 0 interrupt but was unable to determine the source. Usually a reset to the maintenance adapter card (a power on reset or an MD keyboard reset) will clear the level 0 interrupt.	<p>Use the EAD for error code F00D for failure isolation. See EAD 1 for "Error Code F00D."</p> <p>This error may be associated with 'collision detection' or diskette operations.</p> <p>TCC FRUs associated with this error code are: 181 - 01A-A1P2Y 190 - 01A-A1XFG 182 - 01A-A1E2W 191 - 01A-A1YFG 184 - 01A-A1ZPQ 192 - 01A-A1XCDE 187 - 01A-A1ZFG 193 - 01A-A1YCDE 189 - 01A-A1WFG</p>	115 117 120 116 118 119 121 122	Maintenance adapter card Microprocessor card Buffer adapter card Write data card Drive-adapter card Read clock and format card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1E2 01A-A1D2 01A-A1K2 01A-A1P2 01A-A1Q2 01A-A1S2 01A-A1G2 01A-A1F2	MA001, 002, 003 MP001, 002, 003 BA001, 002, 003 DF001, 002 DI001, 002 RC001, 002 SS001, 002 SM001, 002
F00E	This error should not occur.	Call your next level of support.				
F1nn	An external register error occurred in the channel functional area. The nn is the value in the external register address (XRA) register at the time of the error. If bit 7 of sense byte 9 is 0, sense byte 9 contains the value from the processor error register (PER), which represents a data error. If bit 7 of sense byte 9 is not 0, sense byte 9 contains active XR users, which represents an addressing error.	<p>Use the EAD for error code Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn."</p> <p>TCC FRUs associated with this error code are: 159 - 01A-A1YKL 188 - 01A-A1ZKL</p>	121 122 117 115 114 118 119 116 120	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22) Microprocessor card Maintenance adapter card Buffer control card Drive-adapter card Read clock and format card Write data card Buffer adapter card	01A-A1G2 01A-A1F2 01A-A1D2 01A-A1E2 01A-A1L2 01A-A1Q2 01A-A1S2 01A-A1P2 01A-A1K2	SS001, 002 SM001, 002 MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 DI001, 002 RC001, 002 DF001, 002 BA001, 002, 003
F2nn	An external register error occurred in the buffer functional area. The nn is the value in the external register address (XRA) register at the time of the error. If bit 7 of sense byte 9 is 0, sense byte 9 contains the value from the processor error register (PER), which represents a data error. If bit 7 of sense byte 9 is not 0, sense byte 9 contains active XR users, which represents an addressing error.	<p>Use the EAD for error code Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn."</p> <p>TCC FRUs associated with this error code are: 159 - 01A-A1YKL 188 - 01A-A1ZKL</p>	114 120 117 115 118 121 119 116 122	Buffer control card Buffer adapter card Microprocessor card Maintenance adapter card Drive-adapter card Status store basic card Read clock and format card Write data card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1L2 01A-A1K2 01A-A1D2 01A-A1E2 01A-A1Q2 01A-A1G2 01A-A1S2 01A-A1P2 01A-A1F2	BC001, 002, 003 BA001, 002, 003 MP001, 002, 003 MA001, 002, 003 DI001, 002 SS001, 002 RC001, 002 DF001, 002 SM001, 002
F3nn	An external register error occurred in the maintenance functional area. The nn is the value in the external register address (XRA) register at the time of the error. If bit 7 of sense byte 9 is 0, sense byte 9 contains the value from the processor error register (PER), which represents a data error. If bit 7 of sense byte 9 is not 0, sense byte 9 contains active XR users, which represents an addressing error.	<p>Use the EAD for error code Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn."</p> <p>TCC FRUs associated with this error code are: 159 - 01A-A1YKL 188 - 01A-A1ZKL</p>	115 117 114 118 121 119 116 120 122	Maintenance adapter card Microprocessor card Buffer control card Drive-adapter card Status store basic card Read clock and format card Write data card Buffer adapter card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1E2 01A-A1D2 01A-A1L2 01A-A1Q2 01A-A1G2 01A-A1S2 01A-A1P2 01A-A1K2 01A-A1F2	MA001, 002, 003 MP001, 002, 003 BC001, 002, 003 DI001, 002 SS001, 002 RC001, 002 DF001, 002 BA001, 002, 003 SM001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
EDC2	The Power On Diagnostics (POR) detected a hardware error during IML.	<ul style="list-style-type: none"> For check 1 errors, use FSC E100 for additional actions, comments, or FRUs. For external register errors, use the EAD Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn." Run the Basic CU Test. See DIAG 1 for "Basic CU Tests." 				
F000	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
F00D	The microprocessor received a level 0 interrupt but was unable to determine the source. Usually a reset to the maintenance adapter card (a power on reset or an MD keyboard reset) will clear the level 0 interrupt.	<p>Use the EAD for error code F00D for failure isolation. See EAD 1 for "Error Code F00D."</p> <p>This error may be associated with 'collision detection' or diskette operations.</p> <p>TCC FRUs associated with this error code are:</p> <p>181 - 01A-A1P2Y 190 - 01A-A1XFG 182 - 01A-A1E2W 191 - 01A-A1YFG 184 - 01A-A1ZPQ 192 - 01A-A1XCDE 187 - 01A-A1ZFG 193 - 01A-A1YCDE 189 - 01A-A1WFG</p>	115 117 120 116 118 119 121 122	Maintenance adapter card Microprocessor card Buffer adapter card Write data card Drive-adapter card Read clock and format card Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1E2 01A-A1D2 01A-A1K2 01A-A1P2 01A-A1Q2 01A-A1S2 01A-A1G2 01A-A1F2	MA001, 002, 003 MP001, 002, 003 BA001, 002, 003 DF001, 002 DI001, 002 RC001, 002 SS001, 002 SM001, 002
F00E	Microcode detected error.	Refer to SPROC 1 and perform procedure A. After completing procedure A, call your next level of support.				
F1nn	An external register error occurred in the channel functional area. The nn is the value in the external register address (XRA) register at the time of the error. If bit 7 of sense byte 9 is 0, sense byte 9 contains the value from the processor error register (PER), which represents a data error. If bit 7 of sense byte 9 is not 0, sense byte 9 contains active XR users, which represents an addressing error.	<p>Use the EAD for error code Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn."</p> <p>TCC FRUs associated with this error code are:</p> <p>159 - 01A-A1YKL 188 - 01A-A1ZKL</p>	121 122 117 115 114 118 119 116 120	Status store basic card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.) Microprocessor card Maintenance adapter card Buffer control card Drive-adapter card Read clock and format card Write data card Buffer adapter card	01A-A1G2 01A-A1F2 01A-A1D2 01A-A1E2 01A-A1L2 01A-A1Q2 01A-A1S2 01A-A1P2 01A-A1K2	SS001, 002 SM001, 002 MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 DI001, 002 RC001, 002 DF001, 002 BA001, 002, 003
F2nn	An external register error occurred in the buffer functional area. The nn is the value in the external register address (XRA) register at the time of the error. If bit 7 of sense byte 9 is 0, sense byte 9 contains the value from the processor error register (PER), which represents a data error. If bit 7 of sense byte 9 is not 0, sense byte 9 contains active XR users, which represents an addressing error.	<p>Use the EAD for error code Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn."</p> <p>TCC FRUs associated with this error code are:</p> <p>159 - 01A-A1YKL 188 - 01A-A1ZKL</p>	114 120 117 115 118 121 119 116 122	Buffer control card Buffer adapter card Microprocessor card Maintenance adapter card Drive-adapter card Status store basic card Read clock and format card Write data card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1L2 01A-A1K2 01A-A1D2 01A-A1E2 01A-A1Q2 01A-A1G2 01A-A1S2 01A-A1P2 01A-A1F2	BC001, 002, 003 BA001, 002, 003 MP001, 002, 003 MA001, 002, 003 DI001, 002 SS001, 002 RC001, 002 DF001, 002 SM001, 002
F3nn	An external register error occurred in the maintenance functional area. The nn is the value in the external register address (XRA) register at the time of the error. If bit 7 of sense byte 9 is 0, sense byte 9 contains the value from the processor error register (PER), which represents a data error. If bit 7 of sense byte 9 is not 0, sense byte 9 contains active XR users, which represents an addressing error.	<p>Use the EAD for error code Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn."</p> <p>TCC FRUs associated with this error code are:</p> <p>159 - 01A-A1YKL 188 - 01A-A1ZKL</p>	115 117 114 118 121 119 116 120 122	Maintenance adapter card Microprocessor card Buffer control card Drive-adapter card Status store basic card Read clock and format card Write data card Buffer adapter card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.)	01A-A1E2 01A-A1D2 01A-A1L2 01A-A1Q2 01A-A1G2 01A-A1S2 01A-A1P2 01A-A1K2 01A-A1F2	MA001, 002, 003 MP001, 002, 003 BC001, 002, 003 DI001, 002 SS001, 002 RC001, 002 DF001, 002 BA001, 002, 003 SM001, 002

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FSC/ Error Code	Error Code Definition	Additional Actions / Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
F4nn	An external register error occurred in the device functional area. The nn is the value in the external register address (XRA) register at the time of the error. If bit 7 of sense byte 9 is 0, sense byte 9 contains the value from the processor error register (PER), which represents a data error. If bit 7 of sense byte 9 is not 0, sense byte 9 contains active XR users, which represents an addressing error.	Use the EAD for error code Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn." TCC FRUs associated with this error code are: 159 - 01A-A1YKL 188 - 01A-A1ZKL	118 117 115 114 121 119 116 120 122	Drive-adapter card Microprocessor card Maintenance adapter card Buffer control card Status store basic card Read clock and format card Write data card Buffer adapter card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1Q2 01A-A1D2 01A-A1E2 01A-A1L2 01A-A1G2 01A-A1S2 01A-A1P2 01A-A1K2 01A-A1F2	DI001, 002 MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 SS001, 002 RC001, 002 DF001, 002 BA001, 002, 003 SM001, 002
F5nn	An external register error occurred in the read data flow functional area. The nn is the value in the external register address (XRA) register at the time of the error. If bit 7 of sense byte 9 is 0, sense byte 9 contains the value from the processor error register (PER), which represents a data error. If bit 7 of sense byte 9 is not 0, sense byte 9 contains active XR users, which represents an addressing error.	Use the EAD for error code Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn." TCC FRUs associated with this error code are: 159 - 01A-A1YKL 188 - 01A-A1ZKL	119 117 115 114 118 121 116 120 122	Read clock and format card Microprocessor card Maintenance adapter card Buffer control card Drive-adapter card Status store basic card Write data card Buffer adapter card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1S2 01A-A1D2 01A-A1E2 01A-A1L2 01A-A1Q2 01A-A1G2 01A-A1P2 01A-A1K2 01A-A1F2	RC001, 002 MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 DI001, 002 SS001, 002 DF001, 002 BA001, 002, 003 SM001, 002
F6nn	An external register error occurred by accessing an invalid register address. The nn is the value in the external register address (XRA) register at the time of the error. If bit 7 of sense byte 9 is 0, sense byte 9 contains the value from the processor error register (PER), which represents a data error. If bit 7 of sense byte 9 is not 0, sense byte 9 contains active XR users, which represents an addressing error.	Use the EAD for error code Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn." TCC FRUs associated with this error code are: 159 - 01A-A1YKL 188 - 01A-A1ZKL	117 115 114 118 121 119 116 120 122	Microprocessor card Maintenance adapter card Buffer control card Drive-adapter card Status store basic card Read clock and format card Write data card Buffer adapter card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1D2 01A-A1E2 01A-A1L2 01A-A1Q2 01A-A1G2 01A-A1S2 01A-A1P2 01A-A1K2 01A-A1F2	MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 DI001, 002 SS001, 002 RC001, 002 DF001, 002 BA001, 002, 003 SM001, 002
F7nn	An external register error occurred in the microprocessor functional area. The nn is the value in the external register address (XRA) register at the time of the error. If bit 7 of sense byte 9 is 0, sense byte 9 contains the value from the processor error register (PER), which represents a data error. If bit 7 of sense byte 9 is not 0, sense byte 9 contains active XR users, which represents an addressing error.	Use the EAD for error code Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn." TCC FRUs associated with this error code are: 159 - 01A-A1YKL 188 - 01A-A1ZKL	117 115 114 118 121 119 116 120 122	Microprocessor card Maintenance adapter card Buffer control card Drive-adapter card Status store basic card Read clock and format card Write data card Buffer adapter card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1D2 01A-A1E2 01A-A1L2 01A-A1Q2 01A-A1G2 01A-A1S2 01A-A1P2 01A-A1K2 01A-A1F2	MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 DI001, 002 SS001, 002 RC001, 002 DF001, 002 BA001, 002, 003 SM001, 002
F8nn	This is an error match code set by the maintenance package.	This is an operating condition. This condition can only occur during error match code operation with the MD. If this condition occurs during customer operation, use the MD to turn off error matching. See SDISK 1 for "Trace/Match Control."				
F9nn	An external register error occurred in the write data flow functional area. The nn is the value in the external register address (XRA) register at the time of the error. If bit 7 of sense byte 9 is 0, sense byte 9 contains the value from the processor error register (PER), which represents a data error. If bit 7 of sense byte 9 is not 0, sense byte 9 contains active XR users, which represents an addressing error.	Use the EAD for error code Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn." TCC FRUs associated with this error code are: 159 - 01A-A1YKL 188 - 01A-A1ZKL	116 117 115 114 118 121 119 120 122	Write data card Microprocessor card Maintenance adapter card Buffer control card Drive-adapter card Status store basic card Read clock and format card Buffer adapter card Status store communication card (This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22)	01A-A1P2 01A-A1D2 01A-A1E2 01A-A1L2 01A-A1Q2 01A-A1G2 01A-A1S2 01A-A1K2 01A-A1F2	DF001, 002 MP001, 002, 003 MA001, 002, 003 BC001, 002, 003 DI001, 002 SS001, 002 RC001, 002 BA001, 002, 003 SM001, 002

FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
FC80	This error should not occur.	Call your next level of support.				
Fnnn	Used by the support diagnostics to define added actions.	Use the EAD for error code Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn."		FRUs are defined by the diagnostic failure that brought you here.		



FSC/ Error Code	Error Code Definition	Additional Actions/Comments	FRU NUM	FRU Name * EC sensitive FRU. See CARR-DR 4. ** EC sensitive FRU. See CARR-CU 7.	Location	Logic Pages
FC80	Microcode detected error.	Refer to SPROC 1 and perform procedure B. After completing procedure B, call your next level of support.				
FBnn	An error was detected on the Cartridge Automation Facility interface.	This failure can also be a library failure external to the 3480.	134 117 273	FRUs are defined by the diagnostic failure that brought you here.		
Fnnn	Used by the support diagnostics to define added actions.	Use the EAD for error code Fnnn for failure isolation. See EAD 1 for "Error Code Fnnn."		FRUs are defined by the diagnostic failure that brought you here.		

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Cable Groups

Cables are grouped according to a common data path. Some cable groups will begin at a switch and end at a board location. Another group may begin in one control unit and go through two additional cables and end in another control unit. The continuity of the data path is kept throughout a group.

Using the Cable Group Information

If you look at the cable group list, you can see that it provides a variety of information. Each column heading is explained below.

Group Number

This number is referred to by entries in FSI error codes under the Additional Actions column. The group number can identify two or more cables.

Area of Subsystem

This column identifies that part of the machine that the cables are servicing. This includes channel, read data bus, device data bus, and other areas of the subsystem.

From/To Connectors

This column tells where both ends of the cable are located. In the channel cable area you must determine which channel number (A, B, C, or D) to select the correct cables. In other groups, the correct control unit must be identified (CU0 or CU1).

FRU Num

As a reference, the FRU number is listed for each cable. Occasionally the same FRU number is listed for cables going to/from different locations. This is normal because the cables will have the same part number.

Logic Pages

These are the machine logic pages where the cables or cable plugs are found.

Location Pages

The LOC section of the MI is helpful in locating cables in the machine or locating connectors. Each cable has a page where you can find information about the cable location.

Cable Group Table

- For specified cable troubleshooting, use the "Additional Actions/Comments" column in the FSI for that FSC.
- For general cable and connection checkout, see "Cable and Board Interconnection Failure" on EAD 1.

Group Number	Area of Subsystem	From/To Connectors	FRU NUM	Logic Pages	LOC Pages		
10	CU Offline/Online switch Offline Indicator	Offline Switch to CU CSU J2	141	YF010, WZ106	50		
		CU CSU J2 to 01A-A2A4	168	WZ106, WZ001-2	50, 20		
		01A A2A5 to 01A-A1A5	255	WZ001, MP001	20		
		01A A1Z3 to 01A-A2Y3	251	SS001, WC003-4	20		
		01A A2A4 to CU CSU J2	168	WZ106, YF010	20, 50		
		CU CSU J2 to Offline LED	141	YF010	50		
11	IML switch	IML switch (IML) to CU CSU J2	141	YF010, WZ106	50		
		CU CSU J2 to 01A-A2A4	168	WZ106, PR001	20, 50		
12	IML switch	IML switch to CU CSU J2	141	YF010, WZ106	50		
		CU CSU J2 to 01A-A2A4	168	WZ106, WZ001-2	20, 50		
		01A-A2A5 to 01A-A1A5	255	WZ001-2, MA001	20		
13	CU0/CU1 switch	CU0/CU1 switch to CU CSU-J2	141	YF010, WZ106	50		
		CU CSU-J2 to 01A-A2A4	168	WZ106, WC001-2, CA001, CA101, CA201, CA301, WC001-2, SS001	50, 20		
		01A-A2Y2 to 01A-A1Z2	250		20		
14	CU Test/Normal switch	CU Test/Normal switch to CU CSU-J2	141	YF010, WZ106	50		
		CU CSU-J2 to 01A-A2A4	168	WZ106, WZ001-2	50, 20		
		01A-A2A5 to 01A-A1A5	255	WZ001-2, MP001	20		
20	Channel Tag (see note 7)	01A-T1A4 to 01A-T1A3 W/X (channel A)	172	WA001-2	40, 45		
		01A-T1A3 Z to 01A-A2C2 W (channel A)	170	WA005-6, CA002	40, 45		
		01A-T1A3 P to 01A-T1A1 P (channel A)	271	WE045	40, 45		
		01A-T1B4 to 01A-T1B3 W/X (channel B)	243	WA001-2	40, 45		
		01A-T1B3 Z to 01A-A2D2 W (channel B)	214	WA005-6, CA102	40, 45		
		01A-T1B3 P to 01A-T1B1 P (channel B)	271	WE045	40, 45		
		01A-T1C4 to 01A-T1C3 W/X (channel C)	245	WA001-2	40, 45		
		01A-T1C3 Z to 01A-A2E2 W (channel C)	220	WA005-6, CA202	40, 45		
		01A-T1C3 P to 01A-T1C1 P (channel C)	271	WE045	40, 45		
		01A-T1D4 to 01A-T1D3 W/X (channel D)	247	WA001-2	40, 45		
		01A-T1D3 Z to 01A-A2F2 W (channel D)	221	WA005-6, CA302	40, 45		
		01A-T1D3 P to 01A-T1D1 P (channel D)	271	WE045	40, 45		
		21	Channel bus (see note 7)	01A-T1A2 to 01A-T1A1 W/X (channel A)	172	WA011-12	40, 45
				01A-T1A1 Z to 01A-A2C2 Z (channel A)	171	WA014-15, CA002	40, 45
01A-T1A1 P to 01A-T1A3 P (channel A)	271			WE045	40, 45		
01A-T1B2 to 01A-T1B1 W/X (channel B)	243			WA011-12	40, 45		
01A-T1B1 Z to 01A-A2D2 Z (channel B)	242			WA014-15, CA102	40, 45		
01A-T1B1 P to 01A-T1B3 P (channel B)	271			WE045	40, 45		
01A-T1C2 to 01A-T1C1 W/X (channel C)	245			WA011-12	40, 45		
01A-T1C1 Z to 01A-A2E2 Z (channel C)	244			WA014-15, CA202	40, 45		
01A-T1C1 P to 01A-T1C1 P (channel C)	271			WE045	40, 45		
01A-T1D2 to 01A-T1D1 W/X (channel D)	247			WA011-12	40, 45		
01A-T1D1 Z to 01A-A2F2 Z (channel D)	246			WA014-15, CA302	40, 45		
01A-T1D1 P to 01A-T1D3 P (channel D)	271			WE045	40, 45		
22	Channel Address Switch			CU CSU-J8 to 01A-A2A2 (channel A)	173	WZ102, CA001	50, 20
				CU CSU-J10 to 01A-A2A2 (channel B)	173	WZ102, CA101	50, 20
		CU CSU-J12 to 01A-A2A3 (channel C)	153	WZ104, CA201	50, 20		
		CU CSU-J14 to 01A-A2A3 (channel D)	153	WZ104, CA301	50, 20		
23	Channel Type (Mode) Switch	CU CSU-J9 to 01A-A2A2 (channel A)	173	WZ102, CA001	50, 20		
		CU CSU-J11 to 01A-A2A2 (channel B)	173	WZ102, CA101	50, 20		
		CU CSU-J13 to 01A-A2A3 (channel C)	153	WZ104, CA201	50, 20		
		CU CSU-J15 to 01A-A2A3 (channel D)	153	WZ104, CA301	50, 20		



Fault Symptom Index (FSI)

Group Number	Area of Subsystem	From/To Connectors	FRU NUM	Logic Pages	LOC Pages
24	Channel Enable/Disable switch	Enable switch to CU OP J1 (channel A)	142	WZ106	50
		CU OP J1 to 01A-A2A4 (channel A)	168	WZ106, CA001	15, 50
		Enable switch to CU OP J1 (channel B)	142	WZ106	50
		CU OP J1 to 01A-A2A4 (channel B)	168	WZ106, CA101	15, 50
		Enable switch to CU OP J1 (channel C)	142	WZ106	50
		CU OP J1 to 01A-A2A4 (channel C)	168	WZ106, CA201	15, 50
		Enable switch to CU OP J1 (channel D)	142	WZ106	50
CU OP J1 to 01A-A2A4 (channel D)	168	WZ106, CA301	15, 50		
28	Channel adapter to buffer adapter local port	01A-A2V5 to 01A-A1V3	256	WC005-6	15
30	Channel adapter to status store	01A-A2Y2 to 01A-A1Z2	250	WC001-2	15
		01A-A2Y3 to 01A-A1Z3	251	WC003-4	15
32	Maintenance device to maintenance adapter	01A-A1Y1 to CU MD connector	169	WX001	15, 50
34	Miscellaneous CA, MP, MA, SS, SM lines	01A-A1A5 to 01A-A2A5	255	WZ001-2	15
50	Channel adapter in one CU to buffer in other CU (buffer adapter remote port) (see notes 1 and 2)	01A-A2Z2 (local CU) to P2A5 (local CU) (see note 3)	026*	WK006	15, 25
		P2A5 (local CU) to P2A3 (remote CU) (see note 4)	261	WW010	25
		P2A3 (remote CU) to 01A-A1Y4 (remote CU) (see note 3)	027	WK005	15, 25
52	Status store communication (CU to CU communication and control) (see notes 1 and 6)	01A-A1Y2 and A1Y3 (local CU) to P2A4 (local CU) (see note 5)	056*	WK001, WK003	15, 25
		P2A4 (local CU) to P2A4 (remote CU) (see note 4)	261	WW010	25
		P2A4 (remote CU) to 01A-A1Y3 and A1Y2 (remote CU) (see note 5)			
61	Read bus to local tape units	01A-A2U2 (local CU) to P1A1 (local CU) (see note 8)	022	RDxxx, WT004-6	15, 25
		P1A1 (local CU) to tape units (see cable group 66)	088	WW020	25
62	Read bus to remote tape units (see note 1)	01A-A2U4 (local CU) to P2A2 (local CU) (see note 8)	024	RDxxx, WT008-10	15, 25
		P2A2 (local CU) to P2A1 (remote CU)	260	WW020	15, 25
		P2A1 (remote CU) to P1B1 (remote CU)	025*	WW020	15, 25
		P1B1 (remote CU) to tape units (see cable group 67)	092	WW020	25, 75
65	Read bus - A2 board to A1 board	01A-0A1Z4 to 01A-A2Y4	252	WT103-4	15
		01A-0A1Z5 to 01A-A2Y5	253	WT105-6	15
		01A-0A1Z6 to 01A-A2Y6	254	WT107-8	15
		01A-A1S2W to 01A-A2V2	178	WT111	20
		01A-A1Z1 to 01A-A2Y1	249	WT101	20
66	Read bus A - tape unit	TU D0 RA(TEE) to TU D0 P1 RA1	089	WW020, VP001	115, 120
		TU D0 P1 RA1 to TU D0 02A-A1G2	087	WW020, VP001	115, 130
		TU D1 RA(TEE) to TU D1 P1 RA1	089	WW020, VP001	115, 120
		TU D1 P1 RA1 to TU D1 02A-A1G2	087	WW020, VP001	115, 130
67	Read bus B - tape unit (see note 1)	TU D0 RB(TEE) to TU D0 P1 RB1	093	WW020, VP002	115, 120
		TU D0 P1 RB1 to TU D0 02A-A1G2	094	VP002, WW020	115, 130
		TU D1 RB(TEE) to TU D1 P1 RB1	093	WW020, VP002	115, 120
		TU D1 P1 RB1 to TU D1 02A-A1G2	094	VP002, WW020	115, 130
80	Device data bus to local tape units	01A-A1Y5 to P1A2	029	WT001, WW010	20, 25
		P1A2 to tape units (see cable group 85)	205	ZW101, WW010	
82	Device data bus to remote tape units (see note 1)	01A-A1Y6 (local CU) to P2A5 (local CU)	026*	DI001, WT003	20, 25
		P2A5 (local CU) to P2A3 (remote CU)	261	WW010	25
		P2A3 (remote CU) to P1B2 (remote CU)	027	WW010	25
		P1B2 (remote CU) to tape units (see cable group 86)	200	ZW201, WW010	25

Group Number	Area of Subsystem	From/To Connectors	FRU Num	Logic Pages	LOC Pages
85	Device data bus local	CU (P1A2) or TU (TU D1 P2A2) to TU D0 P1WA1	205	ZW101, WW010	30, 70, 110
		TU D0 P1WA1 to D0 02A-A1A2	208	ZW101, WW010	110, 130
		D0 02A-A1A3 to TU D0 P1WA2	209	ZW101, WW010	110, 130
		TU D0 P1WA2 to TU D1 P1WA1	206	ZW102, WW010	110, 130
		TU D1 P1WA1 to D1 02A-A1A2	208	ZW102, WW010	110, 130
		D1 02A-A1A3 to TU D1 P1WA2	209	ZW103, WW010	110, 130
		TU D1 P1WA2 to TU D1 P2A2 To terminator or next drive	207 199	ZW103, WW010 ZW103	110, 70 70
86	Device data bus remote (see note 1)	CU (P1B2) or TU (TU D1 P2B2) to TU D0 P1WB1	200	ZW201, WW010	30, 75, 110
		TU D0 P1WB1 to D0 02A-A1A4	203	ZW201, WW010	110, 130
		D0 02A-A1A5 to TU D0 P1WB2	204	ZW202, WW010	110, 130
		TU D0 P1WB2 to TU D1 P1WB1	201	ZW202, WW010	110, 130
		TU D1 P1WB1 to D1 02A-A1A4	203	ZW202, WW010	110, 130
		D1 02A-A1A5 to TU D1 P1WB2	204	ZW203, WW010	110, 130
		TU D1 P1WB2 to TU D1 P2B2 To terminator or next drive	202 248	ZW203, WW010 ZW203	110, 70 70
166	Read bus A - tape unit	CU-(P1A1) or DR(TU-D1-P2A1) to TU-D1-P2A1	088	WW020	30, 70
		TU-D0-RA(TEE) to TU-D0-A1G2 (right TCC)	057	WW020, VP001	110
		TU-D1-RA(TEE) to TU-D1-A1G2 (right TCC)	057	WW020, VP001	110
167	Read bus B - tape unit (see note 1)	CU-(P1B1) or TU(TU-D1-0P2B1) to TU-D1-P2B1	092	WW020	30, 70
		TU-D0-RB(TEE) to TU-D0-A1G2 (left TCC)	055	WW020, VP001	110, 130
		TU-D1-RB(TEE) to TU-D1-A1G2 (left TCC)	055	WW020, VP001	110, 130
180	Device data bus to local tape units	01A-A1Y5 to 01A-P1A/B2 (local part of cable)	028	WT001, WW010	30
		01A-P1A/B2 to TU-D0-A1A2 (local part of cable)	023	WW010, ZW101	
182	Device data bus to remote tape units	01A-A1Y6 (local CU) to 01A-P2A5 (local CU)	026*	DI001, WT003	15, 25
		01A-P2A5 (local CU) to 01A-P2A3 (remote CU)	261	WW010	25
		01A-P2A3 (remote CU) to 01A-P1A/B2 (remote CU)	028	WW010	25
		01A-P1A/B2 (remote CU) to TUs (TU-D0-A1A4, remote part of cable)	023	WW010, ZW201	25, 130
185	Device data bus local	CU-P1A/B2 or TU-D1-P2A/B2 to TU-D0-A1A2 (local part of cable)	023	WW010, ZW101	25, 110
		TU-D0-A1A3 to TU-D1-A1A2	222	ZW102, WW010	130
		TU-D0-A1A5 to TU-D1-P2A/B2 (local part of cable)	053	ZW103, WW010	130, 75
		To terminator (local and remote) or next drive	266	ZW103	75
186	Device data bus remote (see note 1)	CU-P1A/B2 or TU-D1-P2A/B2 to TU-D0-A1A4 (remote part of cable)	023	WW010, ZW201	25, 110
		TU-D0-A1A5 to TU-D1-A1A4	174	ZW202, WW010	130
		TU-D1-A1A5 to TU-D1-P2A/B2 (remote part of cable)	053	ZW203, WW010	130
		To terminator (local and remote) or next drive	266	ZW203	75

* This FRU is a feature on 3480 Model A11 and Standard on 3480 Model A22.



Notes:

1. For dual control unit configuration only.
2. From/To Connectors shown for channel adapters in local CU to buffer in remote CU. To obtain the opposite path, interchange words 'local' and 'remote.'
3. FRUs 026 and 027 are cable assemblies in which the cables from two different board locations are merged into a single connector at the dual CU tailgate (P2). Only the part of the cable assembly related to the area under consideration is listed in the From/To column.
4. FRU 261 is a cable assembly having multiple cables packaged together for connecting the dual CU configuration. Only the tailgate connections related to the area under consideration are listed in the From/To column.
5. FRU 056 is a cable assembly in which cables from two different board locations are merged into a single connector at the dual CU tailgate (P2). Both parts of the cable are used in Status Store Communication, and both are listed in the From/To column.
6. The path described in the From/To column is for Status Store Communications in both directions.
7. FRU 271 will only be found on the 4.5 megabyte per second channel feature.
8. FRU 022 connects from 01A-A2U2 to CU-P1-A1 on machines without EC A57689 installed.
FRU 022 connects from 01A-A2Q4 to CU-P1-A1 on machines with EC A57689 installed.
FRU 024 connects from 01A-A2U4 to CU-P2-A2 on machines without EC A57689 installed.
FRU 024 connects from 01A-A2Q2 to CU-P2-A2 on machines with EC A57689 installed.

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Use the fault symptom index (FSI) section for the selection of the correct EAD.

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An Error Analysis Diagram (EAD) is supplied for use as a troubleshooting tool if the product maintenance package does not supply a repair for a failure. The support maintenance package will lead you into the EADs.

The EADs include several type of entries which are briefly explained below.

Error Description: gives the reason for the error code.

Error Condition Theory: describes the machine operation that is performed to detect an error.

Additional Possible Causes of Failure: lists additional FRUs which can cause the error code. You may also be directed to an EAD for another error code for more troubleshooting aid.

References: guide you to MI pages where additional information is found.

Error Diagrams: are block diagrams which show data flow relating to the error code. Logic boards, card locations, FRU numbers and line names are shown. Timing charts are sometimes included.

Support Diagnostics

Support diagnostics are non-concurrent maintenance diagnostics that test areas of the subsystem. The support diagnostics have variable options for running the programs. When possible, the EAD recommends support diagnostics that can be used in problem determination for the error code. The diagnostic descriptions and control program options are explained in the DIAG section of the maintenance information. DIAG 1 is the table of contents for the DIAG section.

Support Diskette

The Support Diskette (SDISK) section supplies MD functions similar to a service panel and support utility programs to aid in collecting and displaying error condition and status information. Errors can be saved with the Error Trace/Match function, and registers and data fields can be displayed. Data fields and registers useful for hardware troubleshooting are described in the "Data Fields" (DF) section of the maintenance information. Support diskette tools can be found in the "Support Diskette" table of contents on SDISK 1.

Data Fields

External register and microcode data field contents that are useful for isolating hardware failures are explained in the "Data Fields" (DF) section of the maintenance information. See the table of contents on DF 1 for the fields and registers explained. The data field definitions are mainly used to define bit meanings in a register or field when an EAD makes reference to the register or field. Also, support diagnostics display register contents and the DF section can be used to determine the meaning of the register contents.

Sense

The "Sense" section of the maintenance information explains the 32 sense bytes supplied by the subsystem. For some error codes, sense bytes contain error register information. The contents of the error registers are described in the "Data Fields" section of the maintenance information. See the table of contents on SENSE 1 for sense bytes, and see the table of contents on DF 1 for the locations of error register descriptions.

Clock Nets

Control unit error codes can be caused by bad clock signals to the failing functional area. The table of contents on EAD 1 shows pages that contain descriptions of control unit clocks and clock signal distribution.

Procedure for Isolating Drive Failures

If more than one drive appears to be failing, use the procedure for isolating drive failures contained in this Error Analysis Diagram section. See EAD 1 for the location of the "Drive Interconnections" EAD. Read the general error descriptions and troubleshooting guide. For write or control problems, follow the procedures for "Information for - FSC D4nn, DSE Register Bit 0 Equals 1." For read problems, follow the procedures for "Error Codes D0nn and D8nn," followed by "Drive Interconnections," and "Read Bus Problems."

Drive Command Exerciser

The Drive Command Exerciser program is a concurrent maintenance support tool that can be used to exercise a selected drive in the subsystem. The Drive Command Exerciser has variable options for running the program. The Drive Command Exerciser description and options are explained in the DIAG section of the maintenance information. See DIAG 1 for the table of contents of the DIAG section.

Subsystem Clocks and Sequences

Clocks are generated in the control unit and in the magnetic tape drives. Communications sequences are used between the control unit and the system channel and between the control unit and the drives.

Control Unit Clocks

Clocks in the control unit are generated first in the control store card. Although the basic clocks are generated there, various other cards take the control store card clocks and generate other clocks and sequences to succeeding cards and to the channel and the magnetic tape drives.

The control unit clocks can be divided into the following areas for discussion:

Control storage subsystem clocks

Channel adapter area

Buffer area

Write data flow area

Drive adapter clocks

Read data flow area

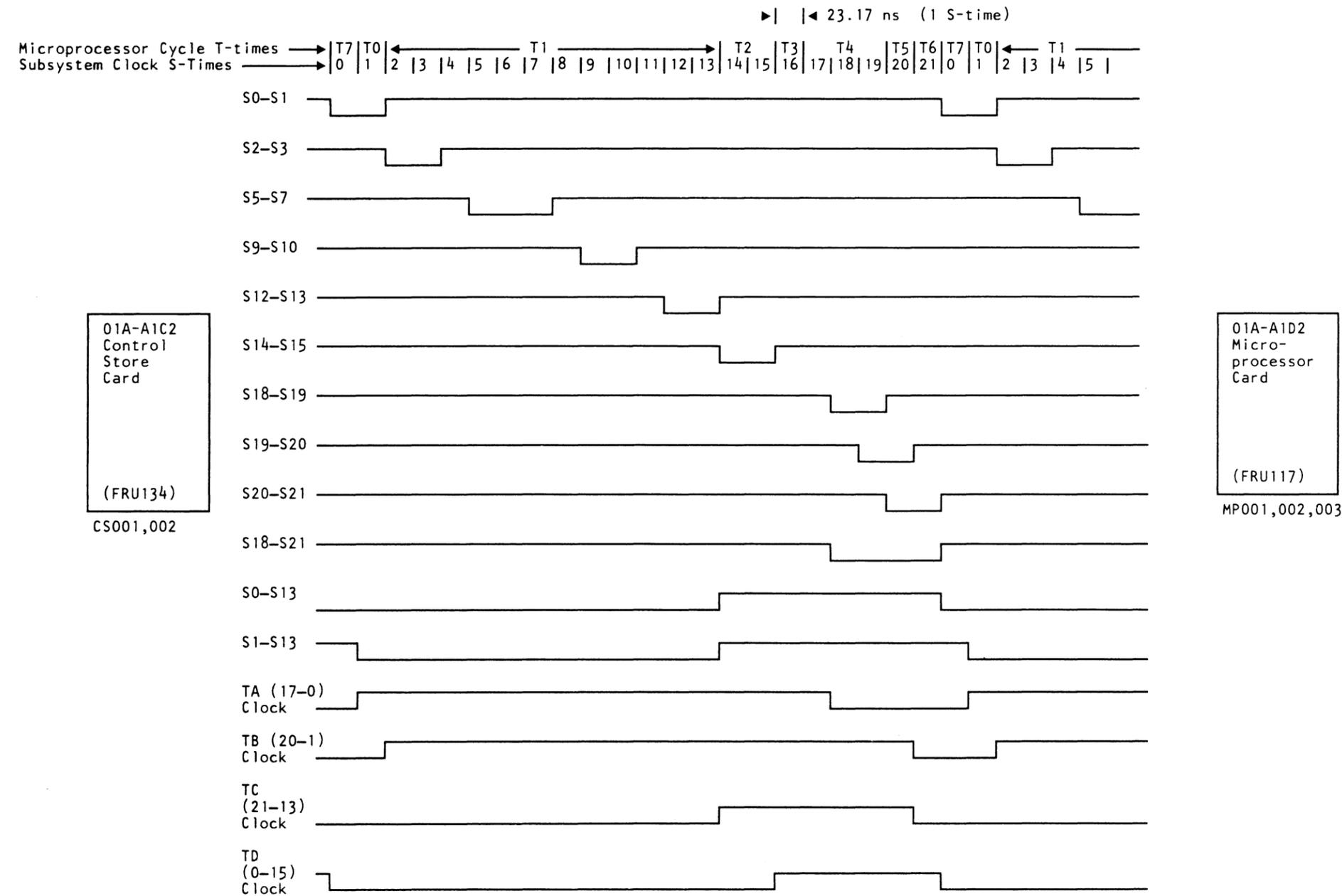
Dual control unit area

Maintenance adapter area.

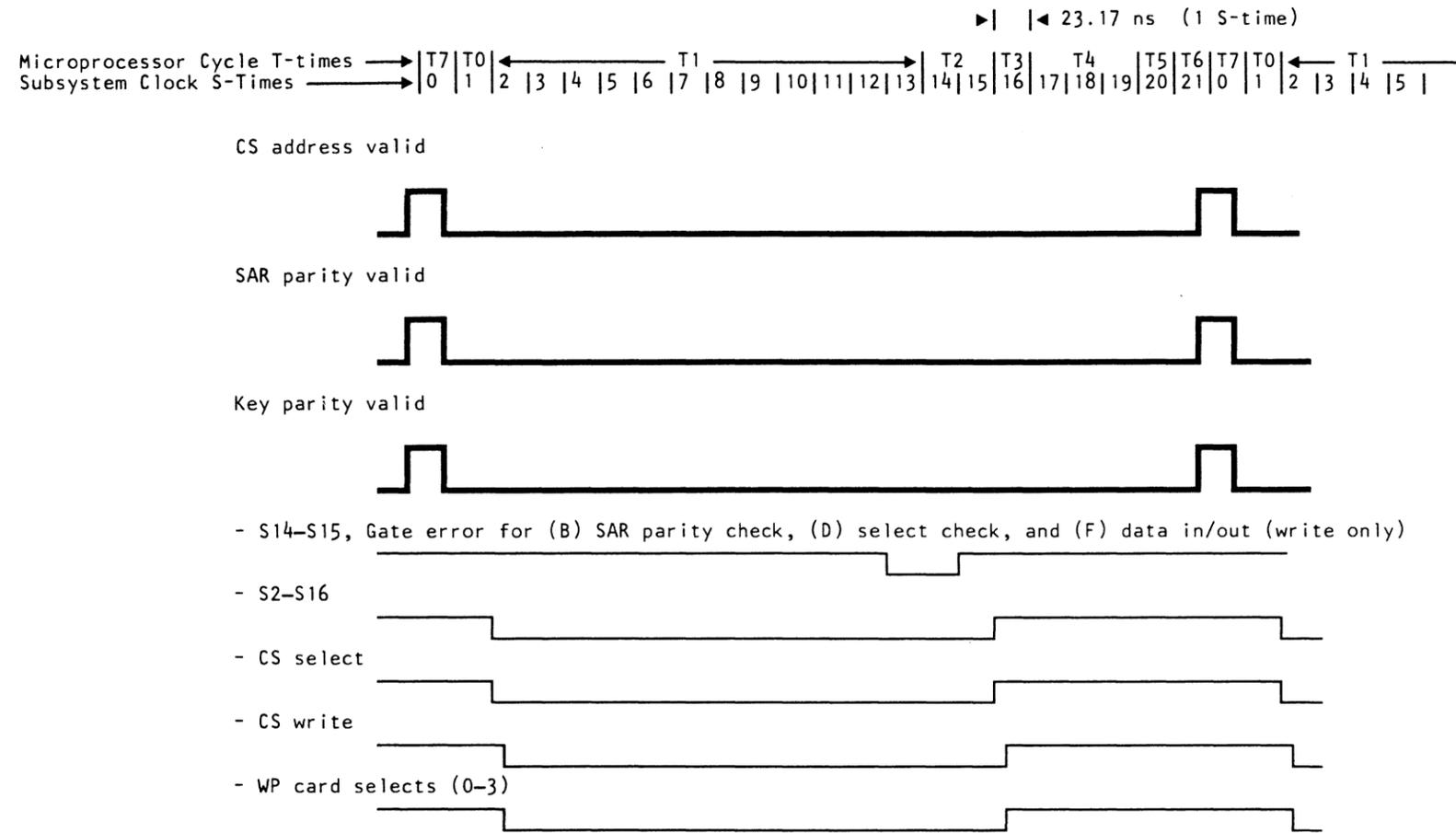


Subsystem Clocks to the Microprocessor Card

The main oscillator on the control storage card (01A-A1C2) runs a ring counter to develop s-time clock pulses. The ring counter output is decoded to make a combination of timing pulses for the functional area cards in the control unit. The s-times and clocks that go to the microprocessor card are shown in the timing chart.



Control Storage Clocks Timing Chart

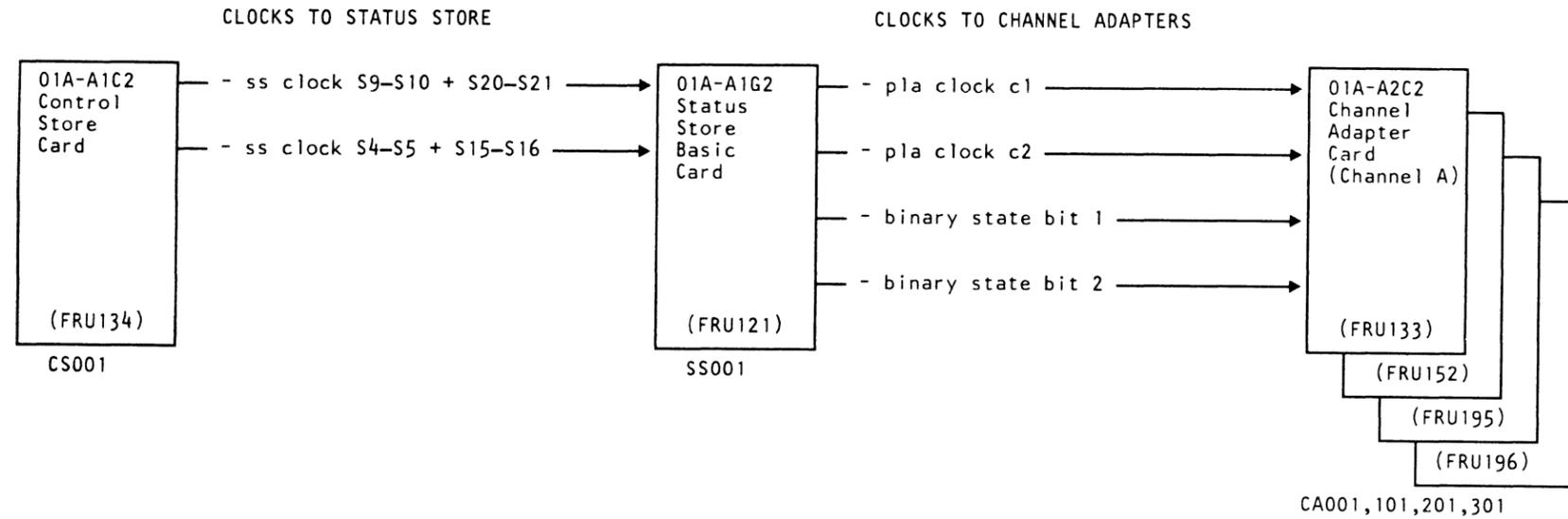


XR Bus and Control Clocks

The external register (XR) bus supplies the primary means for the microprocessor to communicate with and control the other areas in the control unit. Each area has been assigned specific registers that are accessible by the microprocessor through the external register bus.

Because of the large number of variables in the use of the XR bus, the timing chart and documentation and support diagnostic EEFO are shown on DIAG 600.

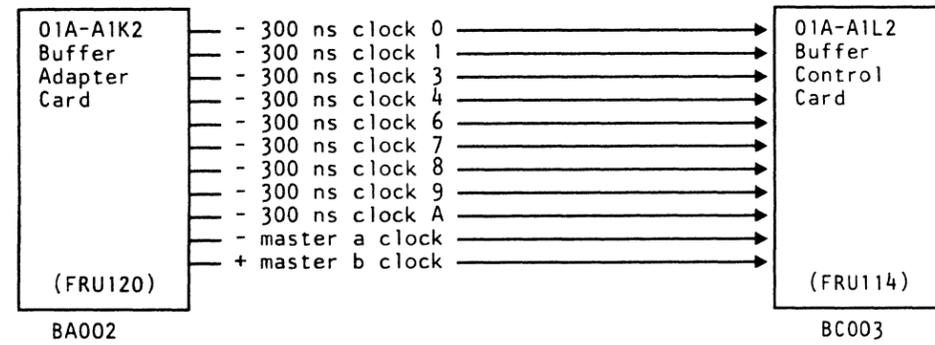




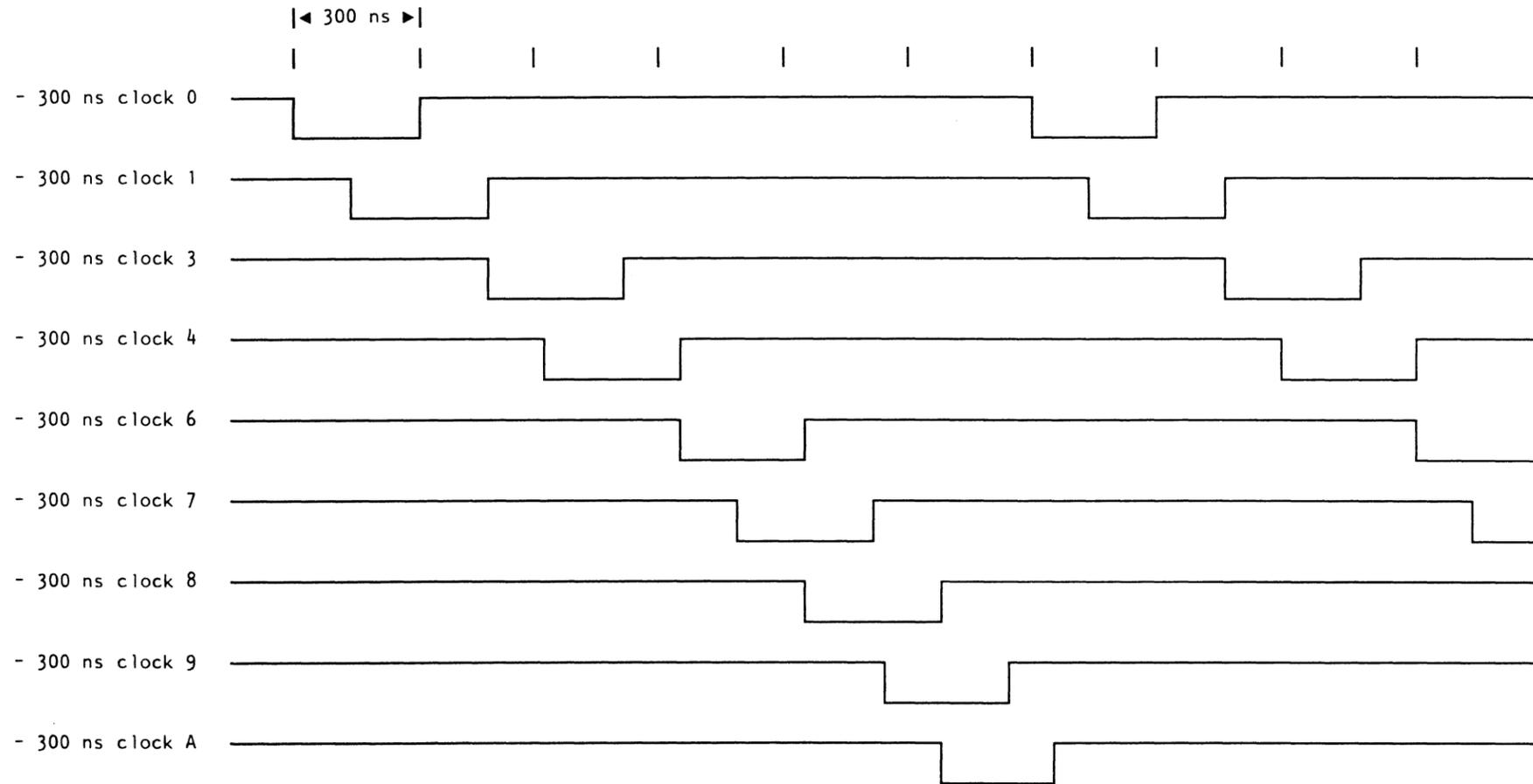
Status Store to Channel Adapter Interconnection States					
Interconnection state	IS0	IS1	IS2	IS3	IS0
Line Name					
- PLA clock c1	[Timing diagram showing periodic pulses]				
- PLA clock c2	[Timing diagram showing periodic pulses]				
- Binary state bit 1	[Timing diagram showing a square wave]				
- Binary state bit 2	[Timing diagram showing a square wave]				

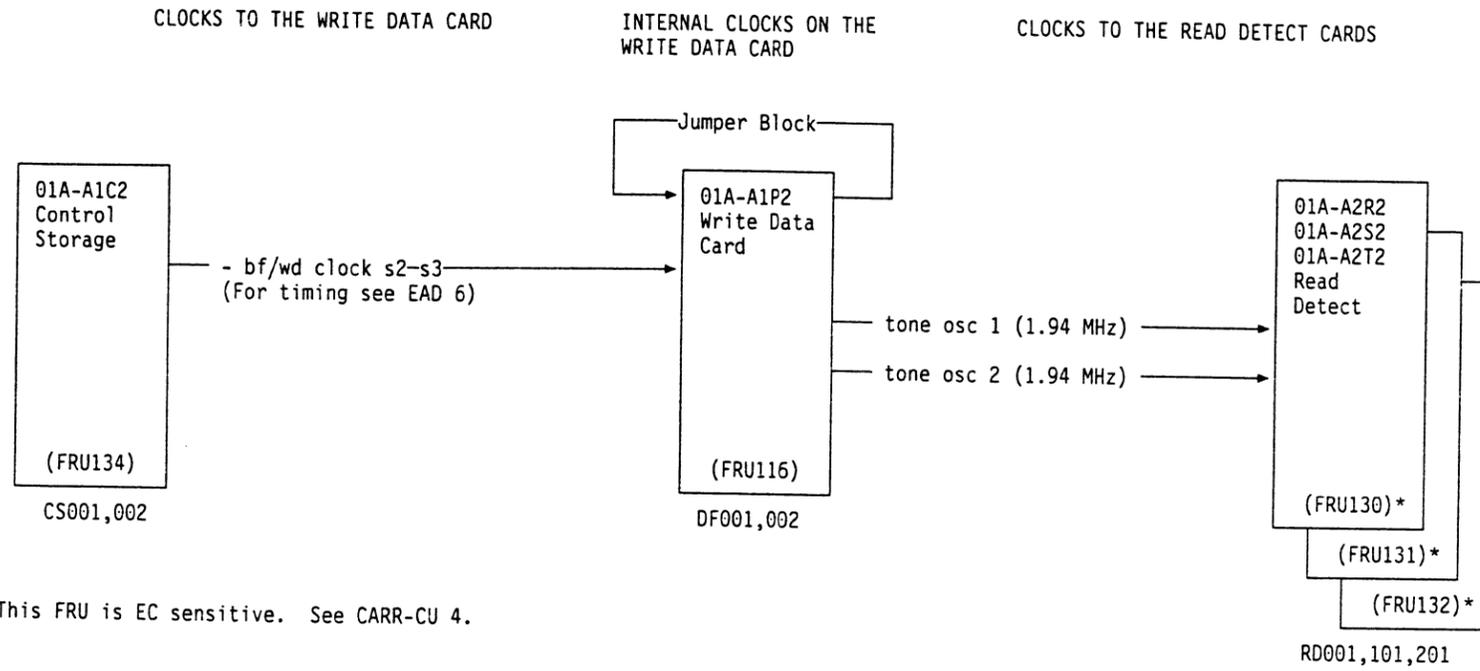
Each IS time = 255 ns
 PLA clock c1 minus time = 46 ns
 PLA clock c2 minus time = 46 ns
 Time between c2 going not active and c1 going active = 69 ns

Clocks to the Buffer Control Card

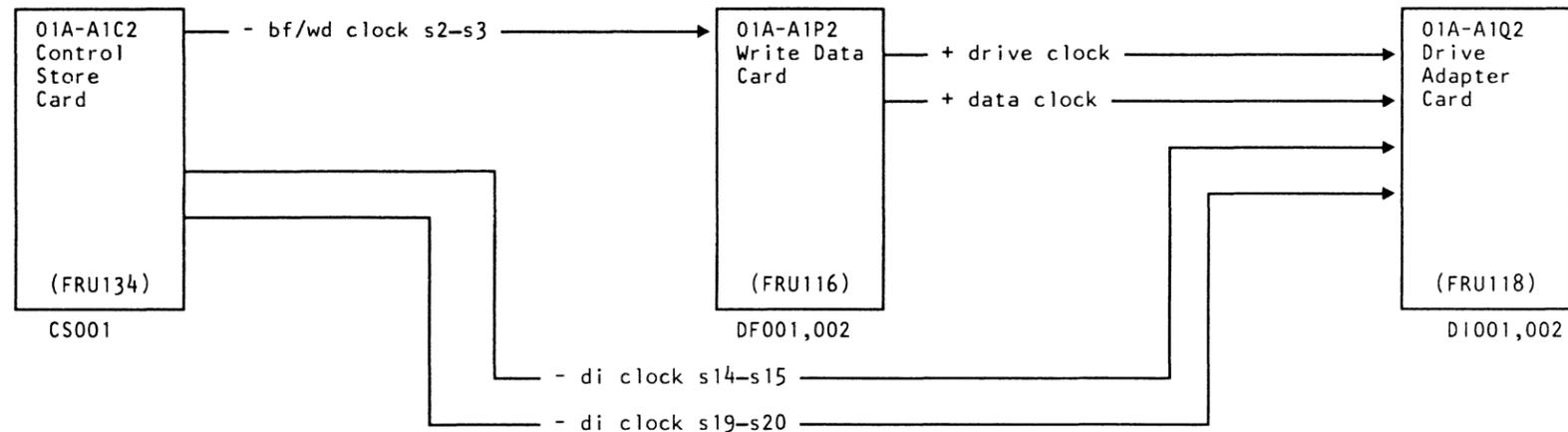


300 Nanosecond Clock Timings





Clocks to the Drive Adapter Card

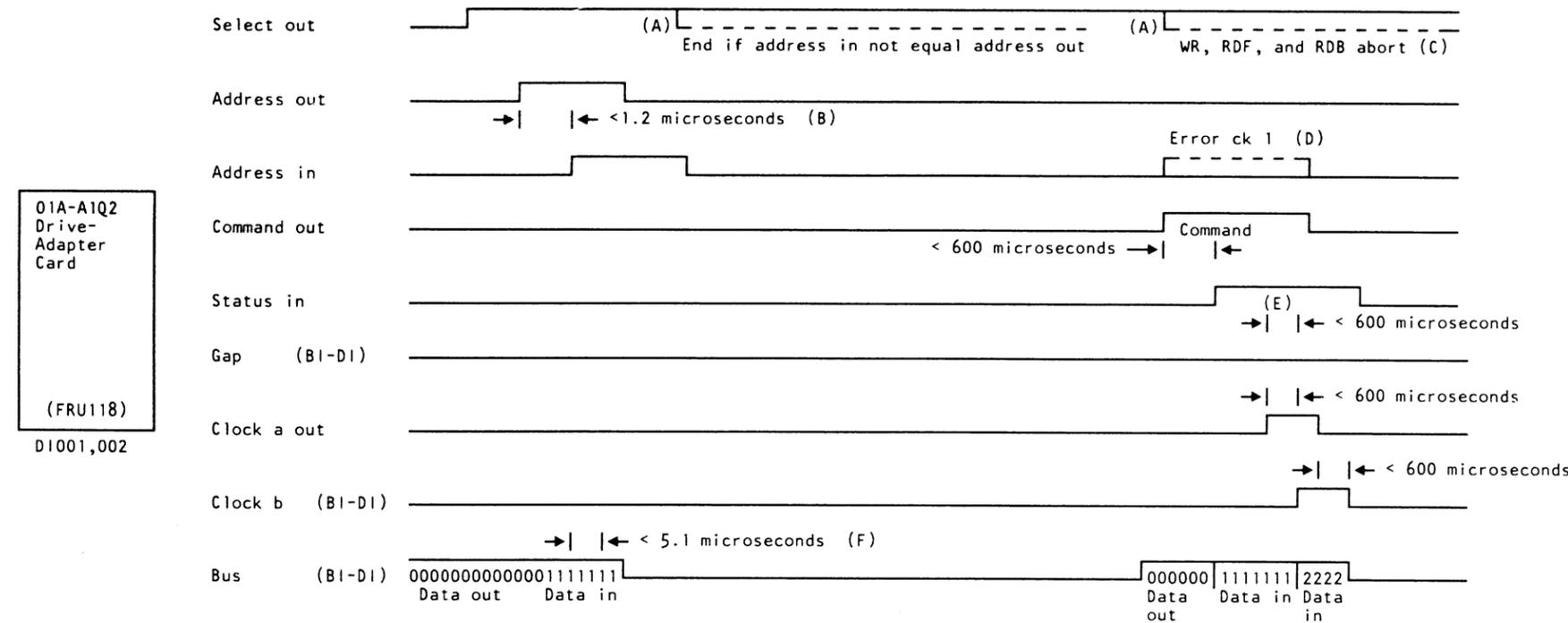


(For system clock timings see EAD 6.)



Initial Selection Sequence from the Control Unit to the Drive

* This FRU is EC sensitive.
See CARR-DR 4.



01A-A1Q2
Drive-
Adapter
Card

(FRU118)
D1001,002

02A-A1B2
Drive
Control
Card

(FRU085)*
DD000,003

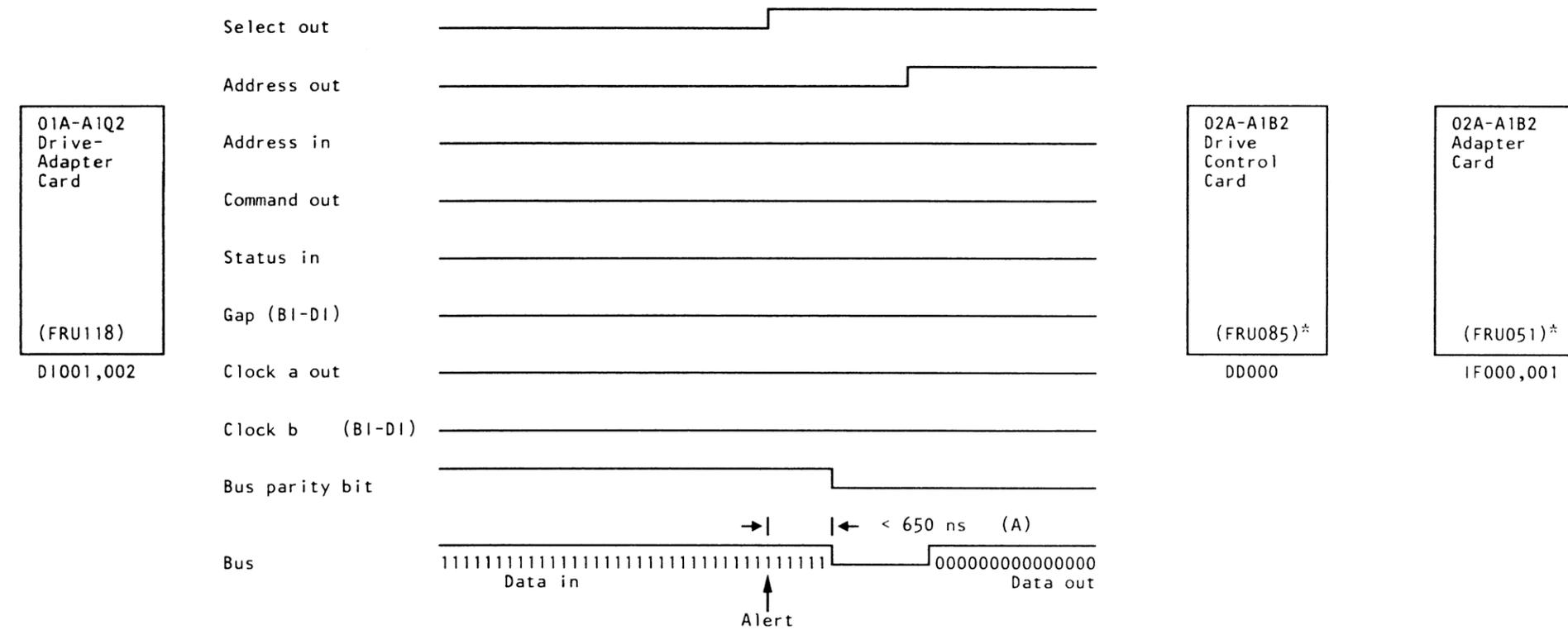
02A-A1B2
Adapter
Card

(FRU051)*
IF000,001

- (A) 'Select out' becomes inactive if:
 1. Control command and no data to be transferred
 2. Command was an immediate command
 3. Status byte contained unusual or unexpected data.
- (B) A selected drive must respond to 'address out' in 1.2 microseconds or less by activating 'address in' and putting the complemented address on the bus. 'Select out' must remain active during the whole connected operation and must become inactive and stay inactive for 200 microseconds before another initial sequence can be started.
- (C) Drive goes to stop lock for that command.
- (D) 'Address in' active in response to 'command out' signals a drive hardware error.
- (E) 'Status in' becomes active in response to the rise of 'command out' ('status in' going active can be delayed up to 600 microseconds due to microcode processing). 'Status in' becomes inactive with 'clock B' going inactive, as a result of command out going inactive.
- (F) 5.1 microseconds or less after 'address in' becomes active, the address bits from the control unit become inactive on the bus.

Alert Sequence from the Drive to the Control Unit

* This FRU is EC sensitive.
See CARR-DR 4.



(A) All pending alerts from the drive must be removed in 650 ns.

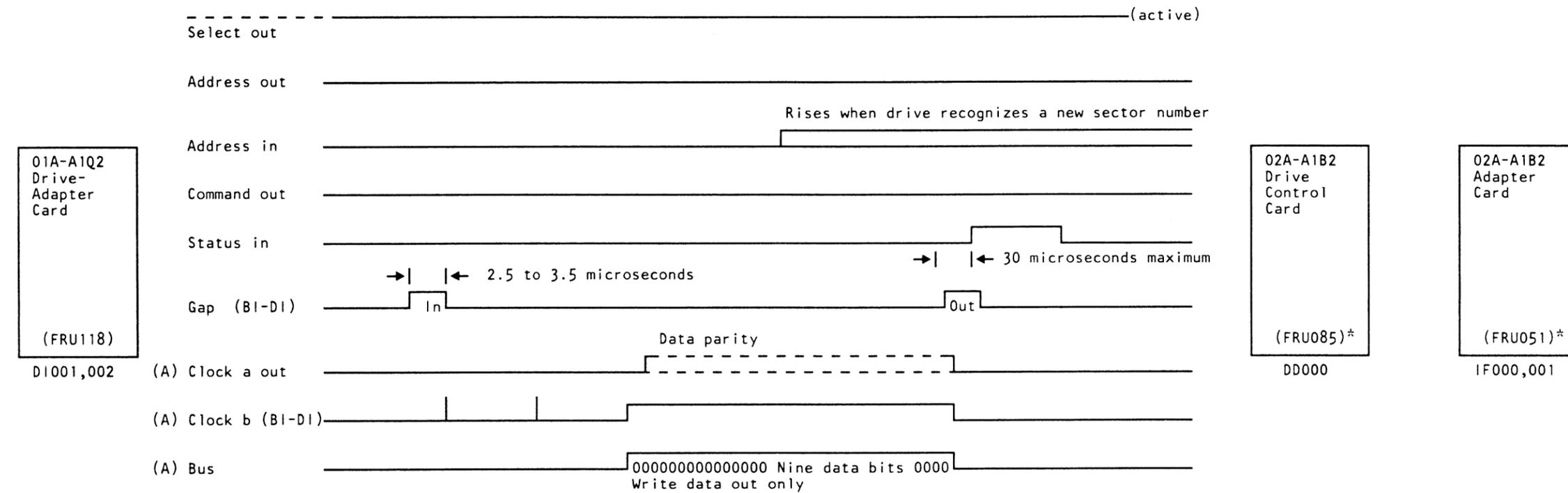
The drive uses this sequence to get the attention of the control unit for:

- Completion of the Disconnected operation
- Not ready to ready status changes
- Completion of repositioning
- Manual Rewind Unload switch activated
- Request patches during the power on sequence



Data Transfer Sequence between the Control Unit and the Drive and WTM, Write Erase Gap Sequence

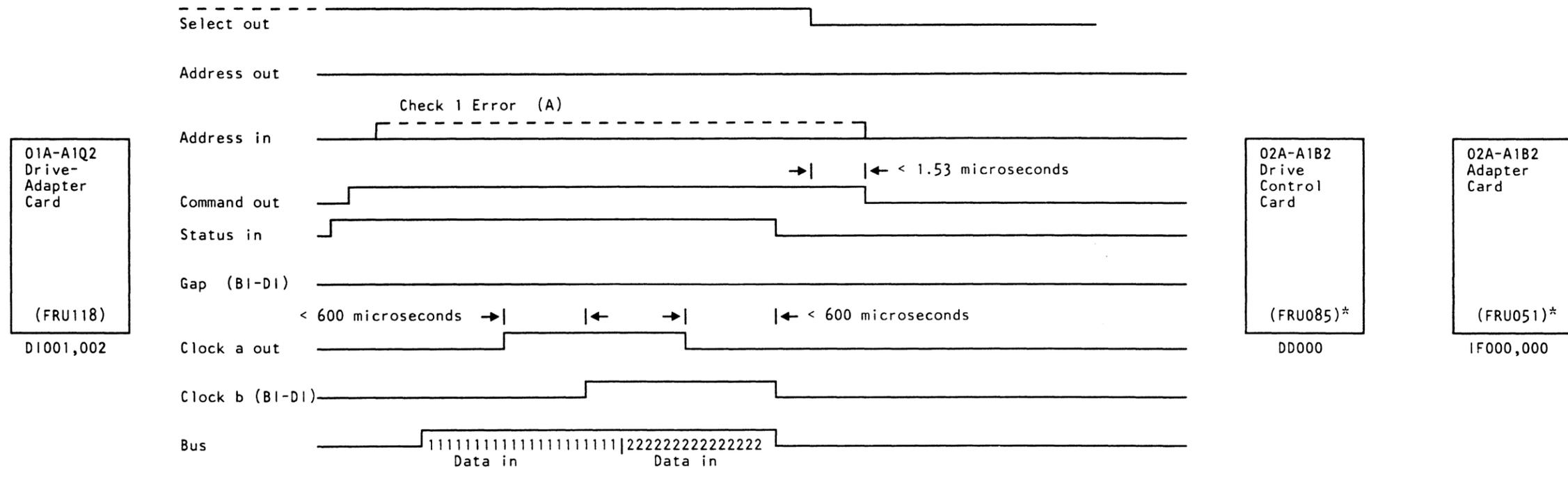
* This FRU is EC sensitive.
See CARR-DR 4.



(A) These line are 'don't care' during a read data sequence.

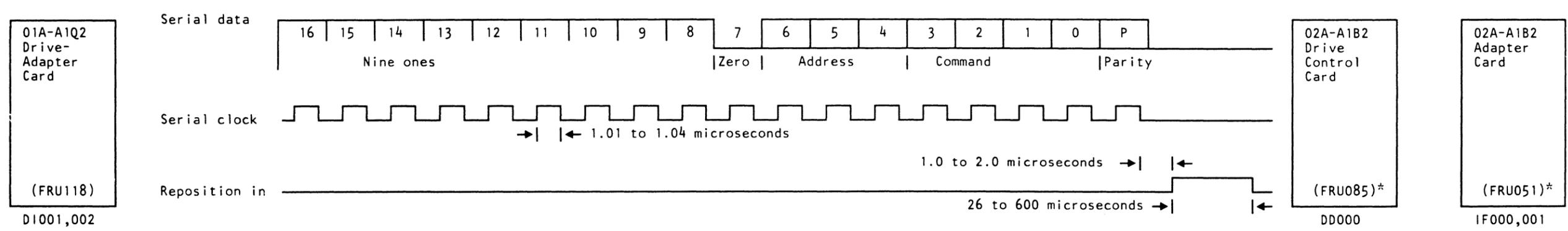
Sense Control Transfer

* This FRU is EC sensitive.
See CARR-DR 4.



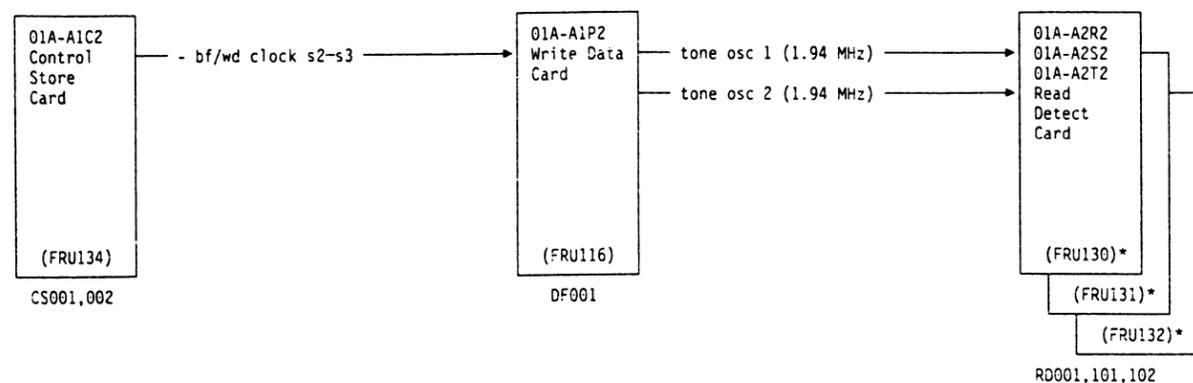
(A) If 'address in' becomes active during this time, the control unit indicates a check 1 was detected from the drive.

Serial Sequence Drive Interconnections

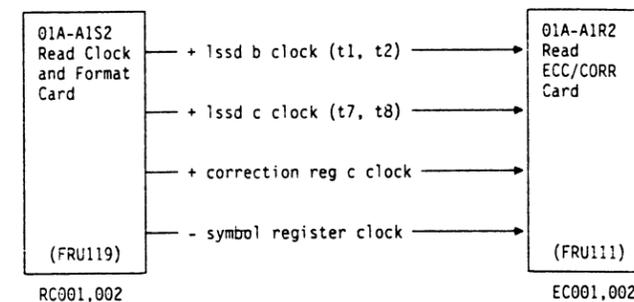


Read Data Flow Area Clocks

Clocks to the Read Detect Cards



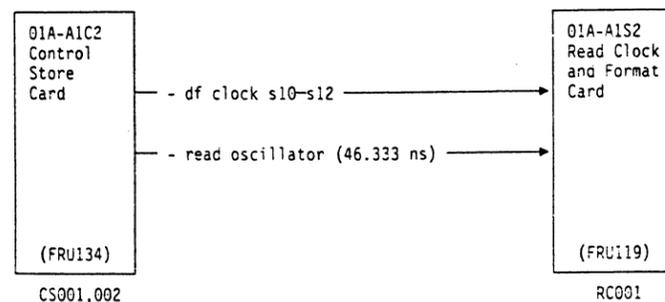
Clocks to the Read ECC/CORR Card



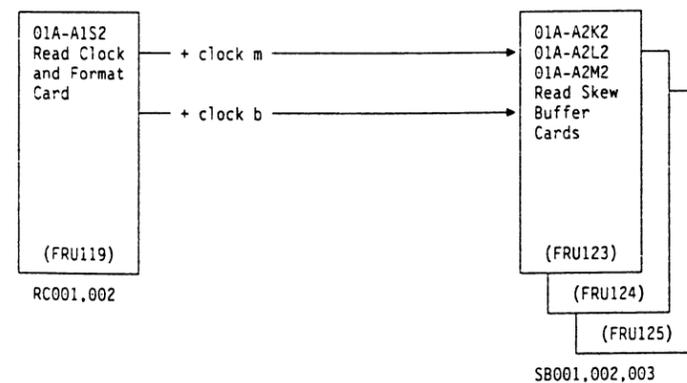
Note: For system clock timings (s and t times), see EAD 6.

*This FRU is EC sensitive. See CARR-CU 4.

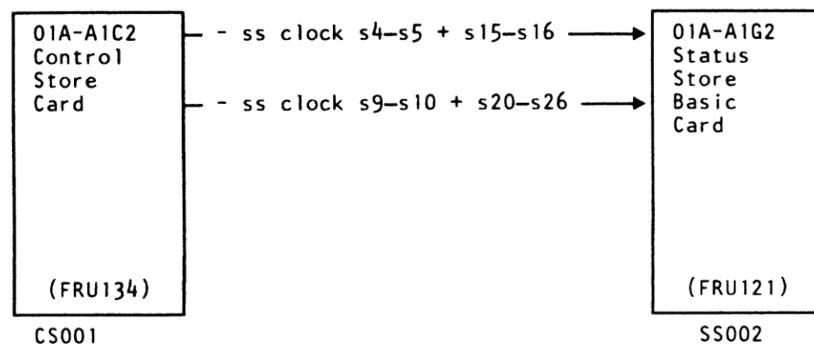
Clocks to the Read Clock and Format Card



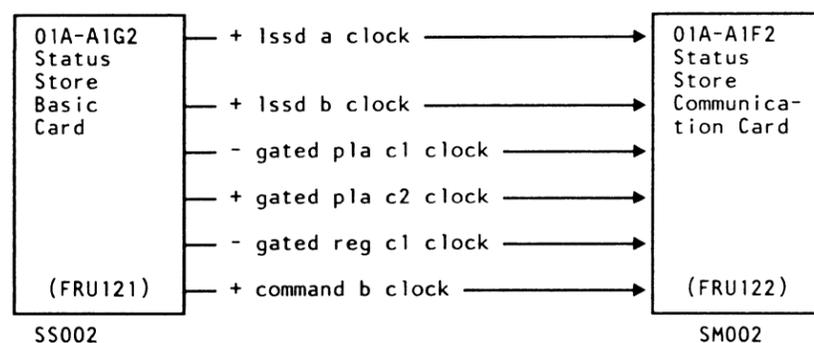
Clocks to the Read Skew Buffer Cards



Clocks to the Status Store Basic Card



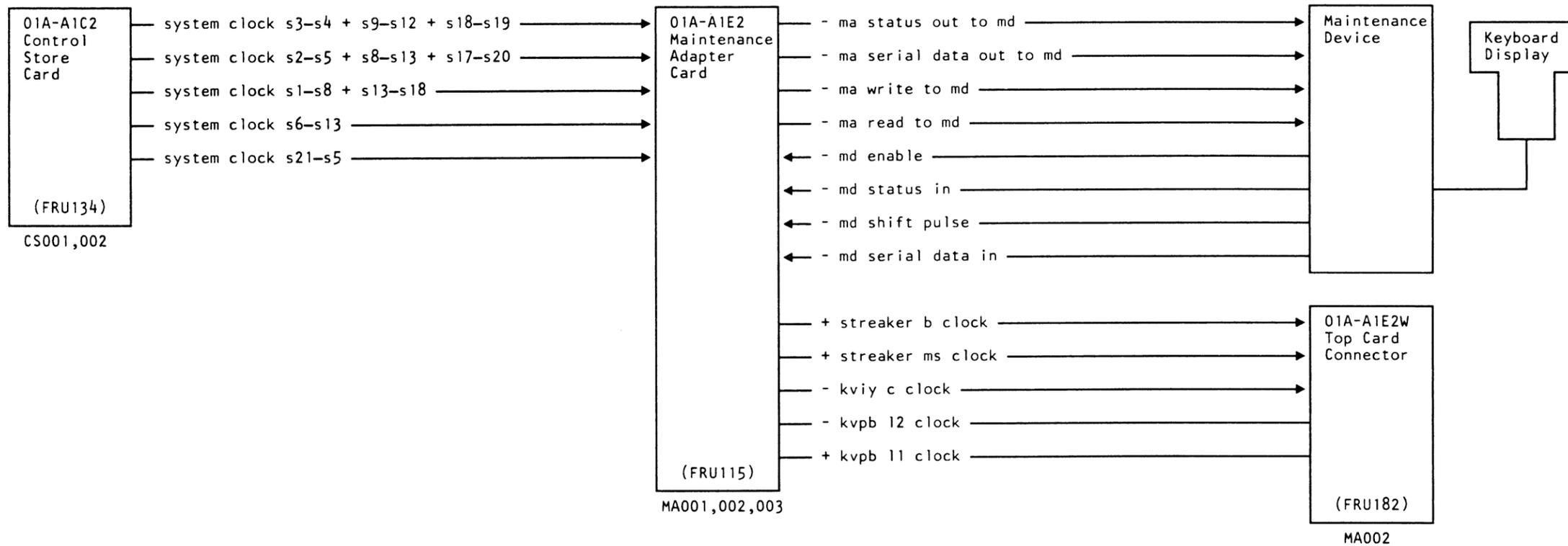
Clocks to the Status Store Communication Card



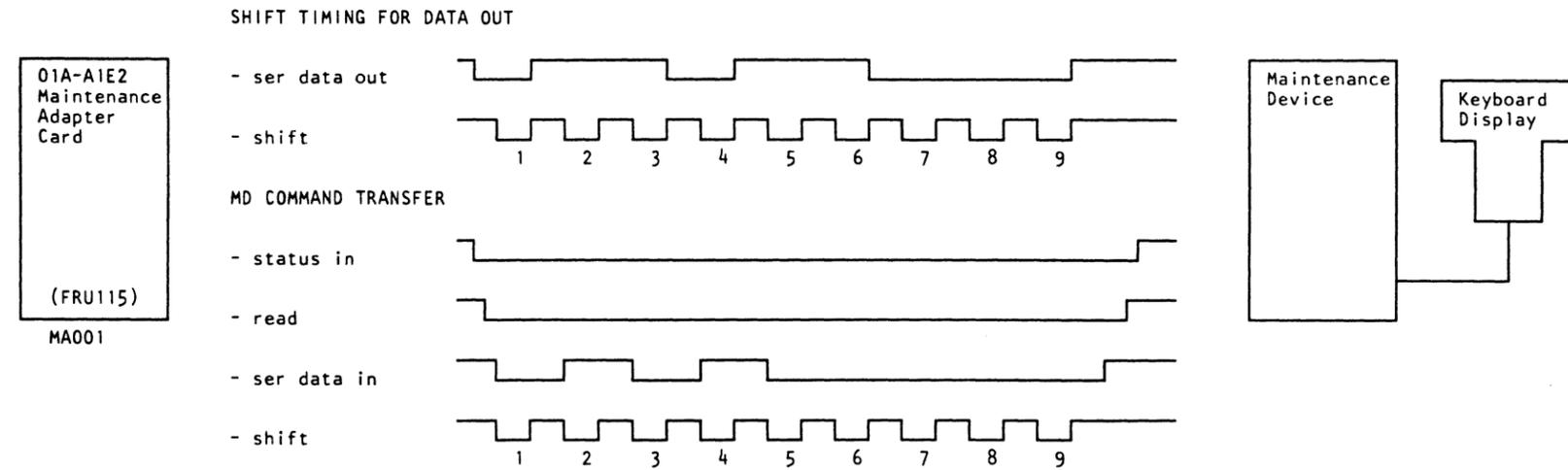
Maintenance Adapter Area Clocks

Clocks to and from the Maintenance Adapter

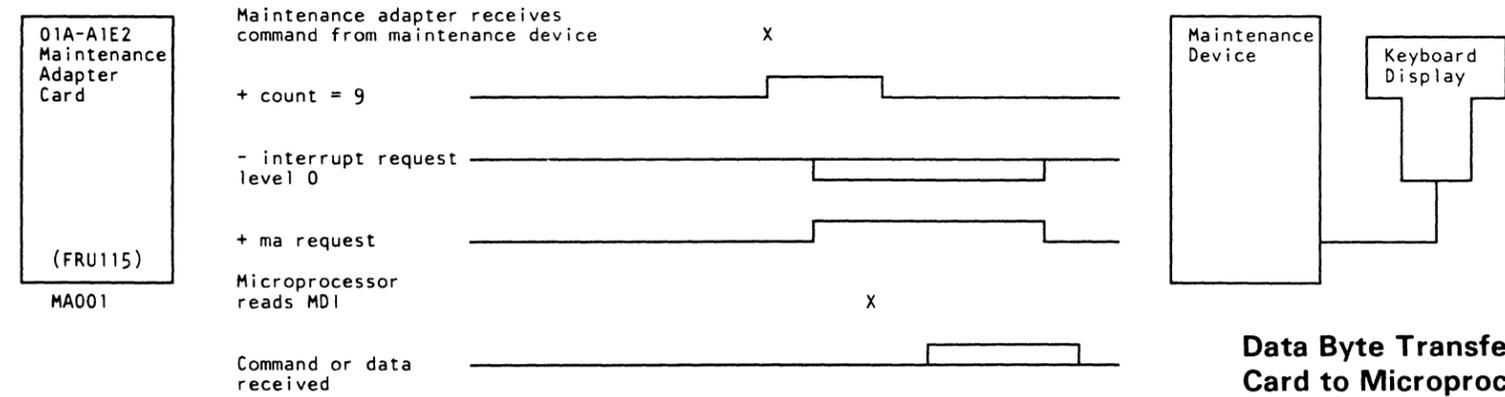
The control storage card and microprocessor card supply clocks to the maintenance adapter card. The maintenance adapter card supplies clocks to the maintenance device and the microprocessor card.



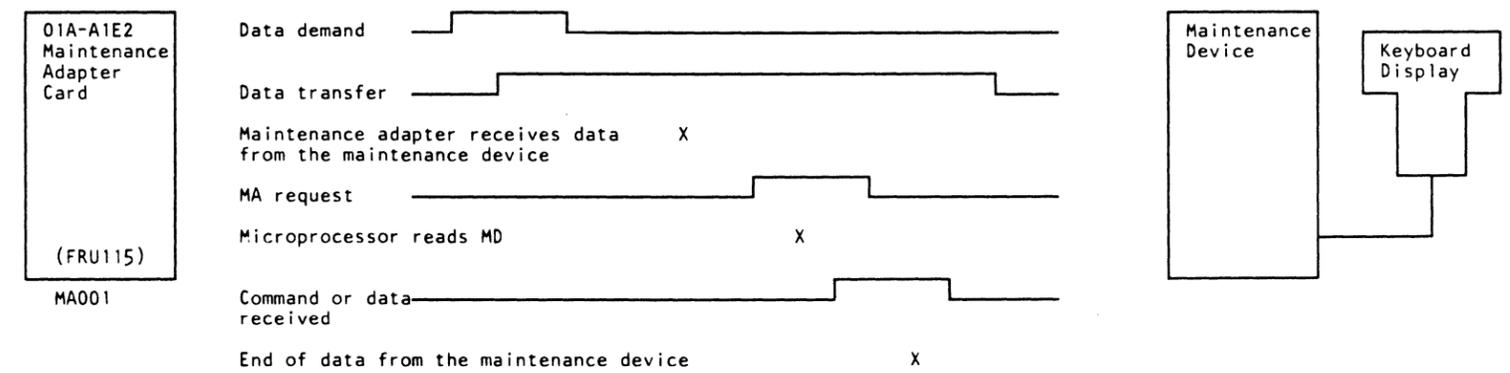
Maintenance Device to Maintenance Adapter Timing



Maintenance Device Command Byte Transfer Maintenance Adapter Card to Microprocessor Card

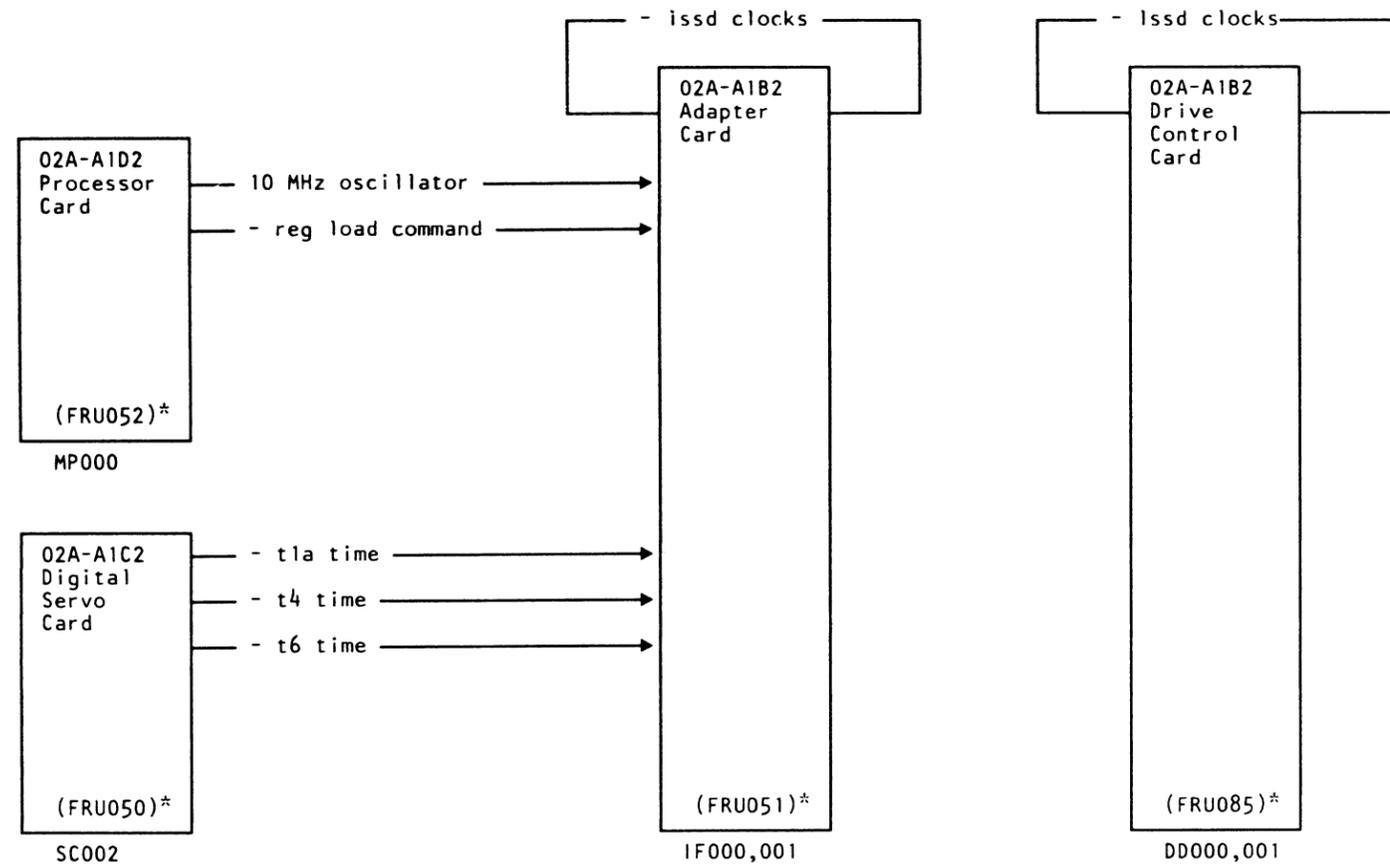


Data Byte Transfer Maintenance Adapter Card to Microprocessor Card



Clocks to the Adapter Card

* This FRU is EC sensitive.
See CARR-DR 4.



Note: At EC 333293 all clocks are internal.

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

An open was detected while checking the LED current for tape path sensor A, the cartridge present sensor, and the cartridge latched sensor.

Error Condition Theory

Note: See EAD 101 for test points.

The current to these three LEDs is checked before the thread/load operation by the digital servo card and microcode. The digital servo card performs as a 3-input OR with the LED currents used as the inputs. Normally, points **A** (see diagram) are +1.4 volts to +2.2 volts. If one of the LEDs opens, point A for that LED increases to approximately +5.0 volts, which sets a sensor error in the digital servo card. This error is then read by microcode, and CHK 02 is displayed.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure.

1. (FRU081) tachometer sensor cable
2. Source voltages at the input to the FRUs on this EAD
3. Cables, connectors, and nets between FRUs on this EAD
4. (FRU058) 02A-A1 logic board

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.

Note: The measurement points with the drive control card (FRU085) and the digital servo card (FRU 050) can change because these cards are EC-sensitive.

3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

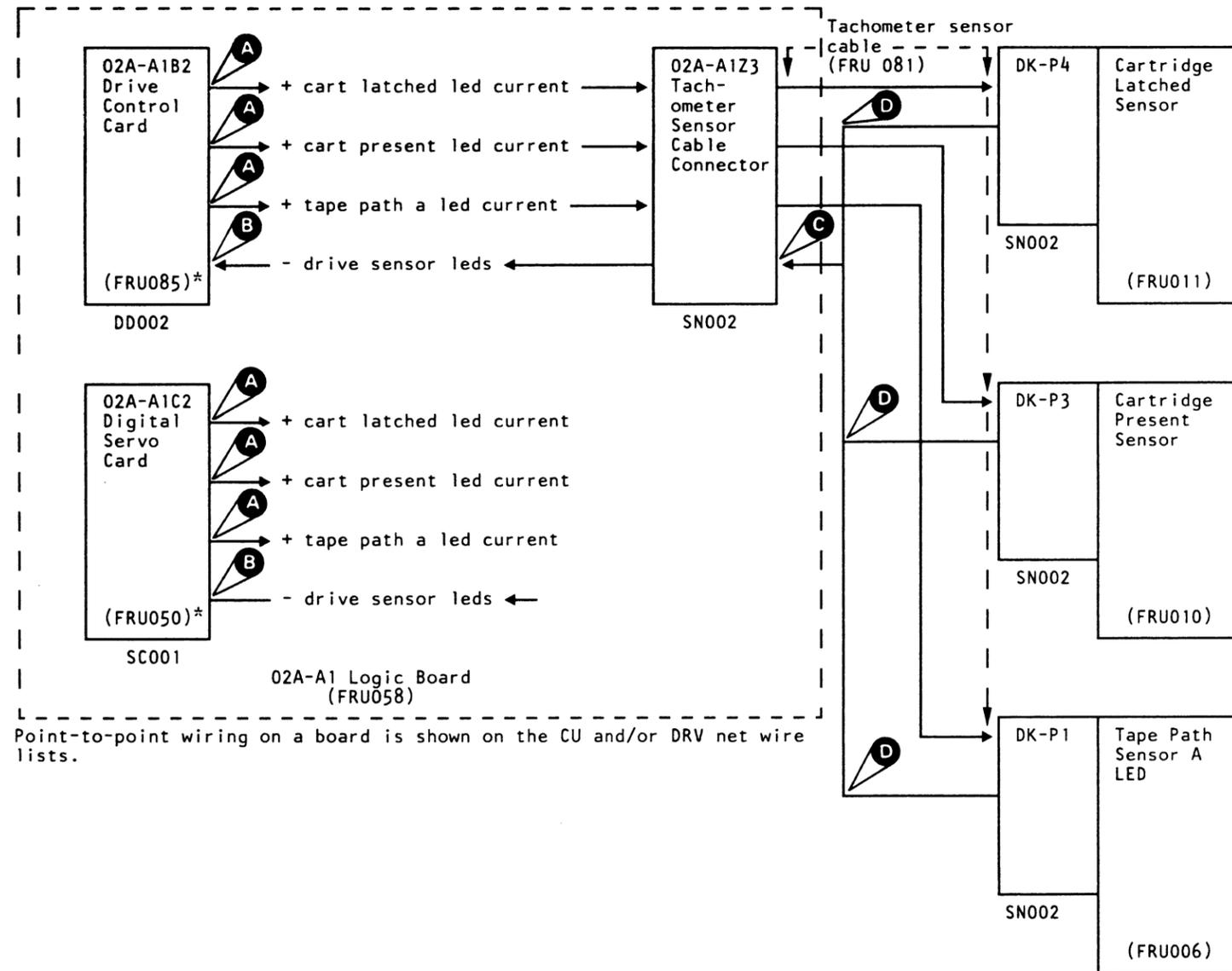
4. Check for less than +2.2 volts at the output to each LED
 - A.** If all three are more than +2.2 volts, check for an open circuit in the return line between point **B** and any point **D**.
 - D.** If the return line is not open, the problem is in the area of FRU058 or FRU085*.
5. If only one **A** is more than +2.2 volts, check that line for an open circuit between point **A** and point **C**. (Note that there is a diode in the circuit. If the meter shows an open circuit, reverse the leads of the meter to verify the open circuit.) If there is continuity, the problem is in the area of FRU058 or FRU085*.
6. If **A** is less than +2.2 volts at all three points. Suspect FRU085*.
7. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - a. If no errors are detected, go to SPROC 1 "End of Call Actions."
 - b. If the program detects an error, return to the FSI and do one of the following
 - 1) Perform any additional actions.
 - 2) If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
8. **If no repair action has been performed** and no additional action are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net list in the Logic Diagrams.
4,5,6	LOC 1	Location of FRUs Also see SN002 for point-to-point wiring of the return bus on cable A1Z3
4,5,6	CARR-DR 1-1	Removal and replacement procedures
7	MD 1	How to use the MD with the 3480

Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.



Plug DK-P1, P2, and P4 (Pin Side)

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

A tension-transducer-under-tension error was not detected.

Error Condition Theory

Note: See EAD 107 for test points.

After the sensor test and before loading the tape, the drive logic checks the tension transducer to ensure that the 'tension good' signal is not active. If the 'tension good' signal is active, a CHK 04 is set and the load operation is not performed.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU073) logic board to power amplifier J1 cable
2. (FRU079*) dc power distribution cable drive internal—J1, J2
3. (FRU080) dc power distribution cable
4. (FRU049) logic board to power amplifier J2 cable
5. Source voltages at the input to the FRUs on this EAD
6. Cables, connectors, and nets between FRUs on this EAD
7. (FRU058) logic board O2A-A1

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4.
 - a. With the tape unloaded, connect point **H** in the error diagram to logic ground.
 - b. Scope point **G** in the error diagram. Point **G** should be at -2.5 volts to -1.9 volts.
 - c. Remove the connection between point **H** and logic ground.
 - d. Load a tape. Point **G** should now be -0.5 volts to +0.5 volts.
 - e. If both tests are correct, the problem is in the area of FRUs 059, 085*, or the cables between them. Go to step 6.
 - f. If either test fails, the problem is in the area of FRUs 014, 059, the cables between them, or source voltages. Go to step 5.
5.
 - a. Point **F** in the error diagram should be +15 volts. If the voltage is not correct, use the logics to follow its path back to the power supply.
 - b. Measure the voltage at points **C** and **D** in the error diagram. Point **C** should be not less than +11.2 volts. Point **D** should be approximately +15 volts.
 - c. If all points are correct, replace FRUs 059 and 014 again. Go to step 8.
6. Point **J** in the error diagram varies from +5 volts to 0 volts. Connect the oscilloscope to **J** and attempt to load a cartridge. The logic level should go from +5 volts to 0 volts then back to +5 volts. If the logic level fails to vary correctly, the problem is in the area of FRUs 059, 049, or 085*.

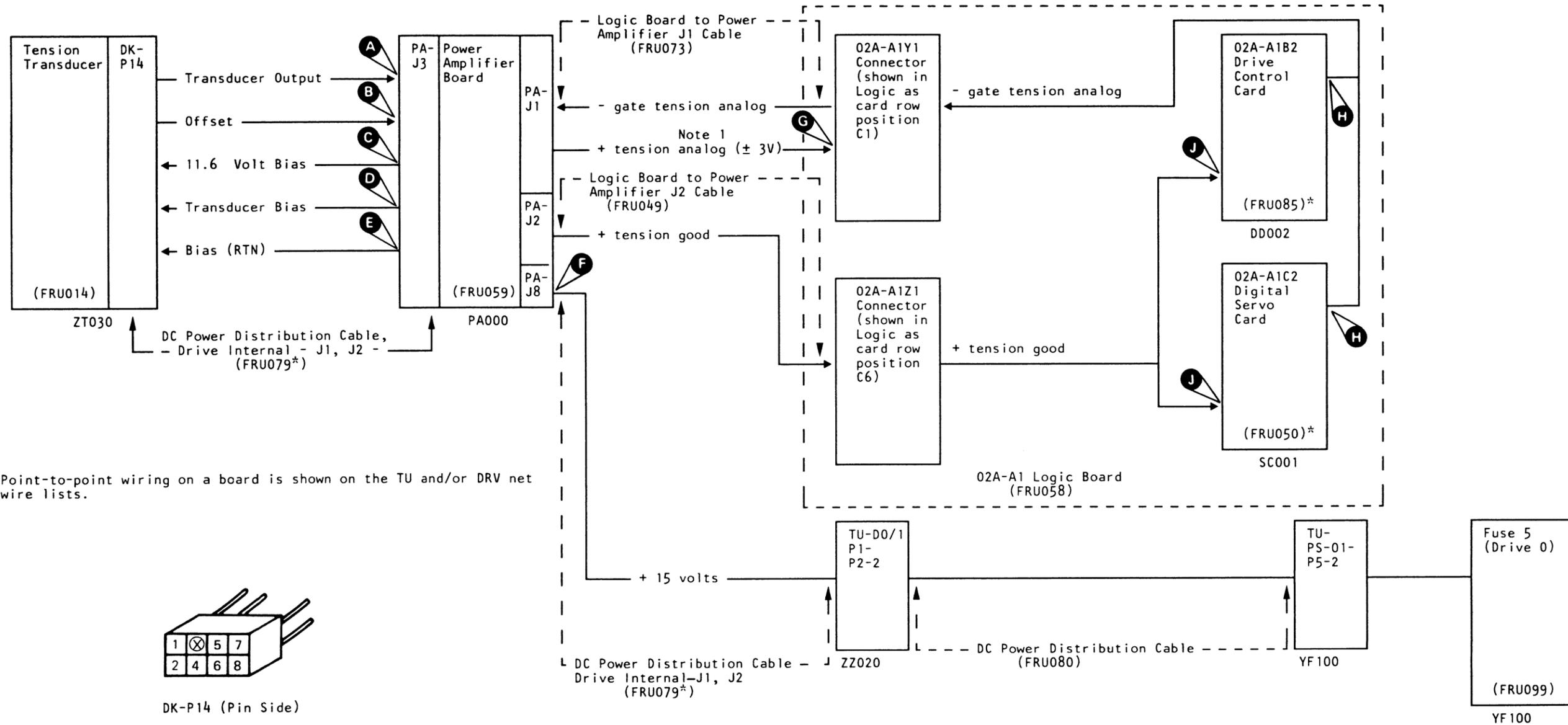
7. Point **H** in the error diagram varies from +3 volts to 0 volts. Scope **H** and load a cartridge. The value is +3 volts before the cartridge latch engages, on drives without the automatic cartridge loaders, or before the load motor completes its cycle on drives with the automatic cartridge loaders, goes to 0 volts momentarily, then goes back to +3 volts. If the value fails to vary, the problem is in the area of FRUs 059, 073, or 085*.
8. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
9. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

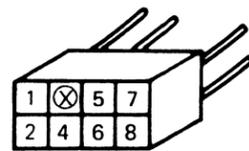
STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4,5,6,7	LOC 1	Location of cables and connectors
4,5,6,7	CARR-DR 1-1	Location of cables and connectors
8	MD 1	How to use the MD with the 3480

Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.



*Point-to-point wiring on a board is shown on the TU and/or DRV net wire lists.



DK-P14 (Pin Side)

Note 1. This is a test point.

Error Description

Tape path sensor B failure or no LED current was detected.

Error Condition Theory

* This FRU is EC sensitive.
See CARR-DR 4.

Note: See EAD 109 for test point.

After a cartridge is inserted and the latch is closed on drives without the automatic cartridge loaders or the Start button is pressed on drives with the automatic cartridge loaders, a three step sensor test is run to check tape path sensor B.

Step one checks that '+tape path sensor B' **B** is at a down logic level (lighted status). If step one is correct, step two turns off the LED and checks that '+tape path sensor B' is now at an up logic level (dark status).

If step two is correct, the thread/load operation starts. If step one fails, step three pulls down the '+tape path sensor B' signal on the digital servo card and checks for a down logic level. If a down logic level is detected, the checking circuit is good, and CHK 05 is set.

(If a down logic level is not detected, CHK 06 is set. If step two failed, CHK 0E is set. For more information on CHK 06 and CHK 0E, see the EADs for those check codes.)

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU081) tachometer sensor cable
2. Voltages at the input to the FRUs on this EAD
3. Cables, connectors, and nets between FRUs on this EAD
4. (FRU058) O2A-A1 logic board

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and that all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly (or loop on the identified diagnostics) and scope the specified test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

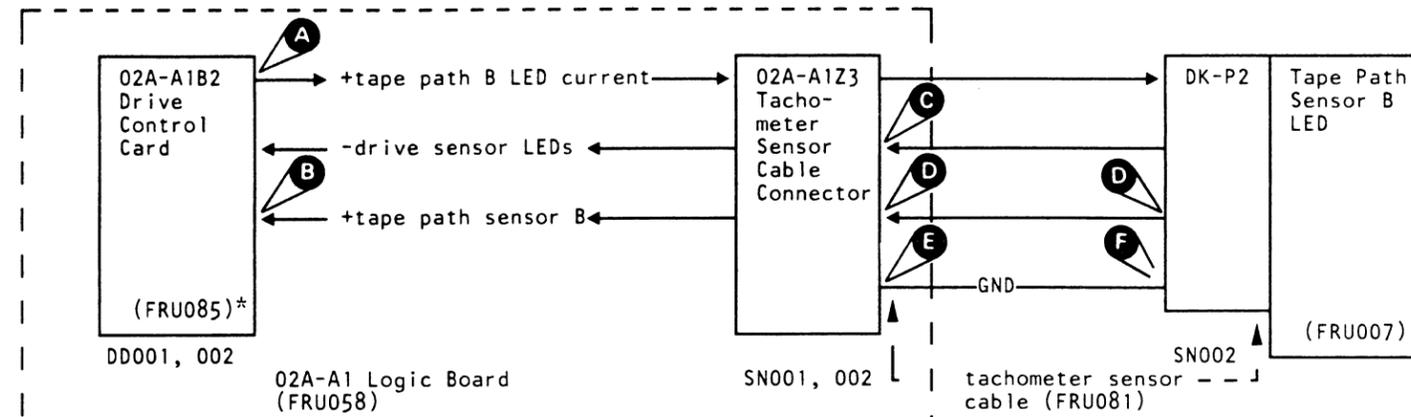
4. Check for +1.4 volts to +2.2 volts at **A**. If the voltage at **A** is correct, the LED current supply and return lines are good. If the voltage is more than +2.2 volts, check for an open circuit between points **A** and **C**. (Note that there is a diode in the circuit. If the meter shows an open circuit, switch the meter leads to verify that the circuit is really open.) If the voltage is less than +1.4 volts, the problem is in the area of FRU085* or there is a short circuit between **A** and ground on FRU081 or FRU058.
5. Check for a down logic level at point **B**. If point **B** is at an up logic level, check for an open circuit between points **B** and **D** or **E** and **F**. If point **B** is at a down logic level or if no open circuit can be found, the failure is in the area of FRU058 or FRU085*.
6. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, *Call your next level of support* and then go to SPROC 1 "End of Call Actions."
7. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, *Call your next level of support* and then go to SPROC 1 "End of Call Actions."

References

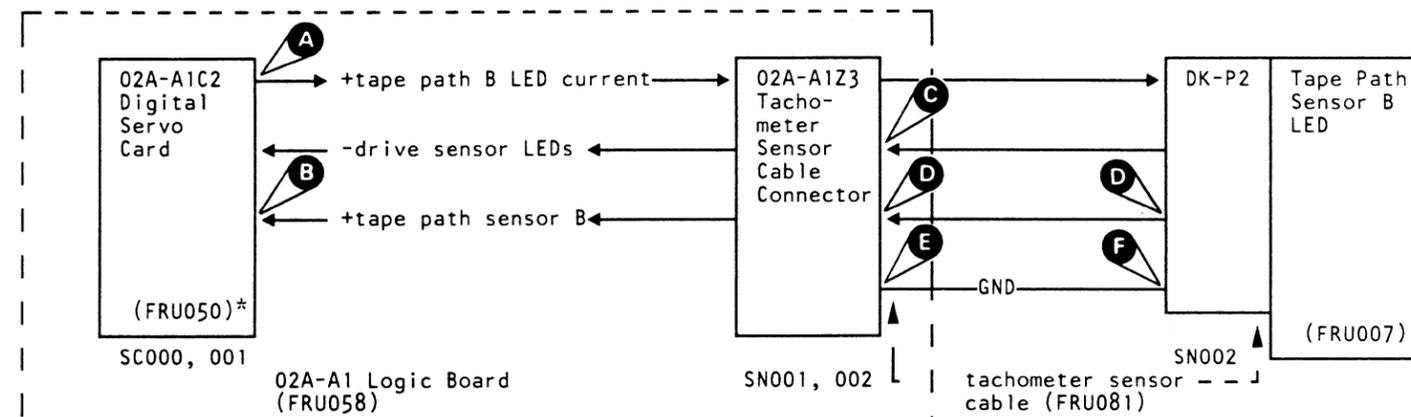
STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4,5	LOC 1	Location of FRUs
4,5	CARR-DR 1-1	Removal and replacement procedures
6	MD 1	How to use the MD with the 3480

Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.

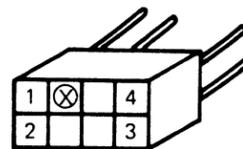


Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

NOTE: Point A Norm: +1.4 V to +2.2 V
Fail: +5.0 V
Point B Light: +0.4 V
Dark: +5.0 V



Plug DK-P2 (Pin Side)

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

A tape path sensor B detect circuit failure has occurred (always an up logic level).

Error Condition Theory

Note: See this page for test points.

After a cartridge is inserted and the latch is closed on drives without the automatic cartridge loaders or the Start button is pressed on drives with the automatic cartridge loaders, a three-step sensor test is run to check tape path sensor B.

Step one checks that '+tape path sensor B' **A** is at a down logic level (lighted status). If step one is correct, step two turns off the LED and checks that '+tape path sensor B' is now at an up logic level (dark status).

If step two is correct, the thread/load operation is started. If step one fails, step three pulls down the '+tape path sensor B' signal on the digital servo card and checks for a down logic level. If a down logic level signal is not detected, the detection circuit is failing and CHK 06 is set.

(If a down logic level is detected, CHK 05 is set. If step two failed, CHK 0E is set. For more information on CHK 05 and CHK 0E, see the EADs for those check codes.)

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU081) tachometer sensor cable
2. Voltages at the input to the FRUs on this EAD
3. Cables, connectors, and nets between FRUs on this EAD
4. (FRU058) O2A-A1 logic board.

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and that all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostics and scope the EAD test points looking for unusual or deteriorated levels or signals.

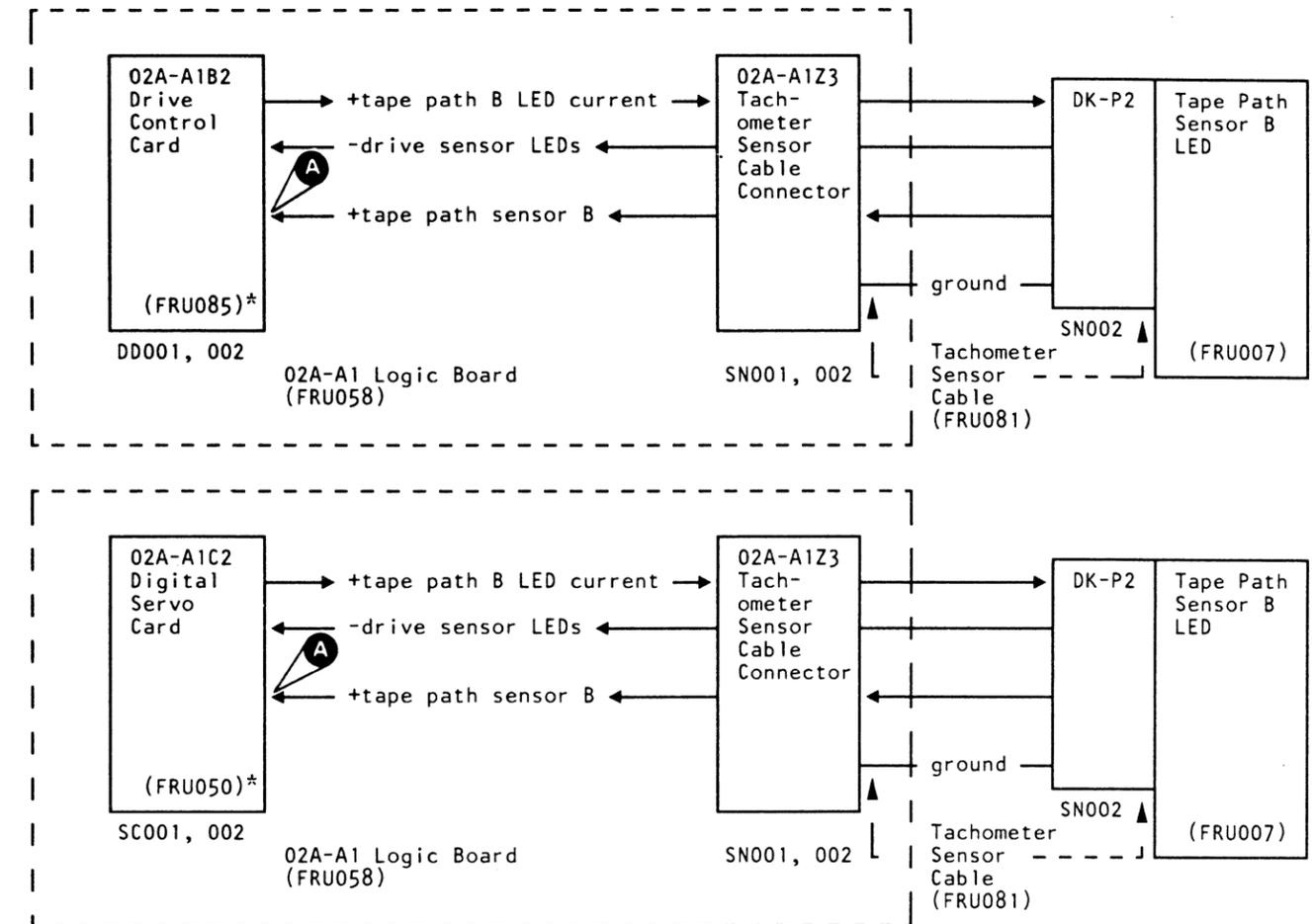
Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Check for a down logic level at **A**. If point **A** is at a down logic level, the failure is in the area of FRU058 or FRU085*.
5. If point **A** is at an up logic level, connect a jumper between **A** and O1A-A1B2D08 (ground). Reset the drive and load a scratch cartridge. If the same error returns, the failure is in the area of FRU085*.
6. If CHK 0E is displayed, turn power off and check for a short circuit between '+tape path sensor B' and +5.0 volts in FRU058 or FRU081.
 - a. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
 - b. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

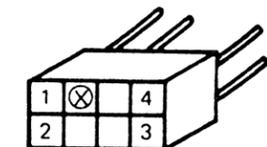
STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4,5,6	LOC 1	Location of FRUs
4,5,6	CARR-DR 1-1	Removal and replacement procedures
7,8	MD 1	How to use the MD with the 3480

ERROR DIAGRAM



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

NOTE: Point A Light: +0.4 V
Dark: +5.0 V



Plug DK-P2 (Pin Side)

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

A tape path sensor B failure has occurred (always a down logic level).

Error Condition Theory

Note: See the diagram on this page for test points.

After a cartridge is inserted and the latch is closed on drives without the automatic cartridge loaders or the Start button is pressed on drives with the automatic cartridge loaders, a three-step sensor test is run to check tape path sensor B.

Step one checks that '+tape path sensor B' (A) is at a down logic level (lighted status). If step one is correct, step two turns off the LED and checks that '+tape path sensor B' is now at an up logic level (dark status).

If step two is correct, the thread/load operation is started. If step two fails, CHK OE is set. (If step one failed, step three sets either CHK O5 or CHK O6. For more information on CHK O5 and CHK O6, see the EADs for those check codes.)

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU081) tachometer sensor cable
2. Voltages at the input to the FRUs on this EAD
3. Cables, connectors, and nets between FRUs on this EAD
4. (FRU058) O2A-A1 logic board.

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and that all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostics and scope the EAD test points looking for unusual or deteriorated levels or signals.

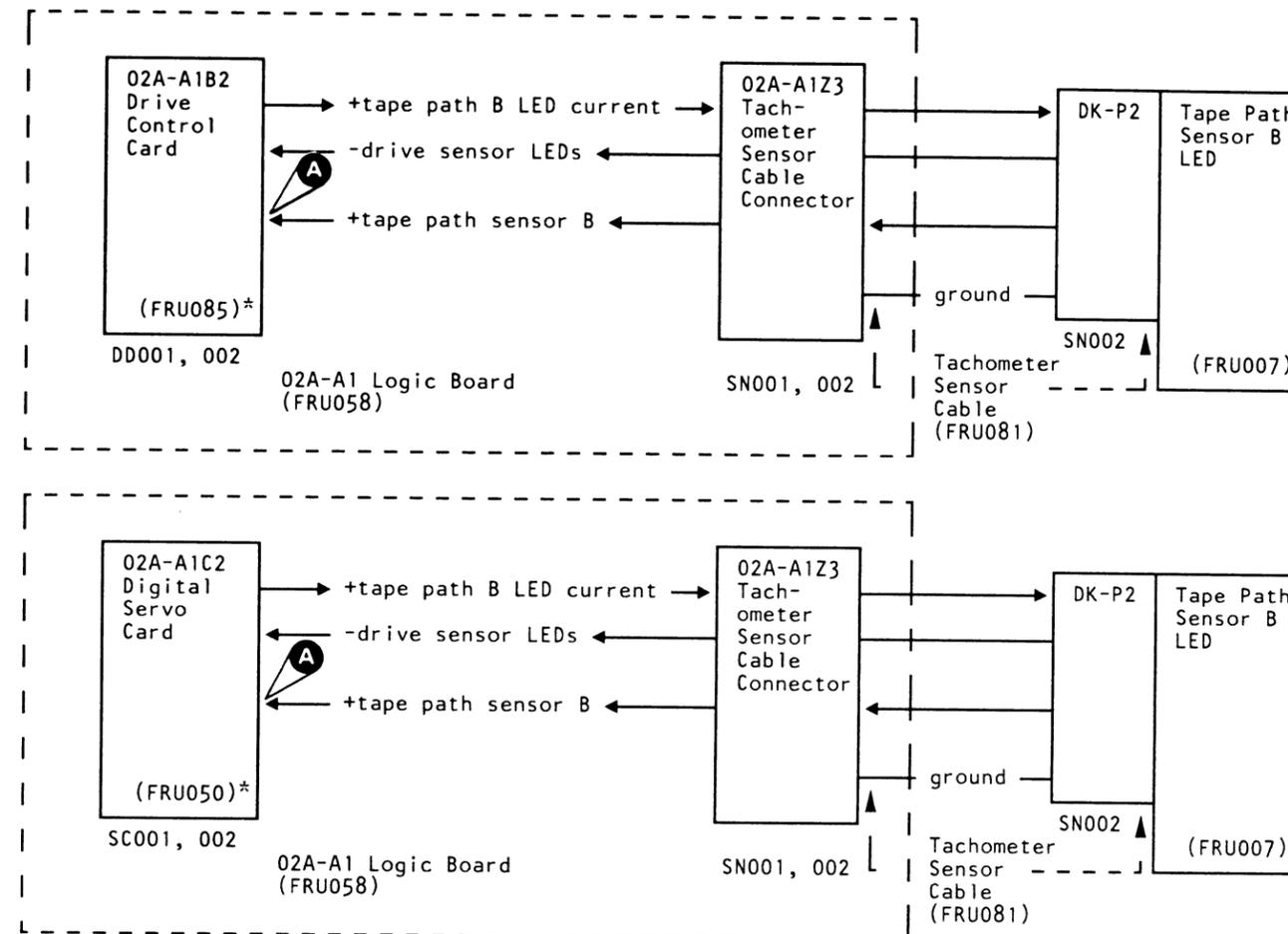
Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Connect an oscilloscope to '+tape path sensor B' at point (A). Insert a scratch cartridge and close the latch on drives without the automatic cartridge loaders, or press the Start button on drives with the automatic cartridge loaders. Check for a 50 ms pulse to +5.0 volts after the latch is closed on drives without the automatic cartridge loaders, or the Start button is pressed on drives with the automatic cartridge loaders.
5. If no pulse is present, the failure is in the area of FRU085*, or there is a short circuit between '+tape path sensor B' and ground in FRU007, FRU081, FRU085*, or FRU058.
6. If the pulse occurred, the failure is in the area of FRU085* or FRU058.
 - a. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
 - b. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

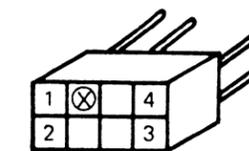
STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution Lists" in the Field Wire Net List in the Logic Diagrams.
4,5	LOC 1	Location of FRUs
4,5	CARR-DR 1-1	Removal and replacement procedures
7	MD 1	How to use the MD with the 3480

ERROR DIAGRAM



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

NOTE: Point A Light: +0.4 V
Dark: +5.0 V



Plug DK-P2 (Pin Side)

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

The file reel motor tachometer sensed an error before the threading operation.

Error Condition Theory

Note: See EAD 121 for test points.

After a cartridge is inserted and the latch is closed on drives without the automatic cartridge loaders (on drives with the automatic cartridge loaders insert the cartridge then press the Start button) a test is performed to remove the slack in the cartridge. A timer is set to a predetermined value and the file reel motor is driven backwards under velocity control of the DAC on the digital servo card. The DAC is incremented until there are no file reel tach pulses. If the DAC did not reach a certain threshold before the timer timed out, a CHK 14 is set. (This condition can also be caused by a broken tape).

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU079*) dc power distribution cable, drive internal, J1, J2
2. (FRU081) tachometer sensor cable
3. (FRU049) power amplifier cable PA-J2 to 02A-A1Z1
4. (FRU073) power amplifier cable PA-J1 to 02A-A1Y1
5. Source voltages at the input to the FRUs on this EAD
6. Cables, connectors, and nets between the FRUs on this EAD
7. (FRU058) logic board 02A-A1

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.

3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Connect an oscilloscope with channel 1 on point **A** and channel 2 on point **B**. Reach through the front of the latch, on drives without the automatic cartridge loaders, and slowly turn the file reel motor by hand.

On drives with the automatic cartridge loaders use the tape removal tool (see PLAN 1) on the socket wrench handle. From the bottom of the drive, slide the tape removal tool through the slot in the air baffle and onto the file reel motor shaft. Slowly turn the file reel motor.

Check to ensure that both lines are changing between 0.4 volts and 5 volts. If either line fails to change to a down logic level, check for an open circuit between points **A** and **C** or between points **B** and **D** for that sensor.

If both lines fail to change to a down logic level, check for an open circuit in **E**. If either line fails to change to an up logic level, check that line for a short circuit to ground. If both phases are working, go to step 5.

5. Connect channel 1 to point **G** and sync minus internal. Insert a scratch cartridge (on drives without the automatic cartridge loaders close the latch, on drives with the automatic cartridge loaders insert the cartridge and press the Start button).

Check for a down logic level pulse in a few seconds after you close the latch. If the pulse is correct, check for a down logic level signal at **J**.

If **J** is correct (on drives without the automatic cartridge loaders open the latch, on drives with the automatic cartridge loaders press the Unload button) and remove the cartridge. Now, connect channel 1 to **H** with the sync still on minus internal.

Insert the scratch cartridge (on drives without the automatic cartridge loaders close the latch, on drives with the automatic cartridge loaders press the Start button). Check for a down logic level pulse within a few seconds after you close the latch. If the pulse is correct, check for a down logic level signal at **K**. If any of the test points is not correct, check for an open circuit in FRU058 or FRU073 for the failing line.

If all the checks were correct, go to step 6.

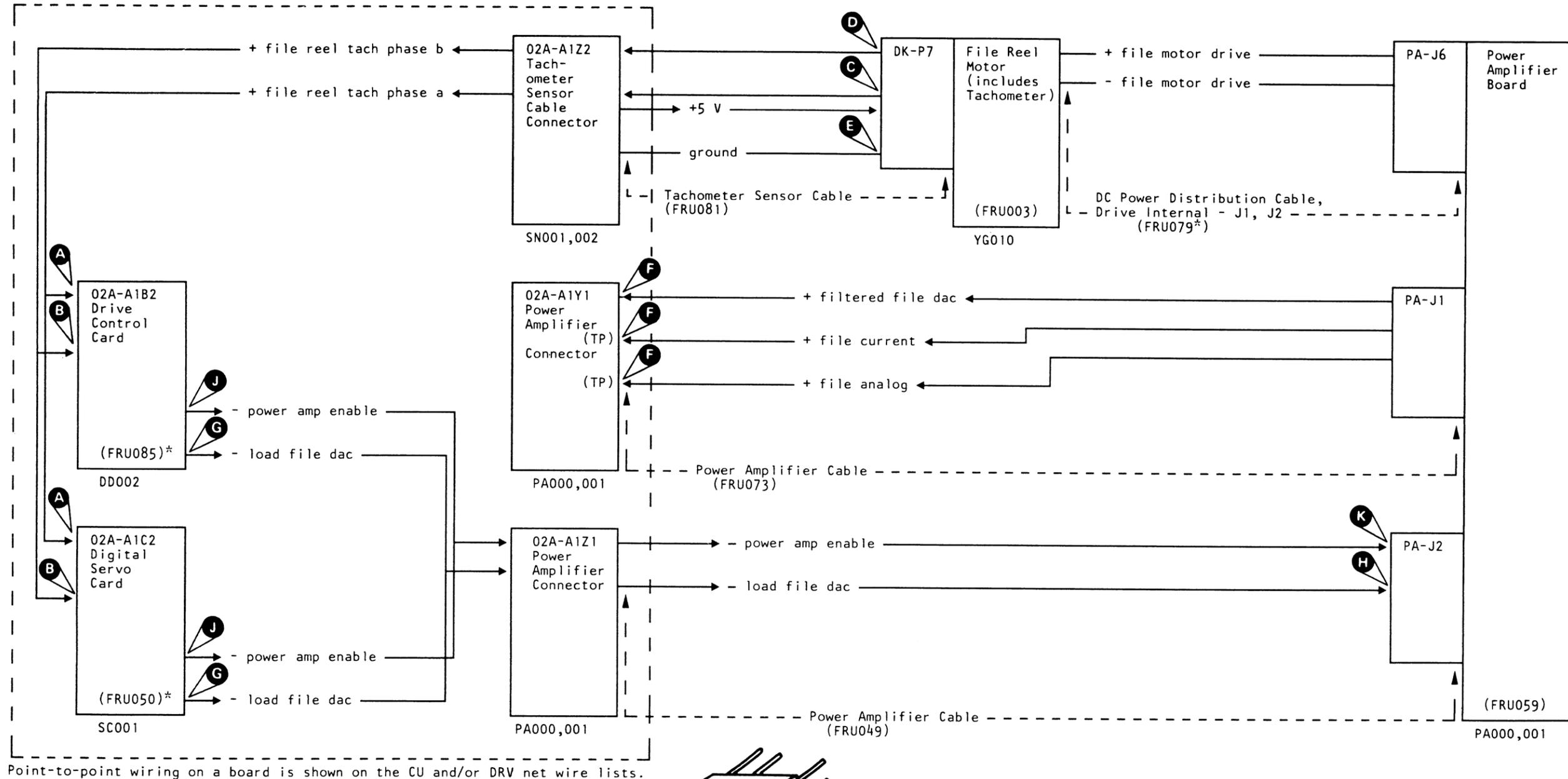
6. Check for a short circuit between **F** and ground for all three test points.
7. Lower the power amplifier board and disconnect J6. Check for approximately 4 ohms between J6-1 and J6-2. If the resistance is not correct, suspect FRU003 or FRU079*.
8. Check the +24 volts and the +15 volts with an oscilloscope to verify that the voltages and ac ripple are in tolerance. If they are out of tolerance, exchange FRU095.
9. Physically check that the cartridge latch assembly (the load assembly on drives with the automatic cartridge loaders) holds the cartridge on the file reel motor without binding. The cartridge should be free to move a small amount.
10. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
11. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI. **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

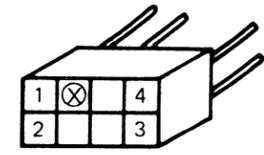
STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4,5,7,9	LOC 1	Location of FRUs
4,5,7	CARR-DR 1-1	Removal and replacement procedures
5	PANEL 1	How to operate the tape unit
8	YF100	DC power supply voltage pins
8	ZZ200	Voltage net wire list
10	MD 1	How to use the MD with the 3480

Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.



Plug DK-P7 (Pin Side)

Note: TP = test point.

Error Description

- * This FRU is EC sensitive. See CARR-DR 4.
- A machine reel null completed, or because of an intermittent machine reel tach phase A signal, the drive microcode signals a null complete, and machine reel tach phase B was on (CHK 20).
- A machine reel null error was sensed during a load, or a machine reel tach phase A failure occurred (CHK 23).

Error Condition Theory

Note: See EAD 146 for test points.

After the thread/load operation starts, the microprocessor attempts to move the machine reel to a null position to receive the leader block. The movement to the null position is done by sending current to the machine reel motor until the machine reel tach A signal changes from a down logic level to an up logic level or from an up logic level to a down logic level. If the movement to the null position fails to cause the tach A signal to change in a specified time, the microprocessor stops the loading process and signals CHK 20 or CHK 23.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU081) tachometer sensor cable
2. (FRU073) logic board to power amplifier J1 cable
3. (FRU049) drive cable logic to the power amplifier board J2 (CHK 20)
4. Source voltages at the input to the FRUs on this EAD
5. Cables, connectors, and nets between the FRUs on this EAD
6. (FRU058) drive logic board O2A-A1

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostic and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. For a continuous error do steps 5 and 6. For intermittent errors, start at step 7.
5. Measure '+ machine reel tach phase A' at point **A** looking for a change from 0 volts to 5 volts as you manually turn the machine reel hub. If the voltages are not correct at point **A**, trace the voltage back to the machine reel tach A sensor (FRU225) to correct the problem.
6. Check for 1.5 volts at points **C** and **D**. If the voltage is not correct at point **C** or **D**, trace the voltage back to the drive control card (FRU085*) to correct the problem.
7. Attach the MD to the control unit.
 - a. Select option 1 (Subsystem Diagnostics).
 - b. Select option 3 (Drive Command Exerciser).
 - c. Select the DSE (Data Security Erase) and REW (Rewind) commands.

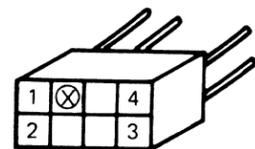
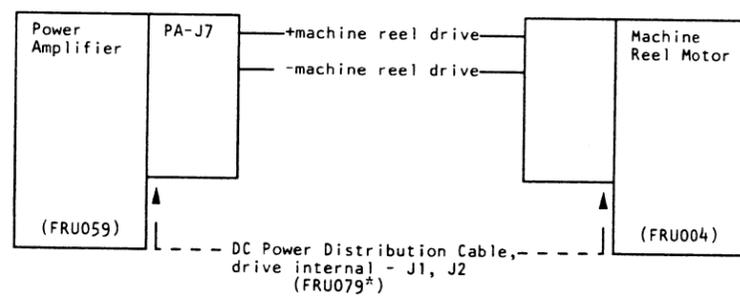
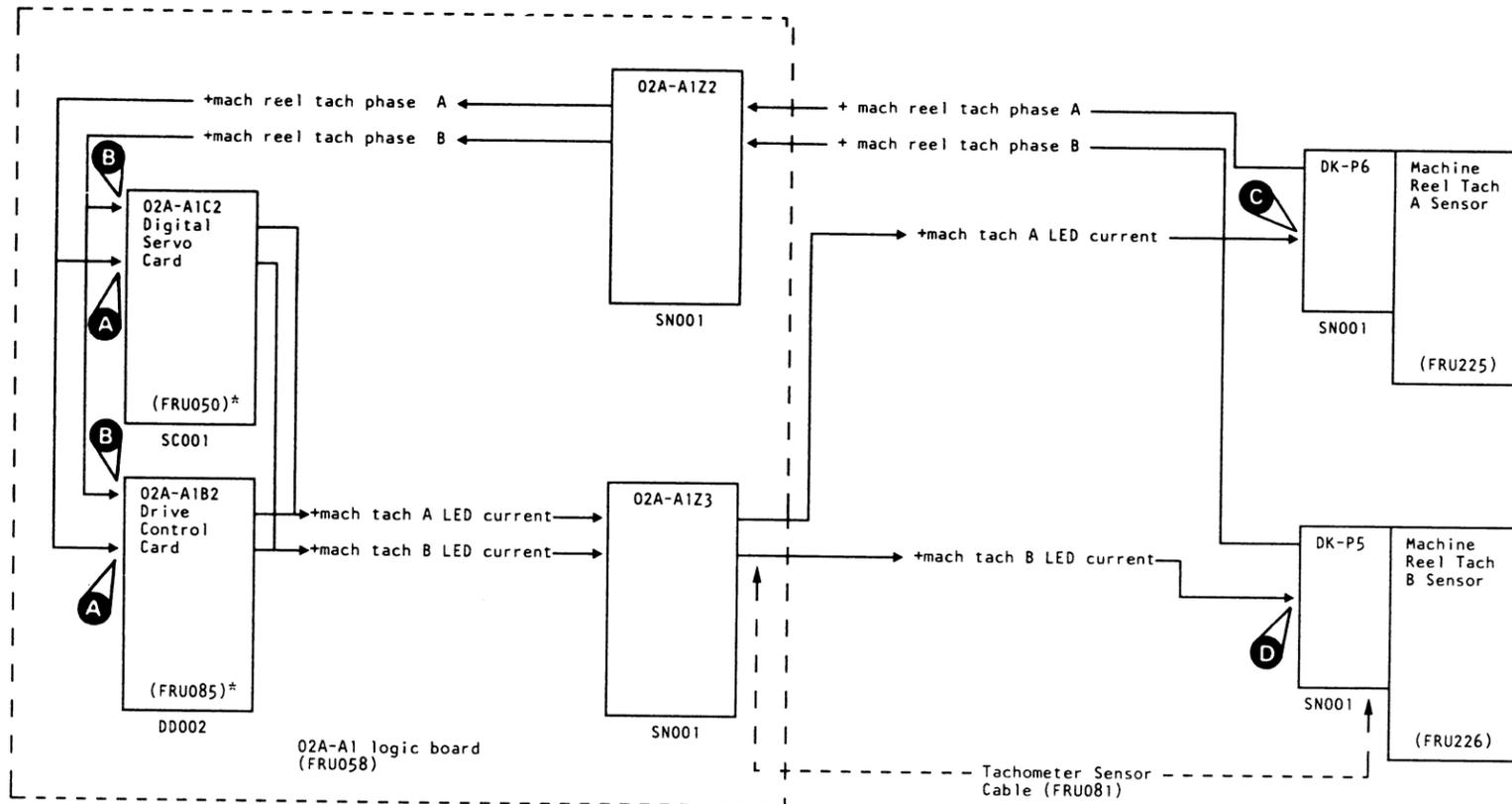
8. Sync the oscilloscope plus internal with 5 volts/division vertical deflection and 10 milliseconds/division horizontal deflection. Display **A** on channel 1 and **B** on channel 2. Look for phase A to differ from phase B by 90 degrees. (See the timing charts in the Error Diagram.) The change from lighted to dark should be from 0 volts to 5 volts.
9. Physically check the machine reel flange for cracks or other damage.
10. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
11. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

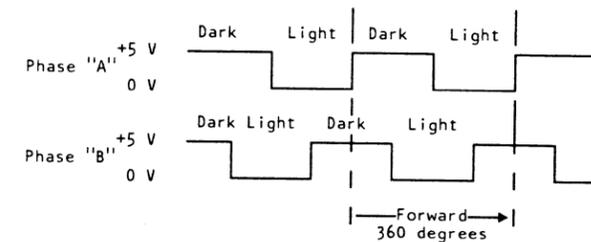
STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
3	CARR-DR 1-1	FRU removal and replacement
5,9	LOC 1	Location of machine reel and flange
7	DIAG 1	How to use Drive Command Exerciser
7	MD 1	How to use the MD with the 3480

Error Diagram

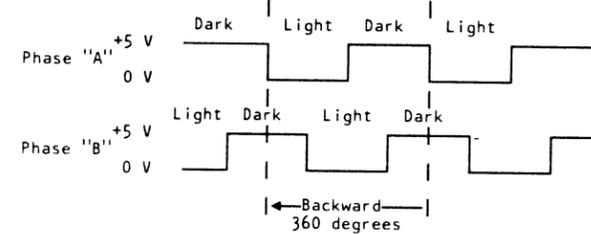
* This FRU is EC sensitive.
See CARR-DR 4.



Plug DK-P5 and P6 (Pin Side)



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.



Error Description

The thread mechanism is slow or stalled during load.

Error Condition Theory

Note: See EAD 151 for test points.

When the threader assembly pulls the tape from the cartridge, the digital servo card monitors the '+ file reel tach phase A' and '+ file reel tach phase B' lines until tape path sensor B goes dark (tape leader block is at the machine reel). The power amplifier board applies a small reverse bias to the file reel motor through the '+ file motor drive' and '- file motor drive' lines to maintain tension on the tape. If the file reel tach pulses do not occur at the correct intervals:

- The thread operation stops.
- The file reel motor winds the tape into the cartridge (unload operation).
- The thread operation restarts.

If the file reel tach pulses still do not occur at the correct intervals during the first retry, the operation stops and the drive displays CHK 21.

Note: If the file reel tach phase pulses do not occur at the correct intervals during the unload operation for the retry, the operation stops and the drive displays CHK 25.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. Source voltages at the input to the FRUs on this EAD
2. Cables, connectors, and nets between FRUs on this EAD
3. (FRU058) logic board 02A-A1

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.

2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

3. Turn the file reel motor by hand and check for binds.
4. Remove the cartridge and close the cartridge latch assembly on drives without the automatic cartridge loaders or remove the cartridge and then turn the knurled knob on the load assembly motor counterclockwise until the knob stops. This releases the threader pin from the interlock. Move the threader by hand and check for binds.

Move the threader arm clockwise to move the threader pin into the receiver, then turn the knurled knob clockwise until it stops turning freely. This opens the cartridge loader assembly and interlocks the threader pin.

5. Check the tape path for any contamination that can cause excessive tape drag.
6. Connect the oscilloscope with channel 1 on point **D** and channel 2 on point **C**. Perform a load operation and check that point **D** ('- thread motor forward') goes to 0 volts and point **C** ('- thread motor backward') remains at +5 volts while the tape is threading. If a retry occurs, check that point **C** goes to 0 volts and point **D** goes to +5 volts when the tape is winding back into the tape cartridge.
7. Connect the oscilloscope to points **A** and **B** and turn the file reel motor by hand. Both points should change between +5 volts and 0 volts as the file reel motor is turned.

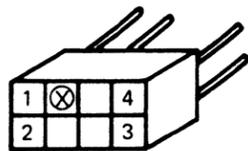
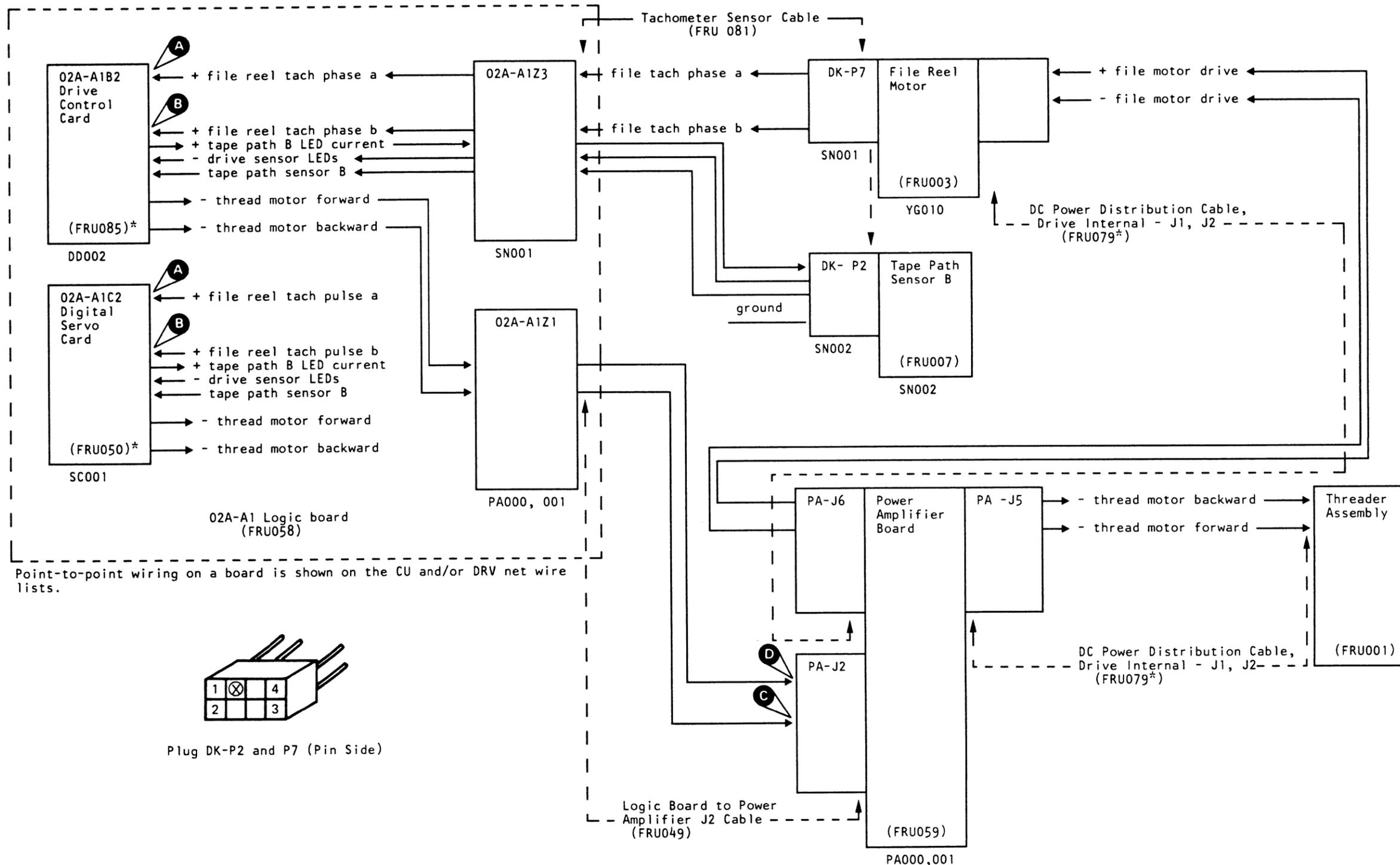
8. Check the file reel motor (FRU003) and threader assembly (FRU001) circuitry for short circuits or open circuits from the power amplifier board (FRU059).
9. Check for loose connections and pins pushed back at all connectors referred to by the error diagram.
10. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
11. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
3, 4	LOC 1	Location of file reel motor and of threader assembly
10	MD 1	How to use the MD with the 3480

Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.



Plug DK-P2 and P7 (Pin Side)

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

The threading mechanism was not at the cartridge home position during cartridge load.

Error Condition Theory

Note: See EAD 156 for test points.

After the cartridge latch is closed, on drives without the automatic cartridge loaders, or on drives with the automatic cartridge loaders the load assembly moves down to the latched position, and before the tape is loaded, the drive checks the threading mechanism to verify that it is at the home position.

This check verifies that '+tape path sensor A' (A) is at an up logic level (dark status). If (A) is at a down logic level (lighted status) during a cartridge load attempt, CHK 22 is set.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU079*) dc power distribution cable, drive internal - J1, J2
2. (FRU081) tachometer sensor cable
3. (FRU049) logic board to power amplifier J2 cable
4. Source voltages at the input to the FRUs on this EAD
5. Cables, connectors, and nets between FRUs on this EAD
6. (FRU058) 02A-A1 logic board

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.

3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Check visually to see if the threading mechanism is at the cartridge home position (flag on threader arm is located in tape path sensor A). If the threading mechanism is in the home position, go to step 5. If the threading mechanism is *not* in the home position:

- a. Manually move the threader arm to the home position.
- b. Reset the drive.
- c. Insert and load a scratch cartridge.

If the same check code returns, continue with step 5. If a different check code appears, go to the EAD for that check code.

5. Check the adjustment of FRU006. The open end of the LED should be even with the mounting bracket. Also check the flag on the threader arm to ensure that it is not bent or broken and that it is fully seated in FRU006.

6. Check for an up logic level at point (A). If (A) is at an up logic level, the problem is in the area of FRU058 or FRU085*.

7. If (A) is at a down logic level, check for a short circuit between '+tape path sensor A' and ground in FRU006, FRU081, or FRU058.

8. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

9. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

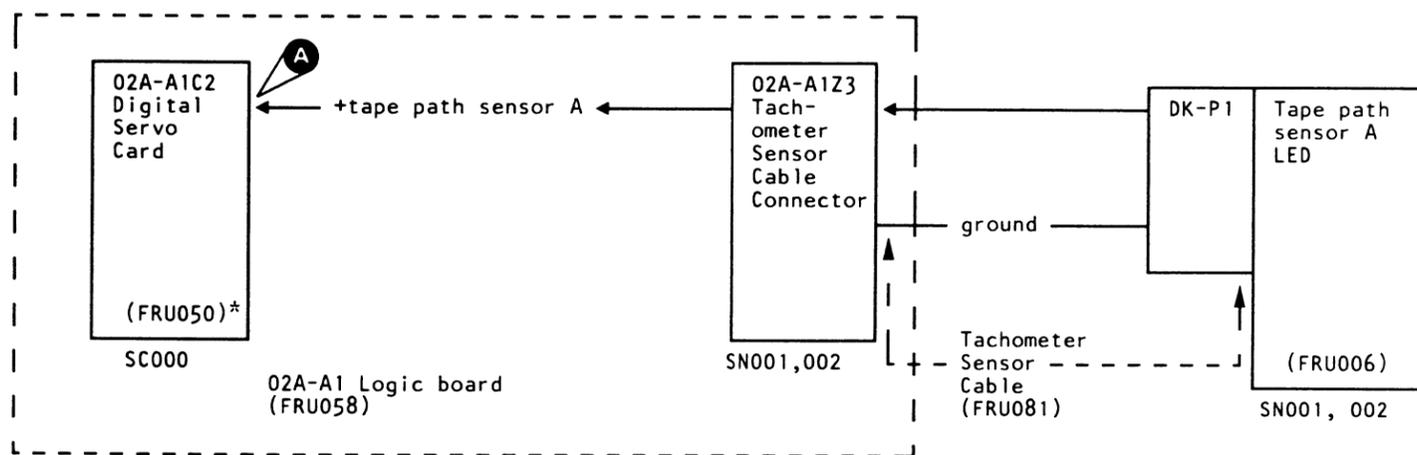
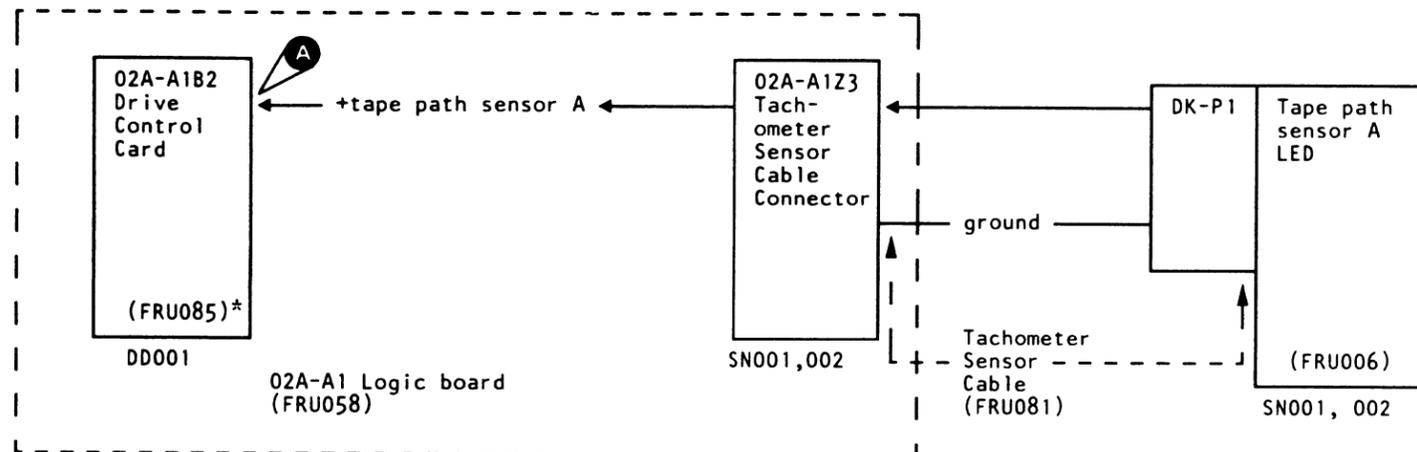
References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4	CART 13	Step 5 for moving the arm to the home position
5,6,7	CARR-DR 1-1	Removals, replacements, and adjustments
8	MD 1	How to use the MD with the 3480



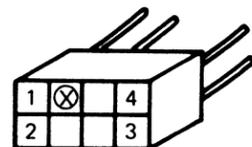
Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

NOTE: Point A Light: +0.4 V
Dark: +5.0 V



Plug DK-P1 (Pin Side)

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

A machine reel null error was sensed during an unload operation.

Error Condition Theory

Note: See EAD 166 for test points.

During an unload sequence after beginning of tape (BOT) is detected, the microcode attempts to null the machine reel. This is done by applying current to the machine reel motor and detecting a change in machine reel tach sensor A. Then the current is reversed and tach sensor A is monitored for a change back. This is done five times. A timer is set for a timeout condition which will cause a CHK 24 to occur.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU079*) dc power distribution cable, drive internal - J1, J2
2. (FRU081) tachometer sensor cable
3. (FRU073) drive cable logic to power amplifier J1
4. Source voltages at the input to the FRUs on this EAD
5. Cables, connectors, and nets between FRUs on this EAD
6. (FRU058) drive logic board O2A-A1

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.

3. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostic and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

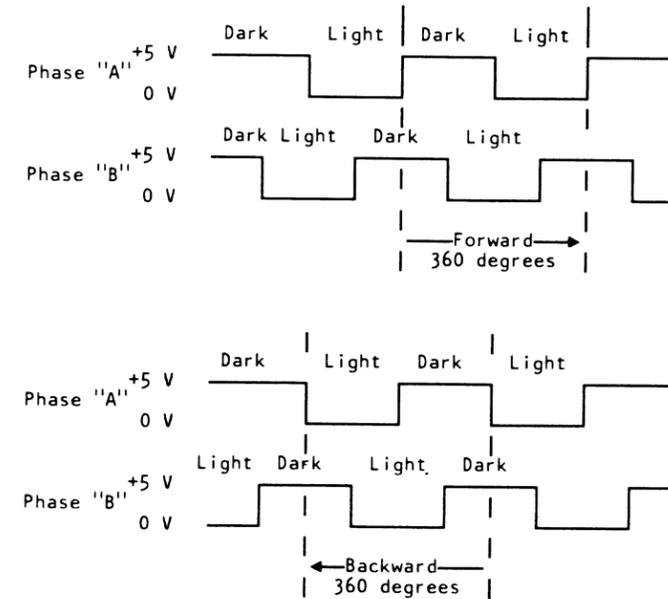
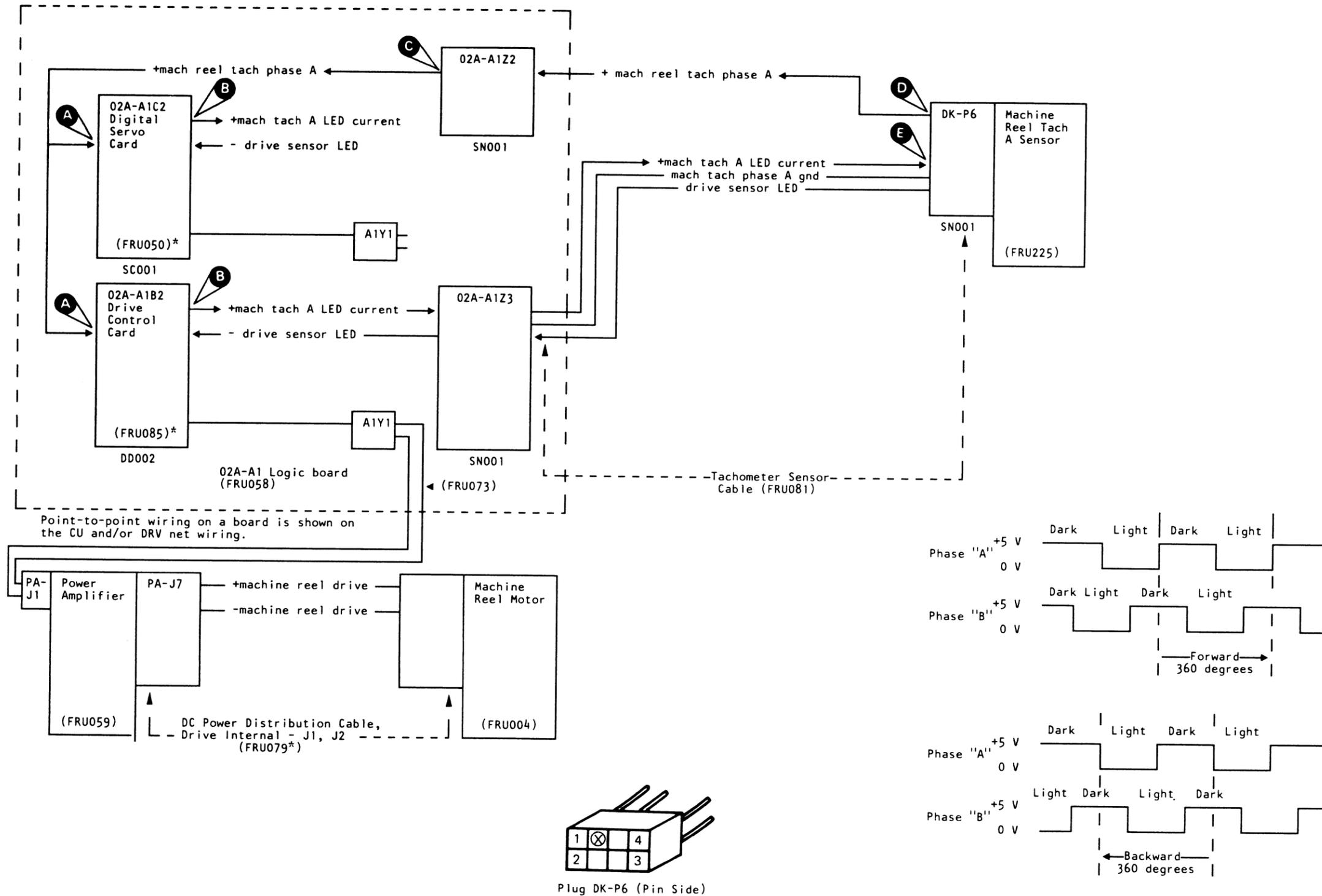
4. Scope lines **A**, **C** and **D** looking for 0 to 5 volt changes as you turn the machine reel hub by hand.
5. Check for 1.5 volts at **B** and **E**.
6. Physically check the machine reel flange for cracks or other damage.
7. Check the machine reel motor circuitry (FRU004) and the cables (FRUs 079* and 073) for short circuits or open circuits from the power amplifier board (FRU059).
8. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
9. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
6,7	CARR-DR 1-1	Removal and replacement procedures
4,7	LOC 1	Location of machine reel
8	MD 1	How to use the MD with the 3480

Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.



0 0 0 0 0 0 0 0 0 0 0

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

The threading mechanism is slow or stopped during an unload operation, or the leader block was not attached to the threader pin on a load operation and the drive tried to put the leader block back during a load retry.

Error Condition Theory

Note: See EADs 171 and 172 for test points.

The unload sequence starts with the tape under tension, at the beginning of tape, and with the rewind-unload status active. When the tape reaches the last-wrap null point, the tape leader block and the threader assembly threader pin are pulled out from the machine reel enough to cause tape path sensor B to become lighted. This causes control to pass to the unthread routine.

When the null position is reached, the thread motor is driven in the backward direction with an increased bias on the file reel motor. The threading assembly movement is checked by timing the tach 2 rate until tape path sensor A is blocked. If the threading assembly is slow or stopped, a time-out occurs and CHK 25 is set.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU049) drive logic cable to power amplifier J2
2. (FRU079*) dc power distribution cable, drive internal - J1, J2
3. (FRU081) tachometer sensor cable
4. Source voltages at the input to the FRUs on this EAD
5. Cables, connectors, and nets between FRUs on this EAD
6. (FRU058) logic board O2A-A1

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostic and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. For a solid error, start at step 5; for an intermittent error, start at step 6.

Note: Scope points for steps 5-8 are on EAD 171.

5. Scope line **B** looking for a change from 0 volts to +5 volts while you manually turn the file reel motor.
6. Scope points **C** and **D** while an unload operation is running. Look for point **C** to pulse from +5 volts to 0 volts and for point **D** to remain at +5 volts.
7. Connect the MD to the control unit, insert the support diskette, select option 1 (Subsystem Diagnostics), then select option 3 (Drive Command Exerciser). Select the commands DSE (Data Security Erase) and REW (Rewind).
8. Sync the oscilloscope plus internal with the settings at 5 volts/division vertical and 0.1 millisecond/division horizontal. Display point **A** on channel 1 and point **B** on channel 2. Look for phase A to differ from phase B by 90 degrees. (See the Phase Diagram of the error diagram.) The change from lighted to dark should be from 0 volts to +5 volts.

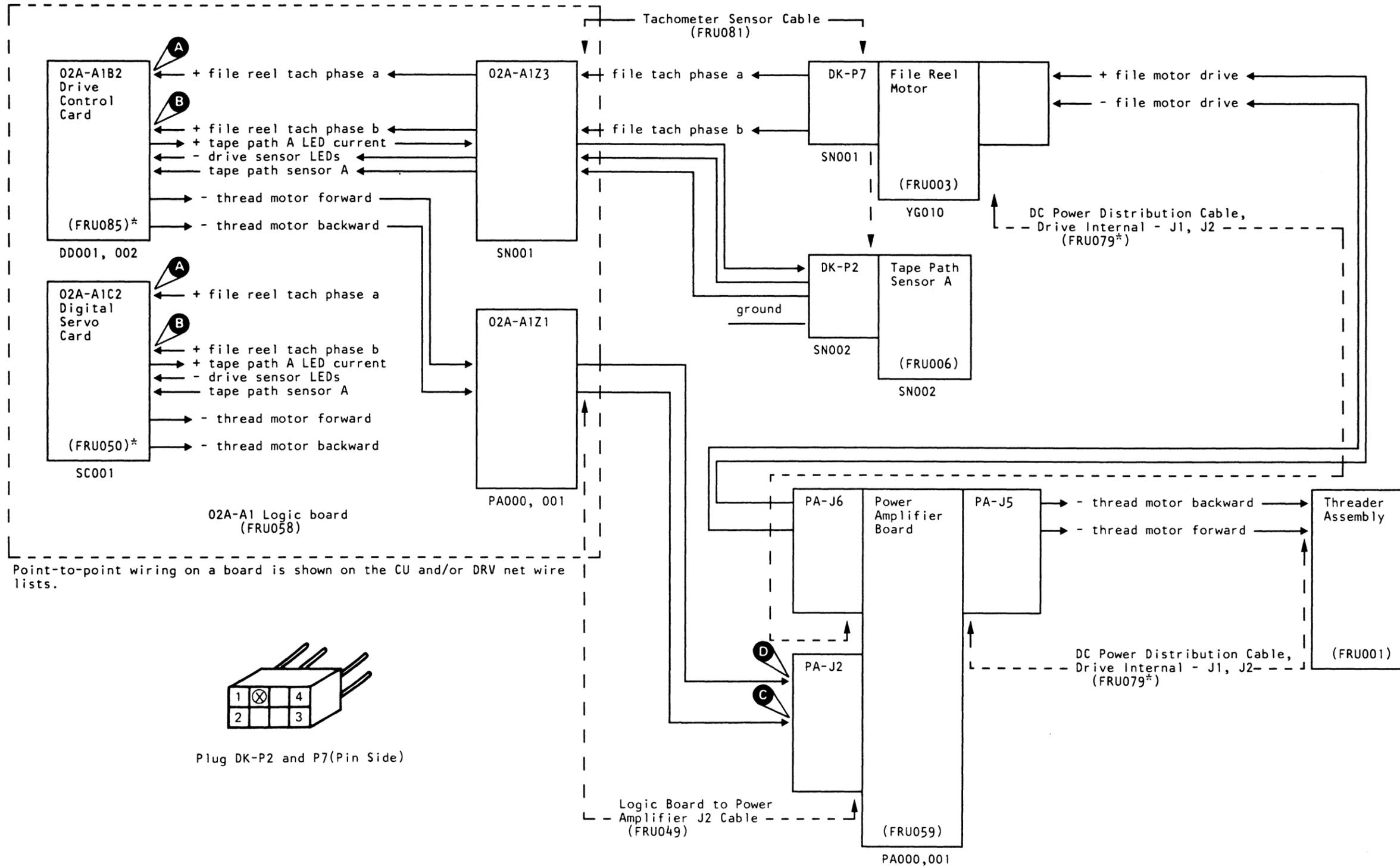
9. Check the file reel motor (FRU003) and the threader assembly (FRU001) circuits for short circuits or open circuits from the power amplifier board (FRU059).
10. Check for loose connections at all connectors shown in the error diagram.
11. Check for binds in the threader assembly mechanism (FRU001).
12. Connect the oscilloscope to point **E** and point **F** (diagram 3 on EAD 172). Observe both lines while an unload operation runs. **E** should remain at +1.6 volts to +2.2 volts at all times. **F** should be at 0 volts until the flange enters tape path sensor A, then it should change to +5 volts.
13. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
14. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
3	CARR-DR 1-1	Removal and replacement procedures
5,10	LOC 1	File reel and threader location
7	DIAG 1	Drive Command Exerciser
7,13	MD 1	How to use the MD with the 3480

ERROR DIAGRAM

* This FRU is EC sensitive.
See CARR-DR 4.



Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.

Diagram 2

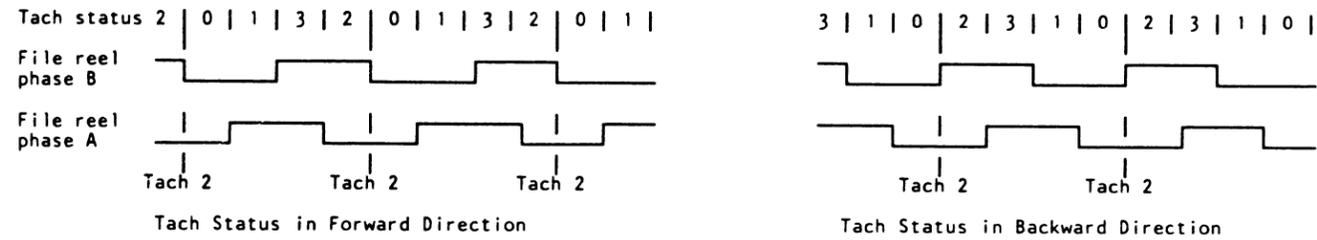
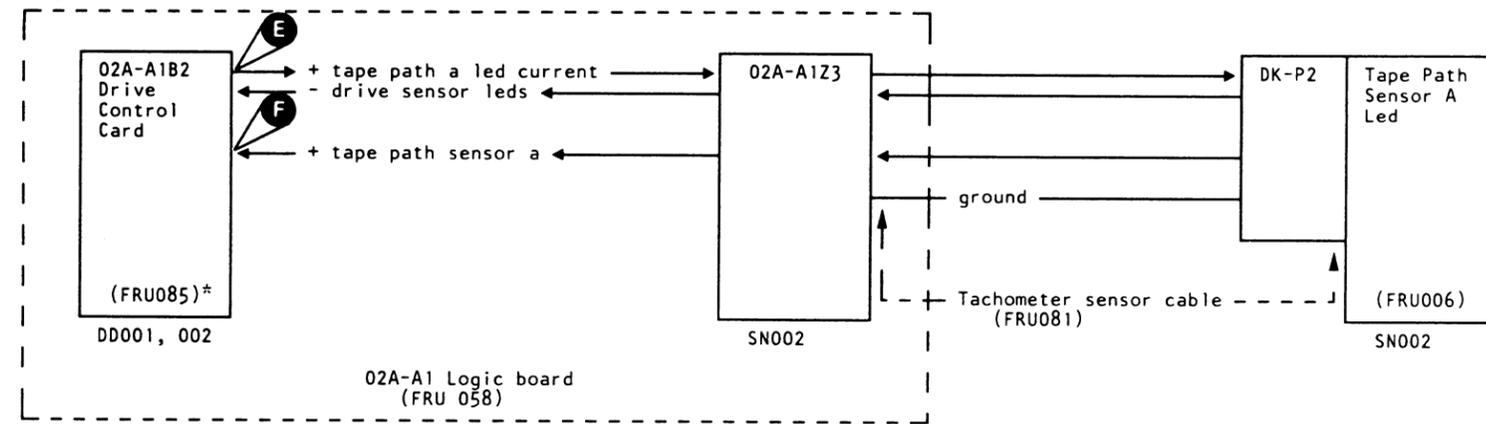
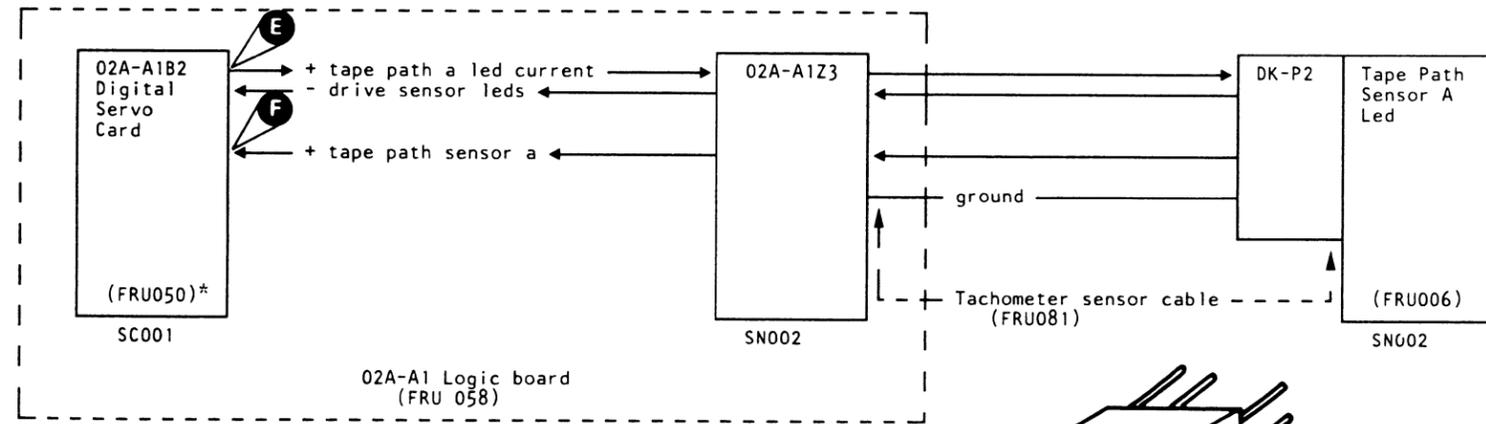


Diagram 3

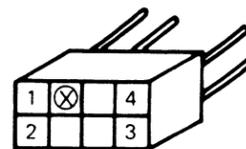


Point-to-point on a board is shown on the CU and/or DRV net wire lists.

Diagram 3



Point-to-point on a board is shown on the CU and/or DRV net wire lists.



Plug DK-P2 (Pin Side)

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

The cartridge tray latch failed to release.

Error Condition Theory

Note: See EAD 176 for test points.

When the threader arm reaches tape path sensor A during a rewind and unload operation (signaling the cartridge home position), the digital servo card releases the cartridge latch assembly on drives without the automatic cartridge loaders, or signals the automatic cartridge loader to move the load assembly to the up position by activating '- cartridge latched' to the latch assembly on drives without the automatic cartridge loaders, or to the loader control card on drives with the automatic cartridge loaders.

When the latch opens, or the load assembly moves to the up position, the flag is removed from the cartridge latched sensor, and '+ cartridge latched' changes to a down logic level, signaling that the tray has released (the load assembly has moved to its up position). If the tray fails to release (the load assembly does not move to the upper position on drives with the automatic cartridge loaders), or if the sensor fails to detect the movement of the flag, CHK 26 is set.

CHK 26 is also set if the drive has no automatic cartridge loader feature or does not know the feature is installed (early in the power on cycle). If the drive knows the automatic cartridge loader feature is installed, CHK 31 is set.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. Source voltages at the input to the FRUs on this EAD.
2. Cables, connectors, and nets between FRUs on this EAD.
3. (FRU058) logic board O2A-A1.

In addition to the previously called FRUs, if an automatic cartridge loader is present the following items are also possible causes of the failure.

4. (FRU283) load motor.
5. Automatic cartridge loader cables and connectors.

Note: FRU011 and FRU081 are possible FRUs. When a false error condition occurs, the latch releases with a check 26 on the display

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. If the cartridge tray latch is failing to release on drives without the automatic cartridge loaders, or the load assembly fails to move to the up position on drives with the automatic cartridge loaders, go to step 7.

If the cartridge tray latch releases on drives with the automatic cartridge loaders, or the load assembly does move to the up position on drives with the automatic cartridge loaders go to step 5.

5. Check point **A** for +1.4 volts to +2.2 volts. If the voltage is correct, go to step 6. If the voltage is more than +2.2 volts, check for an open circuit between points **A** and **B**. (Note that there is a diode in the circuit. If the meter shows an open circuit, reverse the meter leads to verify that the circuit is really open.) If the voltage at **A** is less than +1.4 volts, check for a short circuit between **A** and ground. If no problem can be found, the failure is in the area of FRUs 058 or 085*.

6. With the cartridge unlatched on drives without the automatic cartridge loaders, or the load assembly in the up position on drives with the automatic cartridge loaders, check point **C** for a down logic level. If **C** is at an up logic level, check for an open circuit between points **C** and **D** or points **E** and **F**. If there is no open circuit, the failing area is FRU058 or FRU085*.

7. On drives with the automatic cartridge loaders go to step 8. On drives without the automatic cartridge loaders follow this procedure only if the cartridge latch assembly failed to release the cartridge tray.

Connect an oscilloscope to point **G**. Reset the drive and load a scratch cartridge. Press the Unload switch.

After the cartridge unthreads, check for a down logic level pulse. If no pulse occurs, the problem is in the area of FRU058 or FRU085*. If the pulse occurs, check for an open circuit in the solenoid circuit by:

- a. Disconnect PA-P4 from FRU059.
- b. Measure the resistance from P4-1 to P4-2.

If the circuit is not open, the failure is in the area of FRUs 059, 049, or 058.

8. On drives with the automatic cartridge loaders check to see if the loader assembly moved up to the unlocked position. If the loader assembly did move up, then the problem is in the cartridge latch sensor assembly FRU011, loader control card FRU281, or the loader mechanical assembly FRU285.

If the loader assembly did not move up to the unlocked position, then the problem is in the load assembly FRU282 (motor and mechanical parts), the loader control card FRU281, or in the loader mechanical assembly FRU285 (for cables and connectors to the load assembly).

9. If the threader is still near the machine reel, the tape path sensor A **H** should be light (0 volts). If it is dark (+5 volts), the problem is in the area of FRUs 006, 085*, and 081.

10. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:

- Perform any additional actions.

- If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

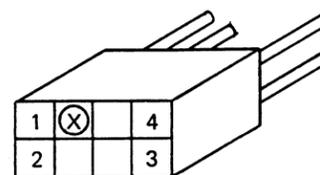
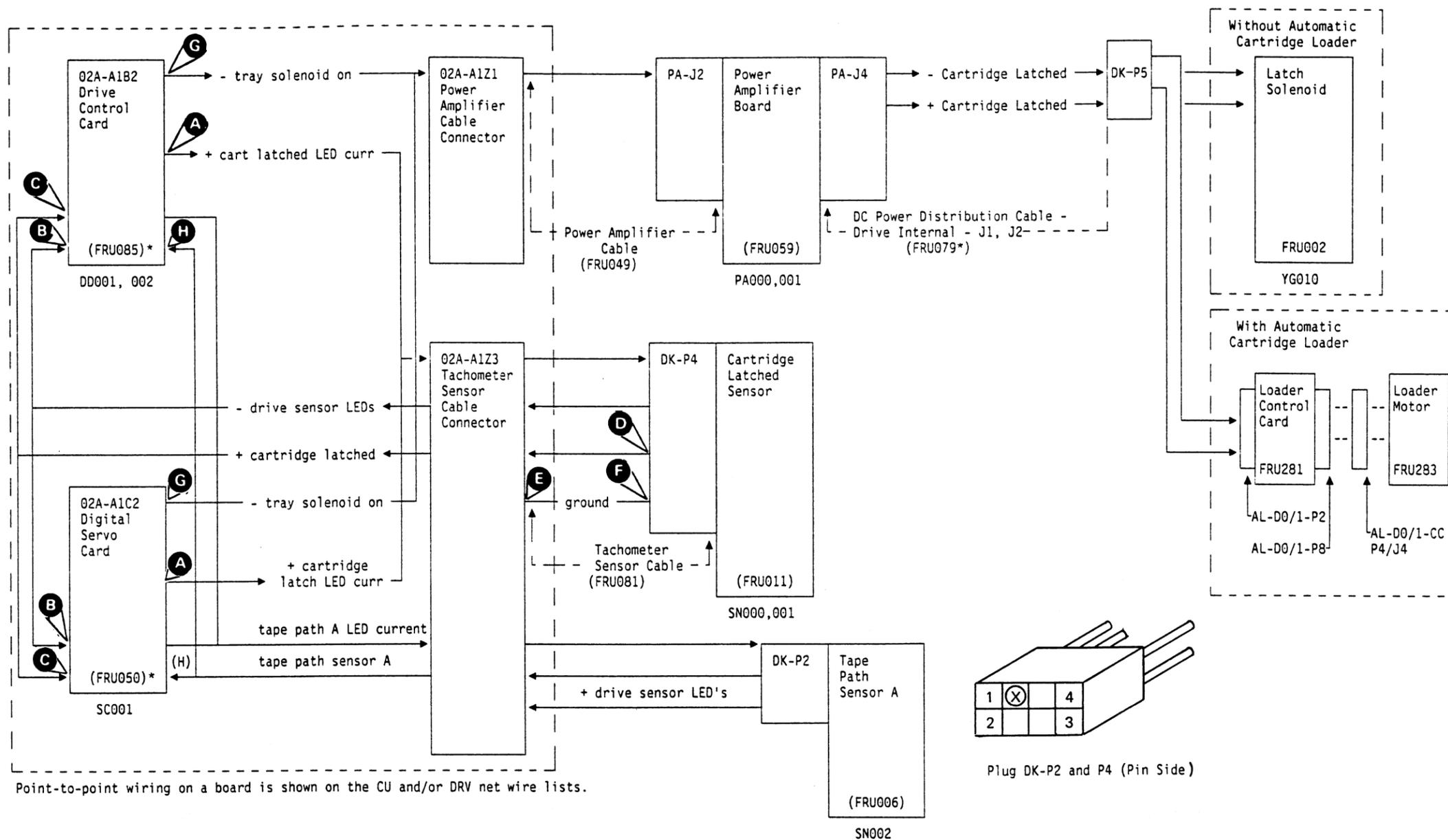
11. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
5,6,7,8,9	CARR-DR 1-1	Removal and replacement procedures
7	PANEL 1	How to operate the tape unit
7	LOC 1	Location of FRU059
7	CARR-DR 1-1	How to lower FRU059 to service position
10	MD 1	How to use the MD with the 3480

Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.



Plug DK-P2 and P4 (Pin Side)

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

An unexpected interrupt occurred at tape path sensor B (FRU007) during an unload operation or the machine reel sensor B (FRU226) is on unexpectedly during an unload operation.

Error Condition Theory

Note: See EAD 181 for test points.

During a rewind and unload operation, the tape reaches the last wrap null point and the tape leader block and the threader assembly tape carrier pin are withdrawn from the machine reel enough to cause an interrupt to tape path sensor B. The interrupt causes control to be passed to the unthread routine. An interrupt from tape path sensor B before this time sets CHK 27.

When the machine reel reaches the last-wrap null point, sensor B is checked, if it is on, a CHK 27 is set. A CHK 27 cannot be repeated, because of the unique timing considerations. The failing FRU or FRUs should cause other CHK Codes and these codes should be pursued (CHK 20 or OE for example).

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU079*) dc power distribution cable, drive internal - J1, J2
2. (FRU081) tach sensor cable
3. (FRU073) drive cable logic to power amp J1
4. (FRU049) drive cable logic to power amp J2
5. Source voltages at the input to the FRUs on this EAD
6. Cables, connectors, and nets between FRUs on this EAD

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Check machine reel tach sensor B (FRU226) output **B**, rotate the machine reel by hand; the signal should switch from +5 volts to 0 volts.
5. While the tape drive is unloading and prior to unthread, check the voltages at FRU007 output point **A**. With the sensor covered the output should be at approximately +5.0 volts, if uncovered the output will be approximately +0.5 volts.
6. Check the adjustments of machine reel sensors B (FRU226) and A (FRU225). For this check code sensor A is suspected intermittent.
7. Check the adjustment of tape path sensor B (FRU007).
8. Check the flag on the threader assembly to see if it is bent or broken. Check the flange on the machine reel hub.
9. Check FRU001 for a bent threader assembly tape carrier pin. A bent pin could cause the flag to move out of tape path sensor B while unloading.

10. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

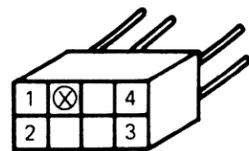
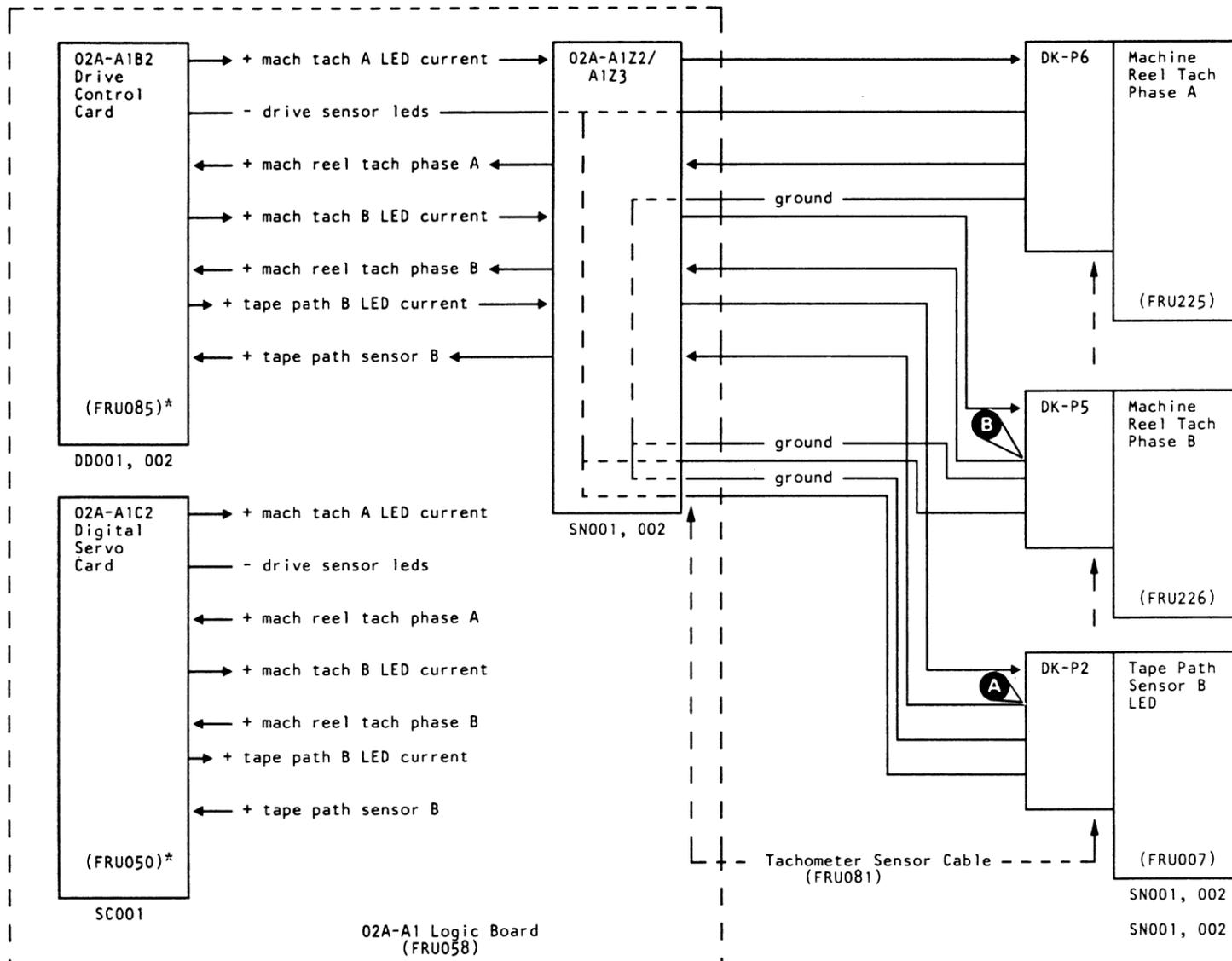
11. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4,6,9	LOC 1	Location of FRUs
7,8	CARR-DR 1-1	Tape path sensor B and machine reel A and B sensor adjustments
10	MD 1	How to use the MD with the 3480

Error Diagram 1

* This FRU is EC sensitive.
See CARR-DR 4.



DK-P2, P5, P6 (pin side)

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

The tape leader block is not attached to the carrier pin, or the tape is broken, which causes the file reel to turn in reverse during a thread operation.

Error Condition Theory

Note: See EAD 186 for test points.

A thread operation is started by driving the thread motor in the forward direction. The tape carrier pin engages the leader block on the tape, and the tape starts through the tape path. At the same time, a reverse bias is supplied to the file reel motor to keep tension on the tape during the thread operation. If the tape is broken or the carrier pin does not engage the leader block, the reverse bias causes the file reel motor to turn in reverse. The backward movement causes CHK 28 to be set.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU081) tachometer sensor cable
2. (FRU079*) dc power distribution cable, drive internal - J1, J2
3. Source voltages at the input to the FRUs on this EAD
4. Cables, connectors, and nets between FRUs on this EAD
5. (FRU058) logic board 02A-A1

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.

3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Connect an oscilloscope with channel 1 on point **A** and channel 2 on point **B**.
5. On drives without the automatic cartridge loaders reach through the front of the latch and slowly turn the file reel motor while doing the check in step 7.
6. On drives with the automatic cartridge loaders use the tape removal tool (see PLAN 1) on the socket wrench handle. From the bottom of the drive, slide the tape removal tool through the slot in the air baffle and onto the file reel motor shaft. Slowly turn the file reel motor while doing the check in step 7.
7. Check to ensure that both lines are changing between +0.4 volts and +5.0 volts. If either line fails to change to +0.4 volts, check for an open circuit between points **A** and **C** or points **B** and **D** for that sensor.

If both lines fail to change to +0.4 volts, check for an open circuit in **E**. If either line fails to change to +5 volts, check that line for a short circuit to ground. If both phases are working, go to step 8.

8. This failure can be caused by the gear on the cartridge not engaging the gear on the file reel motor correctly. Poor engaging is caused by the height of either the latch assembly (on drives without the automatic cartridge loaders), the load assembly (on drives with the automatic cartridge loaders), or the file reel motor not being correct.

Compare the distance between the file reel motor gear and the latch assembly (on drives without the automatic cartridge loaders), or the file reel motor gear and the latch assembly (on drives with the automatic cartridge loaders), to the same distance on a drive that is working correctly. If the distance is not correct, exchange the FRUs as needed to obtain the correct distance.

9. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.

- If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

10. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

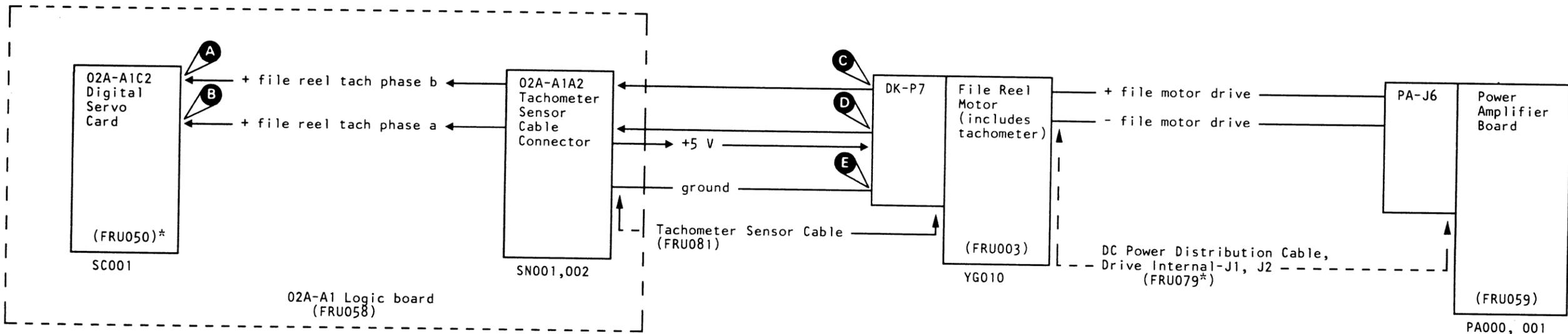
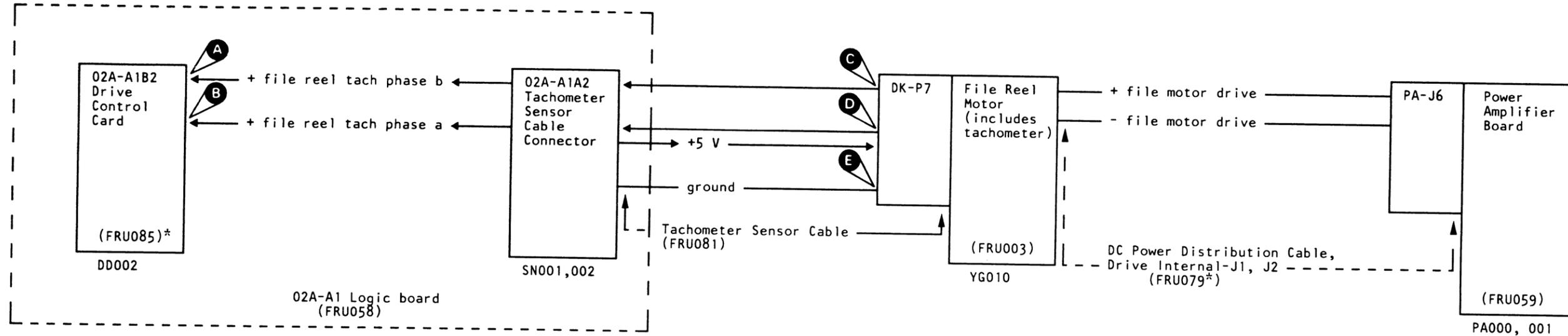
References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution Lists" in the Field Wire Net List in the Logic Diagrams.
4,5	LOC 1	Location of FRUs
4,5	CARR-DR 1-1	Removal and replacement procedures
6	MD 1	How to use the MD with the 3480

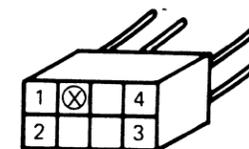
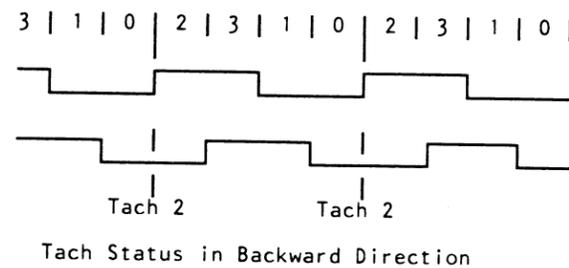
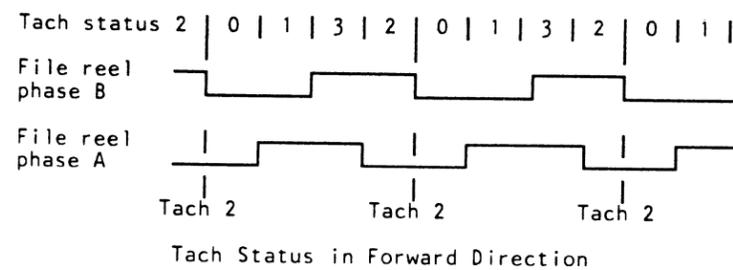


Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.



Plug DK-P7 (Pin Side)

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

An error was detected in attempting to reach the last wrap null point during unload.

Error Condition Theory

Note: See EAD 196 for test points.

When the tape is at the beginning of tape position and a rewind and unload sequence is started, the tape is moved backward toward the machine reel position for the leader block to leave the reel. The position for the leader block to leave the reel is known as the last wrap null point.

If too much tape drag causes the file reel digital-to-analog converter (DAC) to contain a value larger than an already determined value, CHK 2A is set.

The machine reel is tested for rotation in the correct direction during the rewind and unload sequence. If the machine reel turns in the wrong direction (forward), CHK 2A is set. The machine reel tach sensor B being on (dark) can cause this.

Tape path sensor B should go to an up level (lighted status) when the last wrap null point is reached. If tape path sensor B does not go up (+ 5.0 V), CHK 2A is set.

CHK 2A causes the drive to remove power from all motors and to display CHK 2A on the message display. CHK 2A is also stored in the sense bytes.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU079)* dc power distribution cable, drive internal - J1, J2
2. (FRU081) tachometer sensor cable
3. (FRU049) logic board to power amplifier J2 cable
4. (FRU058) logic board 02A-A1
5. Source voltages at the input to the FRUs on this EAD
6. Cables, connectors, and nets between the FRUs on this EAD.

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. Check tape path sensor B (FRU007) for dust or dirt that might be blocking the sensor.
4. Check the tape path for dirt or something else that might cause too much friction on the tape.
5. Check J5, J6, and J7 for loose connections to the power amplifier board.
6. Check that the machine reel, file reel, and threader assembly are not binding by moving them by hand. (If another drive is available, compare the amount of friction in a failing drive to the amount of friction in a drive that is operating correctly.)
7. Check the pressure and vacuum hoses for leaks.
8. Ensure that the pressure and vacuum measurements are correct.
9. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.
Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.
10. Scope point **A** during an unload operation. Ensure the cartridge that you use is in good mechanical condition; a cartridge that is jamming can cause a CHK 2A. **A** should remain between + 1.4 V and + 2.2 V at all times.
11. Scope point **B** during an unload operation. **B** should remain at + 5 V. If **B** pulses to ground (0 V), it will drive the thread motor forward and cause too much friction.

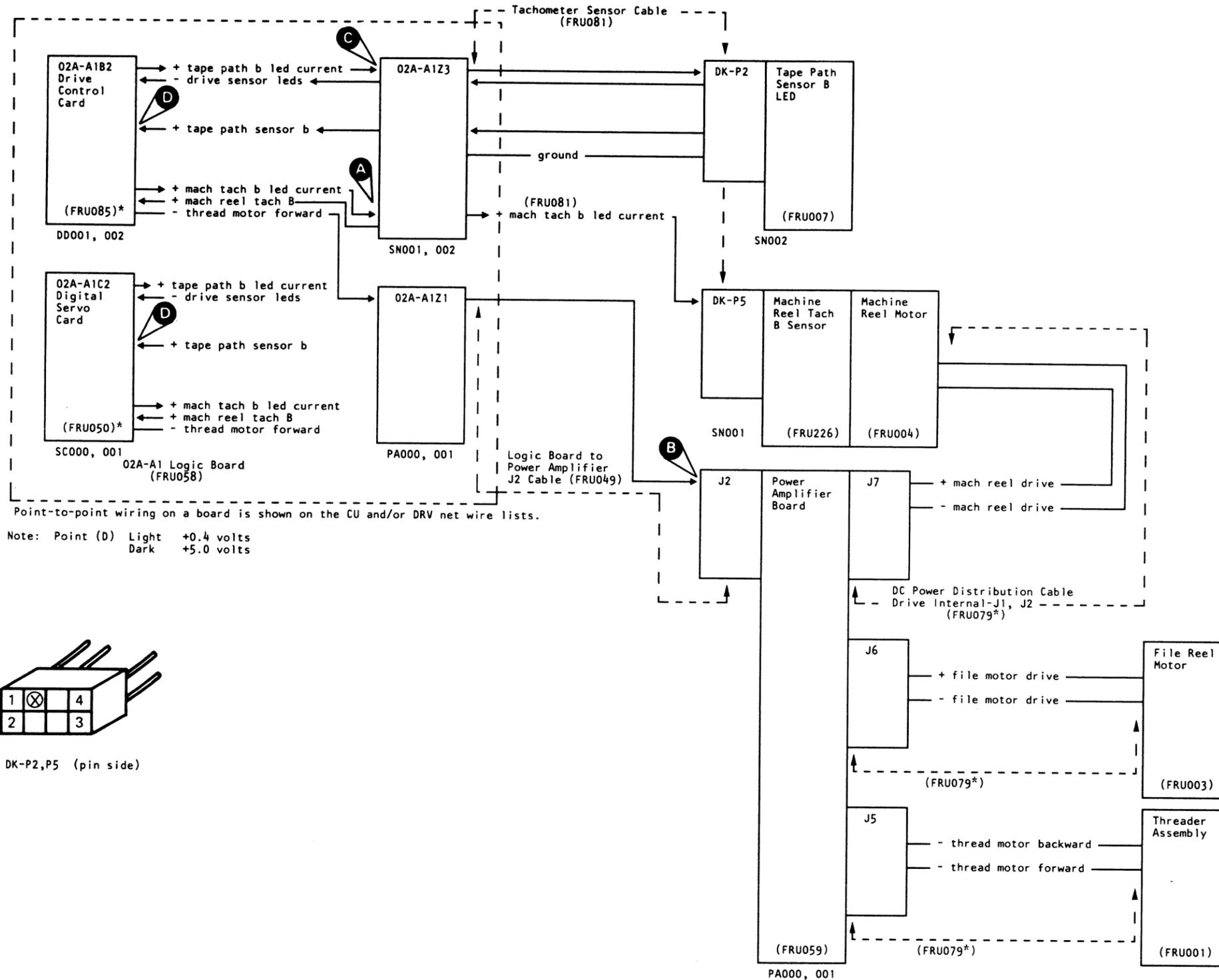
12. Connect the oscilloscope to points **C** and **D**. Observe both lines during an unload operation. **C** should remain at + 1.4 V to + 2.2 V at all times. **D** should remain at + 5 V until the flange leaves the tape path sensor B, then it should change to + 0.4 V.
13. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **call your next level of support** and then go to SPROC 1 "End of Call Actions."
14. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
1	CARR-DR 1-1	Removal and replacement procedures.
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4,6,9	LOC 1	Location of cables and connectors.
8	PNEU 1	Pressure and vacuum measurements.
13	MD 1	How to use the MD with the 3480.

Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.





Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

The servo hardware sensed a power amplifier failure.

Error Condition Theory

Note: See this page for test points.

The power amplifier board contains two driver/amplifier circuits to drive the reel motors (one for the file reel motor and one for the machine reel motor). The output current of each driver, along with being sent to the motors, is sent back to a checking circuit and compared to the control signal. If the current and the control signal do not match for either power driver/amplifier circuit, CHK 41 is set.

Additional Possible Causes of Failure

A tension transducer failure can cause CHK 41. A tension transducer failure or short in the cable can provide a -10 volt reference input to the power amp card. This causes the power amp to correct a severe tension condition, which will be detected by the power amp error line and a CHK 41 occurs.

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. Source voltages at the input to the FRUs on this EAD
2. Cables, connectors, and nets between FRUs on this EAD
3. (FRU058) logic board 02A-A1

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

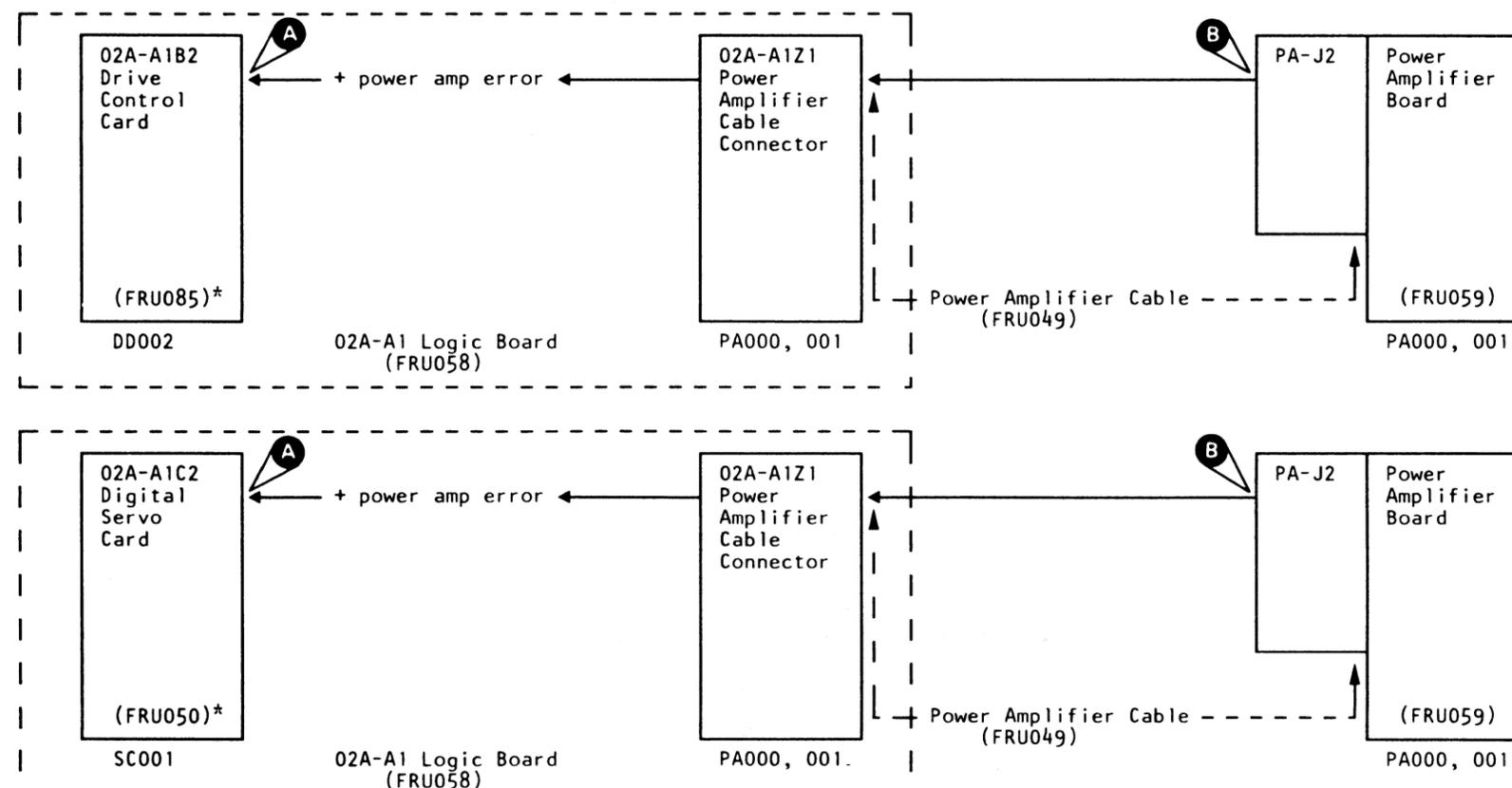
4. Check point **A** for a down logic level. If **A** is at a down logic level, the failure is in the area of FRU058 or FRU085*. If **A** is at an up logic level, check for an open circuit in FRU058 or FRU049 between points **A** and **B**.
5. If the failure still is not found, obtain the sense data and check for any associated error. Go to the EAD for that error.

6. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
7. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4	CARR-DR 1-1	Removal and replacement procedures
5	SENSE 1	Location of format 20 sense bytes 16-23 description
6	MD 1	How to use the MD with the 3480

ERROR DIAGRAM



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

The power amplifier board detected an open circuit in the file reel motor circuit, or the file reel motor was running with no load.

Error Condition Theory

Note: See EAD 216 for test points.

The power amplifier board contains a circuit that checks the output current of the power amplifier for the file reel motor. If the file reel motor circuit opens or the motor runs with no load, the power amplifier saturates and causes '+ file motor problem' to go active to the digital servo card. '+ file motor problem' causes CHK 42 to be set.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU049) power amplifier cable PA-J2 to O2A-A1Z1
2. (FRU079*) dc power distribution cable drive internal— J1, J2
3. (FRU080) dc power distribution cable—external to drive (inside tape unit)
4. (FRU081) tachometer sensor cable
5. Source voltages at the input to the FRUs on this EAD
6. Cables, connectors, and nets between FRUs on this EAD
7. (FRU058) logic board O2A-A1

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.

3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. If this error occurs on an unload operation only, go to step 8. Otherwise, continue with step 5.
5. Lower the power amplifier board and disconnect J6. Check for approximately 4 ohms from J6-1 **A** to J6-2 **B**. If the resistance is not correct, the failure is in the area between FRU003 and FRU079*.
6. Check for +24 volts at point **C**. If +24 volts is not present, the failure is in the area of FRU079* and FRU080.
7. Load a scratch cartridge. Check point **D** for a logic level that is down. If the logic level is down, the failure is in the area of FRU085* and its O2A-A1 logic board nets. If the logic level is up, check for an open circuit between points **D** and **E** or the problem is in the area of FRU059.
8. (NOTE: Perform steps 8 and 9 if the drive is failing on an unload operation only). Load a scratch cartridge and then press the Unload switch. Check that '- power amp enable' **G** changes to an up logic level after the unload operation is complete. If **G** does not go to an up logic level, the failure is in the area of FRU085* or check for a short circuit between point **G** and ground. If point **G** does go to an up logic level, go to step 9.
9. An intermittent short circuit between '+ file reel tach phase b' and ground can cause a CHK 27. Scope point **F** and verify that the signal does not intermittently go to 0 volts. The signal should switch between +0.4 volts and +5 volts as the file reel motor turns. If the signal is going to 0 volts, check for a short circuit to ground between **F** and FRU003.

10. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, *Call your next level of support* and then go to SPROC 1 "End of Call Actions."

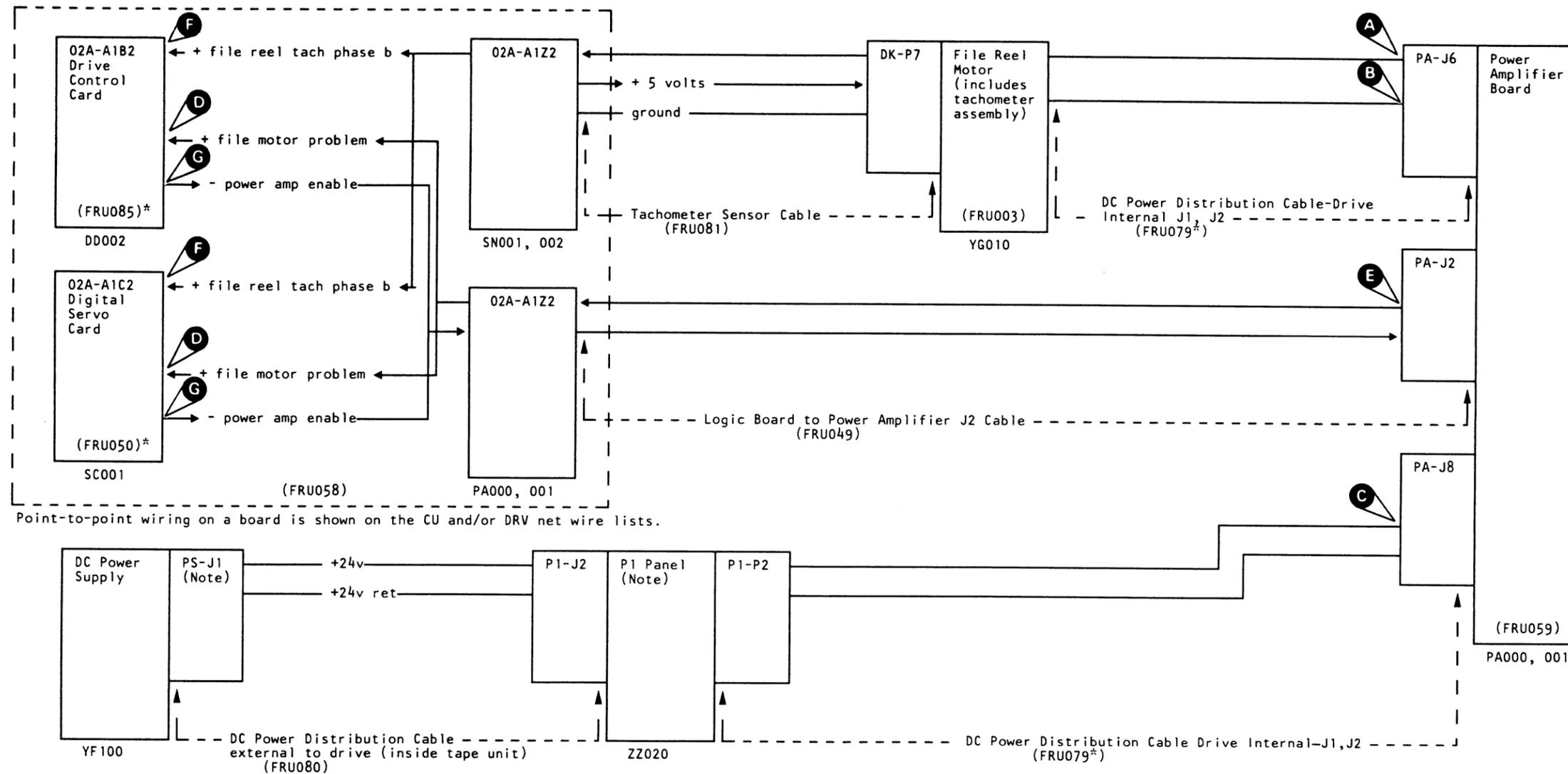
11. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, *Call your next level of support* and then go to SPROC 1 "End of Call Actions."

References

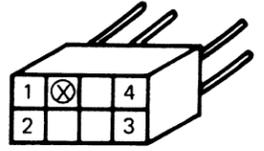
STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
5,6,7,9	LOC 1	Location of cables and connectors
5,6,7,9	CARR-DR 1-1	Removal and replacement procedures
8	PANEL 1	How to operate the tape unit
10	MD 1	How to use the MD with the 3480

Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.



Plug DK-P7 (Pin Side)

Note: The logic reference shown in the power area is for drive 0. Use the correct lines for a drive 1 failure.



Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

The power amplifier board detected an open circuit in the machine reel motor circuit, or the machine reel motor was running with no load.

Error Condition Theory

Note: See EADs 221 and 222 for test points.

The power amplifier board contains a circuit that checks the output current of the power amplifier for the machine reel motor. If the machine reel motor circuit opens or the motor runs with no load, the power amplifier saturates and causes '+ machine motor problem' **J** to go active to the digital servo card. '+ machine motor problem' causes CHK 43 to be set.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU081) tachometer sensor cable
2. (FRU049) power amplifier cable PA-J2 to O2A-A1Z1
3. (FRU073) power amplifier cable PA-J1 to O2A-A1Y1
4. (FRU079*) dc power distribution cable drive internal—J1,J2
5. (FRU080) dc power distribution cable—external to the drive (inside the tape unit)
6. (FRU005) flange
7. Source voltages at the input to the FRUs on this EAD
8. Cables, connectors, and nets between FRUs on this EAD
9. (FRU058) logic board O2A-A1

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.

3. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostics and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Lower the power amplifier board and disconnect J7. Check for approximately 4 ohms from J7-1 **A** to J7-2 **B**. If the resistance is not correct, the failure is in the area of the machine reel motor cable or FRU004.

5. With a cartridge inserted, check for +5 volts at point **C**. If **C** is correct, go to step 6. If **C** is at 0 volts to +0.4 volts, check to ensure that the flag is engaging the LED assembly correctly. If the flag and sensor are correct, check for a short circuit between point **C** and ground.

6. Check the voltage at **D** for each tach sensor. The voltage should be +1.4 volts to +2.2 volts. If **D** is more than +2.2 volts, check for an open circuit in the tachometer sensor cable between points **D** and **E**. (Note that there is a diode in the circuit.

If the meter shows an open circuit, reverse the meter leads to verify that there really is an open circuit.) If **D** is less than +1.4 volts, the problem is in FRU085*, or there is a short circuit between **D** and ground at the O2A-A1 logic board, in the tachometer sensor cable, or in FRUs 225 or 226.

If **D** is correct, go to step 7.

7. Manually rotate the machine reel motor and scope point **F** for each sensor (A and B). Check for a change from +0.4 volts to +5 volts when the LED changes from the lighted condition to the dark condition. If either fails to change to +5 volts, check for a short circuit between point **F** for that sensor and ground. If either fails to change to +0.4 volts, check for an open circuit between point **F** and point **G** for that sensor.

If no short or open circuits can be found and the voltage does not change correctly, the failure is in the area of FRU085* or the O2A-A1 logic board. If the sensors operate correctly, go to step 8.

8. Check test points **H** for a short circuit to ground. If either has a short circuit, the failure is in the area of power amplifier cable PA-J1 to O2A-A1, FRU059, or logic board O2A-A1. If there is no short circuit, go to step 10.

9. Check point **L** for an up logic level with the drive unloaded. If **L** is at a down logic level, the failure is in the area of FRU085* or logic board O2A-A1, or check for a short circuit to ground.

If **L** is correct, load a scratch cartridge. Check to see that **L** changes to a down logic level.

If **L** does not go to a down logic level, the failure is in the area of FRU085* or logic board O2A-A1.

If **L** operates correctly, go to step 10.

10. With the cartridge still loaded, check point **J** for a down logic level.

If **J** is at a down logic level, the failure is in the area of FRU085* or logic board O2A-A1. If **J** is at an up logic level, check for an open circuit between points **J** and **K** or the failure is in the area of FRU059.

11. Follow these procedures only for an intermittent failure.

Load a scratch cartridge and move the Ready/Not Ready switch to the Ready position. Insert the support diskette into the MD, select option 1 (Subsystem Diagnostics), then select option 3 (Drive Command Exerciser).

Enter commands Data Security Erase (DSE) and Rewind (REW). This procedure permits you to scope the sensors while the tape is moving.

12. Sync the oscilloscope plus internal with the settings 5 volts/division vertical and 10 milliseconds/division horizontal. Display phase A **F** on channel 1 and phase B **F** (see diagram 2) on channel 2. Look for phase A to differ from Phase B by 90 degrees (see diagram 3).

Also check for signals that are not regular on either phase. If either pulse is not regular, check for a broken or cracked flange (FRU005) or for the tachometer sensor cable not being seated correctly.

13. Verify that +24 volts is in tolerance at point **M** (see EAD 222). If +24 volts is out of tolerance, the failure is in the area of the dc distribution cables internal and external (inside the tape unit) to the drive.

14. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

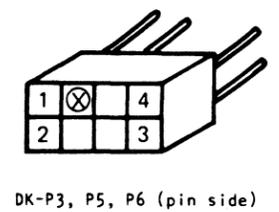
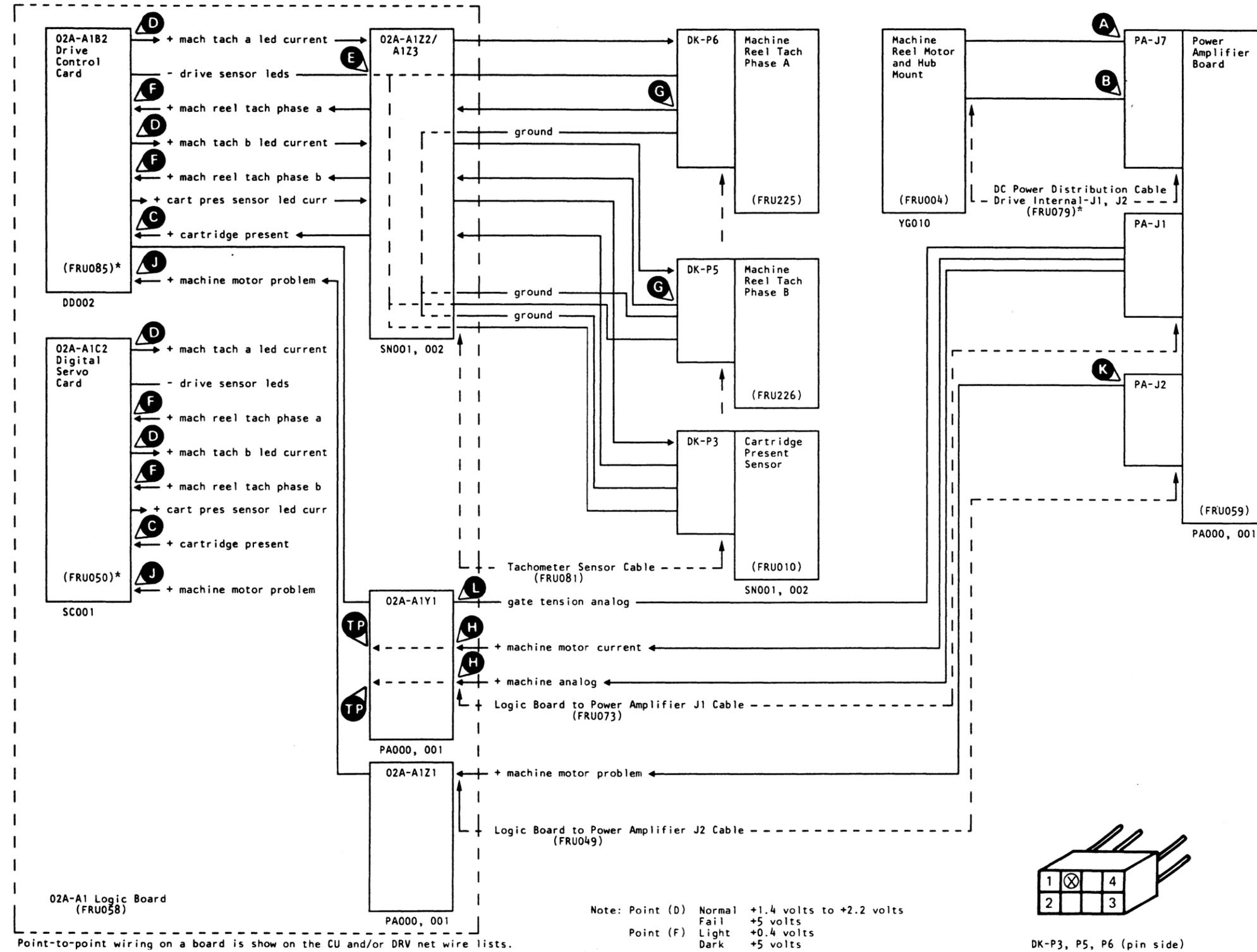
15. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4-10	LOC 1	Location of FRUs
4-10	CARR-DR 1-1	Removal and replacement procedures
9	PANEL 1	How to operate the tape Unit
11	DIAG 1	Drive Command Exerciser
12	CARR-DR 1-1	Removal and replacement procedures
13	PWR 1	Voltage tolerance page
11,14	MD 1	How to use the MD with the 3480

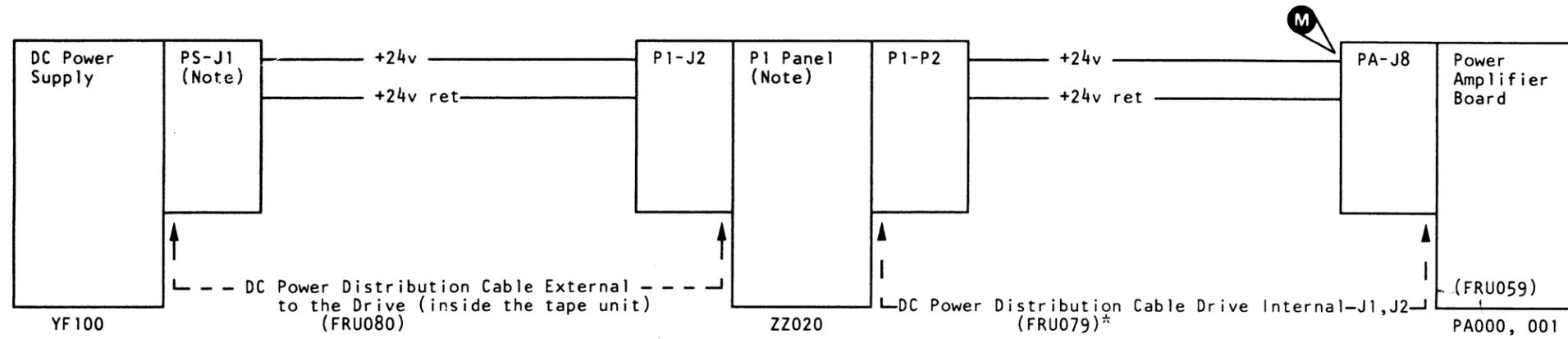
Error Diagram 1

* This FRU is EC sensitive.
See CARR-DR 4.



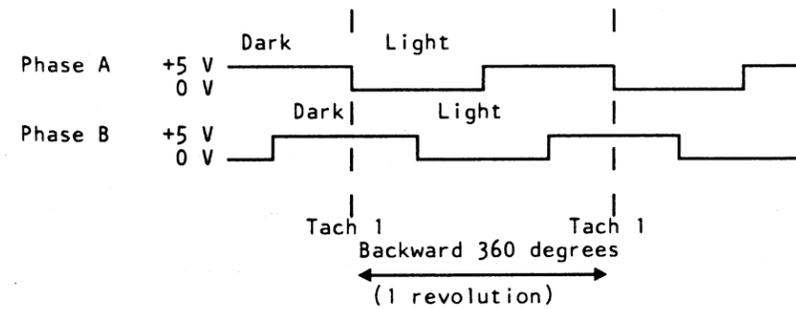
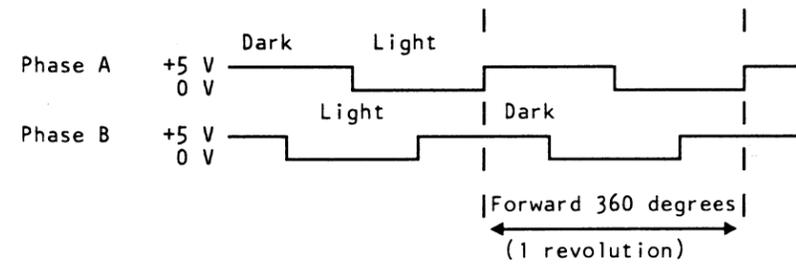
Error Diagram 2

* This FRU is EC sensitive.
See CARR-DR4.



Note: The logic reference shown is for drive 0. Use the correct lines for a drive 1 failure.

ERROR DIAGRAM 3
Phase Diagram



Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

A digital to analog converter (DAC) parity error was sensed.

Error Condition Theory

Note: See EAD 266 for test points.

The power amplifier board contains two digital to analog converters (DAC), one for each reel motor. The DACs convert the digital signals supplied by the digital servo card into analog current for use by the motors. Digital data is loaded into two 8-bit registers on the power amplifier board and gated into the correct digital to analog converter by 'load file dac' or 'load machine dac'. Logic on the power amplifier board checks for odd parity on the input to the registers. If even parity is detected, '+ dac parity error' changes to an up logic level, and CHK 4D is set.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU073) power amplifier cable PA-J1 to O2A-A1Y1
2. (FRU210) message display cable O2A-A1Y2 to P1-DISP-P1
3. (FRU211) message display cable P1-DISP-P1 to MDJ1
4. (FRU060) message display board
5. Source voltages at the input to the FRUs on this EAD
6. Cables, connectors, and nets between FRUs on this EAD
7. (FRU058) logic board O2A-A1

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.

3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. If the "4D" is displayed on the drive message display, start at step 6. If the drive message display is blank and the "4D" was found in sense, start at step 5.
5. Set up an oscilloscope at 2.0 volts/division and 0.5 microseconds/division. Sync plus on channel 1. Connect channel 1 to each point **A**, one by one, and check for a down logic level pulse approximately every 0.5 microseconds.

If any line remains at a down logic level, check for a short circuit between that line and ground or suspect FRU085*. If any line remains at an up logic level, the problem is in the area of FRU058 or FRU085*. If all lines pulse correctly, repeat this procedure and check the signals at points **D** and **G** respectively. If any line remains at an up logic level at **D**, the failure is in FRU058. If the signals are correct at **D** and remain at an up logic level at **G**, the failure is in the area of FRU073 or FRU058.

6. With the oscilloscope set as in step 5, connect channel 1 to point **B**. Load a scratch cartridge. Check for a down logic level pulse early in the load operation. If the signal is correct at **B**, perform the same steps for point **C**. If either pulse is missing, the failure is in the area of FRU058 or FRU085*. If either line is at the down logic level all the time, check for a short circuit between that line and ground.

If the signals are correct here, repeat the procedure checking the pulses at **E**, **F** and **H**, and **J**. If the signals are still correct, go to step 7.

7. Check point **K** for a down logic level. If **K** is at a continuous up logic level, check for an open circuit between **K** and **L**. If **K** is at a down logic level and all other troubleshooting has been attempted, suspect FRU058 or FRU085*.

8. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, *Call your next level of support* and then go to SPROC 1 "End of Call Actions."

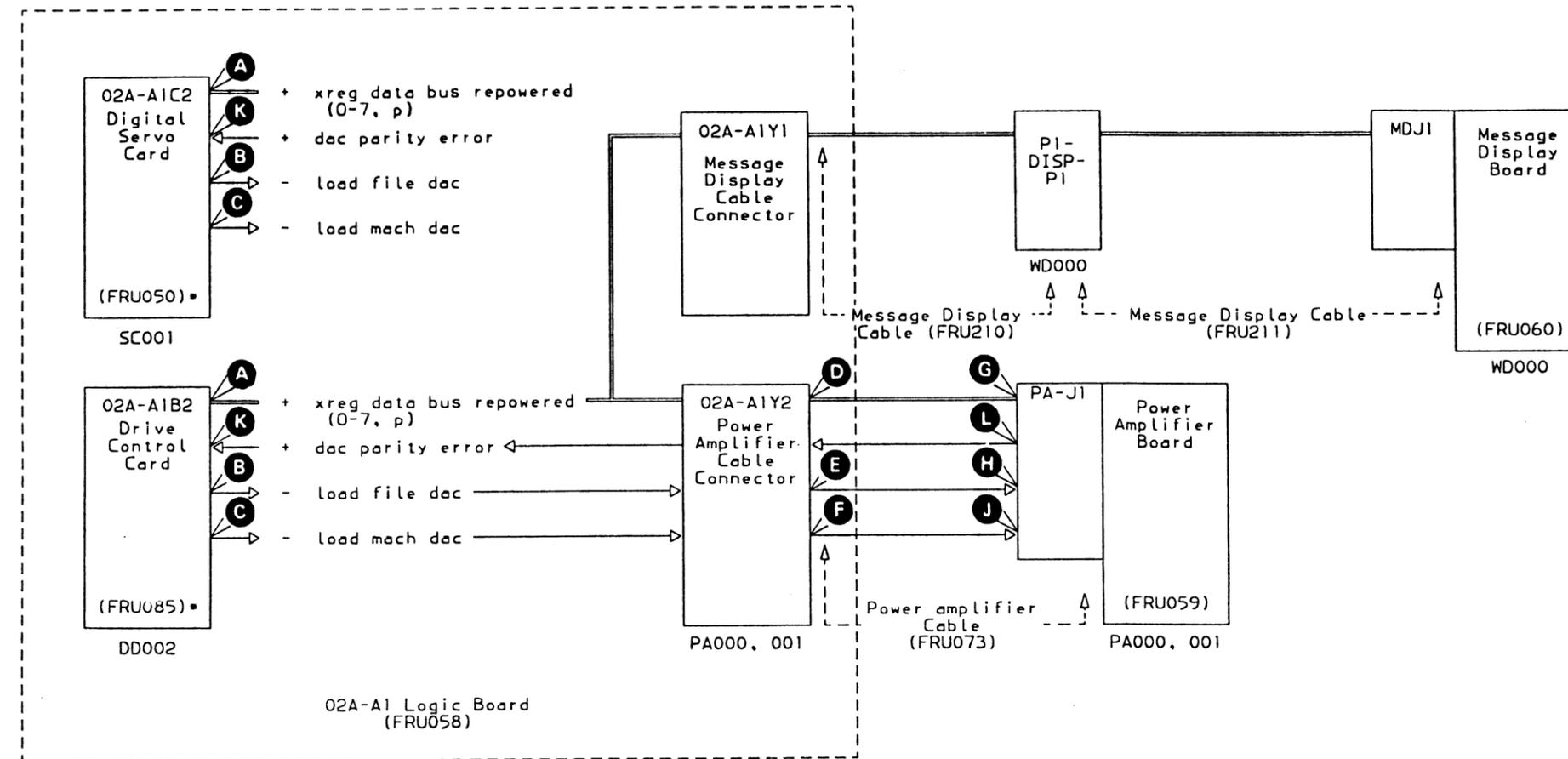
9. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, *Call your next level of support* and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
5,6,7	LOC 1	Location of FRUs
5,6,7	CARR-DR 1-1	Removal and replacement procedures
8	MD 1	How to use the MD with the 3480

ERROR DIAGRAM

* This FRU is EC sensitive.
See CARR-DR 4.



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

ead266

Error Code 50

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

A parity error occurred on the message display.

Error Condition Theory

Note: See EAD 271 for test points.

Sixteen bytes of message data is loaded into RAM on the message display board from 'xreg data bus repowered'. The PLA on the message display board checks for odd parity on the input to the RAM. If even parity is detected, the '+ msg disp bus parity error' line is activated to the digital servo card, the message is not displayed, and error code 50 is set in the sense bytes.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

- (FRU073) power amplifier cable 02A-A1Y1 to PA-J1
- (FRU059) power amplifier board
- Source voltages at the input to the FRUs on this EAD
- Cables, connectors, and nets between FRUs on this EAD
- (FRU058) logic board 02A-A1.

Troubleshooting Guide

- Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
- Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
- For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostics and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

- Set up an oscilloscope at 2 volts/division vertical deflection and 0.5 microseconds/division horizontal deflection. Sync plus on channel 1. Connect channel 1 to each point **A**, one by one, and check for a down logic level pulse approximately every 0.5 microseconds. If any line stays at a down logic level, check for a short circuit between that line and ground or suspect FRU085*. If any line stays at an up logic level, the failure is in the area of FRU058 or FRU085*. If all lines are pulsing correctly, repeat this procedure and check the signals at point **B**. If any line stays at an up logic level at **B**, the failure is in the area of FRUs 211, 210, or 058.

- Insert the support diskette in the MD, select option 1 (Subsystem Diagnostics), then option 3 (Drive Command Exerciser) and enter command LDD (Load Display). Enter control byte hexadecimal 00 and characters 1 through 8, then select option - loop 255 times.

- Set up an oscilloscope at 10 microseconds/division horizontal deflection and 5 volts/division vertical deflection and sync minus internal. Connect channel 1 to point **C**. Check for an up logic level with a down logic level pulse approximately every 25 microseconds. If **C** is at an up logic level with no pulsing, the failure is in the area of FRU085* or there is an open circuit in FRU058 between FRU085* and point **C**. If **C** is at a continuous down logic level, check for a short circuit between net '\$SCMDLODM' and ground. If **C** is operating correctly, repeat this step using point **D** and net '\$SCLDMSGM'.

- If the logic levels are correct at points **C** and **D**, check them at points **E** and **F** respectively. If either is a continuous up logic level, check for an open circuit in the associated net. If **E** and **F** are correct, go to step 8.

- Check point **G** for a down logic level. If **G** is at an up logic level, check for an open circuit in net '\$MDERRORP' between FRU085* and FRU060.

- If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

- If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4,6	LOC 1	Location of cables and connectors
4,6	CARR-DR 1-1	Removal and replacement procedures
5	PANEL 1	How to operate the drive
5	DIAG 1	How to operate the Drive Command Exerciser
6,7,8	FEALDs	Net Wire Lists for point-to-point wiring
9	MD 1	How to use the MD with the 3480

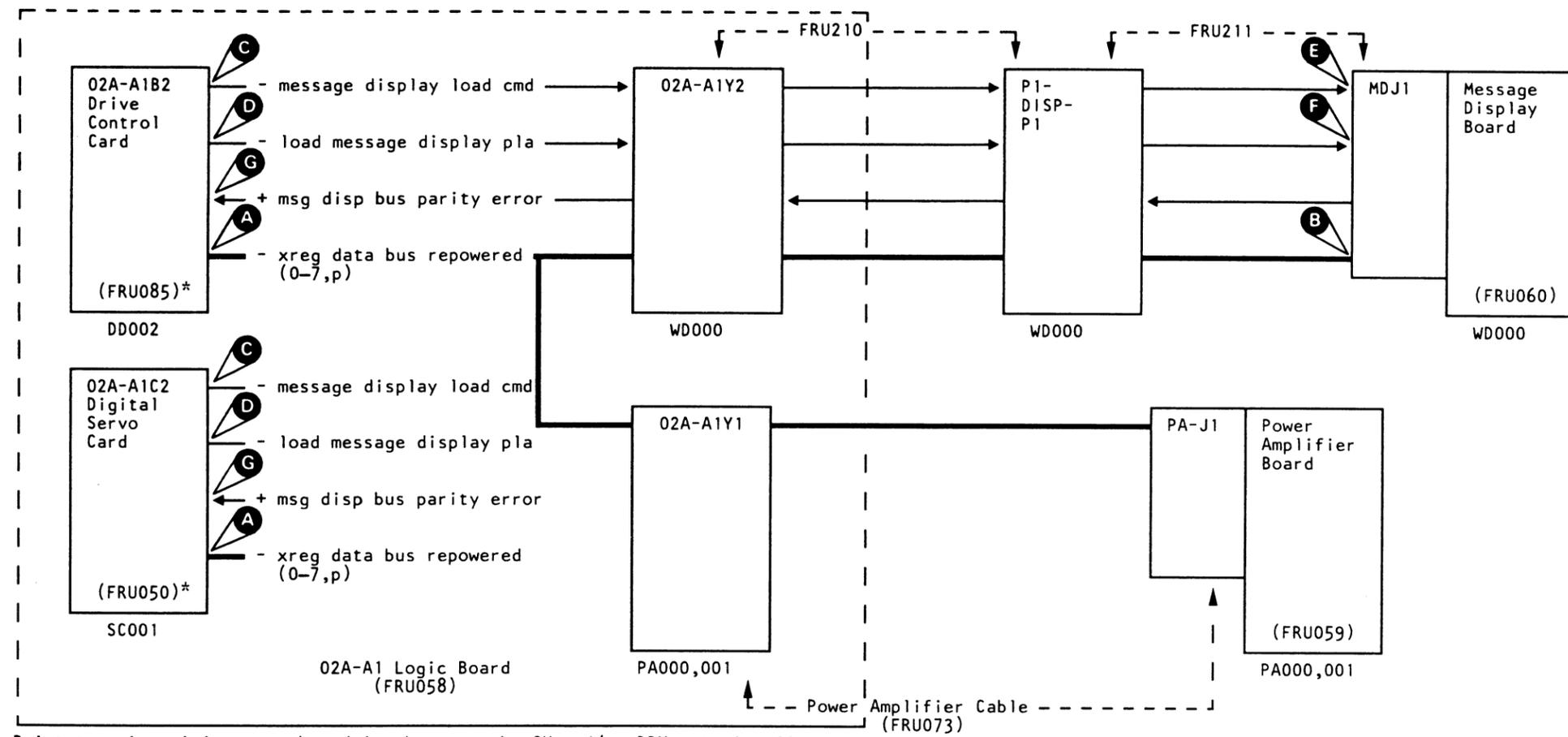
ERROR CODE 50 EAD 270

Net Name to Line Name Cross Reference

NET NAME	LINE NAME	FRUs	LEVEL
\$SCXRDATA	- xreg data bus repowered	085*, 210,211, 060,073, 059,058	Pulsing
\$SCMDLODM	- message display load command	085*, 210,211, 060,058	Up level at rest, pulsing down when loading display
\$SCLDMSGM	- load message display pla	085*, 210,211, 060,058	Up level at rest, pulsing down when loading display
\$MDERRORP	+ msg disp bus parity error	085*, 210,211, 060,058	Normal = down level, Fail = up level

Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

CHK 60 specifies that machine reel tach 1 phase B signal has failed after a thread/load or mid-tape load operation or that the cartridge present sensor failed during a thread/load operation.

Error Condition Theory

Note: See EAD 281 for test points.

A counter is loaded initially and at each machine reel tach 1 phase B occurrence. Tach 2 pulses decrement this counter. If the counter reaches 0 before the next tach 1 phase B occurs, a CHK 60 is set.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU081) tachometer sensor cable
2. (FRU079*) dc power distribution cable, drive internal-J1, J2
3. Source voltages at the input to the FRUs on this EAD
4. Cables, connectors, and nets between FRUs on this EAD
5. (FRU058) logic board O2A-A1

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostic and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.
4. For a continuous failure, go to step 5; for an intermittent failure, go to step 9.
5. With a cartridge inserted, check for +5.0 volts at point **G**. If the voltage is correct, go to step 6. If the voltage is at a

down logic level, check to make sure the flag is engaging the LED assembly correctly. If the sensor is working correctly, check for a short circuit between point **G** and ground **E**.

6. Check the voltage at **A** for the sensor that is failing. The voltage should be between +1.4 volts and +2.2 volts. If the voltage is more than +2.2 volts, check for an open circuit in FRU081 between points **A** and **B**. (Note that there is a diode in the circuit. If the meter shows an open circuit, reverse the meter leads to verify that the circuit is really open.) If the voltage is less than +1.4 volts, the failure is in FRU085*, or there is a short circuit between **A** and ground **F** in FRUs 058, 081, 225, or 226. If the voltage is correct, go to step 7.
7. Connect the oscilloscope to point **C** for each tach phase A and B. Manually rotate the machine reel motor and check for a change from +0.4 volts to +5 volts as the sensors go from light to dark. If either sensor fails to change to an up logic level, check for a short circuit between point **C** for that sensor and ground. If either sensor fails to change to a down logic level, check for an open circuit between point **C** and point **D** for that sensor. If no short circuits or open circuits can be found, the failure is in the area of FRU058 or FRU085*.
8. Lower the power amplifier board and disconnect J7. Check for approximately 4 ohms between J7-1 and J7-2. If the resistance is not correct, suspect FRU004 or FRU079*.
9. Follow these procedures only for an intermittent failure.

Load a scratch cartridge and move the Ready/Not Ready switch to the Ready position. Insert the support diskette in the MD, select option 1 (Subsystem Diagnostics), then option 3 (Drive Command Exerciser). Enter commands Data Security Erase (DSE) and Rewind (REW). This procedure permits you to scope the sensors while the tape is moving.
10. Sync the oscilloscope plus internal with the settings at 5 volts/division vertical and 10 milliseconds/division horizontal. Display phase A **C** on channel 1 and phase B **C** on channel 2. Look for phase A to differ from phase B by 90 degrees. (See the phase diagram of the error diagram.) Also check for any irregular signals on either phase. If either pulse is irregular, check for a broken or cracked flange or the seating of FRU081.

11. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

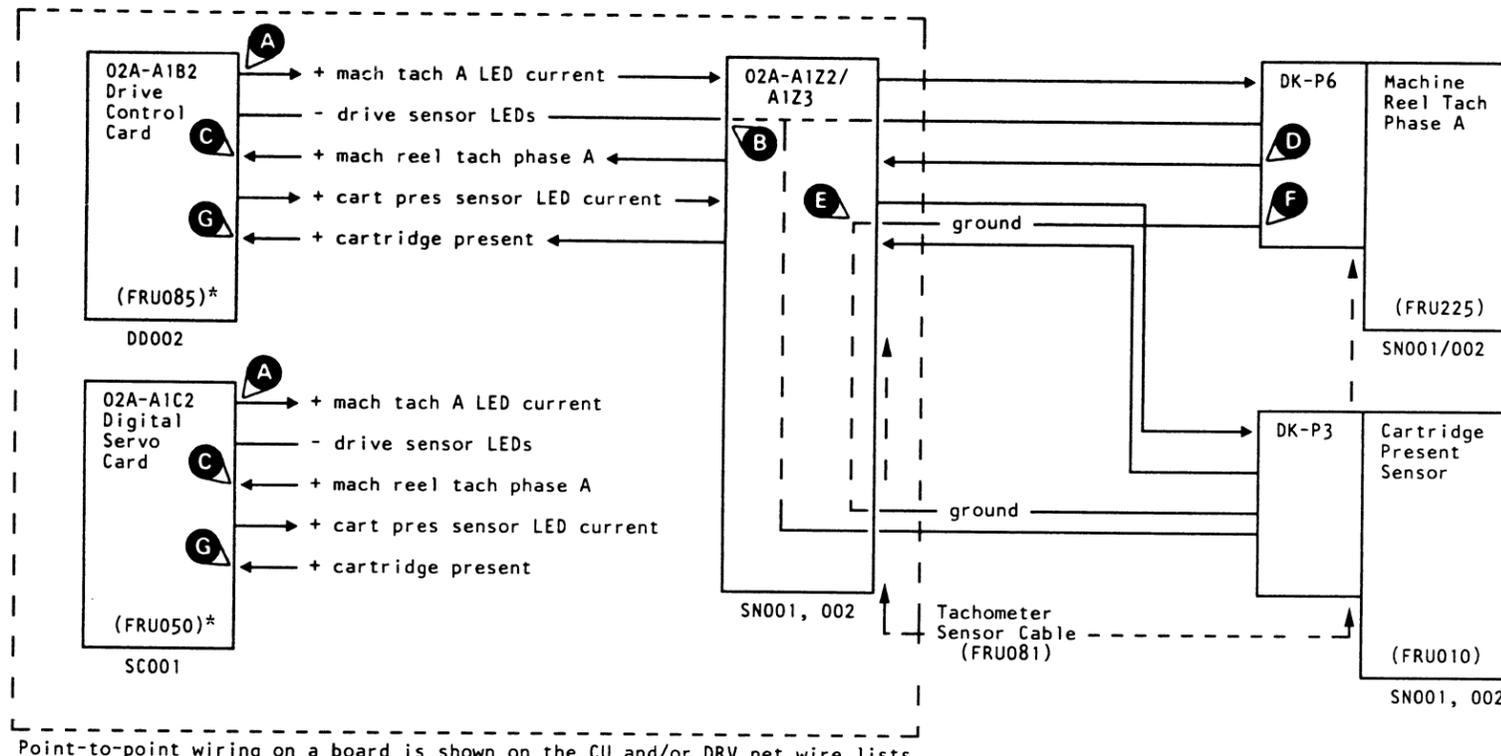
12. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
5	LOC 1	Location of FRUs
6	CARR-DR 1-1	Removal and replacement procedures
9	DIAG 1	How to use Drive Command Exerciser
11	MD 1	How to use the MD with the 3480

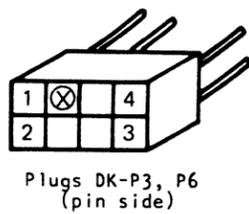
Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.

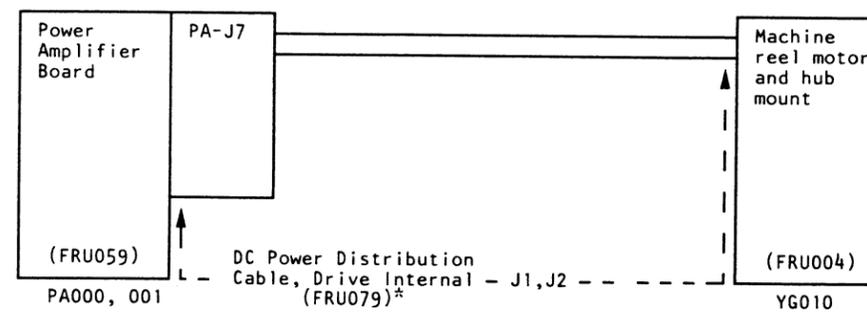
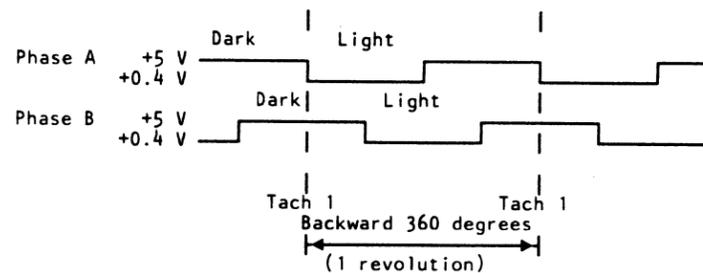
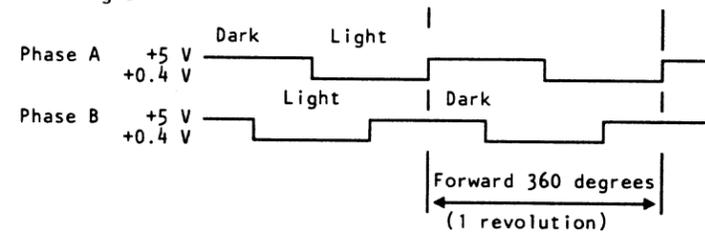


Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

Note: Point (A) Norm +1.4 volts to +2.2 volts
Fail +5.0 volts
Point (C) Light +0.4 volts
Dark +5.0 volts



ERROR DIAGRAM
Phase Diagram



Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

CHK 63 specifies that machine reel tach phase A signal has failed after a thread/load or midtape load operation or that the cartridge present sensor failed during a thread/load operation.

Error Condition Theory

Note: See EAD 296 for test points.

A counter is loaded initially and at each machine reel tach phase A pulse. Tach 2 pulses decrement the counter. If the counter reaches 0 before the next machine reel tach phase A pulse, a CHK 63 is set.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU081) tachometer sensor cable
2. (FRU079*) dc power distribution cable, drive internal-J1, J2
3. Source voltages at the input to the FRUs on this EAD
4. Cables, connectors, and nets between FRUs on this EAD
5. (FRU058) logic board 02A-A1

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostic and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. For a continuous failure, go to step 5; for an intermittent failure, go to step 9.
5. With a cartridge inserted, check for +5.0 volts at point **G**. If the voltage is correct, go to step 6. If the voltage is at a

down logic level, check to make sure the flag is engaging the LED assembly correctly. If the sensor is working correctly, check for a short circuit between point **G** and ground **E**.

6. Check the voltage at **A** for the sensor that is failing. The voltage should be between +1.4 volts and +2.2 volts. If the voltage is more than +2.2 volts, check for an open circuit in FRU081 between points **A** and **B**. (Note that there is a diode in the circuit.

If the meter shows an open circuit, reverse the meter leads to verify that the circuit is really open.) If the voltage is less than +1.4 volts, the failure is in FRU085*, or there is a short circuit between **A** and ground **F** in FRUs 058, 081, or 225. If the voltage is correct, go to step 7.

7. Connect the oscilloscope to point **C** for each tach phase A and B. Manually rotate the machine reel motor and check for a change from +0.4 volts to +5 volts as the sensors go from light to dark. If either sensor fails to change to an up logic level, check for a short circuit between point **C** for that sensor and ground. If either sensor fails to change to a down logic level, check for an open circuit between point **C** and point **D** for that sensor. If no short circuits or open circuits can be found, the failure is in the area of FRU058 or FRU085*.

8. Lower the power amplifier board and disconnect J7. Check for approximately 4 ohms between J7-1 and J7-2. If the resistance is not correct, suspect FRU004 or FRU079*.

9. Follow these procedures only for an intermittent failure.

Load a scratch cartridge and move the Ready/Not Ready switch to the Ready position. Insert the support diskette in the MD, select option 1 (Subsystem Diagnostics), then option 3 (Drive Command Exerciser). Enter commands DSE (Data Security Erase) and REW (Rewind). This procedure permits you to scope the sensors while the tape is moving.

10. Sync the oscilloscope plus internal with the settings at 5 volts/division vertical and 10 milliseconds/division horizontal. Display phase A **C** on channel 1 and phase B **C** on channel 2. Look for phase A to differ from phase B by 90 degrees. (See the phase diagram of the error diagram.) Also check for any irregular signals on either phase. If either pulse is irregular, check for a broken or cracked flange or the seating of FRU081.

11. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:

- Perform any additional actions.
- If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

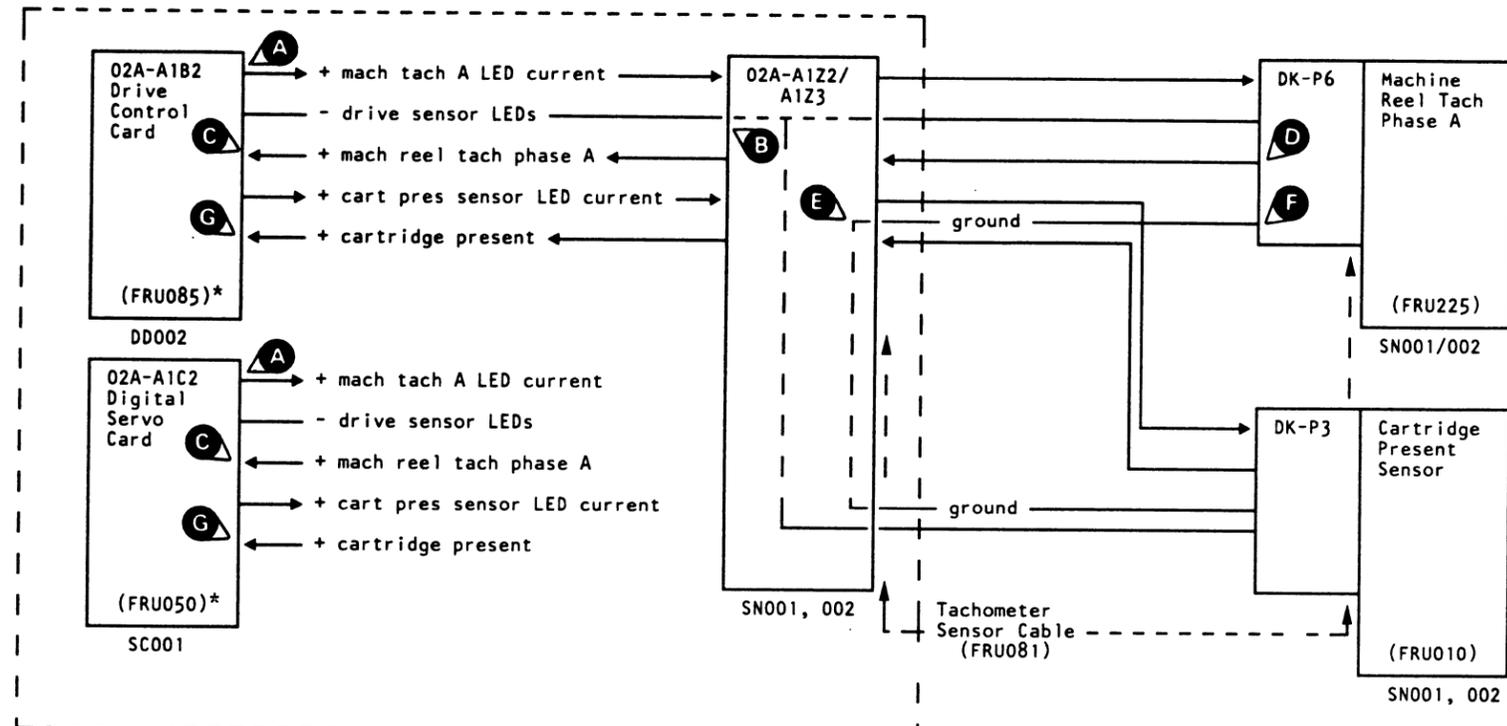
12. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
5	LOC 1	Location of FRUs
6	CARR-DR 1-1	Removal and replacement procedures
9	DIAG 1	How to use Drive Command Exerciser
11	MD 1	How to use the MD with the 3480

Error Diagram

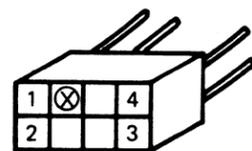
* This FRU is EC sensitive.
See CARR-DR 4.



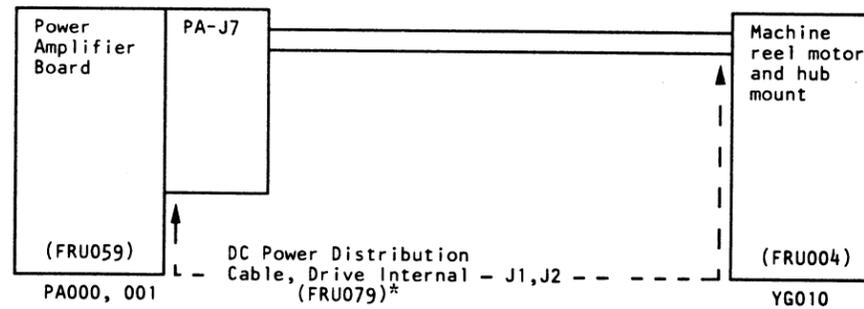
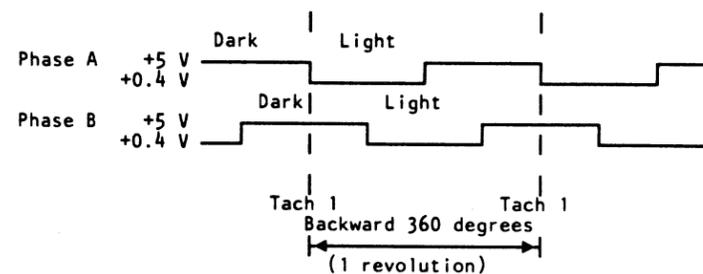
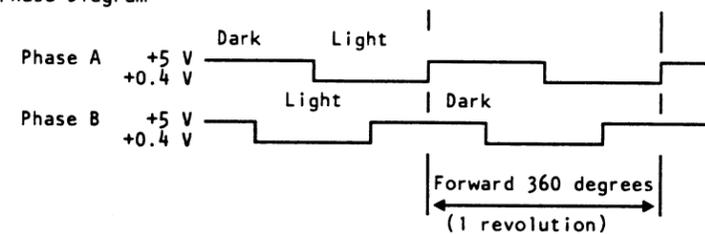
Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

Note: Point (A) Norm +1.4 volts to +2.2 volts
Fail +5.0 volts
Point (C) Light +0.4 volts
Dark +5.0 volts

ERROR DIAGRAM
Phase Diagram



Plugs DK-P3, P6 (pin side)



Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

An interruption occurred on tape path sensor A, tape path sensor B, or the cartridge latched sensor on a loaded drive.

Error Condition Theory

Note: See this page for test points.

One of the functions of the tape path sensors (FRUs 006 and 007) and the cartridge latched sensor (FRU 011) is to check the loaded status of the drive. When the drive is loaded and a sensor changes from its normal status (sensor A lighted, sensor B dark, and cartridge latched sensor dark), the drive sets a CHK 69. CHK 69 also occurs if the voltage path of sensor A becomes open at the cable, the logic board, or the digital servo card (causing a sensor A dark).

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU011) cartridge latched sensor
2. (FRU001) threader assembly
3. Source voltages at the input to the FRUs on this EAD
4. Cables, connectors, and nets between FRUs on this EAD
5. (FRU058) logic board O2A-A1

Troubleshooting Guide

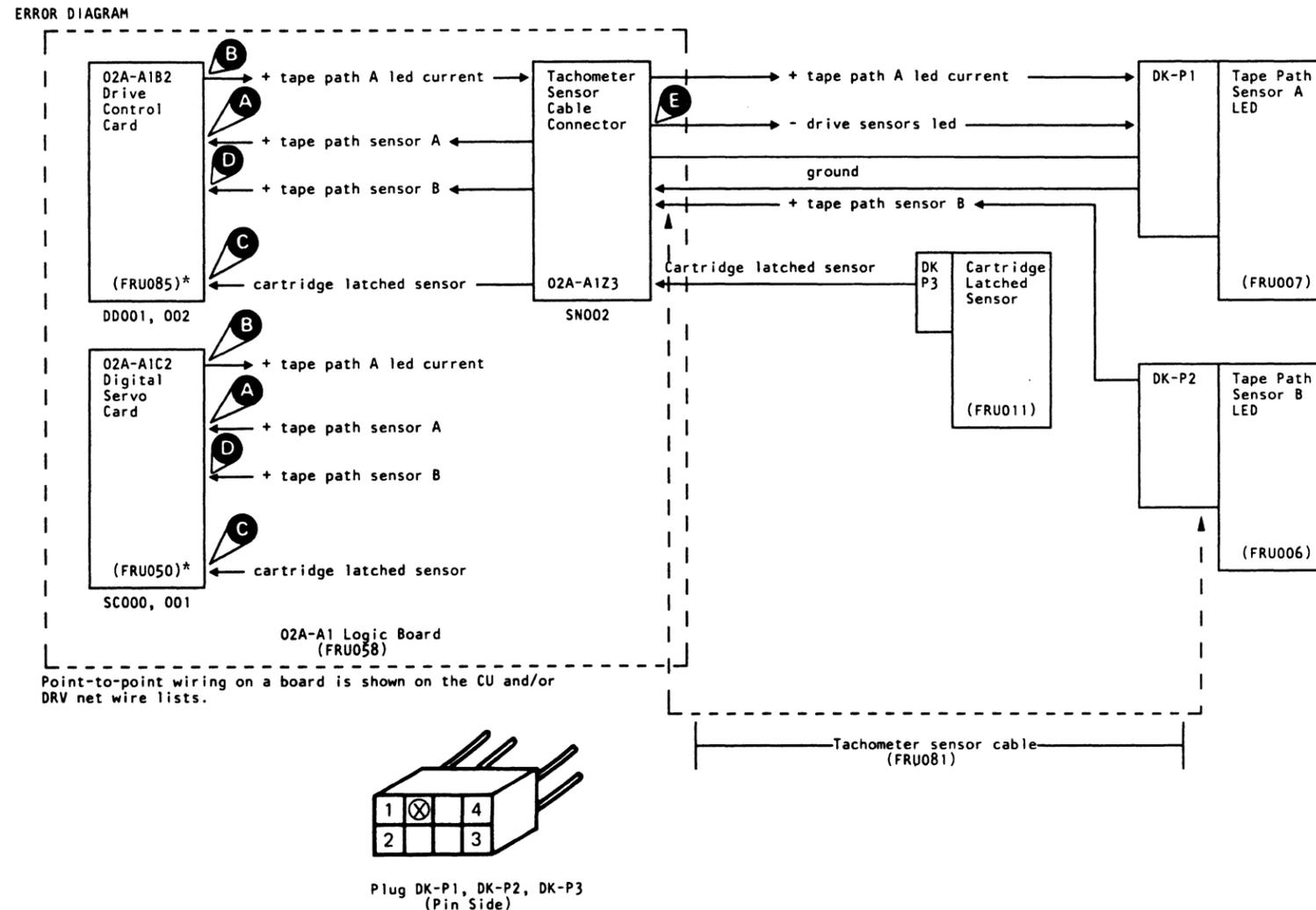
1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Check the threader assembly (FRU001) for a bent carrier pin. This could cause a wobble while running, further causing the flag to move out of tape path sensor B (FRU007).
5. With the drive loaded, check for +0.5 volts at **A** and +1.5 volts at **B**. If **B** is less than 1.4 volts check for a short to ground in FRUs 081, 007, and 058. If **B** is over +2.2 volts, check for an open between **B** and **E** (there is a diode in the circuit, reverse your ohm meter leads).
6. With the drive still loaded, check for +5.0 volts at **C** and **D**.
7. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
8. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4	LOC 1	Location of cables and connectors
4	CARR-DR 1-1	Location of cables and connectors
7	MD 1	How to use the MD with the 3480



Error Code A0

Error Description

'Select out' became not active after address verification and before 'command out' or 'ending status'.

Error Condition Theory

Note: See this page for test points.

Whenever 'select out' is not active, all inbound lines except the bus presenting alerts must become inactive. Any operation currently in process over the interface must be reset. Operations at the drive continue to a normal stopping point.

When 'select out' becomes inactive and is not interlocked with other tags, it must remain not active for a minimum of 200 microseconds. The 200 microsecond delay permits the drive to respond to a servo interrupt, which may occur at the completion of an ending sequence, without missing the changing of 'select out' from active to not active and back to active. Any serial sequence is exempt because it can operate when 'select out' is either active or not active.

'Select out' becoming active signals the start of the initial sequence. 'Select out' requires all drives to remove all waiting alerts from the bus in 200 microseconds or less. 'Select out' must remain active during all of the connected portion of the operation. 'Select out' must become not active and remain not active for at least 200 microseconds before another initial sequence can be started.

'Select out' is reset if:

- The command was a control command with no data to be transferred.
- The command was an immediate command.
- The status byte contained unusual or unexpected information.

'Select out' remains set if:

- The command was a burst command.
- The command was a control command with data to be transferred.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. Drive I/O cables
2. Control unit to drive interconnection cables
3. Source voltages at the input to the FRUs on this EAD

4. Cables, connectors, and nets between FRUs on this EAD
5. (FRU058) logic board 02A-A1

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostics and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

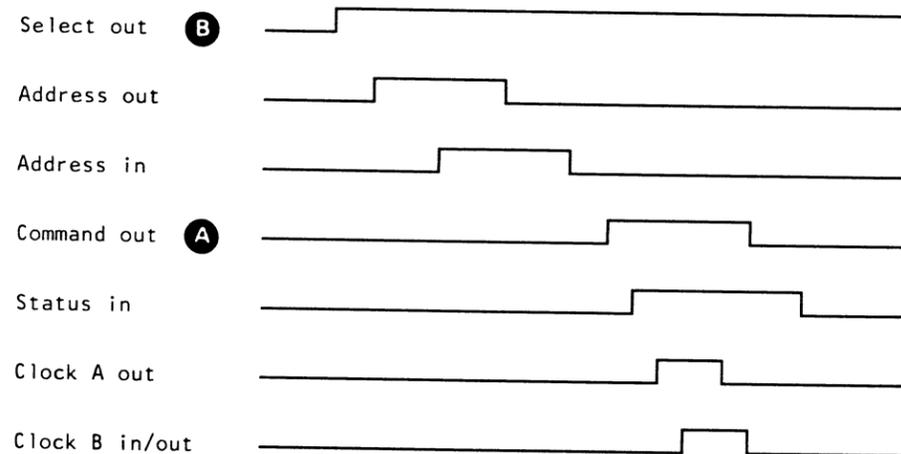
4. See DIAG 1 and run Diagnostic EE40. Scope the 'command out' line **A** and 'select out' line **B** to determine when 'select out' is becoming not active before 'status in'.
5. Continue scoping while checking the connecting cables between the control unit and the drive, looking for unusual or deteriorating logic levels or signals.
6. Check the I/O cables A2, A3, A4, and A5 on the drive logic board for loose or bad connections.
7. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
8. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagram.
4	DIAG 1	How to operate the diagnostic programs
5,6	LOC 1	Location of cables and connectors
7	MD 1	How to use the MD with the 3480

Error Diagram

See the control unit to drive cabling diagrams in the ALD volume of the maintenance information.



Error Description

A2-'Command out' became not active before presenting status.

Error Condition Theory

Note: See this page for test points.

'Command out' is a line from the control unit to all attached drives. The command must be valid on the bus before 'command out' becomes active. 'Command out' is a response to 'address in' becoming not active during the initial sequence and indicates to the selected drive that the command is valid on the bus. 'Command out' remains active until 'status in' is received from the drive. When 'status in' is received, the control unit removes the command from the bus, reads the status bytes, and makes 'command out' not active.

When 'command out' becomes active during the data transfer sequence, it stops the transfer operation in progress, and there is no information on the bus associated with the tag. 'Status in' becomes active in response to this 'command out'. After 'status in' becomes active, the signals on the interconnections operate the same as in the initial sequence.

'Command out' used as a response to 'clock B in' during the sense-control-transfer sequence indicates stop. 'Clock B in' becomes not active in response to 'command out' becoming active.

'Command out' active as a response to 'status in' during an ending sequence indicates to the selected drive that the status on the bus has been accepted and the bus is not required to be valid. 'Command out' becomes not active after 'status in' becomes not active.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. Drive I/O cable (O1A-A2, A3, A4, A5)
2. Control unit to drive interconnection cables
3. Source voltages at the input to the FRUs on this EAD
4. Cables, connectors, and nets between FRUs on this EAD
5. (FRU058) logic board O2A-A1

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostics and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

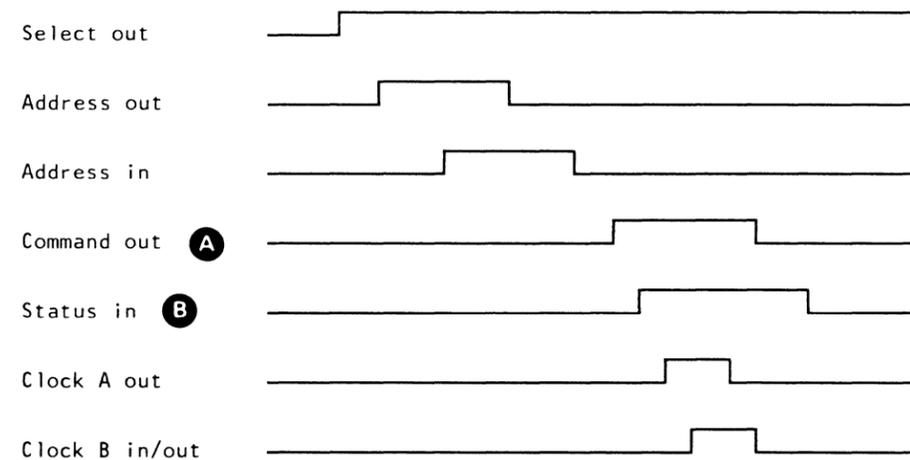
4. See DIAG 1 and run Diagnostic EE40. Scope the 'command out' line **A** and 'status in' line **B** to determine where 'command out' is becoming not active before 'status in'.
5. Continue scoping while checking the connecting cables between the control unit and the drive, looking for unusual or deteriorating logic levels or signals.
6. Check the I/O cables A2, A3, A4, and A5 on the drive logic board for loose or bad connections.
7. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
8. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4	DIAG 1	How to operate the diagnostic programs
5,6	LOC 1	Location of cables and connectors
7	MD 1	How to use the MD with the 3480

ERROR DIAGRAM

See the control unit to drive cabling diagrams in the ALD volume of the maintenance information.



Error Code A9

Error Description

A9 — 'Command out' or 'select out' became not active before loading the command.

Error Condition Theory

Note: See this page for test points.

'Command out' is a line from the control unit to all attached drives. The command must be valid on the bus before 'command out' becomes active. 'Command out' is a response to 'address in' becoming not active during the initial sequence and indicates to the selected drive that the command is valid on the bus. 'Command out' remains active until 'status in' is received from the drive. When 'status in' is received, the control unit removes the command from the bus, reads the status bytes, and makes 'command out' not active.

When 'command out' becomes active during the data transfer sequence, it stops the transfer operation in progress, and there is no information on the bus associated with the tag. 'Status in' becomes active in response to this 'command out'. After 'status in' becomes active, the signals on the interconnections operate the same as in the initial sequence.

'Command out' used as a response to 'clock B in' during the sense-control-transfer sequence indicates stop. 'Clock B in' becomes not active in response to 'command out' becoming active.

'Command out' active as a response to 'status in' during an ending sequence indicates to the selected drive that the status on the bus has been accepted and the bus is not required to be valid. 'Command out' becomes not active after 'status in' becomes not active.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. Drive I/O cable (01A-A2, A3, A4, A5)
2. Control unit to drive interconnection cables
3. Source voltages at the input to the FRUs on this EAD
4. Cables, connectors, and nets between FRUs on this EAD
5. (FRU058) logic board 02A-A1.

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostics and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

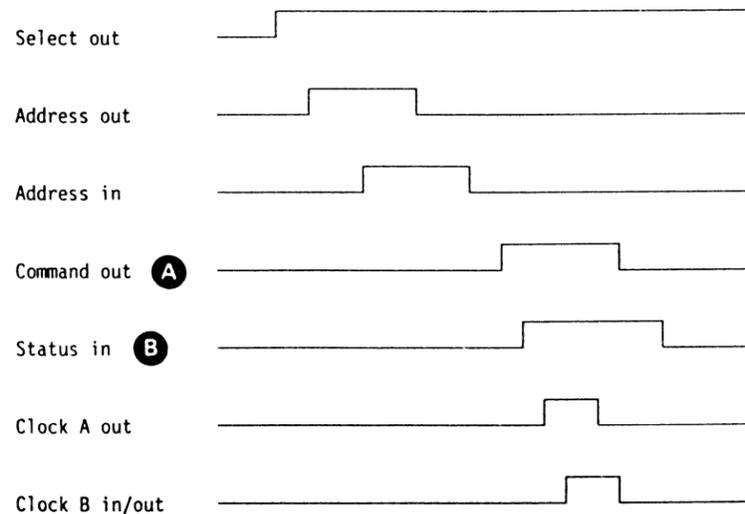
4. See DIAG 1 and run Diagnostic EE40. Scope the 'command out' line **A** and 'status in' line **B** to determine where 'command out' is becoming not active before 'status in'.
5. Continue scoping while checking the connecting cables between the control unit and the drive, looking for unusual or deteriorating logic levels or signals.
6. Check the I/O cables A2, A3, A4, and A5 on the drive logic board for loose or bad connections.
7. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
8. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4	DIAG 1	How to operate the diagnostic programs
5,6	LOC 1	Location of cables and connectors
7	MD 1	How to use the MD with the 3480

ERROR DIAGRAM

See the control unit to drive cabling diagrams in the ALD volume of the maintenance information.



Error Code C0

Error Description

A default condition occurred on a write operation.

Error Condition Theory

Note: See EAD 456 for test points.

Three encoded RAS lines are supplied to indicate 1 of 7 possible error conditions. These lines are sent from the write card to the digital servo card, where the control unit checks them for the correct status.

After a power on, all three RAS lines (bits) are set to the default status (000). The control unit then checks to verify that the lines are set to the default status. If the lines are correct, 'write enable' changes to a down logic level, and the write operation can start. At the end of each write operation, the control unit checks the RAS lines again. If the write operation was successful, the write-valid bit is on (001). If the RAS lines are still in the default status, CHK C0 is set.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU184) top card connector ZPQ
2. (FRU058) logic board 02A-A1
3. Source voltages at the input to the FRUs on this EAD
4. Cables, connectors, and nets between FRUs on this EAD.

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostics and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. See DIAG 1 and run EEA0. If the diagnostic fails, go to the DIAG section for more information on the failure ID.

5. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

6. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

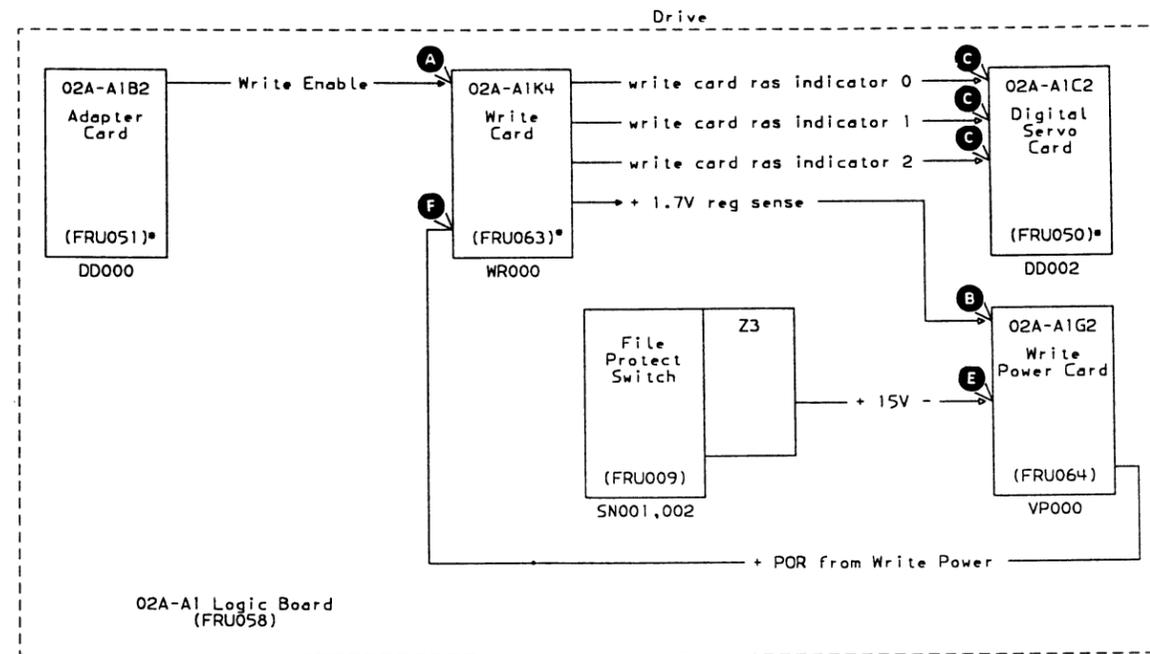
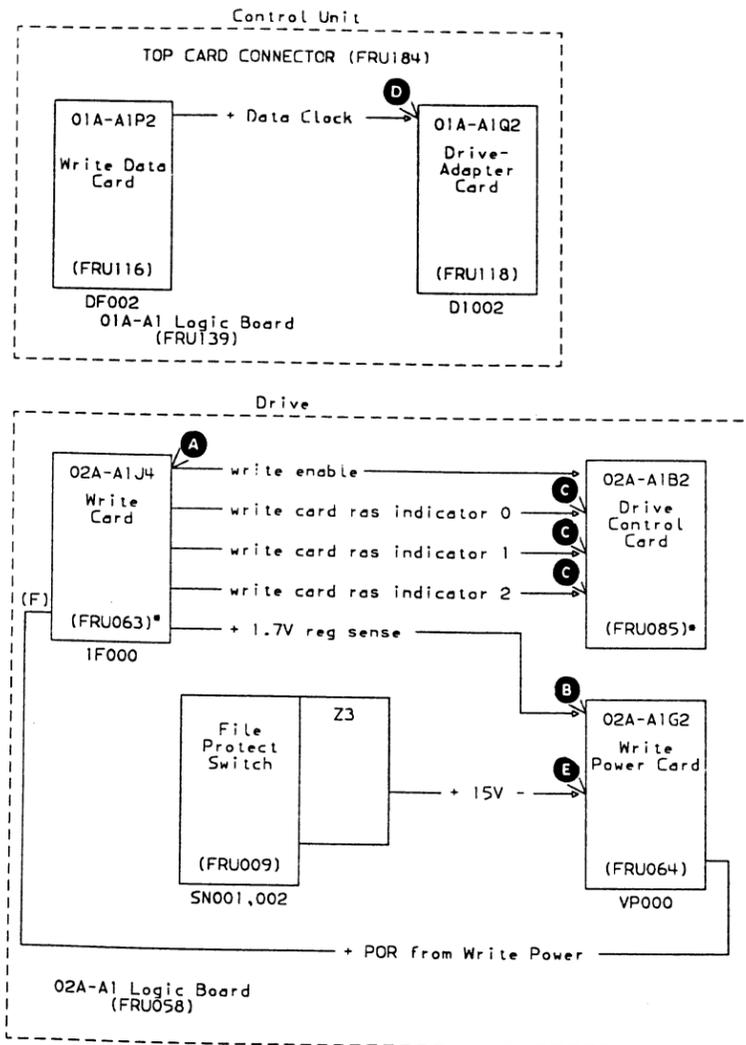
References

STEP	REF PAGE	DESCRIPTION/COMMENTS
1	CARR-DR 1-1	Removal and replacement procedures
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution Lists" in the Field Wire Net List in the Logic Diagrams.
4	DIAG 1	Diagnostic failure ID

Error Code C0 (Continued)

Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.



Error Code C0 (Continued) EAD 456

WRITE CARD RAS INDICATOR	
BITS: 0,1,2	MEANING
111	Regulator Fault
110	Card Fault
101	Interconnection Fault
100	Open (Head/Cable) Fault
011	Phase Lock Loop Error
010	Parity Error
001	Write Valid
000	Default

Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

A parity error was sensed on the write card (FRU063*).

Error Condition Theory

Note: See EAD 461 for test points.

Nine data lines multiplex data out of the control unit write data card to become write data to the drive. These lines are active only during a normal write operation. Lines zero through eight contain the NRZI data to be recorded on tape. Line nine is an odd parity bit line.

The data sent from the control unit to the drive is checked for parity. The write card checks for odd parity on the data received from the control unit and sets CHK C2 when it detects even parity.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU058) logic board 02A-A1
2. (FRU139) logic board 01A-A1
3. (FRU184) top card connector ZPQ
4. Interconnecting cables between the control unit and the drive
5. Source voltages at the input to the FRUs on this EAD
6. Cables, connectors, and nets between FRUs on this EAD.

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostics and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

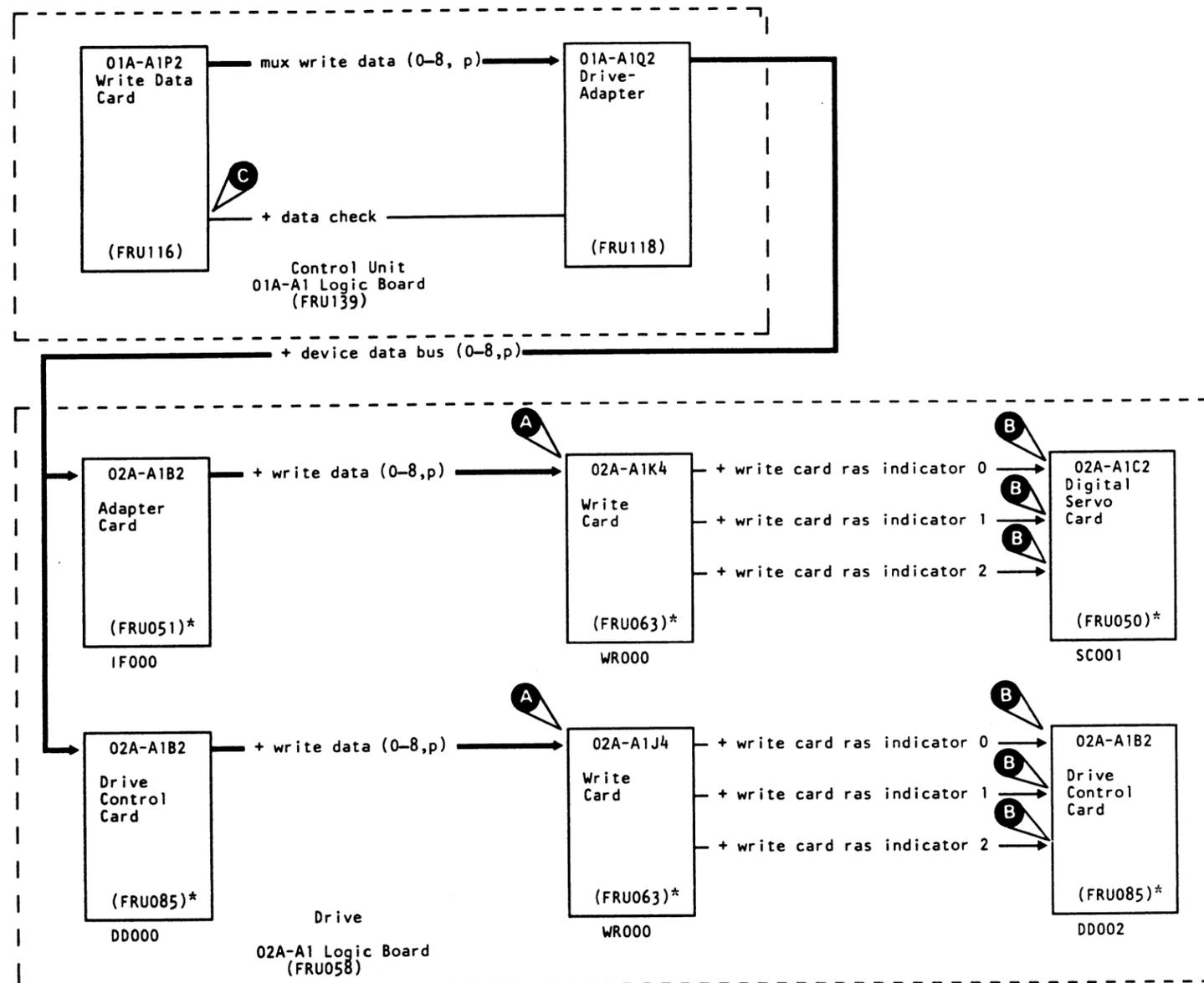
4. Look at sense bytes 16 and 17. If they contain D1nn, D2nn, D5nn, D6nn, or D7nn, go to the error analysis diagram for that error code for repair information. If they contain D4nn (where nn = 0-7) with bits 1 or 2 on, go to the EAD for that error code. The EADs for the Dnnn error codes talk about both control unit and drive failures. Review EREP to determine if these failures are occurring on more than one drive. Failures on more than one drive indicate that the failure is in the control unit. If no correction is made by the EADs for the Dnnn error codes, return here to analyze the problem in the drive that has the most failures. If sense bytes 16 and 17 do not contain a Dnnn error code, continue with step 5. If the failure is still not isolated, run diagnostic E010 for further error analysis.
5. See DIAG 1 and run EEA0. If the diagnostic fails, go to the DIAG section for more information on the failing ID.
6. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
7. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4	SDISK 1	How to display/alter registers
4	DIAG 1	How to operate Drive Command Exerciser
5	MD 1	How to use the MD with the 3480

Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

WRITE CARD RAS INDICATOR	
BIT: 0,1,2	MEANING
000	Default
001	Write Valid
010	Parity Error
011	Phase Lock Loop Error
100	Open (Head/Cable) Fault
101	Interconnection Fault
110	Card Fault
111	Regulator Fault

0 0 0 0 0 0 0 0 0 0 0 0

CHK C3

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

The phase locked loop is not synchronized.

Error Condition Theory

Note: See this page for test points.

This error indicates that the 'clock sync' line **A** is not locked in phase and frequency with the phase locked loop (PLL) reference clock signal on the write card (FRU063*) during a write operation. This causes a 'write card ras indicator' **B** combination to be set.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU058) logic board 02A-A1
2. Source voltages at the input to the FRUs on this EAD
3. Cables, connectors, and nets between FRUs on this EAD.

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostics and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. See DIAG 1 and run EEA0. If the diagnostic fails, go to DIAG section for more information on the failure ID.

5. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

6. See EAD 2 for "Drive Interconnections EAD."

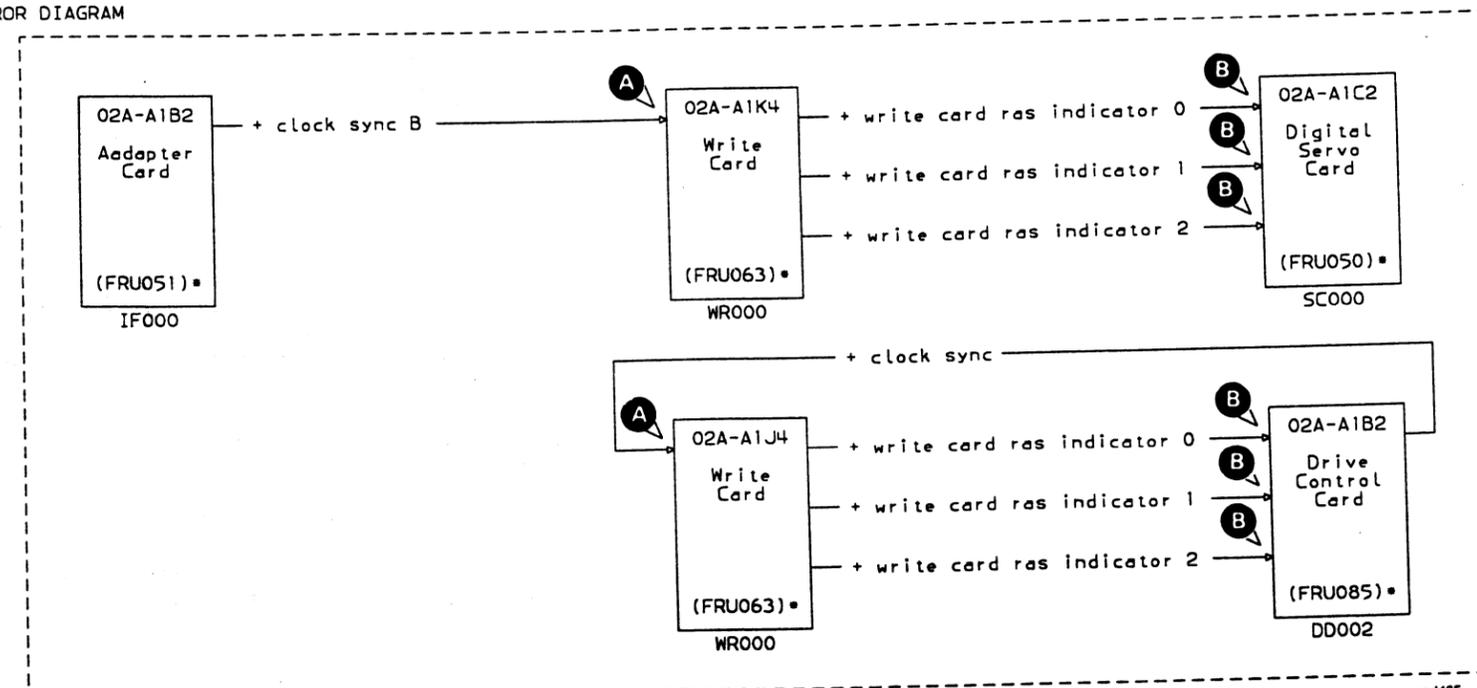
7. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Logic Diagrams.
5	LOC 1	Location of cables and connectors
4	DIAG 1	Drive Command Exerciser
6	MD 1	How to use the MD with the 3480

WRITE CARD RAS INDICATOR	
BITS: 0,1,2	MEANING
000	Default
001	Write Valid
010	Parity Error
011	Phase Lock Loop Error
100	Open (Head/Cable) Fault
101	Interconnection Fault
110	Card Fault
111	Regulator Fault

ERROR DIAGRAM



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

A RAS interconnection fault was detected.

Error Condition Theory

Note: See EAD 476 for test points.

Normal write operation is sensed when '- write enable' **B** changes to a down logic level. From this time, a continuous check is made by the write card (FRU063*) to ensure that '+ read bias' **A** does not change to a down logic level when 'write enable' is at a down logic level. If 'write enable' and 'read bias' are at a down logic level at the same time, the write operation is stopped and CHK C5 is set.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. Source voltages at the input to the FRUs on this EAD
2. Cables, connectors, and nets between FRUs on this EAD
3. (FRU058) logic board 02A-A1.

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostics and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Insert a scratch tape in the tape unit, connect the MD to the control unit, select option 1 (Subsystem Diagnostics), select option 3 (Drive Command Exerciser), and select the commands DSE (Data Security Erase) and REW (Rewind).
5. Scope point **A** for a continuous +3.4 volts during an erase and rewind.

6. Scope point **B** for a down logic level (+0.2 volts) during an erase and +4 volts during a Rewind command. Check for a deteriorated condition of either line **A** or **B**.
7. Perform a reset on the drive and scope **C**, the 'write card ras indicator' lines, for any bits being active. All of the **C** lines should be at a down logic level (0 volts).
8. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, *Call your next level of support* and then go to SPROC 1 "End of Call Actions."
9. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, *Call your next level of support* and then go to SPROC 1 "End of Call Actions."

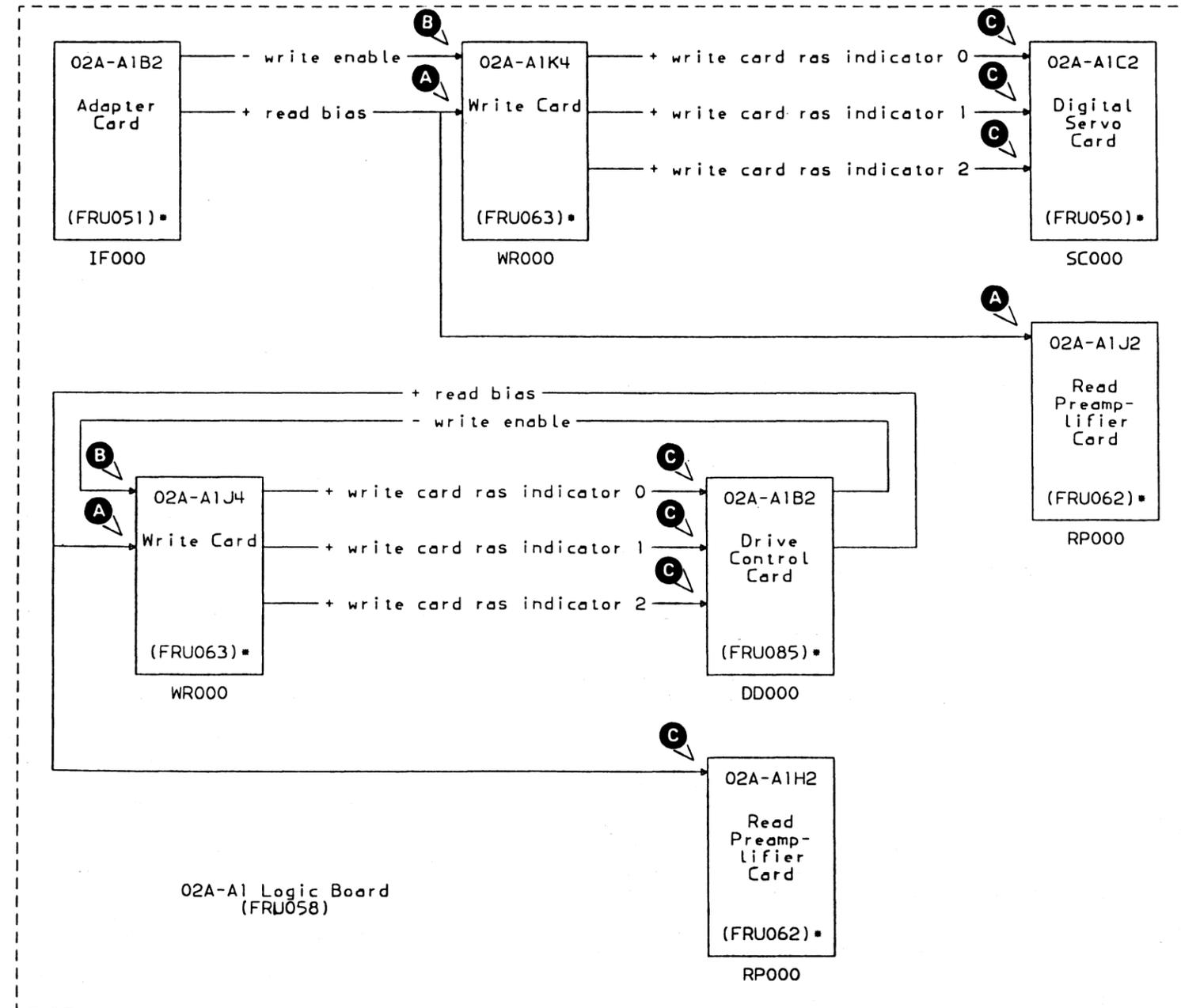
References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4	DIAG 1	How to use the Drive Command Exerciser
7	MD 1	How to use the MD with the 3480



Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.



Point to point wiring on a board is shown on the CU and/or DRV net wire lists.

ead476

WRITE CARD RAS INDICATOR	
BITS: 0,1,2	MEANING
000	Default
001	Write Valid
010	Parity Error
011	Phase Lock Loop Error
100	Open (Head/Cable) Fault
101	Interconnection Fault
110	Card Fault
111	Regulator Fault

Error Description

* This FRU is EC sensitive.
See CARR-DR 4.

The drive detected a +10.5 regulator fault.

Error Condition Theory

Note: See EAD 486 for test points.

This status indicates that a regulator failure has occurred. Regulators on the write power card supply the write drivers with +10.5 volts. The '- turn on +10.5v' line is used to turn on the +10.5 volt regulators. The file protect switch supplies the '- turn on +10.5v' to the voltage regulators.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU049) logic board to power amplifier J2 cable
2. (FRU058) logic board 02A-A1
3. Source voltages at the input to the FRUs on this EAD
4. Cables, connectors, and nets between FRUs on this EAD.

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostics and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Insert a cartridge that is not file protected and check the display panel for READY U. If the U does not appear, check the area of FRU009 for an open condition.
5. Check for a logical down level (+0.1 to +0.7 volts) on the '+ file protect sense' line **D**.
6. Measure point **A**. It should be +15 volts with a tape cartridge that is not file protected inserted. (See the comments on logic page VP000.)
7. Connect '- turn on +10.5v reg' to ground at point **B** to turn on the +10.5v regulator voltage.
8. Measure the +10.5 volts at FRU063* and FRU064. It should be +10.2 volts to +10.8 volts. Disconnect **B** from ground. (See the comments for voltage pin locations on logic pages VP000 and WR000.)
9. See DIAG 1 and run EEA0. If the diagnostic fails, go to DIAG section for more information of the failure ID.
10. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
11. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

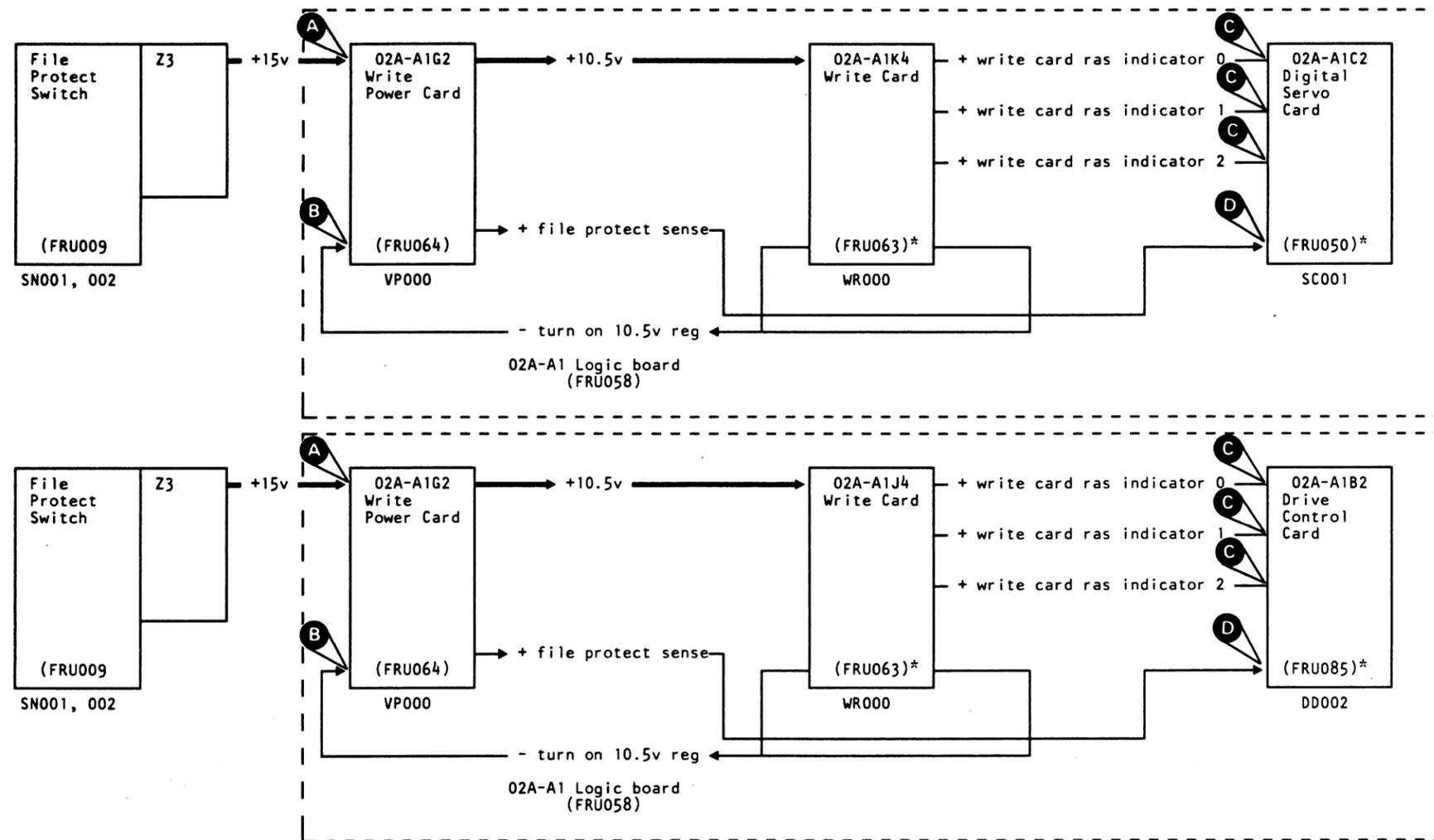
References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4	LOC 1	Location of FRU009
7	DIAG 1	Drive Command Exerciser description and options
9	MD 1	How to use the MD with the 3480



Error Diagram

* This FRU is EC sensitive.
See CARR-DR 4.



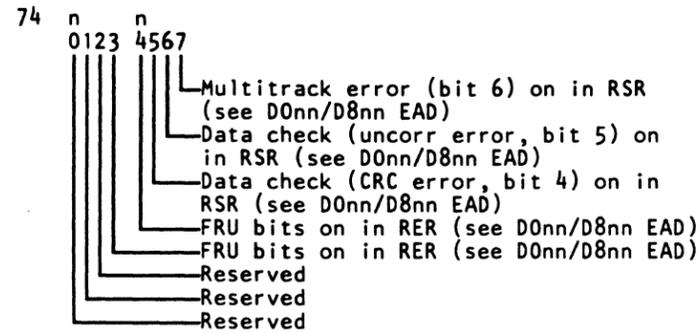
WRITE CARD RAS INDICATOR	
BITS: 0,1,2	MEANING
000	Default
001	Write Valid
010	Parity Error
011	Phase Lock Loop Error
100	Open (Head/Cable) Fault
101	Interconnection Fault
110	Card Fault
111	Regulator Fault

Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

Error Description - 74nn

During writing of the last record, a read back check error was detected in the read error register (RER) or the read status register (RSR).

Note: If sense bytes 16 and 17 contain D0nn, D6nn, or D8nn, use the FSI entry for the error code in sense bytes 16 and 17. This EAD should be used only for error code 741n (missing end sync). If any other bits are on, use this EAD first.



At the end of a write data record operation, the write data flow logic writes pad characters (if needed) to complete the 71 data frames and then writes two sync characters (end sync). The postamble is then written.

The read data flow cards detect the end sync pattern as an indication of the end of a data record. The read data flow is the same for detecting begin sync, resync, and end sync. A failure to detect end sync is most likely an indication that end sync was not written.

Additional Possible Causes of Failure

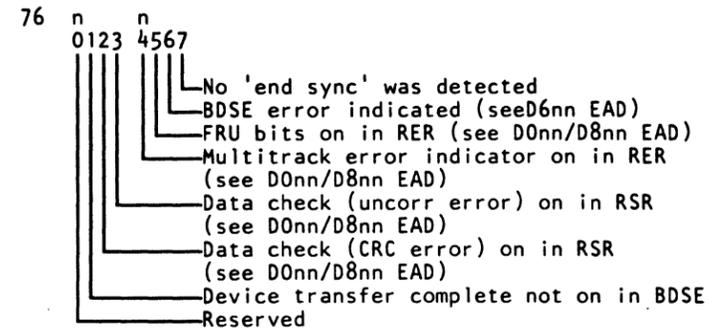
In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. 01A-A1N2 Buffer storage card
2. 01A-A1M2 Buffer storage card
3. Tape and cartridge
4. 01A-A1 Logic board
5. 01A-A2 Logic board
6. 02A-A1 Logic board
7. The source voltages at the input to the FRUs in this EAD
8. The cables, connectors, and nets between FRUs in this EAD
9. Media

Error Description - 76nn

During writing of the last record, a read error was detected.

Note: This EAD should be used in cases where bits 1 or 7 are on in the nn part of the error code. If any other bits are also on, use the EAD for those bits first.



Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

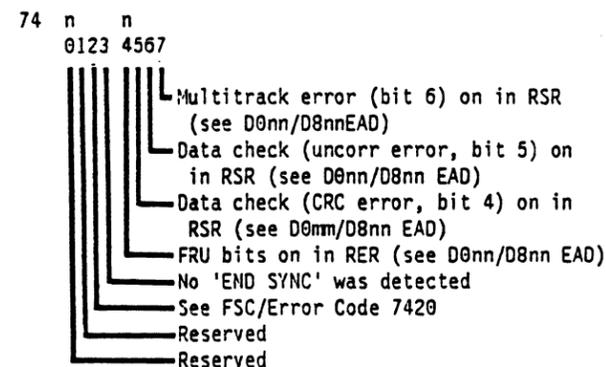
1. 01A-A1S2 Read clock and format card
2. 01A-A1K2 Buffer adapter card
3. 01A-A1 Logic board
4. 01A-A2 Logic board
5. 02A-A1 Logic board
6. The source voltages at the input to the FRUs in this EAD
7. The cables, connectors, and nets between FRUs in this EAD
8. Media



Error Description - 74nn

During writing of the last record, a read back check error was detected in the read error register (RER) or the read status register (RSR).

Note: If sense bytes 16 and 17 contain D0nn, D6nn, or D8nn, use the FSI entry for the error code in sense bytes 16 and 17. This EAD should be used only for error code 741n (missing end sync). If any other bits are on, use this EAD first.



At the end of a write data record operation, the write data flow logic writes pad characters (if needed) to complete the 71 data frames and then writes two sync characters (end sync). The postamble is then written.

The read data flow cards detect the end sync pattern as an indication of the end of a data record. The read data flow is the same for detecting begin sync, resync, and end sync. A failure to detect end sync is most likely an indication that end sync was not written.

Additional Possible Causes of Failure

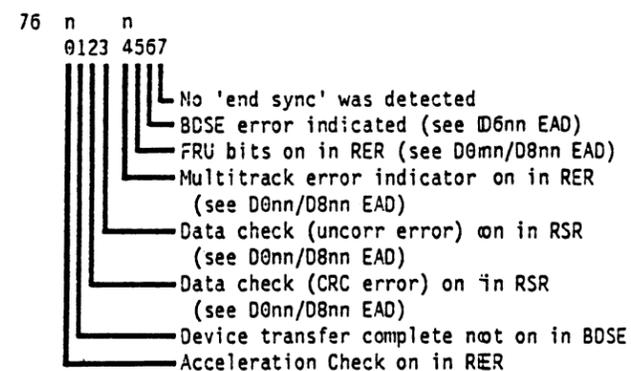
In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. 01A-A1N2 Buffer storage card
2. 01A-A1M2 Buffer storage card
3. Tape and cartridge
4. 01A-A1 Logic board
5. 01A-A2 Logic board
6. 02A-A1 Logic board
7. The source voltages at the input to the FRUs in this EAD
8. The cables, connectors, and nets between FRUS in this EAD
9. Media

Error Description - 76nn

During writing of the last record, a read error was detected.

Note: This EAD should be used in cases where bits 1 or 7 are on in the nn part of the error code. If any other bits are also on, use the EAD for those bits first.

**Additional Possible Causes of Failure**

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. 01A-A1S2 Read clock and format card
2. 01A-A1K2 Buffer adapter card
3. 01A-A1 Logic board
4. 01A-A2 Logic board
5. 02A-A1 Logic board
6. The source voltages at the input to the FRUs in this EAD
7. The cables, connectors, and nets between FRUs in this EAD
8. Media

0 0 0 0 0 0 0 0 0 0 0

Troubleshooting Guide

Note: See this page for test points.

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. Failures can be caused by defective scan controls and clock lines. Verify the clocks going to the areas as shown on the clock pages of this MI.
4. For intermittent errors, perform the following procedures repeatedly or loop the identified diagnostics and scope the EAD test points.

Note: If the troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time.

5. See the "Diagnostic Identification Code Table" on DIAG 3, and run the short loop-write-to-read (EE50) test or run the drive command exerciser using the commands that were failing on the user's job and scope the following signals for correct logic levels and tolerances.

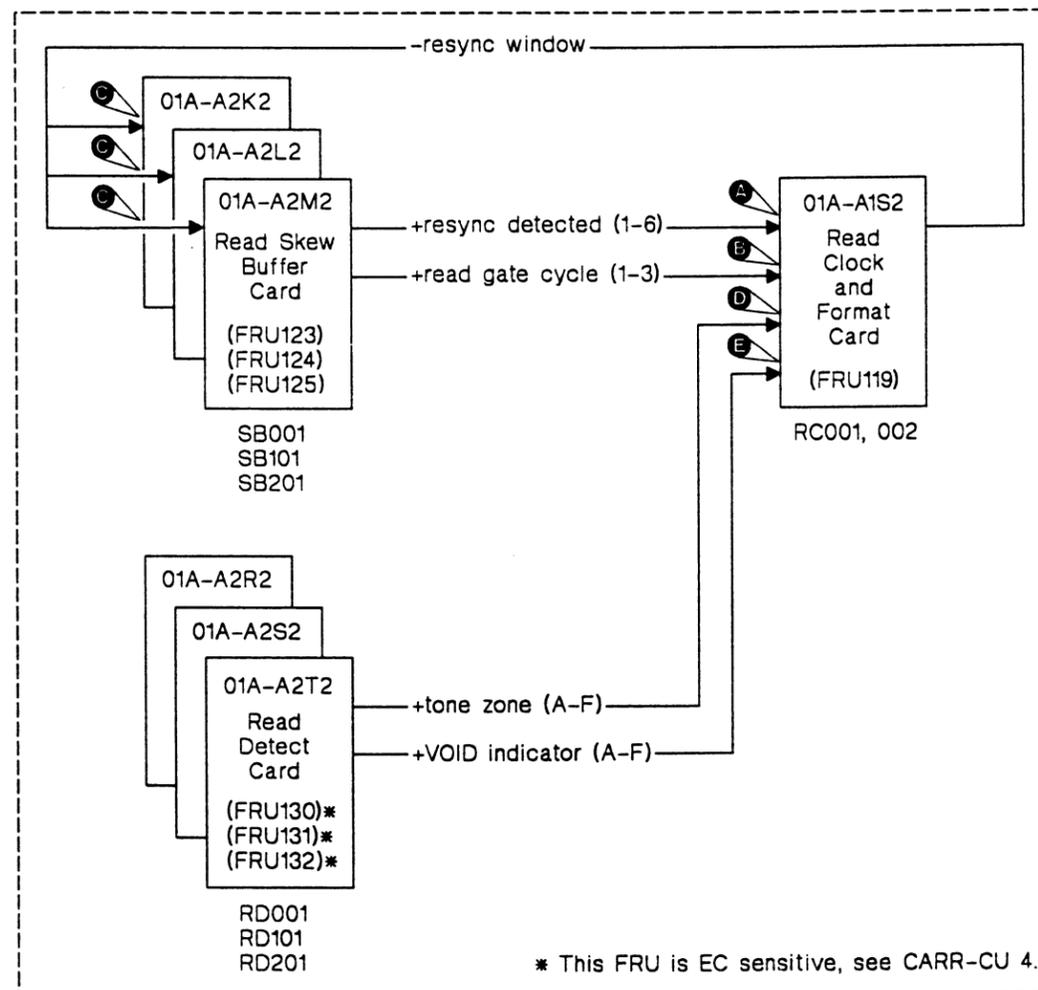
LOGIC NAME	TEST POINT
+resync detected (0-6)	A
+read gate cycle (1-3)	B
-resync window	C
+tone zone (A-F)	D
+VOID ind (A-F)	E

6. If you have performed a repair action, verify the correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, call your next level of support and then go to SPROC 1 "End of Call Actions."
7. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, call your next level of support and then go to SPROC 1 "End of Call Actions."

Maintenance Reference Table - No End Sync

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables" For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams
5	DIAG 1	How to run LWR (EE53) and the drive command exerciser

Error Diagram



0 0 0 0 0 0 0 0 0 0 0

Error Codes D0nn and D8nn

Error Description

This EAD contains information about the Read Error Register (RER) and Read Status Register (RSR) that pertains to errors in the read data path.

- The RSR register contains the error information that is caused by one or more of the drives, defective media, or the data path between the control units and the drives.
- Error bits that are on in the RER register normally indicate a control unit problem that is internal to the control unit.
- It is possible that errors that cause bits to be set on in both RSR and RER registers may affect each other.
- If error bits are on in both the RER and RSR registers, use the error bits that are on in RER register first, to try to fix the problem.
 - Error bits that are on in the RSR register, are D0nn error codes
 - Error bits that are on in the RER register, are D8nn error codes

The following is the list of diagnostics that will detect failures in the read data flow path.

Basic CU Test	- Basic CU check out
EE50	- Data path tests
EEA2	- Basic tape motion test
EEA3	- Write/Read exerciser
EEA4	- Write/Read exerciser
Drive Cmd. Exerciser	- CE initiated commands

If you entered this EAD with other than a D0nn or D8nn error code and the RER and RSR registers bits are not known, run the diagnostics first to obtain the error information needed to continue this EAD.

Note: Read errors may be caused by a problem on any drive attached to an interface (Local A or Remote B). Use Support Diskette and run Diag. EE50. If Diag. EE52 and 53 run without error and EE54 fails on more than one drive, remove "Tee" connector from drive next to CU and rerun EE54. If errors persist, remove "Tee" connector from next sequential drive and continue this procedure until EE54 runs error free. Trouble is in last drive that "Tee" connector was removed. Be sure to reconnect "Tee" connectors in drives that didn't fail. If RER and RSR Registers are zero, Diag. EEA0 may need to be run for additional troubleshooting information.

Read problems can show up in many ways. Each specific FSC will have troubleshooting action for the logic in the FSI or EAD for that error code. If those actions have already been followed, use the "Drive Interconnections" to isolate the problem to a tape unit or control unit. See EAD 1 for "Drive Interconnections."

RER Register

Bit Description

- 0 Error detected in read skew buffer zone A and B
- 1 Error detected in read skew buffer zone C and D
- 2 Error detected in read skew buffer zone E and F
- 3 Acceleration Check
- 4 CRC hardware error
- 5 Parity error detected in the error correction circuitry
- 6 Buffer data bus error
- 7 Read clock and format card circuitry error. Read skew buffer error bits 0, 1, or 2 are set. Buffer data bus error bit 6 is set.

RSR Register

Bit Description

- 0 Indicates that the read data flow recognized the beginning sync of a record (activates interrupt level 3).
- 1 Indicates that the read data flow recognized the ending sync and sent the last byte of data to the buffer.
- 2 Indicates that a transition from BOB, tape mark, or erase gap to the IBG has occurred. This bit is set only if RCR register bit 6 is active.
- 3 Gap In - indicates that the end of the last record (read or write) was detected at the drive's read/write head.
- 4 Indicates that the ECC has determined that the read data needs correction. This bit is activated during ECC Enable or Disable.
- 5 Activated by one of the following conditions:
 - ECC uncorrectable error
 - Resync sequence error (resync did not occur or occurred when it should not occurred). This indicates that the media may have been the failing FRU. Check 2 is activated.
- 6 This bit is active when the ECC detects more pointers than are permitted by the ECC threshold. Check 2 is activated.
- 7 This bit indicates that the CRC was not zero at the end of a record. It also indicates that the media may have been the failing FRU. Check 2 is activated.

Common Troubleshooting Guide for D0nn and D8nn Errors

1. Insert the Support Diskette and run all the read data flow diagnostics to isolate the failure. If no failure is detected, continue this EAD and loop the requested diagnostic in each troubleshooting guide.
2. See DF 1 for the RER and RSR and examine the information in the RER and RSR registers (from the diagnostic failure or from the nn byte of the D0nn or D8nn error code). To determine which troubleshooting guide to start with, use the first bit that is on in the RER register. Go to that troubleshooting information first and troubleshoot that bit, except for bit 3, and troubleshoot that bit last.
3. If troubleshooting that bit did not resolve the failure and other bits are on in the RER or RSR registers, use those bits and continue troubleshooting. If no other bits are on in the RER or RSR registers, start with bit 0 and follow all the troubleshooting information until the failure is resolved or "RER Bit 7 Troubleshooting Guide" has been completed without determining the failure.
4. Verify that all product maintenance FRUs have been replaced and that the procedures have been followed correctly before continuing the troubleshooting using this EAD.
5. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
6. When troubleshooting intermittent errors, loop the referenced diagnostics and scope the EAD test points. Look for unusual or deteriorating signals levels and troubleshoot accordingly.
7. Determine if the error occurs while reading a previously written good tape or only when writing new tapes. Run 3480 OLTs section D, tape interchange test (see the 3480 OLT user's guide).
8. Insert the Support Diskette and using the 'Stop on Error' option, run the 'Short Loop Write to Read' (EE52) test. If this test fails, the problem is in the control unit.
9. If the error occurs only when using a tape drive, use the Drive Diagnostic to read from that drive.
10. Run the Drive Diagnostic and use the "Drive Interconnections" (see EAD 1) "Read Bus Problem Information" EAD to isolate the problem to a failing drive. If multiple drives are failing, but the short loop write to read does not fail, it is probably a data path problem. If the Dual Control Unit feature is installed, see if the problem occurs on both local and remote control units and on both local and remote tape unit strings.

Error Codes D0nn and D8nn EAD 1995

11. Try to determine which tracks are failing, and whether or not the 'loop write to read' fails. If some tracks are always in error, scope the lines in the data path corresponding to the tracks always in error while the diagnostic is running. If the returned data is X'55', it indicates that the track is always dead tracked.
12. If the control unit fails, scope the error bits that are indicated, using the reference diagram error points, while looping the 'Short Loop Write to Read' (EE52) with the bypass error option.
13. Scope the read clocks, using the EAD for reference, for correct levels. Read clock errors can result in 'hang conditions'.
14. If the above troubleshooting procedures indicate a failing FRU that has already been replaced by the product package, replace the FRU a second time (even if the FRU has been replaced before).
15. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
16. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

Maintenance Information Reference Table for Common Troubleshooting Guide for D0nn and D8nn errors

STEP	REF PAGE	DESCRIPTION/COMMENTS
5	PWR 1	Power
12	DIAG 1	Diagnostic options
13	EAD 1	Clocks
7	OLT 1	OLT 3480 section D
8,12	DIAG 1	LWR diagnostic EE50
9,10	DIAG 1	Drive diagnostic EEA0
10	EAD 1	Drive interconnections

CU Hardware Detected Error Code – Sense Bytes 16 and 17 Equals D0nn

Error Description

An error was detected in the read data path.

Error Condition Theory

Note: See EAD 2005 for test points.

An error detected in the read data path sets a check 2 error condition on a Read, Read Backward, or Read Back Check operation. Bits 5, 6, or 7 of the RSR register (read clock and format card) are set to indicate the error that was detected. Error code D0nn is set (nn equals bits 5, 6, and 7 in the RSR register.)

The ECC corrects most of the read data errors that are detected in the read data flow. These errors are reported in the status information as 'correction required'. A count of the records needing correction is maintained as Format 21 in the EREP data.

Uncorrectable data checks are indicated when Read ECC and Correction ECC card detects an uncorrectable data error or the Read Clock and Format card detects a resync error.

The ECC circuitry can detect up to three tracks in error as long as not all the tracks are in the same group of nine tracks. Four tracks in error can be corrected as long as not all of the tracks are in the same group. Correction of the fourth track in error depends on the hardware pointers from the read detection cards. If an error is detected in a track and corrected, a non-zero bit in the syndrome is set. If, after correction, a non-zero bit exists, the error was not corrected and an uncorrectable error **A** is signaled to the read clock and format card. Bit 5 is set in the RSR register.

The Resync sequence is also checked. The data format consists of two beginning sync frames followed by 71 frames of data. When the second sync frame in the beginning sync is recognized (or dead tracked) in all six tracks on a skew buffer card, the 'gate read cycle' line **C** is activated for that skew buffer and is sent to the Read Clock and Format card. The recognition of two or three 'gate read cycle' lines starts a read frame sequence. The 'modulo 18' counter is stepped to gate bytes into the Read ECC Correction card.

When the Read Skew Buffer sends the frame to the ECC card, the first six tracks that are read are analyzed. When at least three of the six tracks are active, a resync frame is recognized, and the 'resync detected' **B** line to the Read Clock and Format card is set. The sequence is checked to ensure that a resync frame occurs only at 72 frame intervals. If there are too many or too few data frames between the resync frames, bit 5 is set in the RSR register.

In a write operation, more than one track in error in a subset (a group of nine tracks) causes a Multi Track Error (bit 6) to be set. In a read operation, if more than three tracks in a subset or a total of four tracks have pointers, the Multi Track Error (bit 6) is set. The Multi Track Error set by itself on a read operation is not an error.

The write data flow generates the correct data format, which includes the two cyclic redundancy check (CRC) characters. These 16 bits are generated from the data and residual frames. The read data flow receives the data from the tape drive and generates another CRC character in the Read ECC and Correction card. The check character that is received and generated should be equal, resulting in a zero output and setting the 'CRC equals zero' line **D** to the Read Clock and Format card. If the check characters do not compare equal, it indicates that part of the data record was read wrong and the ECC circuitry did not correct the failure. A CRC error is signaled and bit 7 is set in the RSR register.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. Tape media
2. FRU139 - 01A-A1 board
3. FRU140 - 01A-A2 Board
4. The source voltages at the input to the boards listed in this EAD.
5. The cables, connectors, or nets between the FRUs listed in this EAD.

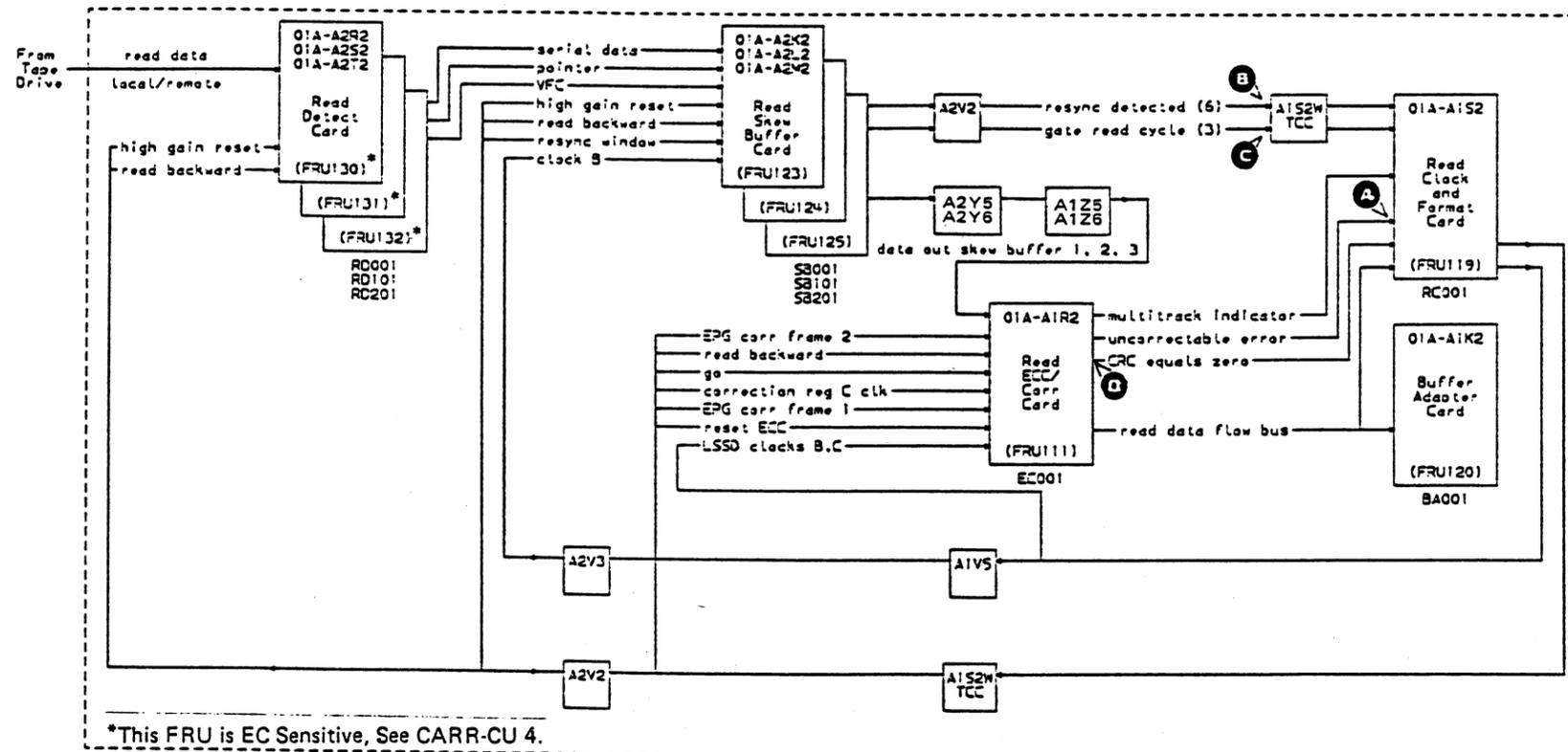


Error Diagram for Error Code D0nn

Net List for RSR Bits 5, 6, and 7

NET	LINE NAME	ERROR CODE	DIAGNOSTIC
\$ECRDFBUS (0-9,P)	+Read Data Flow Bus	D001	EEA0
\$RBUS1A1-9B	+/-Read Data Local/Remote	D005	EEA0
\$RDVFT01-T18	+VFC Trk 1A-9B	D001	EEA0
\$RSDAT01-T18	-Serial Data TRK 1A-9B	D001	EEA0
\$RDPNTR01-18	-Pointer Trk 1A-9B	D001	EEA0
\$CLK01TP-18TP	-Clock Test Point	D001	EEA0
\$VCO01TP-18TP	+Memory Voltage Test Point	D001	EEA0
\$SS01TP-18TP	+Single Shot Test Point	D001	EEA0
\$RCRSTECC	+Reset ECC	D007	EEA0, EE50
\$RCCREGCK	+Correction Reg C Clock	D001	EEA0, EE50
\$RCGO	+Go	D001	EEA0, EE50
\$ECCRCZRO	+CRC Equals Zero	D001	EEA0, EE50
\$RCEPGCF1	+EPG Completion Frame 1	D004	EEA0
\$RCEPGCF2	+EPG Completion Frame 2	D004	EEA0
\$RCBCCC00	+Backward Clock Control	D005	EEA0
\$RCRCKD00	-Read Backward	D007	EEA0, EE50
\$RCCLK00	-Demodulator Gate C	D003	EEA0, EE50
\$ECUNCERR	-Uncorrectable Error	D004	EEA0, EE50
\$ECMULTRK	-Multitrack Indicator	D002	EEA0, EE50
\$RCRSYW00	-Resync Window	D004	EEA0, EE50

See the control unit logic for pin numbering and detail net information.



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0 0 0 0 0 0 0 0 0 0 0

CU Hardware Detected Error Code – Sense Bytes 16 and 17 Equals D8nn

Error Description

The read data flow path receives data from the drive and prepares the data for sending to the host system. The data is reformatted and any recoverable data errors are corrected before loading into the data buffer. The data path is parity checked to ensure data integrity. The correction hardware is checked to ensure correct operation.

FRU pointer bits are set in the Read Error Register (RER) for any errors that are detected. Any hardware errors sets the check 2 signal, which is sent to the microprocessor.

Error Condition Theory

Note: See EAD 2015 for test points.

The following functional areas are part of the read data flow circuitry and failures are detected as D8nn error codes.

- Read detect cards
 1. Converts the 18 tracks of analog data from the drive to 18 tracks of digital data.
 2. Detects tones, zones, and voids that are used by the read clock format card.
 3. Only a small amount of error detection is done by these cards. Pointers to probable failing tracks are set when the analog signal amplitude goes below the threshold.
- Read skew buffer cards
 1. Provides the skew correction of the 18 tracks of digital data received from the read detect cards.
 2. Provides some error detection to the read ECC and correction card.
- Read ECC and correction card
 1. Converts the 18 tracks of deskewed digital data into two 8-bit bytes of data that is sent to the buffer adapter card.
 2. Provides error correction to the data bits.
 3. Provides error detection to the read clock and format card.
- Read clock and format card
 1. Provides the clocking to all the cards listed above.

2. Provides all the control lines for presenting data to the buffer adapter card.
3. Contains the RER and RPR external registers used for error detection and FRU isolation.
4. Presents the detected error information about the read data flow to the microprocessor using the 'check 2' line and the RER external register contents.

Troubleshooting Information for RER Bits 0, 1, and 2

Error Description

RER, bits 0, 1, and 2, indicate possible error conditions associated with the read skew buffers.

Error Condition Theory

The read skew buffer detected errors are set by three different conditions:

- Condition 1 (see **A** on "Error Diagram for RER Bits 0, 1, and 2")

The data format that is read consists of two sync symbols followed by the read data. When the second sync symbol is recognized, the '+ gate read cycle' line is sent to the read clock and format card. When the read clock and format card receives the '+ gate read cycle' lines from two or three read skew buffer cards, it starts a read frame sequence. An error condition is indicated if the '+ gate read cycle' line from one card is not equal to the other two cards.

For example, the '+ gate read cycle' line for read skew buffer 1 is active at the same time as the other two are inactive. Therefore, bits 0 and 7 (X'81') would be set in the RER register indicating that the read skew card 1 is failing.

+ gate read cycle (read skew buffer 1) equals +.
 + gate read cycle (read skew buffer 2) equals Æ.
 + gate read cycle (read skew buffer 3) equals -.

The hardware detected error code will be D881, D841, or D821.

- Condition 2 (see **B** on "Error Diagram for RER Bits 0, 1, and 2")

Each read skew buffer card develops a '-ROC equal zero' line when a data frame has been read from the read skew buffer and the readout counter equals zero. An error is detected in the read clock and format card if the '-ROC equals zero' lines from each read skew buffer card do not compare equal. A comparison process is used to determine which read skew buffer card is in error. The card that is not like the other two is considered the failing card and the

appropriate RER bit is set. RER bit 7 is also set to indicate the read clock and format card is a possible FRU.

In the example, the '- ROC equals zero' line for read skew buffer 2 is inactive at the same time that the other lines are active. Therefore, bits 1 and 7 (X'41') are set in the RER indicating read skew buffer 2 is failing.

+ ROC equals zero'(read skew buffer 1) equals -.
 -ROC equals zero'(read skew buffer 2) equals +.
 + ROC equals zero'(read skew buffer 2) equals -.

The detected hardware error code will be D881, D841, or D821.

- Condition 3 (see **C** on "Error Diagram for RER Bits 0, 1, and 2")

RER bits 0, 1, and 2 can also be set by the read ECC and correction card. When the serial data enters the read skew buffer card, a 'check bit' is developed from the serial data parity, pointer, and the check bit generated from the internal register parity. After the deskew buffer's 'read in' and 'read out' operation, another bit is generated from the sequence checking circuitry, named 'address parity'. The 'check bit' and 'address parity' bits are compared in the read ECC and correction card. If one of the read skew buffers does not compare equal, a '+ skew buffer error latched' line is sent to the read clock and format card and the appropriate RER bit is set. The error is detected in the read ECC and correction card, therefore, bit 5 of the RER is also set indicating it is a possible FRU.

The hardware detected error code will be D884, D844, or D824.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. FRU139 A1 board
2. FRU140 A2 board
3. The source voltages at the input to the boards in this EAD
4. The cables, connectors, or nets between the FRUs in this EAD.

Troubleshooting Guide

1. See the "Common Troubleshooting Guide" for error codes D0nn and D8nn.
2. Insert the support diskette and run the read data flow diagnostics to isolate the failure.

Did this diagnostic fail?

YES NO
 |
 | Continue with the actions in the EAD.

Did the failure direct you back to the same EAD?

YES NO
 |
 | Go to the place that the diagnostics sends you and do the actions.

Does the EADs have specific actions for the diagnostic failure?

YES NO
 |
 | Loop the diagnostics and do any other actions specified in the EADs.

Do the actions specified for that failure.

3. Scope the read clocks, using the EAD for correct voltage levels.
4. If the read skew buffer FRU pointer bits are not always the same, scope the 'reset' line. A bad 'reset' line will cause errors at the different read skew buffers (see **D**) It may also result in other error codes.

Maintenance Information Reference Table for RER Bits 0, 1, and 2

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	DIAG 1	Diagnostic EE50, EEAO
2	DIAG 1	Diagnostics Options
3	EAD 1	Clocks

Error Codes D0nn and D8nn (Continued)

**Troubleshooting Information for RER Bit 3
Acceleration Check**

Error Description

While a block of data is being read or is readback checked, the read detect cards are testing the rate that the data is received from the drive.

If the data rate varies rapidly over a short period of time and a similar change is sensed in a track in each of the three zones at the same time, the error is set into the RER external register. This can be a normal condition due to the variations of media and the tape path.

During a read operation (either read or readback check of write) the read detect cards use '+ HI gain inactive' and '+ read condition' to change the meaning of three void lines: Void A, Void C, and Void E to ISV card 1, ISV card 2, and ISV card 3 respectively.

Acceleration check is one of the errors that is counted in the read transient counter and the write transient counter in format 21 sense data bytes 20 and 21 respectively.

The error recovery procedure (ERP) action for write operations is:

When the first error occurs rewrite the block in place. If an error occurs again perform an erase gap followed by another retry. Repeat until error recovery or the error becomes permanent.

Additional Possible Causes of Failure.

Ensure that the drive tape path is clean. See CARR-DR 130. Change the media used.

FRU NUMBER	FRU NAME
012	Decoupler assembly
277	Head compliant guides
013	Head and guide assembly
014	Tension transducer
130	Read detect card 1
131	Read detect card 2
132	Read detect card 3
119	Read clock and format card

Troubleshooting Guide

1. Insert the product diskette, IML the control unit and run option 1, "START REPAIR."
2. Insert the support diskette and run the write and read diagnostics to isolate the failure.

Maintenance Information Reference Table for Read Error Register Bit 3

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	DIAG 1	Diagnostic EE50, EEA0
2	DIAG 1	Diagnostic Options



Troubleshooting Information for RER Bit 4

Error Description

The read error register (RER) bit 4, indicated a read clock and format card detected CRC hardware error.

Error Condition Theory

This bit indicates that the CRC checker on the ECC card has failed. The ECC card sends the 'CRC equal zero' line to the read clock and format card. When this line is active, the read clock and format card is able to detect an error on the CRC hardware located on the ECC card. If the line is active at the wrong time (other than the normal end of a record) RER bit 4 is set. If the tag line is at a low voltage level during the end of a record, RSR bit 7 is set.

RER bit 4 sets 'check 2', which notifies the microprocessor that an error has occurred. The hardware detected error code is D808.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. FRU139 A1 board
2. FRU140 A2 board
3. The source voltages at the input to the boards in this EAD
4. The cables, connectors, or nets between the FRUs in this EAD.

Troubleshooting Guide

1. See the "Common Troubleshooting Guide" for D0nn and D8nn.
2. Insert the support diskette and run the read data flow diagnostic to isolate the failure.

Did this diagnostic fail?

YES NO
Continue with the actions in the EAD.

Did the failure direct you back to the same EAD?

YES NO
Go to the place that the diagnostics sends you and do the actions.

Does the EADs have specific actions for the diagnostic failure?

YES NO
Loop the diagnostics and do any other actions specified in the EADs.

Do the actions specified for that failure.

3. For intermittent errors, loop the referenced diagnostic(s) and scope the EAD test points. Look for unusual or deteriorating signal levels and troubleshoot accordingly.

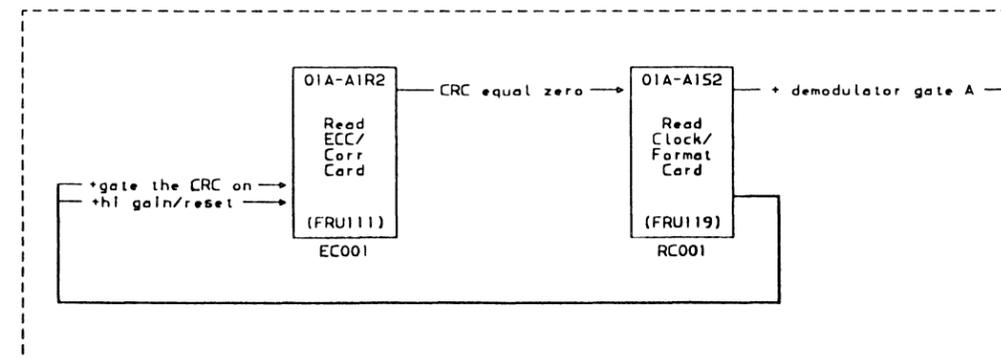
Maintenance Information Reference Table for RER Bit 4

STEP	REF PAGE	DESCRIPTION/COMMENTS
2,3	DIAG 1	Diagnostic EE50, EEAO
2,3	DIAG 1	Diagnostics Options

Net List for RER Bit 4

NET	LINE NAME	ERROR CODE	DIAGNOSTIC
\$RCGATCRC	+Gate The CRC on	D808	EE50, EEAO
\$RCCRST00	+Hi Gain/Reset	D808	EE50, EEAO
\$RCCLKA00	+Demodulator Gate A	D808	EE50, EEAO

Error Diagram for RER Bit 4



See the control unit logic for pin numbering and detail net information.

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Error Codes D0nn and D8nn (Continued)

Troubleshooting Information for RER Bit 5

Error Description

The read error register (RER) bit 5, indicated a read correction and ECC detected error.

Error Condition Theory

Note: See EAD 2030 for test points.

The read ECC and correction card receives data from the read skew buffers, reformats it into byte data for storing into the data buffer, and makes any error corrections that are necessary. The read ECC and correction card circuitry is internally parity checked during the complete data handling process to ensure data integrity. Bit 5 is set by five different conditions. Four conditions are detected in the read ECC and correction card and the last condition is detected in the read clock and format card.

- Condition 1

The 'AXP parity error group' line **A** signals internal hardware parity error conditions. The hardware detected error code is D804.

- Condition 2

The 'corr reg parity check' line **B** indicates a parity check of the corrected data in the correction register before the data is passed to the data buffer. The hardware detected error code is D804.

- Condition 3

The 'decode parity error' line **C** is a parity check of the read data after it enters the read correction and ECC card. It is checked internally on the card. The hardware detected error code is D804.

- Condition 4

The 'skew buffer error latched' line **D** is a check of the skew buffer data. Troubleshoot any read skew buffer error bits first. See "Troubleshooting Information for RER Bits 0, 1, and 2" on EAD 2010 for the procedure. The hardware detected error codes are D884, D844, and D824.

- Condition 5

The 'read data flow data bus parity error' line **E** is a parity check detected during the residual byte. This error also sets the read clock and format bit (RER bit 7). The hardware detected error code is D805.

Any condition that sets bit 5 of the RER register, also sets check 2, which notifies the microprocessor that an error has occurred.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

- FRU139 A1 board
- FRU140 A2 board
- The source voltages at the input to the boards in this EAD
- The cables, connectors, or nets between the FRUs on this EAD

Troubleshooting Guide

- See the "Common Troubleshooting Guide" for D0nn and D8nn.

- Insert the support diskette and run the read data flow diagnostic to isolate the failure.

Did this diagnostic fail?

YES NO

Continue with the actions in the EAD.

Did the failure direct you back to the same EAD?

YES NO

Go to the place that the diagnostics sends you and do the actions.

Does the EADs have specific actions for the diagnostic failure?

YES NO

Loop the diagnostics and do any other actions specified in the EADs.

Do the actions specified for that failure.

- For intermittent errors, loop the referenced diagnostic(s) and scope the EAD test points. Look for unusual or deteriorating signal levels and troubleshoot accordingly.

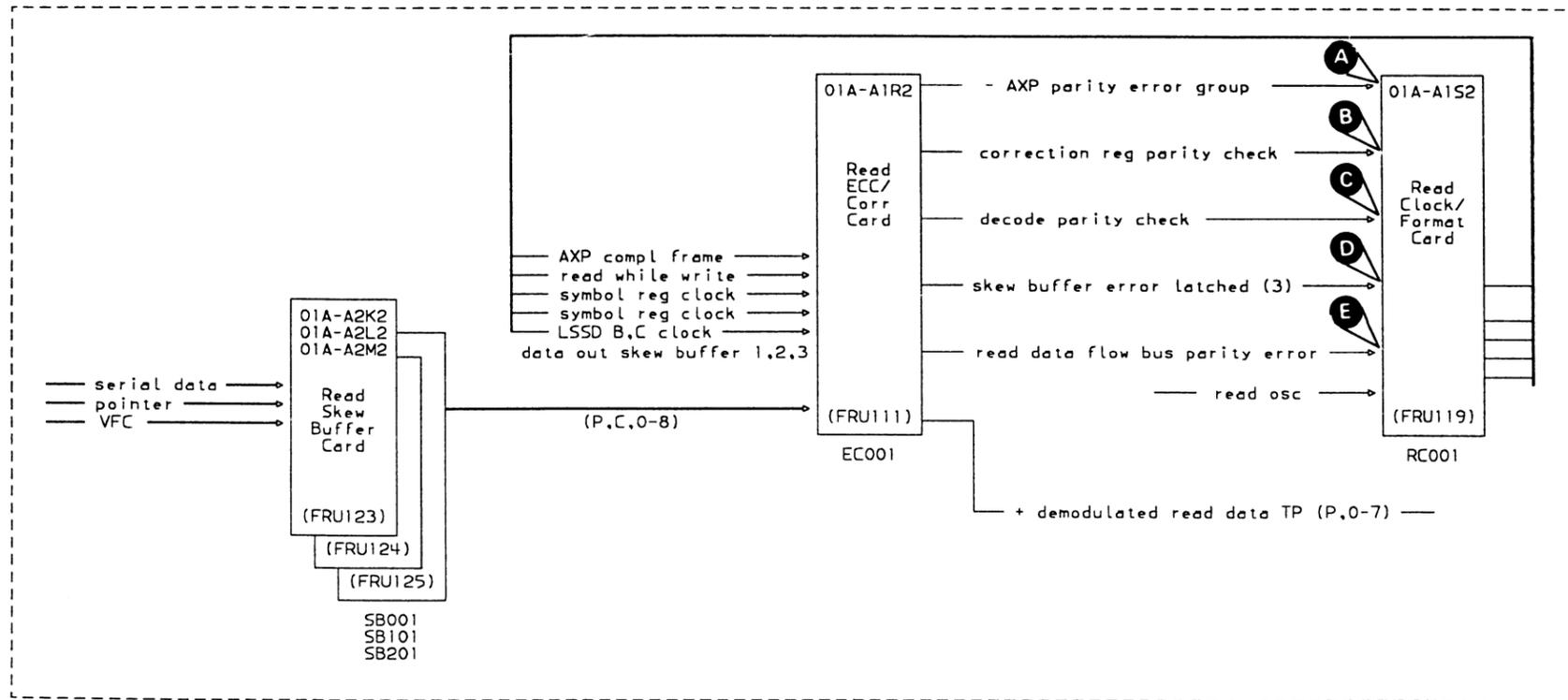
Error Codes D0nn and D8nn (Continued) EAD 2025

Maintenance Information Reference Table for RER Bit 5

STEP	REF PAGE	DESCRIPTION/COMMENTS
2,3	DIAG 1	Diagnostic EE50, EEA0
2,3	DIAG 1	Diagnostics Options

Troubleshooting Information for RER Bit 5
(Continued)

Error Diagram for RER Bit 5



See the control unit logic for pin numbering and detail net information.

Net List for RER Bit 5

NET	LINE NAME	ERROR CODE	DIAGNOSTIC
\$ECAXPERC	-AXP Parity Error Group	D804	EE50, EEA0,
\$RCSYMC00	-Symbol Register Clock	D804	EE50, EEA0
\$ECDCDPER	+Decode Parity Error	D804	EE50, EEA0
\$RCECCLKB	+LSSD B Clock (T1T2)	D804	EE50, EEA0,
\$RCECCLKC	+LSSD C Clock (T7T8)	D804	EE50, EEA0,
\$ECDATBIT	+Demodulated Read Data TP (P,0-7)	D804	EE50, EEA0

Troubleshooting Information for RER Bit 6

Error Description

The read error register (RER) bit 6, indicated a buffer data bus error occurred.

Error Condition Theory

RER register bit 6 is set if an error is detected in the data that is transferred to the data buffer. The buffer adapter card keeps track of the bytes received and sends the '-RDF toggle' line to the read clock and format card. Its value is compared to an internal latch which is toggled by 'read data ready'.

This error also sets RER register bit 7, because the error is detected in the read clock and format card. It is also a possible failing FRU. Check 2 is sent to the microprocessor to signal that an error has occurred. The hardware detected error code is D803.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. FRU120 01A-A1K2
2. FRU139 A1 board
3. FRU140 A2 board
4. The source voltages at the input to the boards in this EAD
5. The cables, connectors, or nets between the FRUs on this EAD.

Troubleshooting Guide

1. See the "Common Troubleshooting Guide" for D0nn and D8nn.
2. Insert the support diskette and run the read data flow diagnostic to isolate the failure.

Did this diagnostic fail?

YES NO
Continue with the actions in the EAD.

Did the failure direct you back to the same EAD?

YES NO
Go to the place that the diagnostics sends you and do the actions.

Does the EADs have specific actions for the diagnostic failure?

YES NO
Loop the diagnostics and do any other actions specified in the EADs.

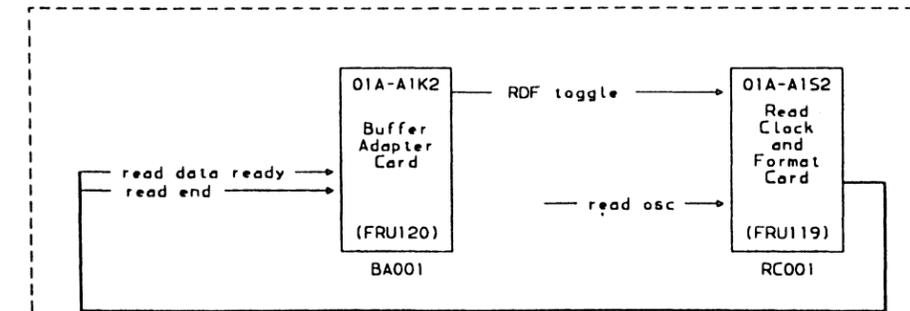
Do the actions specified for that failure.

3. For intermittent errors, loop the referenced diagnostic(s) and scope the EAD test points. Look for unusual or deteriorating signal levels and troubleshoot accordingly.

Maintenance Information Reference Table for RER Bit 6

STEP	REF PAGE	DESCRIPTION/COMMENTS
2,3	DIAG 1	Diagnostic EE50, EEA0
2,3	DIAG 1	Diagnostics Options

Error Diagram for RER Bit 6



See the control unit logic for pin numbering and detail net information.

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Net List for RER Bit 6

NET	LINE NAME	ERROR CODE	DIAGNOSTIC
\$RDFTOG	-RDF Toggle	D803	EE50, EEA0
\$RCDTARDY	-Read Data Ready	D803	EE50, EEA0
\$RCRDEND	-Read End	D803	EE50, EEA0

Error Codes D0nn and D8nn (Continued)

Troubleshooting Information for RER Bit 7

Error Description

The read error register (RER) bit 7, indicated a read clock and format error occurred.

Error Condition Theory

The read clock and format card provides read clock checking and read data flow control (under control of the microprocessor). This function is accomplished by receiving control information, and sending pattern, status and error information to the microprocessor.

RER bit 7 is set if an error is detected in the read clock and format card. If bit 7 is on by itself, either a 'clock sequence error', 'count', or 'format sequence error' has occurred. Bit 7 is also set if RER bits 0, 1, 2, 5, or 6 are set. Troubleshoot these bits first if they occur with bit 7. The hardware detected error codes are D801, D803, D805, D821, D841, D881.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

- FRU139 A1 board
- FRU140 A2 board
- The source voltages at the input to the boards in this EAD
- The cables, connectors, or nets between the FRUs on this EAD.

Troubleshooting Guide

- See the "Common Troubleshooting Guide" for D0nn and D8nn.
- Insert the support diskette and run the read data flow diagnostic to isolate the failure.

Did this diagnostic fail?

YES NO
Continue with the actions in the EAD.

Did the failure direct you back to the same EAD?

YES NO
Go to the place that the diagnostics sends you and do the actions.

Does the EADs have specific actions for the diagnostic failure?

YES NO
Loop the diagnostics and do any other actions specified in the EADs.

Do the actions specified for that failure.

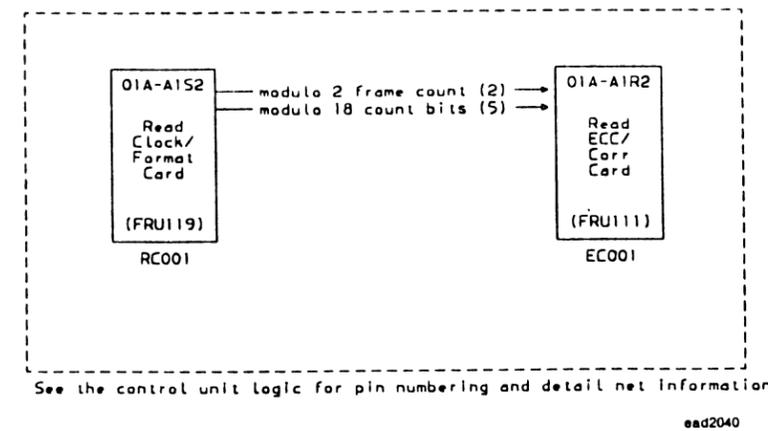
- For intermittent errors, loop the referenced diagnostic(s) and scope the EAD test points. Look for unusual or deteriorating signal levels and troubleshoot accordingly.

Maintenance Information Reference Table for RER Bit 7

STEP	REF PAGE	DESCRIPTION/COMMENTS
2,3	DIAG 1	Diagnostic EE50, EEAO
2,3	DIAG 1	Diagnostics Options

Error Codes D0nn and D8nn (Continued) EAD 2040

Error Diagram for RER Bit 7



Net List for RER Bit 7

EAD test points for hardware detected error code D801

NET	LINE NAME	ERROR CODE	DIAGNOSTIC
\$RCFRMONT (0)	+Modulo 2 Frame Count 0	D801	EE50, EEAO
\$RCFRMONT (1)	+Modulo 2 Frame Count 1	D801	EE50, EEAO
\$PCMCOUNT (1)	+Modulo 18 Cnt Bit 1	D801	EE50, EEAO
\$PCMCOUNT (2)	-Modulo 18 Cnt Bit 2	D801	EE50, EEAO
\$PCMCOUNT (3)	-Modulo 18 Cnt Bit 3	D801	EE50, EEAO
\$PCMCOUNT (4)	-Modulo 18 Cnt Bit 4	D801	EE50, EEAO
\$PCMCOUNT (5)	-Modulo 18 Cnt Bit 5	D801	EE50, EEAO

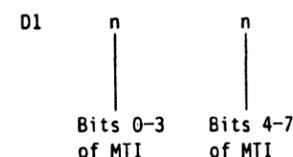
Error Description

The maintenance adapter card detected an error.

Error Condition Theory

The maintenance adapter card detects errors in itself and in addressing the external registers on other cards. These errors set bits in the maintenance-tag-in (MTI) register on the maintenance adapter card. When a maintenance-tag-in register bit is set, the maintenance adapter card activates '- check 2' to the microprocessor card.

When the microprocessor card detects '- check 2', it reads the registers on the cards that can activate '- check 2'. When the microprocessor reads bits on in the maintenance-tag-in register, it uses the bits in the MTI to set the D1nn error code as follows.



Bit Meaning

- 0-2 Masked off for D1nn FSC
- 3 An XR address parity error occurred on one of the cards on the XR address and extend buses.
- 4 None or more than one of the cards responded when an XR was addressed by the microprocessor card.
- 5 Either the maintenance adapter had a parity check in a register, or it detected a parity check on the XR address and extend lines.
- 6 The maintenance adapter card detected a parity error while it was communicating with the MD.
- 7 Check 1 - indicates a check 1 condition occurred and was not reset by a check or hardware reset.

The troubleshooting procedure to be followed is controlled by the MTI bits that are on. If MTI bit 6 is on, always troubleshoot that problem first. The cause of the inability to communicate with the MD must be solved before the other problems, even though the communication problem may be unrelated to the customer's problem.

Note: Bit 6 should never turn on for a customer problem because the customer's operation should never try to communicate with the MD.

MTI Bit 6, Maintenance Adapter to MD Communication Failure

The maintenance adapter card checks the parity of serial data transferred from the MD to the maintenance adapter. If the maintenance adapter card detects a parity error, it turns on bit 6 in the maintenance-tag-in register and activates '- check 2' to the microprocessor card.

Note: This error will most likely be detected when the MD is first connected and is unable to communicate with the maintenance adapter. This error may be indicated as a port-open error.

To troubleshoot this failure, see EAD 1 for "Error Code E103, Port Open and MTI Bit 6 Errors."

MTI Bit 3, XR Addressing Parity Error

Note: See EAD 2103 for the test points.

This error occurs when one of the cards detects a parity error on the 'xr address bus' A lines. The card that detects the error activates '- xr error ungated' G to the maintenance adapter card. The maintenance adapter card turns on MTI bit 3 and activates '- check 2' to the microprocessor card.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU121) status store card 01A-A1G2
2. (FRU118) drive adapter card 01A-A1Q2
3. (FRU114) buffer control card 01A-A1L2
4. (FRU120) buffer adapter card 01A-A1K2
5. (FRU116) write data card 01A-A1P2
6. (FRU119) read clock and format card 01A-A1S2
7. Top card connectors
8. Source voltages at the inputs to the FRUs on this EAD
9. Cables, connectors, and nets between the FRUs on this EAD
10. (FRU139) logic board 01A-A1.

Troubleshooting Procedure

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check the source voltages at the input to each FRU identified in the FSI to verify that the voltages are in tolerance.

3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Run the Maintenance Device/Maintenance Adapter, the CU Basic, and the EE85 diagnostic tests. If a failure occurs, use the information provided with the diagnostic failure information to determine the troubleshooting path to follow. (The diagnostic might send you back to this EAD.)

Did this diagnostic fail?

YES NO
Continue with the actions in the EAD.

Did the failure direct you back to the same EAD?

YES NO
Go to the place that the diagnostics sends you and do the actions.

Do the EADs have specific actions for the diagnostic failure?

YES NO
Loop the diagnostics and do any other actions specified in the EADs.

Do the actions specified for that failure.

5. If the Maintenance Device/Maintenance Adapter diagnostic detects an error, use the MTI bit 6 procedure in this EAD to troubleshoot the error.
6. Use the register alter/display routine in SDISK to select a microprocessor read/write type external register such as the LSP register. If the register you selected displays on the MD, the address bus is operable to the microprocessor.
7. Load the selected register with FF. Display the register again. If the data displayed is FF, the register can be written correctly.
8. Load the selected register with 00. Display the register again. If the register contains 00, the register can be both set and reset.
9. Repeat steps 6, 7, and 8 for each card until you find the card that indicates the addressing parity error.

10. Set up an oscilloscope with a X10 probe for 2 volts/division. Sync on 01A-A1E2Z12.
11. Scope the following nets while running diagnostic EEFO.

NET	NAME	DIAGRAM REF
\$MPXRAD00	XR address bus	(A)
\$MPXRAE00	Extend bit 0	(B)
\$MPXRAE01	Extend bit 1	(B)
\$BAXRADDR	XR address bits to buffer control card	(D)
	Clocks	See EAD 1 for "Clocks to and from the Maintenance Adapter"

12. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
13. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, Call your next level of support and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables" For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams
4,11	DIAG 1	How to run diagnostics CU Basic, MD/MA, EE85,EEFO
6,7,8	SDISK 1	How to alter and display external registers
6,7,8	DF 1	External register addresses and locations
12	MD 1	How to use the MD with the 3480

Error Code D1nn (Continued)

MTI Bit 4, External Register Response Error

The maintenance adapter card monitors the XR addressed lines **E** when the microprocessor card addresses an external register. If none of the lines or more than one of the lines become active, the maintenance adapter card turns on bit 4 in the MTI and activates '- check 2' to the microprocessor card.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU117) microprocessor card 01A-A1D2
2. (FRU121) status store card 01A-A1G2
3. (FRU114) buffer control card 01A-A1L2
4. (FRU120) buffer adapter card 01A-A1K2
5. (FRU116) write data card 01A-A1P2
6. (FRU118) drive adapter card 01A-A1Q2
7. (FRU119) read clock and format card 01A-A1S2
8. Top card connectors
9. Source voltages at the inputs to the FRUs on this EAD
10. Cables, connectors, and nets between the FRUs on this EAD
11. (FRU139) logic board 01A-A1.

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Run the Maintenance Device/Maintenance Adapter, the CU Basic, and the EE85 diagnostics. If an error is detected by one of the diagnostics, use the information supplied with the failure ID to select the debug path.

Did this diagnostic fail?

YES NO

Continue with the actions in the EAD.

Did the failure direct you back to the same EAD?

YES NO

Go to the place that the diagnostics sends you and do the actions.

Does the EADs have specific actions for the diagnostic failure?

YES NO

Loop the diagnostics and do any other actions specified in the EADs.

Do the actions specified for that failure.

5. Set up an oscilloscope with a X10 probe for 2 volts/division. Sync on '- xr read gate' or '- xr write gate', as appropriate for the operation you choose in the next step.
6. Select one external register from each card and loop diagnostic EEFO on the registers (one at a time). Scope the 'xr addressed' lines **E** (see EAD 2103). The card that contains the register you are operating with the EEFO diagnostic should have its 'xr addressed' line active. All other 'xr addressed' lines should be not active.
7. XR data bus and XR address bus errors are also detected as Fnnn error codes. If you are getting multiple error codes, use the EAD for error code Fnnn for further aid.
8. Probe or scope the signals shown in "XR Bus and Control Clocks" while running diagnostic EEFO. Look for bad line levels and shifting pulse times.

9. Run diagnostic EEFO and scope the following nets.

NET	NAME	DIAGRAM REF
\$WDXRAC00	WD XR addressed	E
\$RCXRAC00	RC XR addressed	E
\$DIXRAC00	DI XR addressed	E
\$SSXRAC00	SS XR addressed	E
\$BAXRAC00	BA XR addressed	E
\$MPXADR00	MP XR addressed	E
\$MPXRAD00	XR address bus	A
\$MPXRAE00	Extend bit 0	B
\$MPXRAE01	Extend bit 1	B
\$MPXRBA00	XR data bus A	C
\$MPXRBB00	XR data bus B	C
\$BAXRRDWT	XR write/read	F
\$BAXRADDR	XR address bits to buffer control card	D
	Clocks	See EAD 1 for "Clocks to and from the Maintenance Adapter"

Error Code D1nn (Continued) EAD 2101

10. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

11. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables" For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4, 6, 8, 9	DIAG 1	How to run diagnostics CU Basic, MD/MA, EE85, EEFO
8	EAD 1	Location of "XR Bus and Control Clocks"
6	DF 1	External register addresses and locations
10	MD 1	How to use the MD with the 3480

MTI Bit 5, Maintenance Adapter Error

The maintenance adapter card checks parity on external registers that it contains and on the XR address bus. If the maintenance adapter card detects bad parity in one of the registers or on the XR address bus, it sets MTI bit 5 and activates '- check 2' to the microprocessor card.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU117) microprocessor card 01A-A1D2
2. Source voltages to the FRUs on this EAD
3. Cables, connectors, and nets between the FRUs on this EAD
4. (FRU139) logic board 01A-A1.

Troubleshooting Procedure

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Run the Maintenance Device/Maintenance Adapter, the EE85, and the CU Basic diagnostic tests in that order. If a failure occurs, use the information provided with the diagnostic failure information to determine the debug path to follow. (The diagnostic might send you back to this EAD.)

Did this diagnostic fail?

YES NO
 |
 | Continue with the actions in the EAD.

Did the failure direct you back to the same EAD?

YES NO
 |
 | Go to the place that the diagnostics sends you and do the actions.

Does the EADs have specific actions for the diagnostic failure?

YES NO
 |
 | Loop the diagnostics and do any other actions specified in the EADs.

Do the actions specified for that failure.

5. If the Maintenance Device/Maintenance Adapter diagnostic detects an error, use the MTI bit 6 procedure in this EAD to troubleshoot the error.
6. Use the register alter/display routine in SDISK to select a maintenance adapter read/write type external register such as the MDO register. If the register you selected displays on the MD, the address bus is operable to the microprocessor.
7. Load the selected register with FF. Display the register again. If the data displayed is FF, the register can be written correctly.
8. Load the selected register with 00. Display the register again. If the register contains 00, the register can be both set and reset.
9. Repeat steps 6, 7, and 8 for each register until you find the register that indicates the parity error.

Note: The MDI register can be read but not written to because it is a read-only register.

10. Set up an oscilloscope with a X10 probe for 2 volts/division. Sync on 01A-A1E2Z12.

11. Scope the following nets while running diagnostic EEFO.

NET	NAME	DIAGRAM REF
\$MPXRAD00	XR address bus	A
\$MPXRAE00	Extend bit 0	B
\$MPXRAE01	Extend bit 1	B
	Clocks	See EAD 1 for "XR Bus and Control Clocks"
	Clocks	See EAD 1 for "Clocks to and from the Maintenance Adapter"

12. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

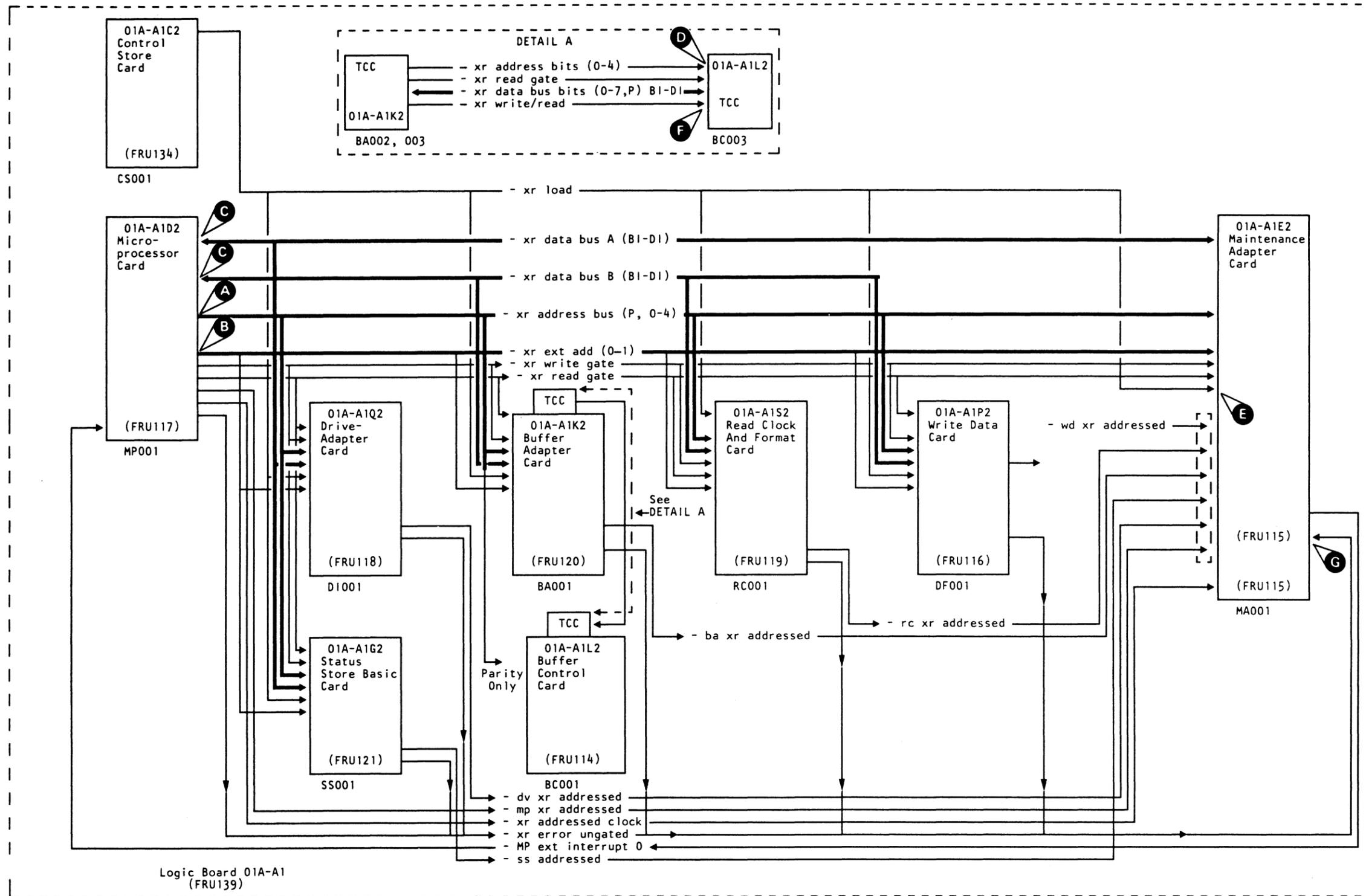
- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

13. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams
4, 11	DIAG 1	How to run diagnostics CU Basic, MD/MA, EE85,EEFO
6, 7, 8	SDISK 1	How to alter and display external registers
6, 7, 8	DF 1	External register addresses and locations
12	MD 1	How to use the MD with the 3480





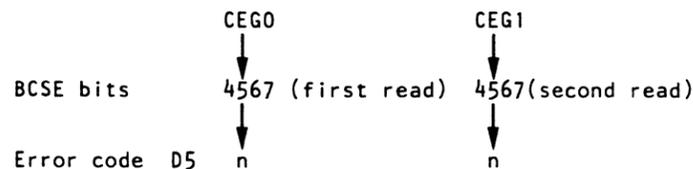
Error Description

The buffer-channel functional area detected a hardware error during a data transfer between the host system channel and the 3480 subsystem buffer. The errors detected are data parity errors and data transfer control failures.

Error Condition Theory

The buffer-channel functional area includes all the hardware that is used to transfer data between the host system channel and the subsystem buffer. When this hardware detects an error, it sets bits in channel error group registers 0, 1, 2, and 3 (CEGO, CEG1, CEG2, and CEG3). The channel error group registers are four bit registers that cannot be read directly. They are read by transferring their data to bits 4-7 of the buffer channel status and error (BCSE) register.

When an error is detected, the microcode reads the BCSE register which includes CEGO in bits 4-7. Then the microcode sets bit 3 of the BCSE to signal that the other CEG registers must be read. When BCSE bit 3 is on, each read of the BCSE advances a pointer to cause the next CEG to be read out. If bit 3 of the BCSE is not on, the CEG pointer does not advance, and CEGO is read for each read of the BCSE. The data read out of the CEG registers is stored, and the microcode uses it to build sense data and the D5nn error code. CEG2 and CEG3 are stored in sense byte 9, and CEGO and CEG1 are used to build the error code as follows.



CEGO and CEG1 are also stored in sense byte 17.

Any error except channel buffer storage data correctable error (CEG2 bit 2) causes the 'check 2' line to the microprocessor to be come active and the CEGs to be read. When an error is detected, the start bit in the buffer channel control (BCC) register becomes active and remains active while the microcode reads out the CEGs. If for some reason the start bit becomes not active before all the CEGs are read, BCSE bits 4-7 contain the contents of the CEG that was loaded after the last XR read of the BCSE before the start bit became not active. Also, resetting the start bit causes some error latches in the CEGs to be reset.

Sense byte 2 points to the control unit that contains the buffer that detected the failure. Sense byte 2 also indicates the channel adapter card, power/POR card, tag shoe card, and bus shoe card involved in the failure.

Buffer Channel Status and Error Register

The contents of the BCSE are:

Bit	Meaning	Condition
Bit 0	Channel pointer = stop	Set when BCP=BCS
Bit 1	Channel stop	Channel ended the data transfer to or from the buffer
Bit 2	MP write complete	Set when data and CRC are stored in the buffer storage (BM)
Bit 3	Sample channel errors	Set to read out CEGs
Bit 4	Channel error 0	Contains the channel error group bit 0
Bit 5	Channel error 1	Contains the channel error group bit 1
Bit 6	Channel error 2	Contains the channel error group bit 2
Bit 7	Channel error 3	Contains the channel error group bit 3

Channel Error Groups

The channel error group bits have meanings as follows.

Channel Error Group 0 (CEG0)

Bit Description

- 0 Any channel error. This bit is set by any other CEG bit being on except for CEG2 bit 2.
- 1 Channel overrun
- 2 Channel adapter to buffer adapter parity error
- 3 Buffer control to buffer adapter channel data bus parity error

Channel Error Group 1 (CEG1)

Note: The bits of CEG1 points to FRUs and are not used for error isolation. Use the channel error group registers 0, 2, and 3 for error isolation.

Bit Description

- 0 The buffer control card caused the failure.
- 1 The buffer adapter card caused the failure.
- 2 A buffer storage card caused the failure.
- 3 A tag or bus shoe card, a channel adapter card, power/POR card, or the host system channel caused the failure.

Channel Error Group 2 (CEG2)

Bit Description

- 0 Channel buffer storage address parity error
- 1 Channel buffer storage address pointer parity error
- 2 Channel buffer storage data correctable error
- 3 Channel buffer storage data uncorrectable error

Channel Error Group 3 (CEG3)

Bit Description

- 0 Buffer adapter to buffer control channel data bus parity error
- 1 Buffer control channel RAM data parity error
- 2 Channel CRC error
- 3 Not used.

Sense Byte 2

Sense byte 2 has the following format.

Bits	Description
0 1 2	
0 0 0	No channel interface is selected
0 0 1	Channel interface A is being used
0 1 0	Channel interface B is being used.
0 1 1	Channel interface C is being used.
1 0 0	Channel interface D is being used.
Bit 3	0 = Channel adapter card, power/POR card, and bus and tag shoe cards are in control unit 0. 1 = Channel adapter card, power/POR card, and bus and tag shoe cards are in control unit 1.
Bit 4	0 = Microprocessor, buffer, and data flow are in control unit 0. 1 = Microprocessor, buffer, and data flow are in control unit 1.
Bit 5	Reserved
Bit 6	Reserved
Bit 7	Not used for this EAD

Use the bits from sense byte 2 to determine which control unit to work on.



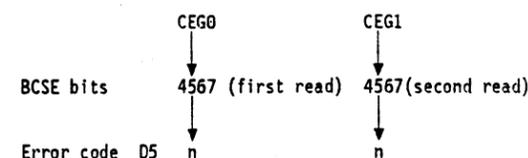
Error Description

The buffer-channel functional area detected a hardware error during a data transfer between the host system channel and the 3480 subsystem buffer. The errors detected are data parity errors and data transfer control failures.

Error Condition Theory

The buffer-channel functional area includes all the hardware that is used to transfer data between the host system channel and the subsystem buffer. When this hardware detects an error, it sets bits in channel error group registers 0, 1, 2, and 3 (CEG0, CEG1, CEG2, and CEG3). The channel error group registers are four bit registers that cannot be read directly. They are read by transferring their data to bits 4-7 of the buffer channel status and error (BCSE) register.

When an error is detected, the microcode reads the BCSE register which includes CEG0 in bits 4-7. Then the microcode sets bit 3 of the BCSE to signal that the other CEG registers must be read. When BCSE bit 3 is on, each read of the BCSE advances a pointer to cause the next CEG to be read out. If bit 3 of the BCSE is not on, the CEG pointer does not advance, and CEG0 is read for each read of the BCSE. The data read out of the CEG registers is stored, and the microcode uses it to build sense data and the D5nn error code. CEG2 and CEG3 are stored in sense byte 9, and CEG0 and CEG1 are used to build the error code as follows.



CEG0 and CEG1 are also stored in sense byte 17.

Any error except channel buffer storage data correctable error (CEG2 bit 2) causes the 'check 2' line to the microprocessor to be come active and the CEGs to be read. When an error is detected, the start bit in the buffer channel control (BCC) register becomes active and remains active while the microcode reads out the CEGs. If for some reason the start bit becomes not active before all the CEGs are read, BCSE bits 4-7 contain the contents of the CEG that was loaded after the last XR read of the BCSE before the start bit became not active. Also, resetting the start bit causes some error latches in the CEGs to be reset.

Sense byte 2 points to the control unit that contains the buffer that detected the failure. Sense byte 2 also indicates the channel adapter card, power/POR card, tag shoe card, and bus shoe card involved in the failure.

Buffer Channel Status and Error Register

The contents of the BCSE are:

Bit	Meaning	Condition
Bit 0	Channel pointer = stop	Set when BCP = BCS
Bit 1	Channel stop	Channel ended the data transfer to or from the buffer
Bit 2	MP write complete	Set when data and CRC are stored in the buffer storage (BM)
Bit 3	Sample channel errors	Set to read out CEGs
Bit 4	Channel error 0	Contains the channel error group bit 0
Bit 5	Channel error 1	Contains the channel error group bit 1
Bit 6	Channel error 2	Contains the channel error group bit 2
Bit 7	Channel error 3	Contains the channel error group bit 3

Channel Error Groups

The channel error group bits have meanings as follows.

Channel Error Group 0 (CEG0)

Bit Description

- 0 Any channel error. This bit is set by any other CEG bit being on except for CEG2 bit 2.
- 1 Channel overrun
- 2 Channel adapter to buffer adapter parity error
- 3 Buffer control to buffer adapter channel data bus parity error

Channel Error Group 1 (CEG1)

Note: The bits of CEG1 points to FRUs and are not used for error isolation. Use the channel error group registers 0, 2, and 3 for error isolation.

Bit Description

- 0 The buffer control card caused the failure.
- 1 The buffer adapter card caused the failure.
- 2 A buffer storage card caused the failure.
- 3 A tag or bus shoe card, a channel adapter card, power/POR card, or the host system channel caused the failure.

Channel Error Group 2 (CEG2)

Bit Description

- 0 Channel buffer storage address parity error
- 1 Channel buffer storage address pointer parity error
- 2 Channel buffer storage data correctable error
- 3 Channel buffer storage data uncorrectable error

Channel Error Group 3 (CEG3)

Bit Description

- 0 Buffer adapter to buffer control channel data bus parity error
- 1 Buffer control channel RAM data parity error
- 2 Channel CRC error
- 3 Not used.

Sense Byte 2

Sense byte 2 has the following format.

Bits 0 1 2	Description
0 0 0	No channel interface is selected
0 0 1	Channel interface A is being used
0 1 0	Channel interface B is being used.
0 1 1	Channel interface C is being used.
1 0 0	Channel interface D is being used.
Bit 3	0 = Channel adapter card, power/POR card, and bus and tag shoe cards are in control unit 0. 1 = Channel adapter card, power/POR card, and bus and tag shoe cards are in control unit 1.
Bit 4	0 = Microprocessor, buffer, and data flow are in control unit 0. 1 = Microprocessor, buffer, and data flow are in control unit 1.
Bit 5	Not used for this EAD
Bit 6	Not used for this EAD
Bit 7	Not used for this EAD

Use the bits from sense byte 2 to determine which control unit to work on.

0 0 0 0 0 0 0 0 0 0 0

Troubleshooting Guide

This is a common troubleshooting guide for all D5nn error codes. This troubleshooting guide helps you determine the order in which you should analyze the symptoms of the error code.

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Failures detected in a functional area can be caused by defective clock lines. All clocks for the buffer are generated by the buffer adapter card. The clock lines are listed in the individual net lists for each CEG bit and should be scoped as part of the individual troubleshooting guide.
5. Run diagnostics E010, EE30, EE53, and EE64. If a failure is detected, see the failure Diagnostic Identification Code listed in the Diagnostic Identification Table on DIAG 3. Record the BCSE and BDSE error information from the diagnostic screen. Return to this EAD and compare any common FRUs or troubleshooting tips.

Did this diagnostic fail?

YES NO
 |
 | Continue with the actions in the EAD.

Did the failure direct you back to the same EAD?

YES NO
 |
 | Go to the place that the diagnostics sends you and do the actions.

Do the EADs have specific actions for the diagnostic failure?

YES NO
 |
 | Loop the diagnostics and do any other actions specified in the EADs.

Do the actions specified for that failure.

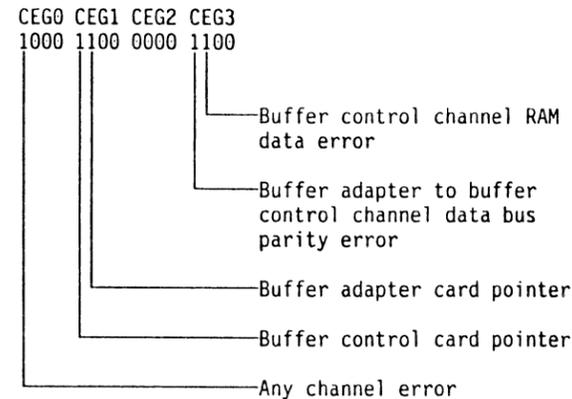
6. If diagnostic EE30 (buffer test) does not give any valid information in the BCSE and diagnostic EE64 fails, suspect an external line between the buffer adapter and the channel adapter.

7. If diagnostic EE30 does not give any valid information in the BCSE and diagnostic EE53 fails, suspect an external line between the buffer adapter and the read data flow.
8. If the BCSE has no error indicated and the BDSE has an error indicated, go to the EAD for error code D6nn to continue troubleshooting.
9. If the BCSE has error bits on, continue in this EAD and analyze the CEG bits.

Note: You can obtain the CEG bits in either of two ways.

- a. If you are analyzing a failure from a diagnostic, the CEGs are displayed as the last four hexadecimal characters of the BCSE in the diagnostic error message on the MD screen. (See the error screen descriptions for the diagnostic you are running.)
- b. If you are analyzing the sense data from EREP, CEG0 and CEG1 are the nn characters from the D5nn error code in sense bytes 16 and 17. CEG2 and CEG3 are in sense byte 9.

As an example, assume that we have CEG values 8C0C. The CEG bit values are:



Select the correct bit to be used for troubleshooting using the troubleshooting procedures on the EAD pages that follow by:

- a. Start with bit 1 of CEG0. (Bit 0 of CEG0 should always be on. If it isn't, go to the troubleshooting procedure for CEG0 bit 0.)
- b. Take the bits in CEG0 in order from bit 1 to bit 3. Troubleshoot for the first bit that is a 1.
- c. If no bits (other than bit 0) in CEG0 are 1 or if troubleshooting the bits in CEG0 did not locate the trouble, go to CEG2. (CEG1 is a FRU pointer. Use the bits from CEG1 to determine which FRU to suspect.)

- d. If no bits are on in CEG2 or if troubleshooting the bits in CEG2 did not locate the trouble, go to CEG3.

For this example, you would suspect the buffer control card and buffer adapter card because their FRU pointer bits are on in CEG1. If those cards had been replaced, you would begin your troubleshooting with CEG3 bit 0. You would find "CEG3 Bit 0, Buffer Adapter to Buffer Control Channel Data Bus Parity Error" on EAD 1 and go to the page for the troubleshooting guide for that error. If troubleshooting with CEG3 bit 0 was not effective, you would try using CEG3 bit 1.

10. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

11. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, Call your next level of support and go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
5, 9	DIAG 1	How to run and interpret diagnostics
9	MSG 1	How to find and interpret information in EREP
8	MD 1	How to use the MD with the 3480

CEG0 Bit 0, Any Error Detected

Error Code D5nn (Continued) EAD 2237

Error Condition Theory

Bit 0 should always be on in the D5nn error code. It is set by any other channel error group bit being on. If it is not on and any other CEG bit is on, bit 0 failed to be set by internal circuitry. D500 should never occur. A check-2 error with no FRU-pointing bits should result in a D900 error code. Bit 0 should not be on by itself (D580). If bit 0 is on and no other CEG bit are on:

- A false error occurred.
- The error was reset or failed to be latched on when the channel error groups were read out by the microprocessor.
- Something inhibited reading out the CEGs.

If bit 0 is on as it should be, go to the next CEG bit for troubleshooting. If bit 0 is on incorrectly, look for a valid error indicated in the sense information.

If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, *Call your next level of support* and then go to SPROC 1 "End of Call Actions."

If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, *Call your next level of support* and then go to SPROC 1 "End of Call Actions."



CEG0 Bit 1, Channel Overrun

Error Condition Theory

Note: See EAD 2240 for test points.

The buffer adapter checks the number of 'service in'/'data in' tags **C** against the number of 'service out'/'data out' **B** tags to ensure that they are equal. It also checks that a response is received from the channel within 8 microseconds after 'service in' or 'data in' is activated to the channel. If the tags do not match or the response is not received within 8 microseconds, the buffer adapter card activates 'channel overrun' **A** to the buffer control card.

The buffer channel command (BCC) register in the buffer control card holds the buffer channel side command that the buffer is to perform. The buffer mode register (BMR) in the buffer adapter card holds the channel group (local or remote) and the mode of the channel data transfer.

Buffer Channel Command Register

Bit	Description
0	Buffer channel command 0
1	Buffer channel command 1
2	Buffer channel command 2
3	Buffer channel command 3
4	Start channel
5-7	Not used

Buffer Channel Commands

BCC Bits	Command
0 0 0 0 1	Store CRC
0 0 0 1 1	Channel write
0 0 1 0 1	Loop write to read
0 1 0 0 1	Microprocessor write
1 0 0 0 1	Channel read forward
1 0 0 1 1	Channel read forward with separation
1 0 1 0 1	Channel read backward
1 0 1 1 1	Channel read backward with separation
1 1 0 0 1	Microprocessor read
1 1 1 1 0	Hold buffer channel control reset
0 0 0 0 0	No buffer channel operation

Buffer Mode Register

Bit	Description
0	Maintain channel separation
1-3	Not used
4	0 = Local channel group 1 = Remote channel group
5	Channel mode A
6	Channel mode B
7	Channel mode C

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

- (FRU133) channel adapter card (channel A) 01A-A2C2
- (FRU152) channel adapter card (channel B) 01A-A2D2
- (FRU195) channel adapter card (channel C) 01A-A2E2
- (FRU196) channel adapter card (channel D) 01A-A2F2
- (FRU120) buffer adapter card 01A-A1K2
- (FRU136) bus shoe card (channel A) 01A-T1A1
- (FRU233) bus shoe card (channel B) 01A-T1B1
- (FRU235) bus shoe card (channel C) 01A-T1C1
- (FRU237) bus shoe card (channel D) 01A-T1D1
- (FRU137) tag shoe card (channel A) 01A-T1A3
- (FRU234) tag shoe card (channel B) 01A-T1B3
- (FRU236) tag shoe card (channel C) 01A-T1C3
- (FRU238) tag shoe card (channel D) 01A-T1D3
- Host system channel
- (FRU114) buffer control card 01A-A1L2
- (FRU126) power/POR card 01A-A2H4 (as associated with the channel adapter in use, local or remote)
- Remote port path between the remote and local control units if the remote channel adapter was used
- (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used
- (FRU140) logic board 01A-A2 in the control unit that contains the channel adapter that was used
- Cable groups 28 and 50 (see cable group list in the FSI section).

Troubleshooting Guide

- Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "CEG0 Bit 1 Net List."
- Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
- For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.
- If steps 1-3 did not correct the problem, examine the BCSE from the diagnostic failure for the next CEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).
- If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
- If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480

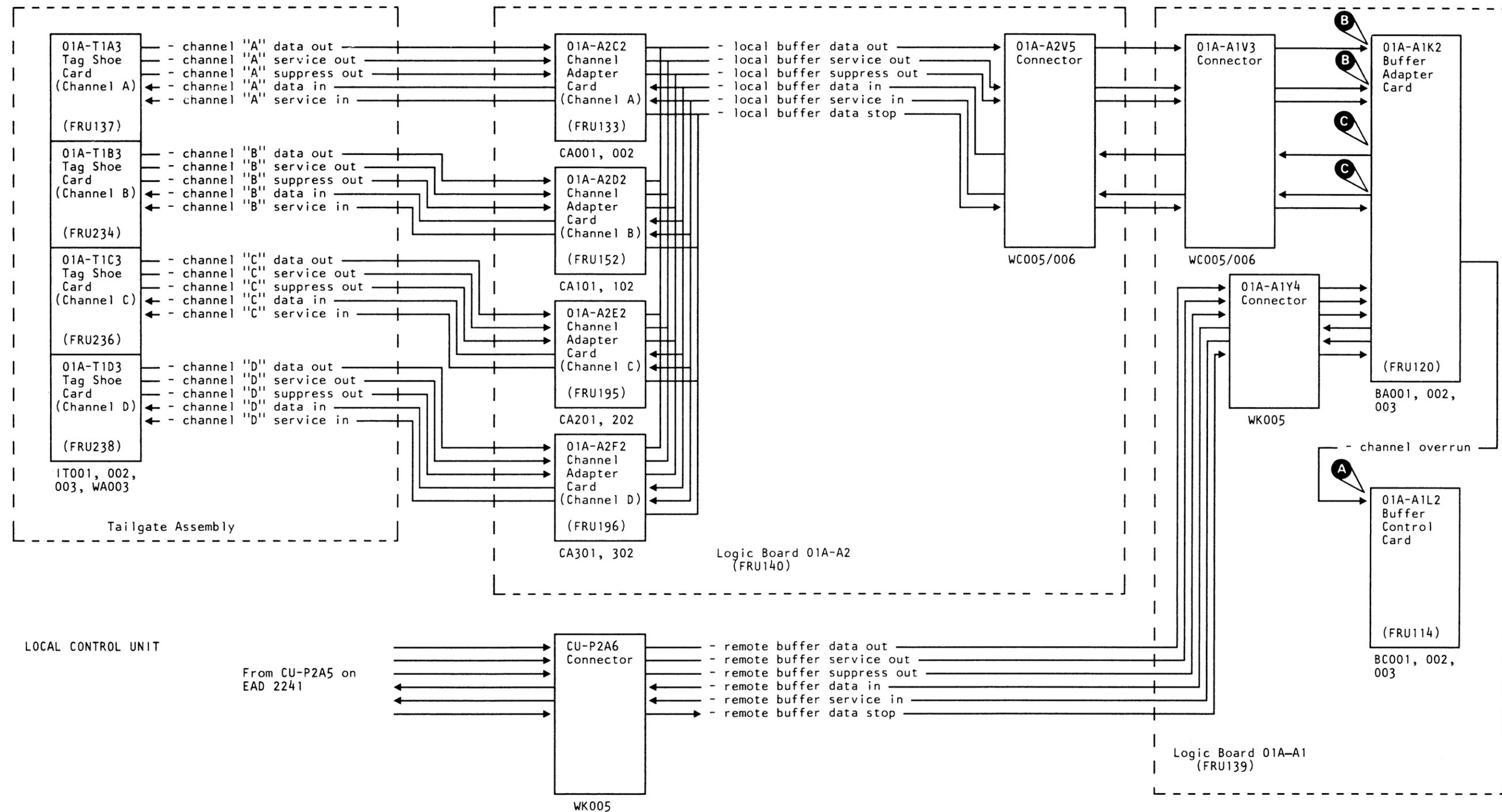
CEG0 Bit 1, Channel Overrun (Continued)

CEG0 Bit 1 Net List

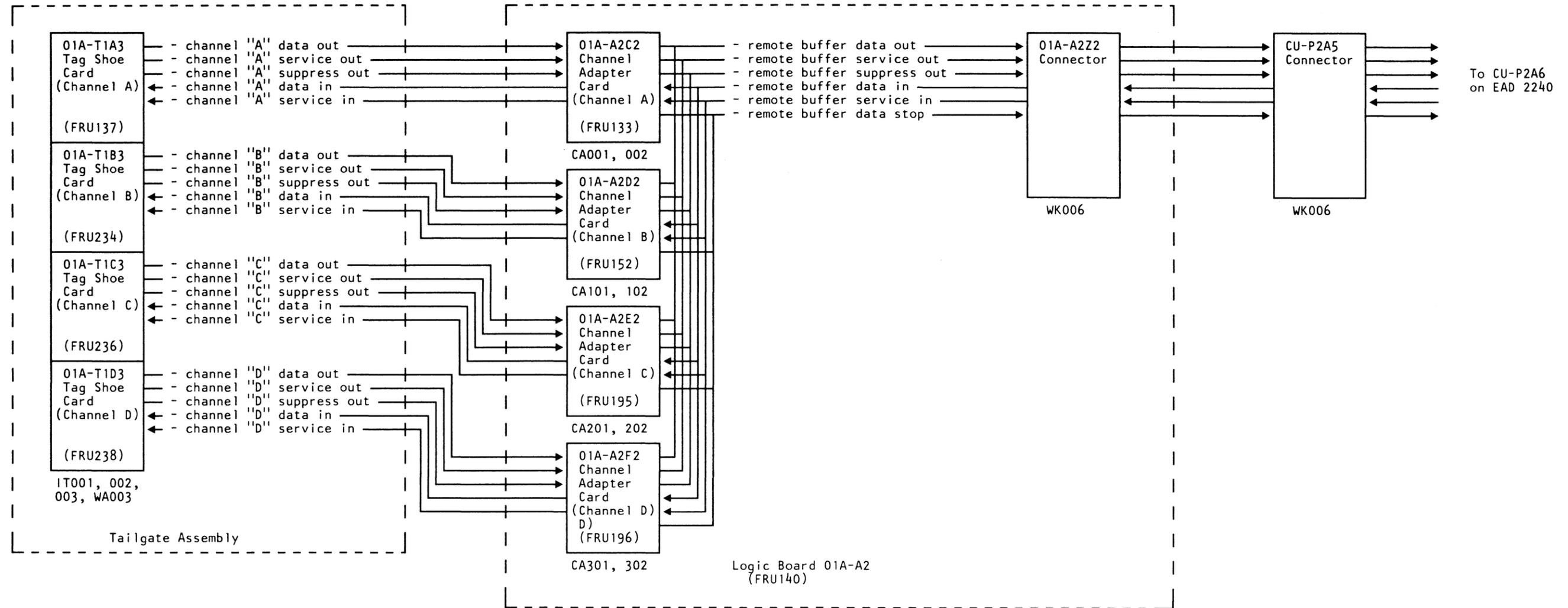
Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE33 E010	- Channel overrun	BU3021	3C100	70000
EE33, E010	- Enable channel tags	BU3025	9D900	90000
EE33, E010	- Channel MP operation	BU3025	9C100	90000
EE33, E010	- 300 ns clock 0 - A	BU3024	9C800	30000
EE64, E010	- Service in local			
EE64, E010	- Service out local			
EE64, E010	- Data in local			
EE64, E010	- Data out local			
EE64, E010	- Stop out local			
EE64, E010	- Suppress out local			

0 0 0 0 0 0 0 0 0 0 0 0

Error Diagram



Error Diagram



REMOTE CONTROL UNIT



Error Condition Theory

This bit indicates that the buffer adapter card received data with even parity from a channel adapter during a Channel Write operation. This error can also be set during a Loop Write to Read operation, indicating bad data parity from the read data flow circuits and can be set during a microprocessor write. Setting this bit also sets CEG1 bit 3 to indicate that the host system channel and the channel adapters are the probable failing FRUs. Sense byte 2 points to the control unit that contains the buffer that detected the failure and to the channel adapter and tag and shoe cards that are involved in the failure.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure. Use sense byte 2 to determine which control unit contains the FRUs in the following list.

1. Host system channel
2. (FRU133) channel adapter card (channel A) 01A-A2C2
3. (FRU152) channel adapter card (channel B) 01A-A2D2
4. (FRU195) channel adapter card (channel C) 01A-A2E2
5. (FRU196) channel adapter card (channel D) 01A-A2F2
6. (FRU136) bus shoe card (channel A) 01A-T1A1
7. (FRU233) bus shoe card (channel B) 01A-T1B1
8. (FRU235) bus shoe card (channel C) 01A-T1C1
9. (FRU237) bus shoe card (channel D) 01A-T1D1
10. (FRU137) tag shoe card (channel A) 01A-T1A3
11. (FRU234) tag shoe card (channel B) 01A-T1B3
12. (FRU236) tag shoe card (channel C) 01A-T1C3
13. (FRU238) tag shoe card (channel D) 01A-T1D3
14. (FRU120) buffer adapter card 01A-A1K2
15. (FRU114) buffer control card 01A-A1L2
16. (FRU126) power/POR card 01A-A2H4 (as associated with the channel adapter in use, local or remote)
17. (FRU117) microprocessor card 01A-A1D2
18. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.
19. (FRU140) logic board 01A-A2 in the control unit that contains the channel adapter that was used.

20. Remote port path between the remote and local control units if the remote channel adapter was used.

21. Cables, connectors, and nets between all FRUs identified by the FSI and this EAD.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "CEG0 Bit 2 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.
4. If steps 1-3 did not correct the problem, examine the BCSE from the diagnostic failure for the next CEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).
5. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
6. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

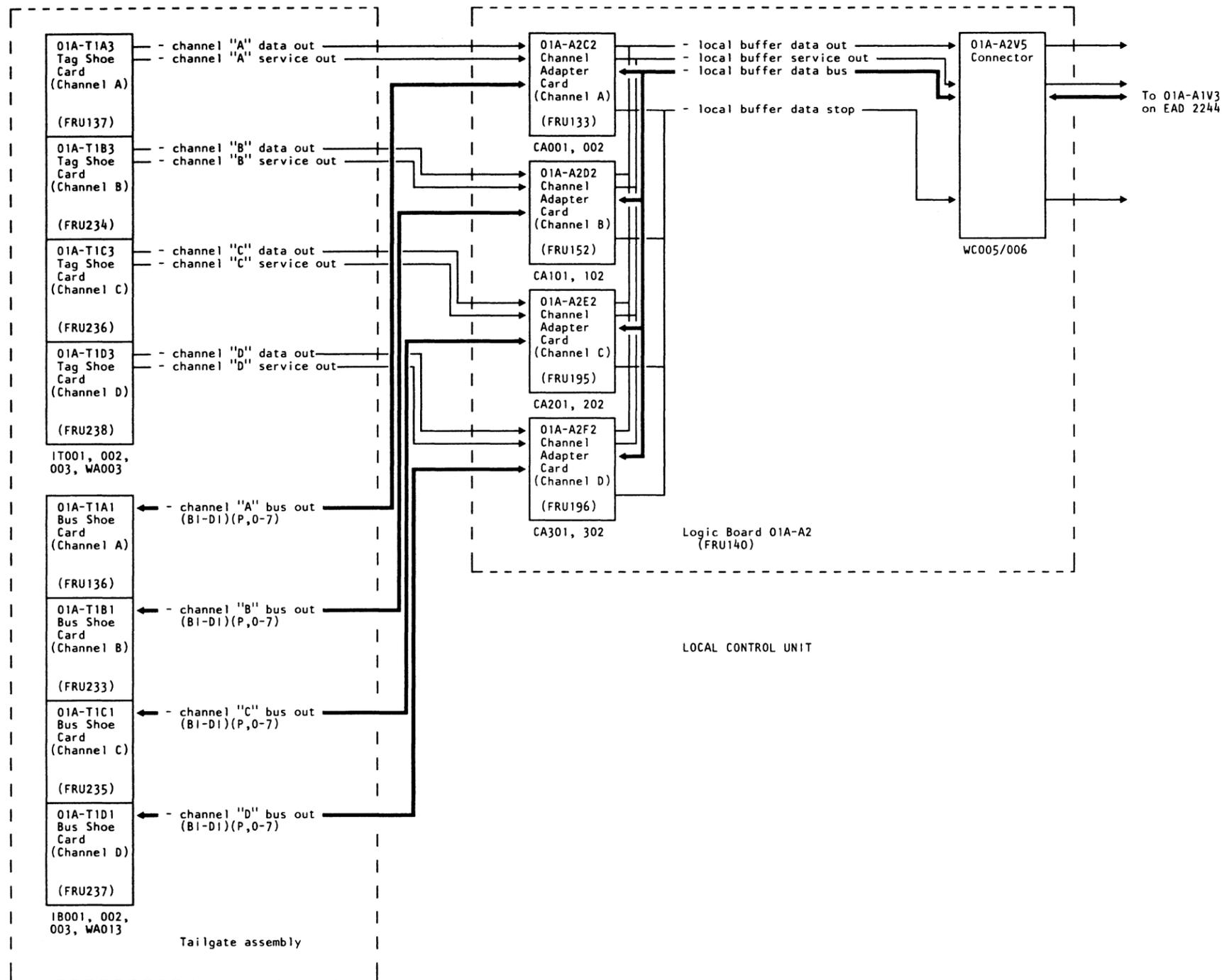
References

Step	Ref Page	Description / Comments
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480

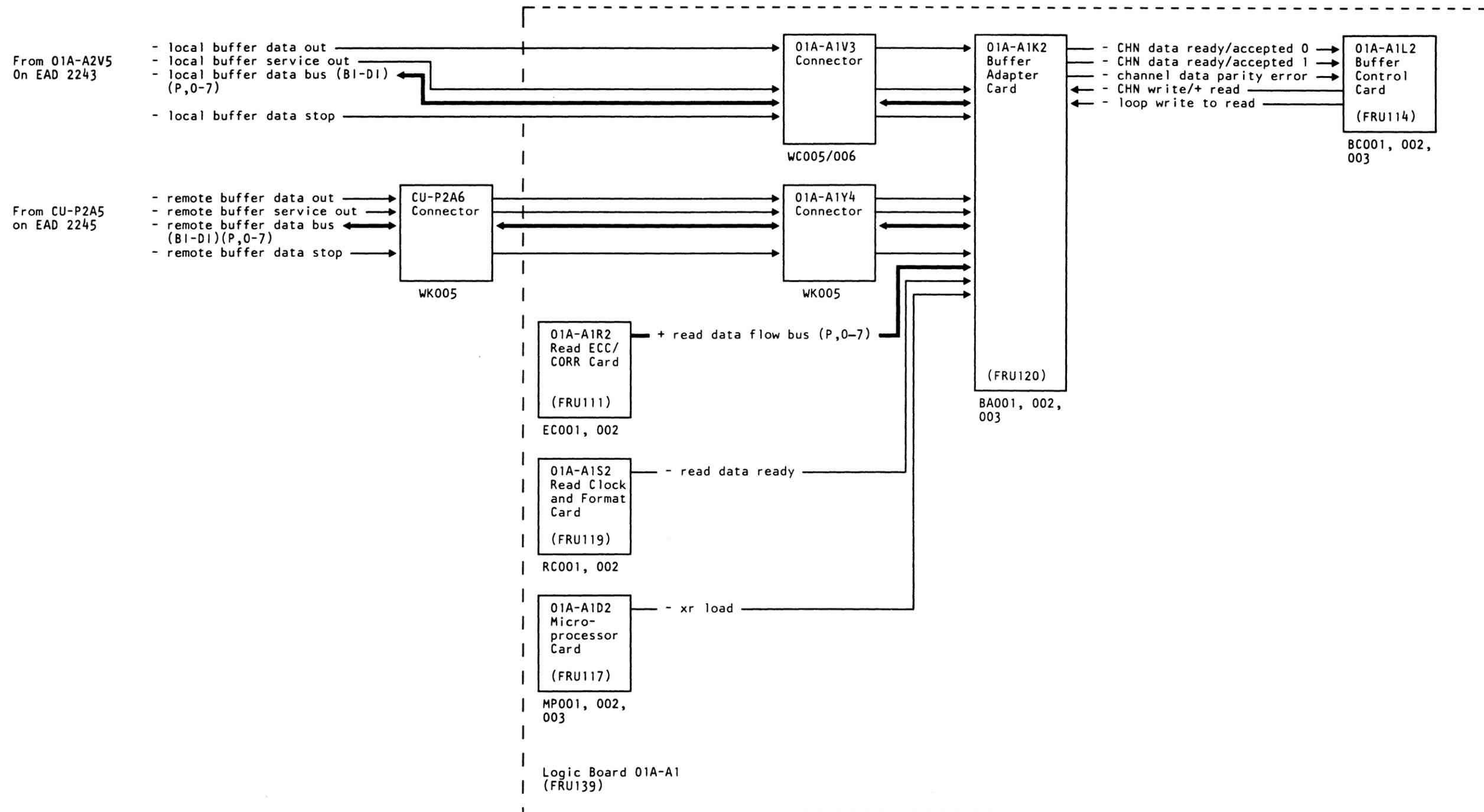
CEG0 Bit 2 Net List

Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE33	- CHN data ready/accepted 0	BU3021	3AD0C	70000
EE33	- Loop write to read	BU3021	3A904	90000
EE33	- Channel data parity error	BU3021	3A100	70000
EE33, EE64	- Local buffer service out	BU3021	3A100	10000
EE33, EE64	- Local buffer data out	BU3021	3A100	10000
EE64	- Local buffer data bus BI-DI (P, 0-7)	CI4025	5AD0C	B0000
EE64	- Local buffer data stop	CI4025	5AD0C	B0000
EE33	- XR load			
EE64	- Channel write/+ read			
EE53	+ Read data flow bus (P,0-7)	LW3024	DAD0C	B0000
EE53	- Read data ready			

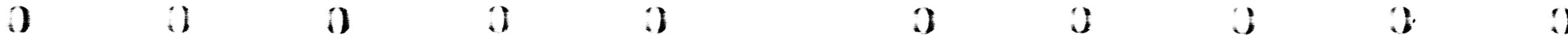
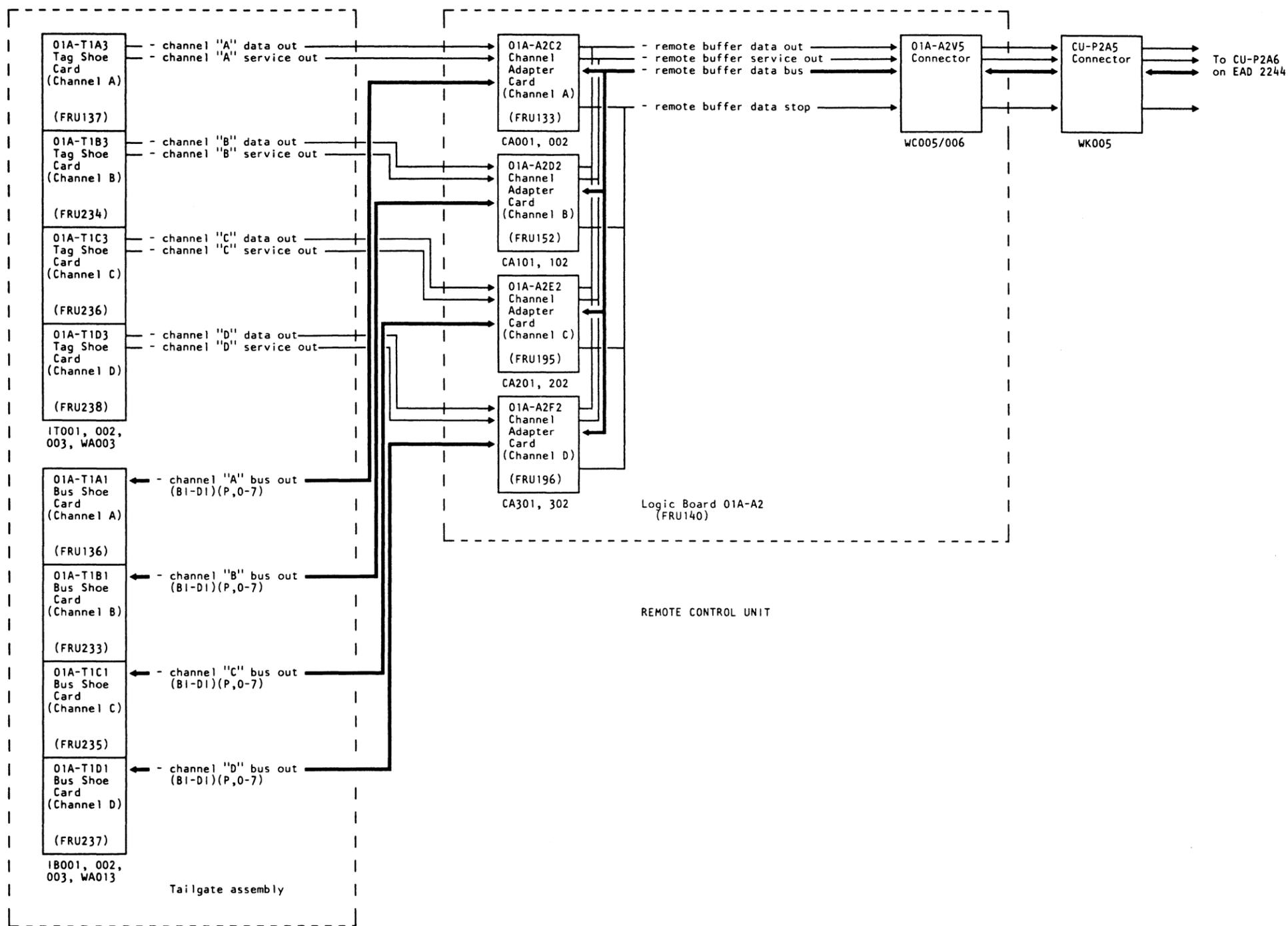
Error Diagram



Error Diagram



Error Diagram



Error Condition Theory

This bit indicates that the buffer adapter card received data with even parity from the buffer control card during Channel Read or Microprocessor Read operations.

Note: The bits of CEG1 are FRU pointers and are not used for error isolation. Use channel error group registers 0, 2, and 3 for error isolation.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU120) buffer adapter card 01A-A1K2
2. (FRU114) buffer control card 01A-A1L2
3. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "CEG0 Bit 3 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.
4. If steps 1-3 did not correct the problem, examine the BCSE from the diagnostic failure for the next CEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).
5. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
6. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

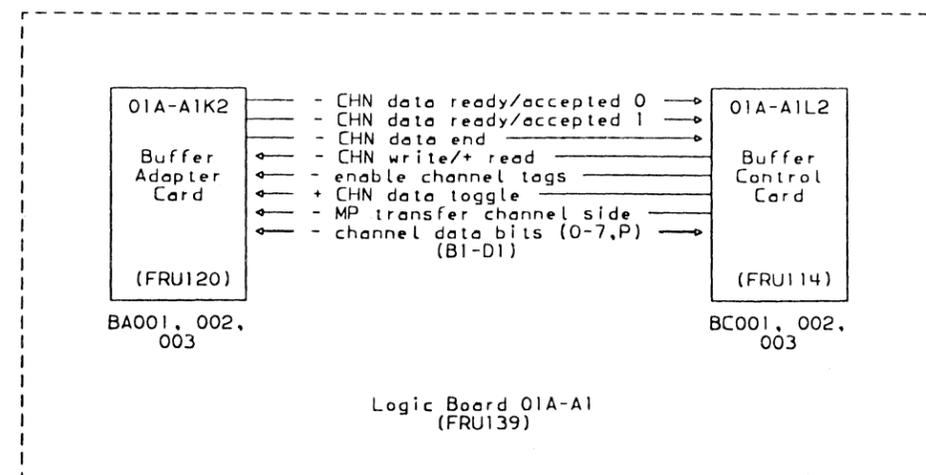
References

Step	Ref Page	Description/Comments
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480.

CEG0 Bit 3 Net List

Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE33, E010	-Enable channel tags	BU3025	D9800	90000
EE33, E010	-CHN data end	BU3025	DD900	90000
EE33, E010	-CHN write/+read	BU3027	D9A02	90000
EE33, E010	-MP transfer channel side			
EE33, E010	+CHN data toggle			
EE33, E010	-CHN data ready/accepted 0			
EE33, E010	-CHN data ready/accepted 1			
EE33, E010	-Channel data bits (0-7,P)			

Error Diagram

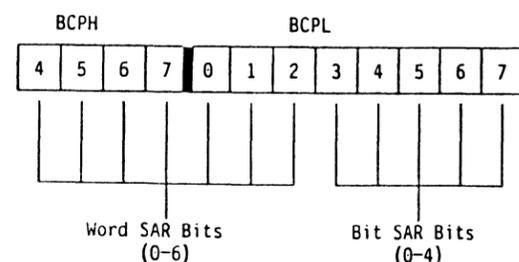


end2246

Error Condition Theory

* These FRUs are EC sensitive.
FRU112 may not be present.
See CARR-CU 7.

This bit indicates that a miss-compare occurred between the buffer storage address parity generated by the buffer control card and the address parity received by the buffer storage cards during a channel storage cycle. The parity of the buffer storage address received by the buffer storage cards is sent back to the buffer control card and compared there. Address parity is checked for channel storage data access cycles only. Address parity is generated from bits 4-7 of the buffer channel pointer high (BCPH) external register and bits 0-7 of the buffer channel pointer low (BCPL) external register as follows.



Word-SAR bits and bit-SAR bits are combined and parity is generated to give the address parity.

CEG1 bits 0 and 2 are set to point to the buffer control card and buffer storage cards as the probable failing FRUs. Sense byte 2 bit 5 indicates the buffer storage card that was being accessed when the error occurred.

If the channel buffer storage address pointer parity error (CEG2 bit 1) is also set, go to the EAD for that bit. (See EAD 1.) The channel buffer storage address pointer parity error is most likely to be the primary error. This channel buffer storage address pointer parity error is likely to be the result of the channel buffer storage address pointer parity error.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU114) buffer control card 01A-A1L2
2. (FRU112*) buffer storage card 01A-A1N2
3. (FRU113*) buffer storage card 01A-A1M2
4. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "CEG2 Bit 0 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.
4. If steps 1-3 did not correct the problem, examine the BCSE from the diagnostic failure for the next CEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).
5. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
6. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

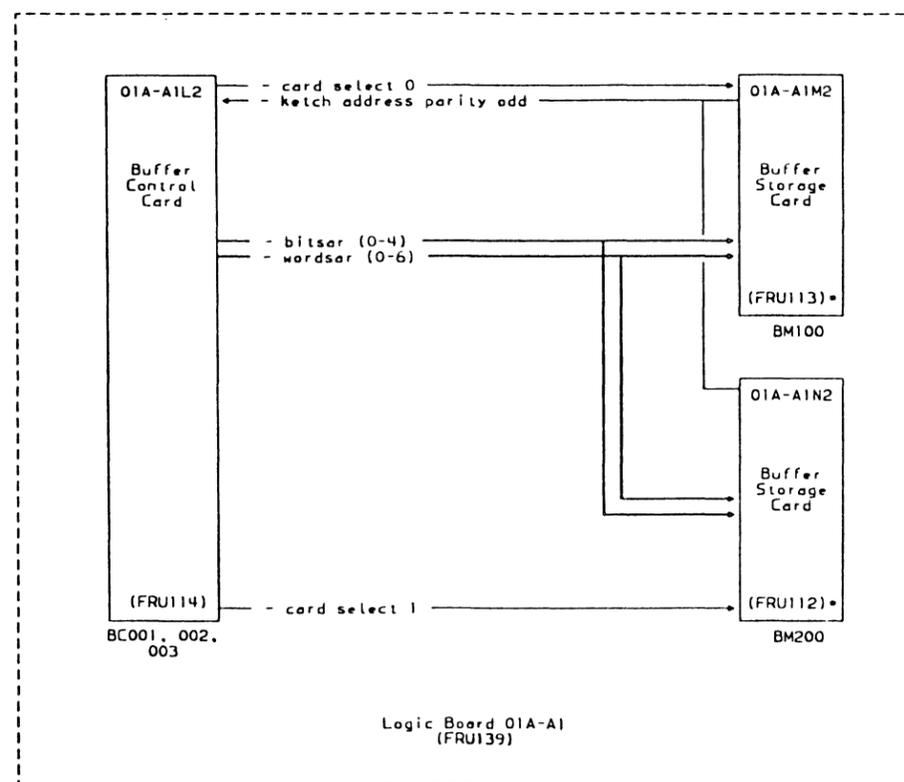
References

Step	Ref Page	Description/Comments
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480.

CEG2 Bit 0 Net List

Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE33, E010	-Bitsar (0-4)	BU3021	18A80	10000
EE33, E010	-Wordsar (0-6)	BU3021	18A80	70000
EE33, E010	-Ketch address parity odd	BU3021	18A80	90000
EE33, E010	-Card select 0	BU2021	18A80	70000
EE33, E010	-Card select 1	BU2021	18A80	30000

Error Diagram



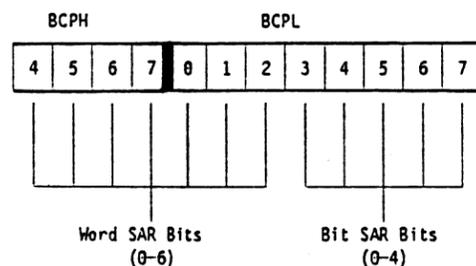
ead2248



Error Condition Theory

* These FRUs are EC sensitive.
FRU112 may not be present.
See CARR-CU 7.

This bit indicates that a miss-compare occurred between the buffer storage address parity generated by the buffer control card and the address parity received by the buffer storage cards during a channel storage cycle. The parity of the buffer storage address received by the buffer storage cards is sent back to the buffer control card and compared there. Address parity is checked for channel storage data access cycles only. Address parity is generated from bits 4-7 of the buffer channel pointer high (BCPH) external register and bits 0-7 of the buffer channel pointer low (BCPL) external register as follows.



Word-SAR bits and bit-SAR bits are combined and parity is generated to give the address parity.

CEG1 bits 0 and 2 are set to point to the buffer control card and buffer storage cards as the probable failing FRUs.

If the channel buffer storage address pointer parity error (CEG2 bit 1) is also set, go to the EAD for that bit. (See EAD 1.) The channel buffer storage address pointer parity error is most likely to be the primary error. This channel buffer storage address parity error is likely to be the result of the channel buffer storage address pointer parity error.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU114) buffer control card 01A-A1L2
2. (FRU112)* buffer storage card 01A-A1N2
3. (FRU113)* buffer storage card 01A-A1M2
4. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "CEG2 Bit 0 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.
4. If steps 1-3 did not correct the problem, examine the BCSE from the diagnostic failure for the next CEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).
5. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
6. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, call your next level of support and then go to SPROC 1 "End of Call Actions."

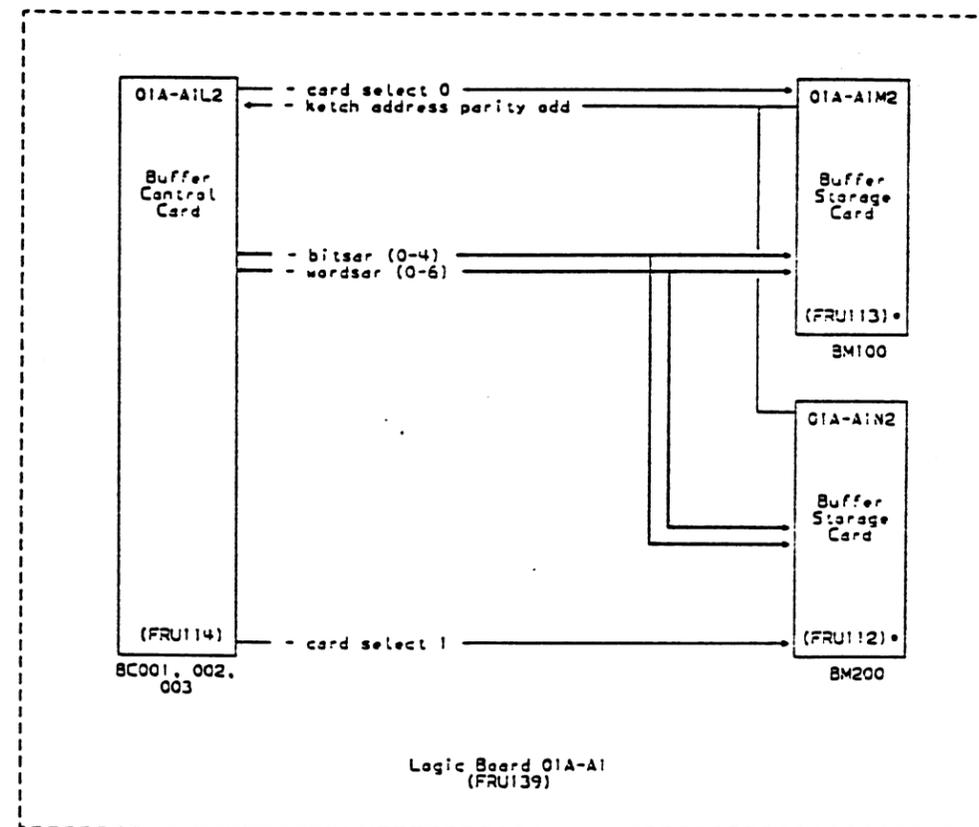
References

Step	Ref Page	Description/Comments
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3489.

CEG2 Bit 0 Net List

Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE33, E010	-Bitsar (0-4)	BU3021	18A80	10000
EE33, E010	-Wordsar (0-6)	BU3021	18A80	70000
EE33, E010	-Ketch address parity odd	BU3021	18A80	90000
EE33, E010	-Card select 0	BU2021	18A80	70000
EE33, E010	-Card select 1	BU2021	18A80	30000

Error Diagram



0 0 0 0 0 0 0 0 0 0 0

CEG2 Bit 1, Channel Buffer Storage Address Pointer Parity Error

Error Code D5nn (Continued) EAD 2250

Error Condition Theory

This bit indicates that a parity error was detected in the buffer channel pointer high (BCPH) external register or buffer channel pointer low (BCPL) external register in the buffer control card during a channel storage cycle. These registers act as one counter and step each channel-buffer-storage cycle to provide the buffer storage addressing. A buffer wrap (BWRP) external register is used to determine the segment size buffer boundary. The BCPH and BCPL step up to the boundary set by the BWRP and go back to the beginning of the segment for the next storage cycle.

BCPH				BCPL							
4	5	6	7	0	1	2	3	4	5	6	7

For example, for a 32K wrap, BCPL steps up to hexadecimal FF and BCPH bits 6 and 7 step to hexadecimal 11. After completing the storage cycle at this address, the pointer bits are reset to zero.

The parity of the BCPH and BCPL is predicted, taking into account the wrap bits. This predicted parity is compared with the actual parity, and a miscompare results in a channel buffer storage address pointer parity error.

CEG1 bit 0 is set to point to the buffer control card as the probable failing FRU.

Buffer Wrap Register (BWRP)

Bit	Meaning
0	Channel port segment size 128K
1	Channel port segment size 64K
2	Channel port segment size 32K
3	Channel port segment size 16K
4-7	Not used by this EAD

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU114) buffer control card 01A-A1L2
2. (FRU120) buffer adapter card 01A-A1K2
3. (FRU117) microprocessor card 01A-A1D2

4. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "CEG2 Bit 1 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.
4. If steps 1-3 did not correct the problem, examine the BCSE from the diagnostic failure for the next CEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).
5. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
6. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

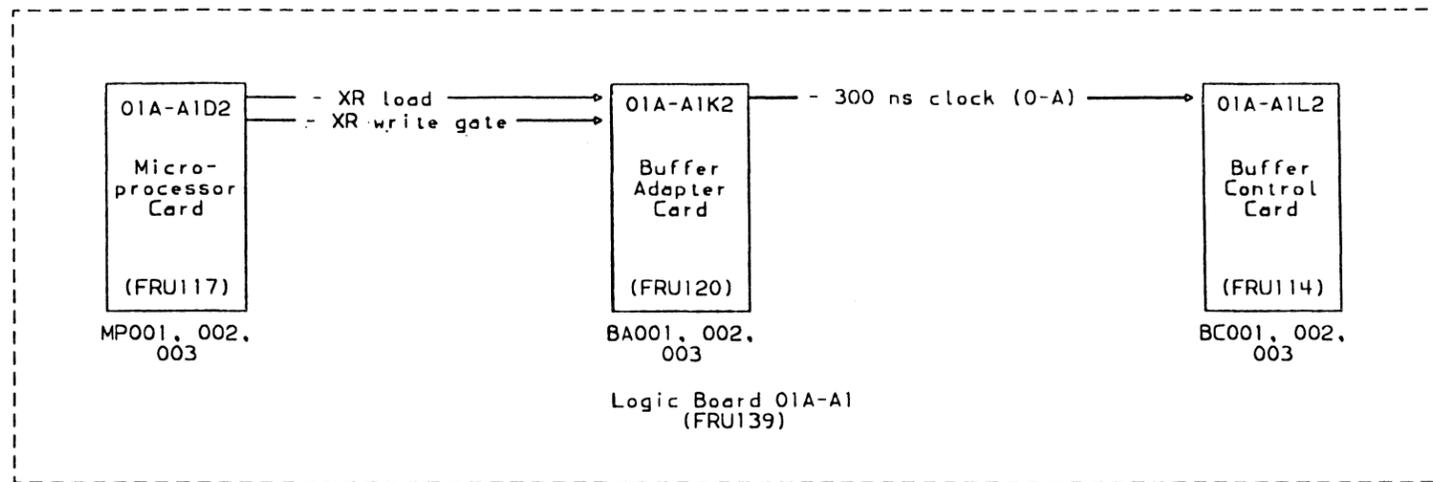
References

Step	Ref Page	Description/Comments
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480

CEG2 Bit 1 Net List

Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE33, E010	- XR load			
EE33, E010	- XR write gate			
EE33, E010	- 300 ns clock 0-A			

Error Diagram



ead2251



CEG2 Bit 2, Channel Buffer Storage Data Correctable Error

Error Code D5nn (Continued) EAD 2252

Error Condition Theory

* These FRUs are EC sensitive.
FRU112 may not be present.
See CARR-CU 7.

This bit indicates a single-bit error was detected in the data received by the buffer control card from the buffer storage card during a channel-to-storage cycle. The error was corrected by the ECC circuits on the buffer control card.

CEG1 bits 0 and 2 are set to point to the buffer control card and buffer storage cards as the probable failing FRUs.

This error does not cause a check 2 error and does not set the any-channel-error bit in CEG0. This error bit cannot be set unless bit 4 of the buffer diagnostic 0 (BDG0) external register has been set. BDG0 bit 4 is the enable-correctable-error-status bit. The channel error BDG0 bit 4 is never set by functional microcode.

Operations continue uninterrupted after CEG2 bit 2 is set.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU114) buffer control card 01A-A1L2
2. (FRU112*) buffer storage card 01A-A1N2
3. (FRU113*) buffer storage card 01A-A1M2
4. (FRU120) buffer adapter card 01A-A1K2
5. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.

CEG2 Bit 3, Channel Buffer Storage Data Uncorrectable Error

Error Condition Theory

* These FRUs are EC sensitive.
FRU112 may not be present.
See CARR-CU 7.

This bit indicates that a multiple-bit error was detected in the data received by the buffer control card from the buffer storage card during a storage-to-channel cycle. The error could not be corrected by the ECC circuits on the buffer control card.

CEG1 bits 0 and 2 are set to point to the buffer control card and buffer storage cards as the probable failing FRUs. Sense byte 2 bit 5 indicates the buffer storage card that was being accessed when the error occurred.

Multiple bit errors give various indications. For example:

- 3-bit errors give wrong correctable error indications and send the wrong data.
- 4-bit errors give no indications and send the wrong data.

The buffer control card uses a cyclic redundancy check (CRC) to detect the multiple-bit errors not detected by the ECC circuits.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU114) buffer control card 01A-A1L2
2. (FRU112*) buffer storage card 01A-A1N2
3. (FRU113*) buffer storage card 01A-A1M2
4. (FRU120) buffer adapter card 01A-A1K2
5. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "CEG2 Bit 3 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.

4. If steps 1 – 3 did not correct the problem, examine the BCSE from the diagnostic failure for the next CEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).
5. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
6. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

CEG2 Bit 3 Net List

Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE33 E010	- Buffer data byte 0 bits 0 – 7	BU3028	D8A12	XXXXX
EE33 E010	- Buffer data byte 1 bits 0 – 7	BU3028	D8A12	XXXXX
EE33 E010	- Buffer data byte 2 bits 0 – 7	BU3028	D8A12	XXXXX
EE33 E010	- Buffer data byte 3 bits 0 – 7	BU3028	D8A12	XXXXX
EE33, E010	- Buffer check bits 0 – 7			
EE33, E010	+ Ketch data gate (0 – 7)			
EE33, E010	- Card select 0			
EE33, E010	- Card select 1			
EE33, E010	- Register select 00			
EE33, E010	- Register select 01			
EE33, E010	- Register select 10			
EE33, E010	- Register select 11			
EE33, E010	- Ketch commands A B C			
EE33, E010	- Array select 00			
EE33, E010	- Array select 01			
EE33, E010	- Wordsar 0 – 6			
EE33, E010	- Bitsar 0 – 4			
EE33, E010	- 300 ns clock 0 – A			

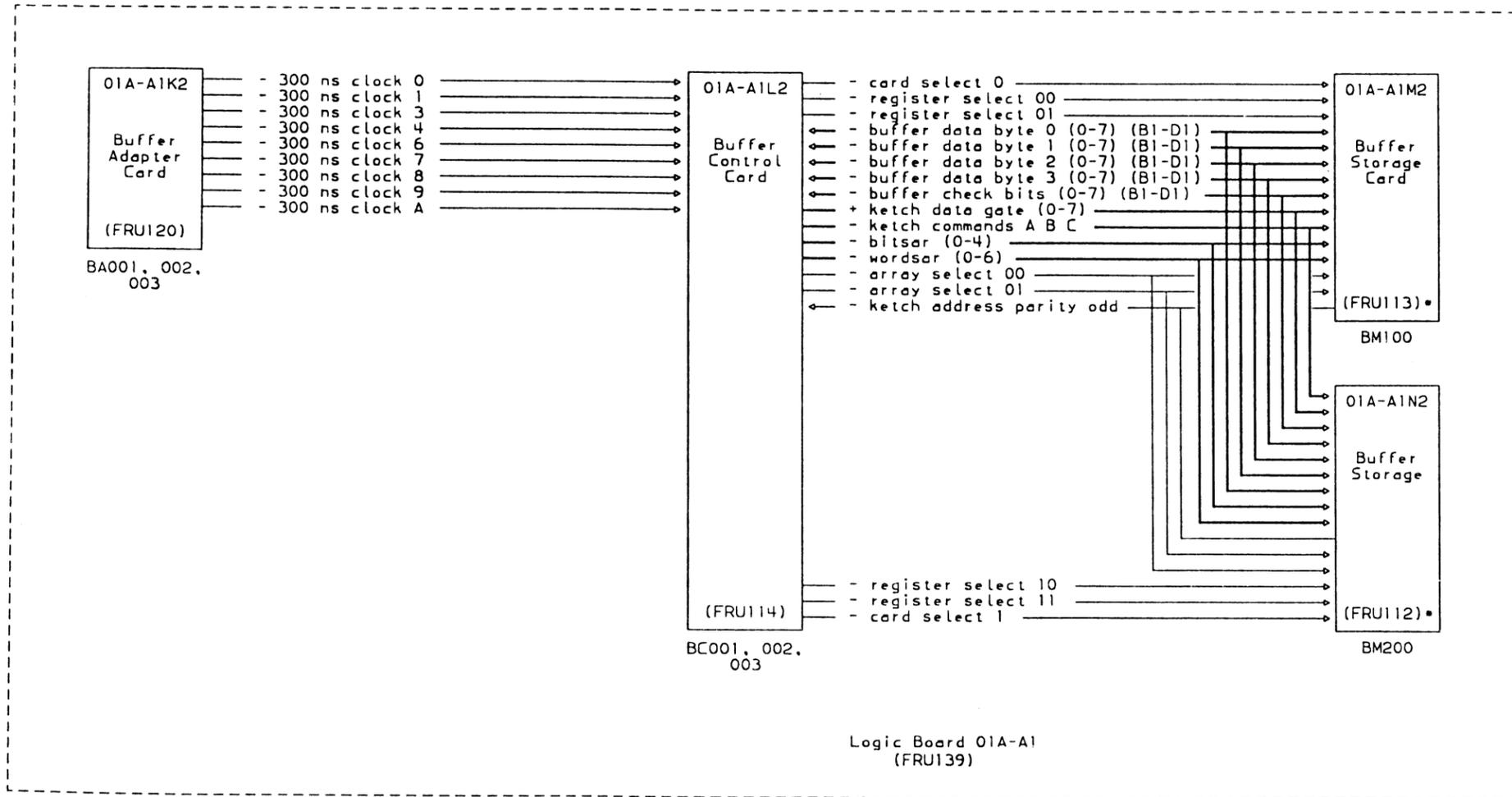
Step	Ref Page	Description/Comments
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480



CEG2 Bit 3, Channel Buffer Storage Data Uncorrectable Error (Continued)

Error Diagram

* These FRUs are EC sensitive.
FRU112 may not be present.
See CARR-CU 7.



ead2254

Error Condition Theory

This bit indicates that the buffer control card received data with even parity from the buffer adapter card during a Channel Write, Loop Write to Read, or Microprocessor Write operation. CEG1 bit 1 is set to point to the buffer adapter card as the probable failing FRU.

If CEG0 bit 2, channel adapter to buffer parity error, is also set, ignore this data bus parity error because CEG3 bit 0 is a result of the bad parity being sent to the buffer adapter card and propagated to the buffer control card. Return to the error detection theory and troubleshooting guide for CEG0 bit 2.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure. Use sense byte 2 to determine which control unit contains the FRUs in the following list.

1. (FRU120) buffer adapter card 01A-A1K2
2. (FRU114) buffer control card 01A-A1L2
3. Host system channel
4. (FRU133) channel adapter card (channel A) 01A-A2C2
5. (FRU152) channel adapter card (channel B) 01A-A2D2
6. (FRU195) channel adapter card (channel C) 01A-A2E2
7. (FRU196) channel adapter card (channel D) 01A-A2F2
8. (FRU136) bus shoe card (channel A) 01A-T1A1
9. (FRU233) bus shoe card (channel B) 01A-T1B1
10. (FRU235) bus shoe card (channel C) 01A-T1C1
11. (FRU237) bus shoe card (channel D) 01A-T1D1
12. (FRU137) tag shoe card (channel A) 01A-T1A3
13. (FRU234) tag shoe card (channel B) 01A-T1B3
14. (FRU236) tag shoe card (channel C) 01A-T1C3
15. (FRU238) tag shoe card (channel D) 01A-T1D3
16. (FRU126) power/POR card 01A-A2H4 (as associated with the channel adapter in use, local or remote)
17. (FRU117) microprocessor card 01A-A1D2
18. Remote port path between the remote and local control units if the remote channel adapter was used

19. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used
20. (FRU140) logic board 01A-A2 in the control unit that contains the channel adapter that was used
21. Cables, connectors, and nets between all FRUs identified by the FSI and this EAD.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "CEG3 Bit 0 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.
4. If steps 1 – 3 did not correct the problem, examine the BCSE from the diagnostic failure for the next CEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).
5. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
6. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

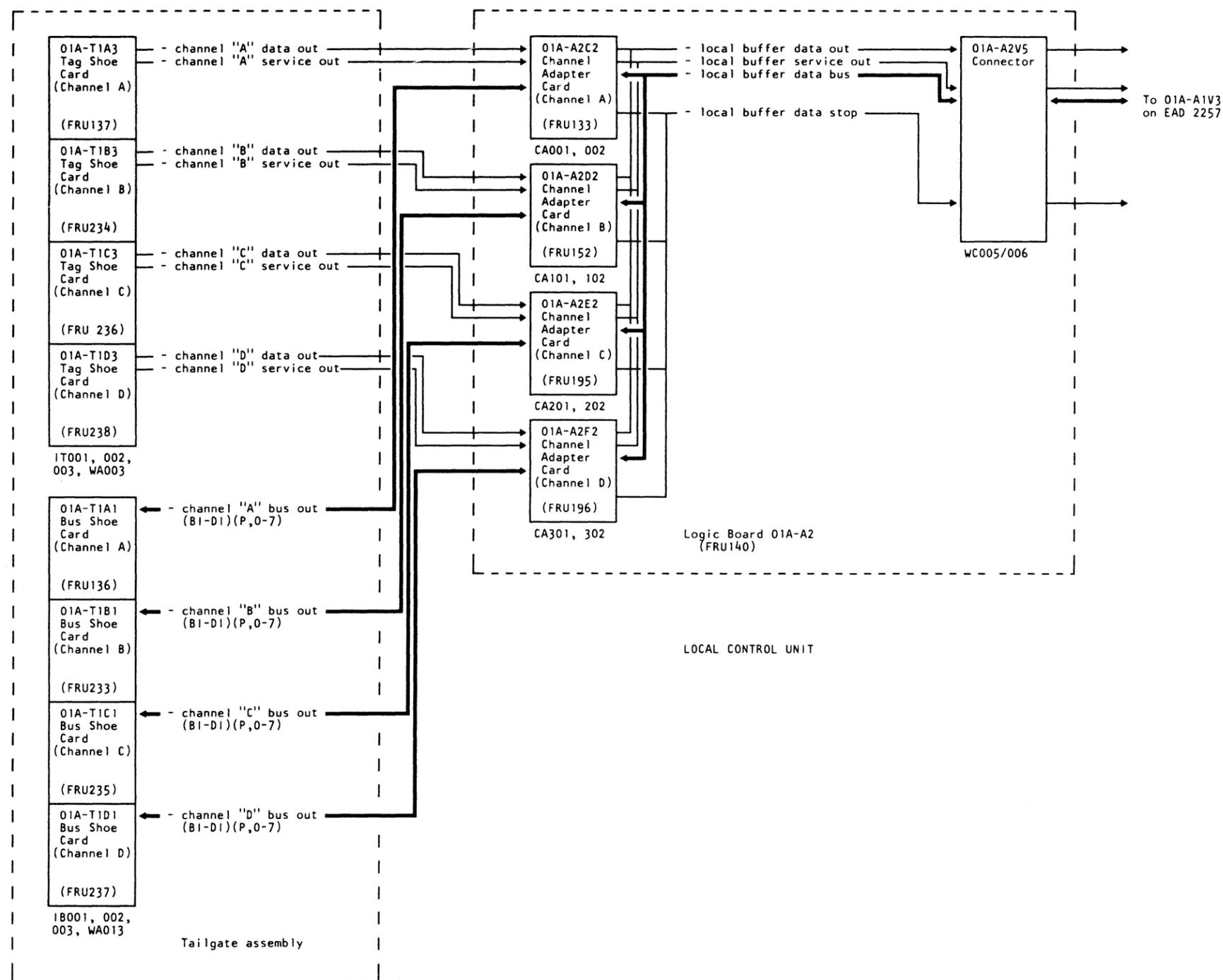
Step	Ref Page	Description/Comments
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480.

CEG3 Bit 0 Net List

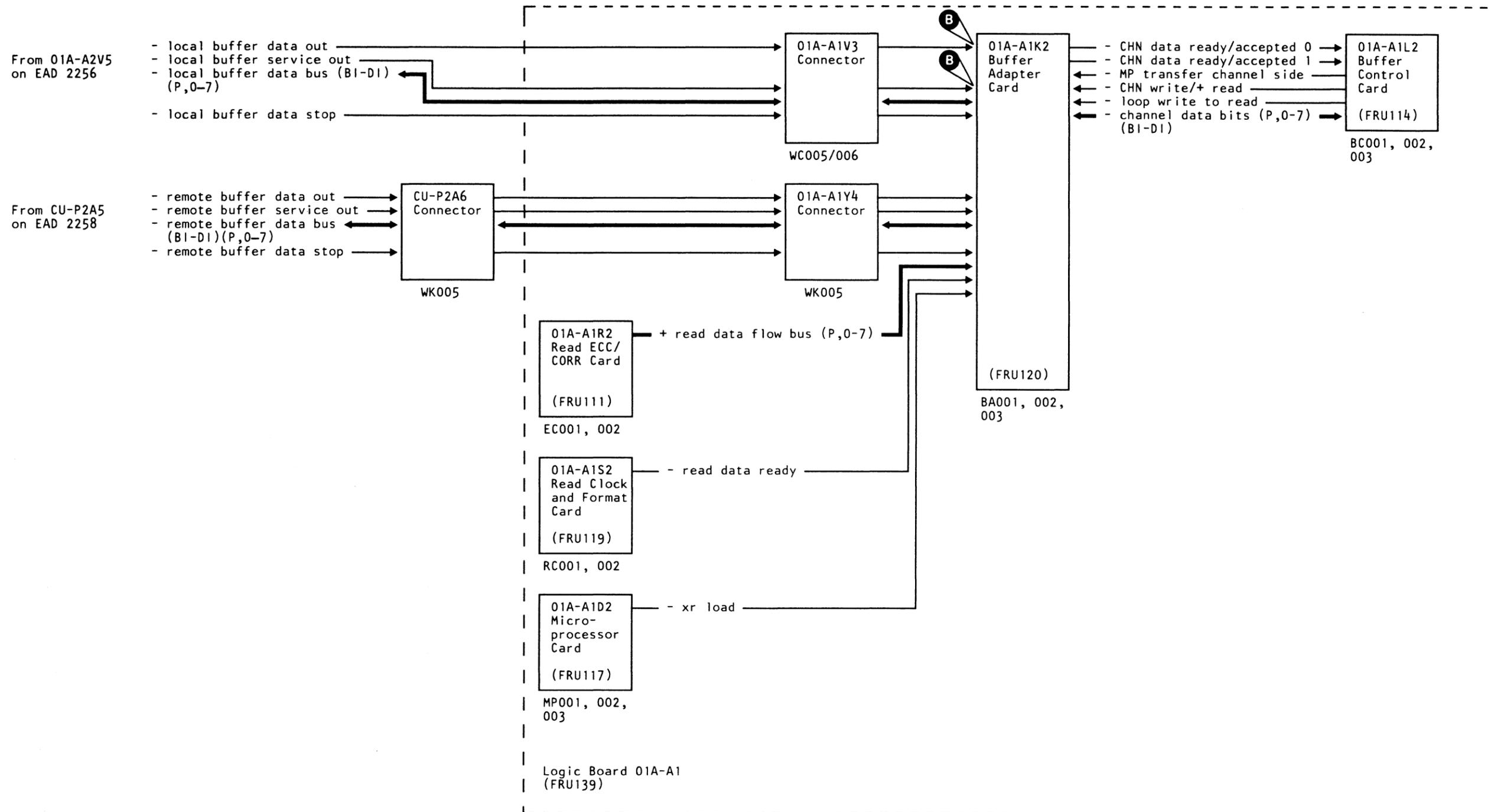
Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE33, E010	- CHN data read/accepted 0	BU3021	3AD0C	70000
EE33, E010	- Channel data bits (0 – 7) BI-DI	BU3021	38804	90000
EE33, EE64, E010	- Channel write/ + read	BU2021	38804	70000
EE33, E010	+ Read data flow bus (P,0 – 7)	LW3024	DAD0C	B0000
EE33, E010	- Loop write to read			
EE64, E010	- Local buffer service out			
EE64, E010	- Local buffer data out			
EE64, E010	- Local buffer data stop			
EE64, E010	- Local buffer data bus BI-DI (P,0 – 7)			
EE33, E010	- XR load			
EE53, E010	- Read data ready			
EE64, E010	- MP transfer channel side			



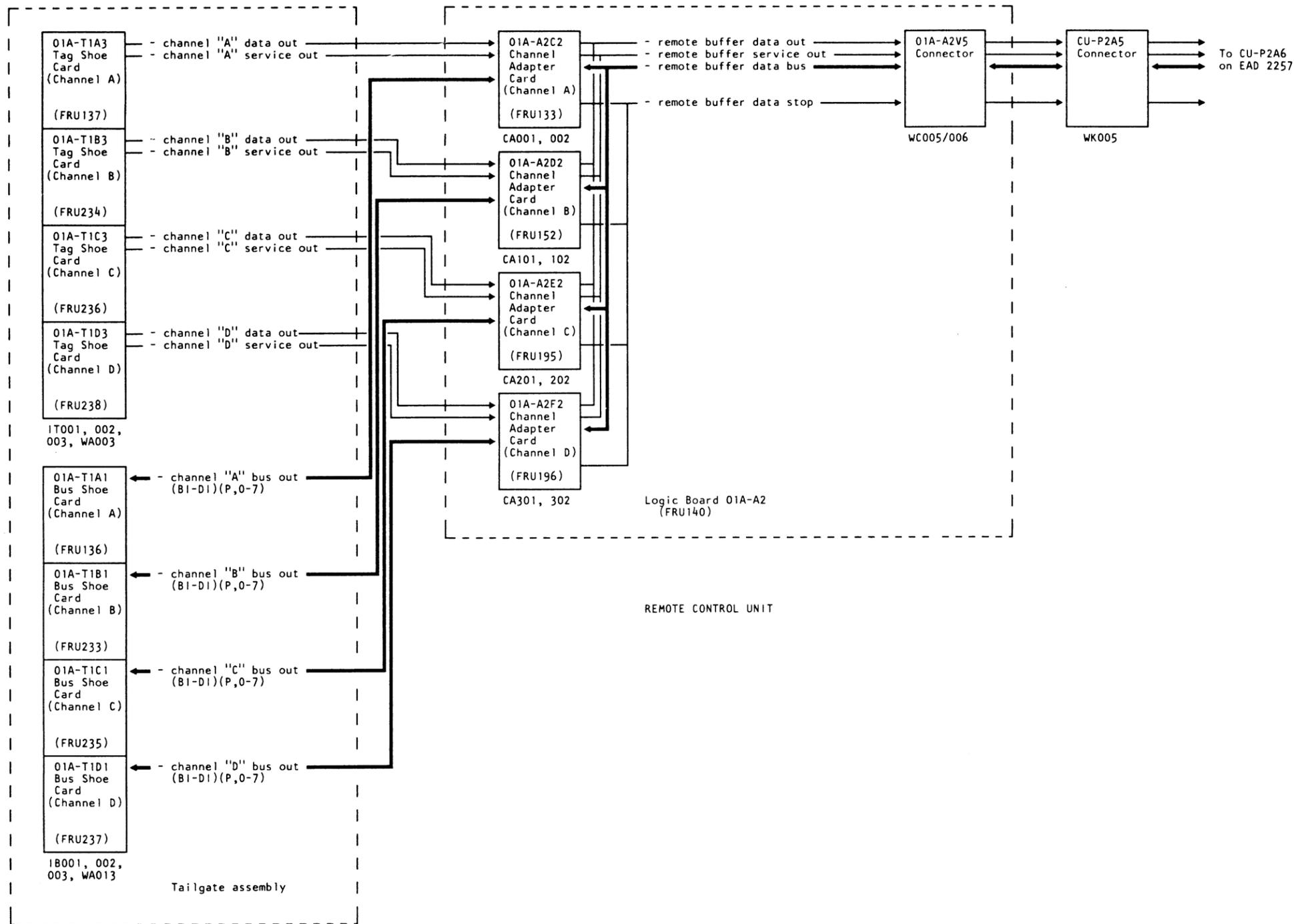
Error Diagram



Error Diagram



Error Diagram



CEG3 Bit 1, Buffer Control Channel RAM Data Parity Error

Error Condition Theory

This bit indicates that a parity error was detected on the output of the buffer control channel RAM on the buffer control card during a buffer-storage-channel-store cycle while performing a Write operation. This is an internal parity check of data stored temporarily in the channel RAMs before it is sent to the buffer storage card. All data written to or read from the buffer storage cards must pass through the buffer control channel RAM on the buffer control card.

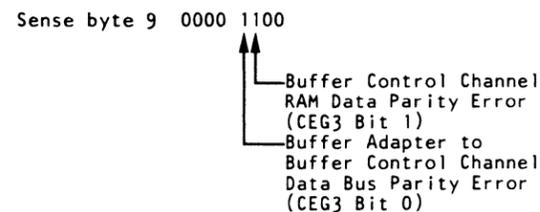
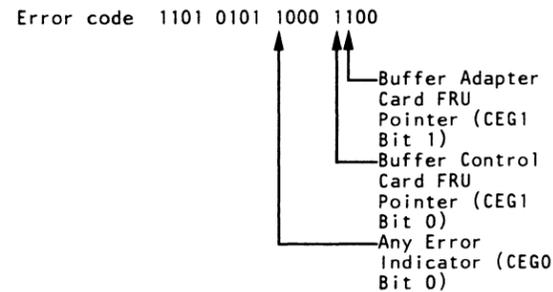
After checking the output of the buffer control channel RAM, the buffer control card strips the parity and generates an error correction code (ECC) across groups of four data bytes as the data is taken from the RAM and stored in the buffer storage cards. By parity checking the data as it is read from the RAM, the buffer control card knows that each group of four bytes is correct before the ECC is concatenated to the group.

CEG1 bit 0 is set to point to the buffer control card as the probable failing FRU.

If CEGO bit 2 (channel adapter to buffer adapter parity error) or CEG3 bit 0 (buffer adapter to buffer control channel data bus parity error) is set, the buffer control channel RAM failure is a result of the earlier error. The following examples show you how to select the correct error bit if multiple error bits are on.

Example 1

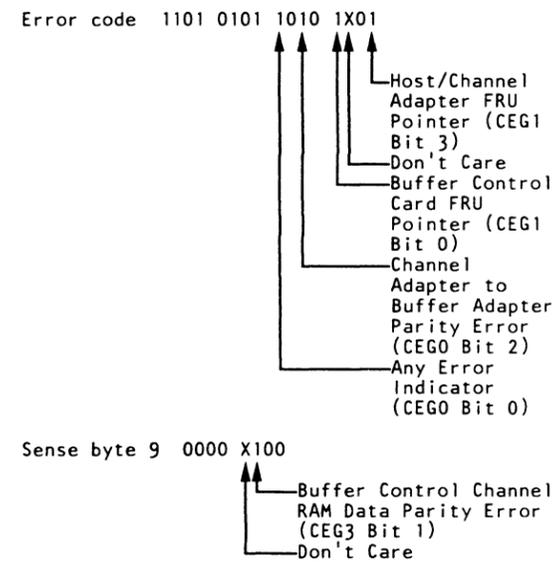
Assume that the error code is D58C and sense byte 9 is 0C



This indicates that the buffer control card received data with bad parity from the buffer adapter card over the channel data bus. The incorrect data propagated through the buffer control card logic and was loaded into the RAM. The failure is either in the buffer adapter card, the channel data bus, the control lines from the buffer adapter card to the buffer control card, or the logic on the control card that precedes the checker for the buffer adapter to buffer control channel data bus parity error. Return to the error detection theory and troubleshooting guide for "CEG3 bit 0, Buffer Adapter to Buffer Control Channel Data Bus Parity Error."

Example 2

Assume an error code of D5A9 or D5AD and sense byte 9 of 04 or 0C.



This indicates that the buffer adapter card received data with bad parity from the channel adapter over either the local or remote buffer data bus. The error data propagated through the buffer adapter card and the buffer control card logic and was loaded into the RAM. Return to the error detection theory and troubleshooting guide for "CEGO Bit 2, Channel Adapter to Buffer Adapter Parity Error."

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure. Use sense byte 2 to determine which control unit contains the FRUs in the following list.

1. (FRU114) buffer control card 01A-A1L2
2. (FRU117) microprocessor card 01A-A1D2

3. (FRU120) buffer adapter card 01A-A1K2
4. (FRU126) power/POR card 01A-A2H4 (as associated with the channel adapter)
5. Host system channel
6. (FRU133) channel adapter card (channel A) 01A-A2C2
7. (FRU152) channel adapter card (channel B) 01A-A2D2
8. (FRU195) channel adapter card (channel C) 01A-A2E2
9. (FRU196) channel adapter card (channel D) 01A-A2F2
10. (FRU136) bus shoe card (channel A) 01A-T1A1
11. (FRU233) bus shoe card (channel B) 01A-T1B1
12. (FRU235) bus shoe card (channel C) 01A-T1C1
13. (FRU237) bus shoe card (channel D) 01A-T1D1
14. (FRU137) tag shoe card (channel A) 01A-T1A3
15. (FRU234) tag shoe card (channel B) 01A-T1B3
16. (FRU236) tag shoe card (channel C) 01A-T1C3
17. (FRU238) tag shoe card (channel D) 01A-T1D3
18. Remote port path between the remote and local control units if the remote channel adapter was used.
19. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.
20. (FRU140) logic board 01A-A2 in the control unit that contains the channel adapter that was used.
21. Cables, connectors, and nets between all FRUs identified by the FSI and this EAD.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "CEG3 Bit 1 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.

Error Code D5nn (Continued) EAD 2259

4. If steps 1-3 did not correct the problem, examine the BCSE from the diagnostic failure for the next CEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).
5. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
6. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480.

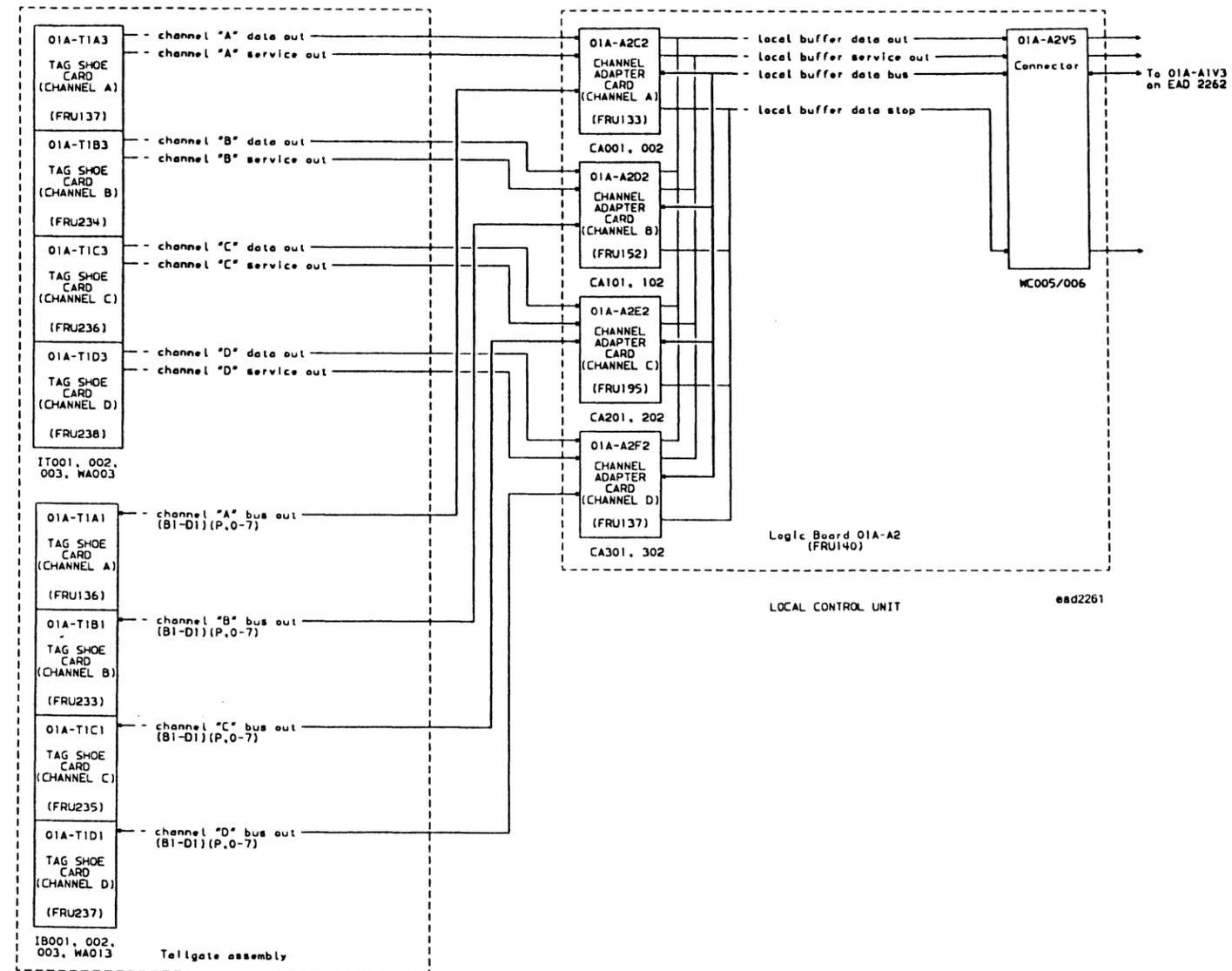
CEG3 Bit 1, Buffer Control Channel RAM Data Parity Error (Continued)

Error Code D5nn (Continued) EAD 2260

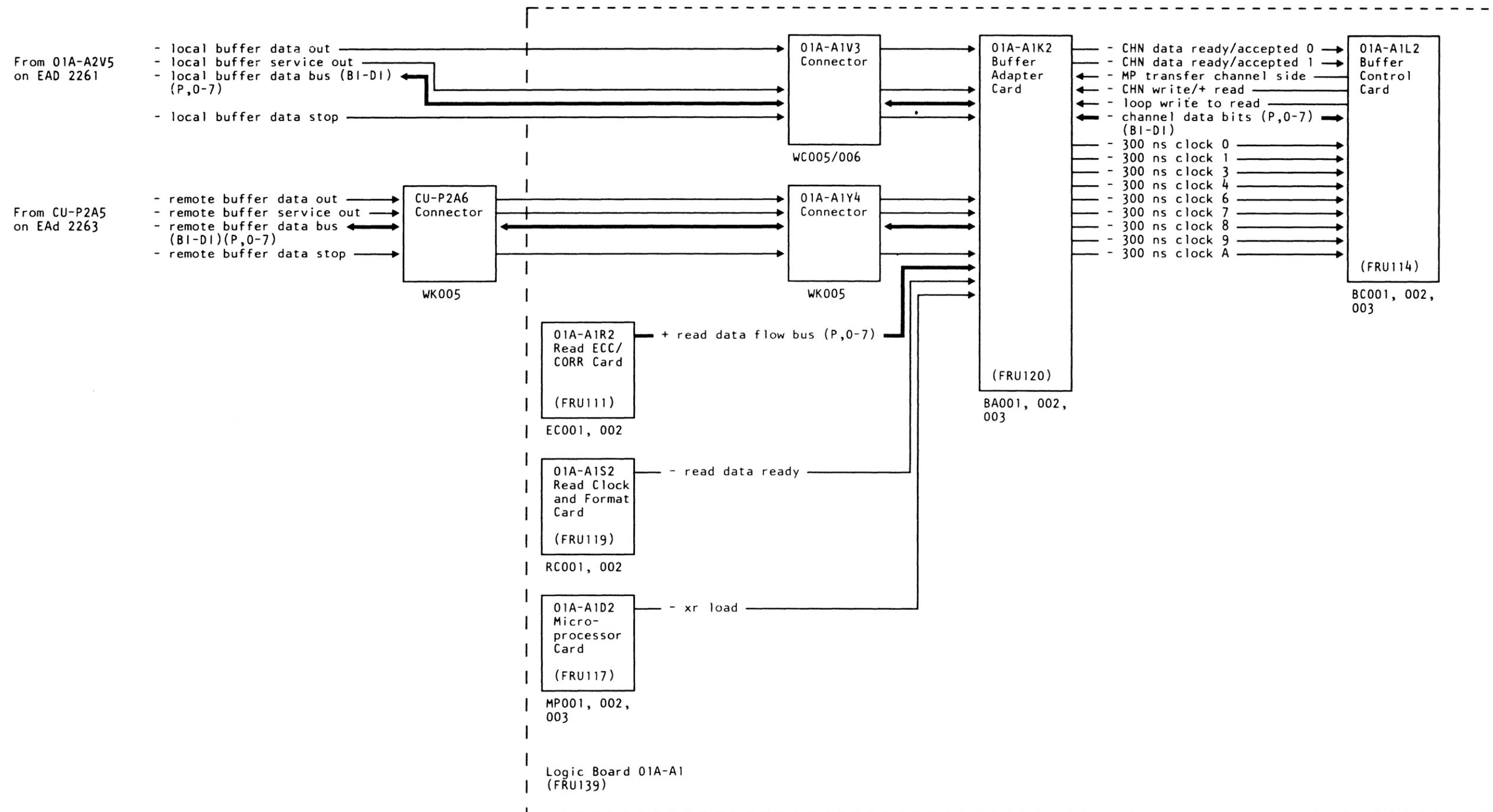
CEG3 Bit 1 Net List

Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE33, E010	- CHN data ready/accepted 0	BU3021	3AD0C	70000
EE33, E010	- CHN data ready/accepted 1	BU3021	38804	70000
EE33, E010	- Channel data bits (0 - 7) BI-DI	BU3021	38804	10000
EE33, EE64, E010	- Channel write/+ read	BU2021	38804	70000
EE53, E010	+ Read data flow bus (P,0 - 7)	LW3024	DAD0C	B0000
EE33, E010	- Loop write to read	BU3021	3A904	90000
EE53, E010	- 300 ns clock 0 - A	LW3024	18804	10000
EE64, E010	- Local buffer service out			
EE64, E010	- Local buffer data out			
EE64, E010	- Local buffer data stop			
EE64, E010	- Local buffer data bus BI-DI (P,0 - 7)			
EE33, E010	- XR load			
EE53, E010	- Read data ready			
EE64, E010	- MP transfer channel side			

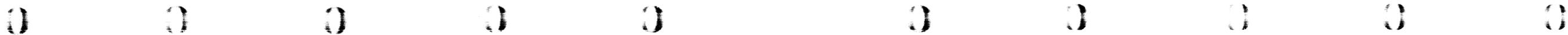
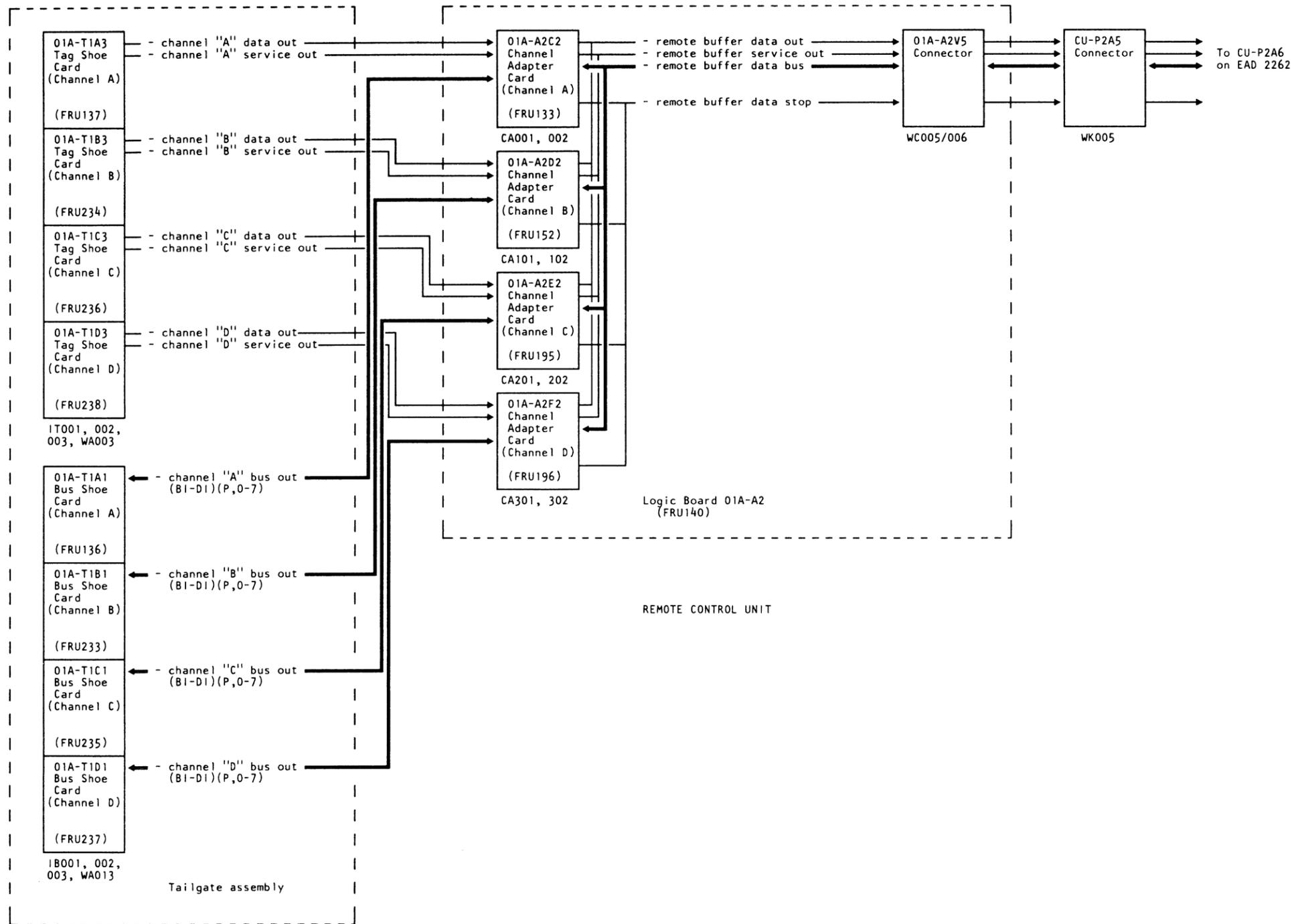
Error Diagram



Error Diagram



Error Diagram



CEG3 Bit 2, Channel Cyclic Redundancy Check (CRC) Error

Error Code D5nn (Continued) **EAD 2265**

Error Condition Theory

* These FRUs are EC sensitive.
FRU112 may not be present.
See CARR-CU 7.

This bit indicates that the contents of the buffer channel CRC register was not zero at the completion of a Channel Read operation. The read data flow circuits read data from the tape and send the data to the buffer storage cards through the device-side circuits one byte at a time. As each byte is received, it is clocked through a CRC generator register in the device-side circuits of the buffer control card. Thus, a CRC is generated for the entire record that is read from tape. The buffer control card stores the CRC behind the last characters of the record.

When the channel reads the record, the record is taken from the buffer storage cards by the channel-side circuits of the buffer control card. As each byte is sent to the channel, the channel-side circuits of the buffer control card clock the byte through a CRC generator. After the last byte has been sent to the channel, the CRC that was stored behind the record is clocked through the CRC generator. The CRC generated by the device-side circuits should cause the channel-side CRC generator to go to zero. If the channel-side CRC does not go to zero, channel CRC error is detected. This CRC check ensures data integrity from the tape through the buffer storage cards to the buffer control card output to the buffer adapter card.

CEG1 bits 0 and 2 are set to point to the buffer control card and the buffer storage cards as the probable failing FRUs.

If this error is set at the same time as any of the following errors, channel CRC error is likely to be a result of the primary error. The primary errors are:

- Channel buffer storage data uncorrectable error (CEG2 bit 3)
- Channel buffer storage address parity error (CEG2 bit 0)
- Channel buffer storage address pointer parity error (CEG2 bit 1)
- Buffer control to buffer adapter data bus parity error (CEG0 bit 3).

Go to the error detection theory and troubleshooting guide for the primary error.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure. Use sense byte 2 to determine which control unit contains the FRUs in the following list.

1. (FRU114) buffer control card 01A-A1L2
2. (FRU112*) buffer storage card 01A-A1N2

3. (FRU113*) buffer storage card 01A-A1M2
4. Host system channel
5. (FRU133) channel adapter card (channel A) 01A-A2C2
6. (FRU152) channel adapter card (channel B) 01A-A2D2
7. (FRU195) channel adapter card (channel C) 01A-A2E2
8. (FRU196) channel adapter card (channel D) 01A-A2F2
9. (FRU136) bus shoe card (channel A) 01A-T1A1
10. (FRU233) bus shoe card (channel B) 01A-T1B1
11. (FRU235) bus shoe card (channel C) 01A-T1C1
12. (FRU237) bus shoe card (channel D) 01A-T1D1
13. (FRU137) tag shoe card (channel A) 01A-T1A3
14. (FRU234) tag shoe card (channel B) 01A-T1B3
15. (FRU236) tag shoe card (channel C) 01A-T1C3
16. (FRU238) tag shoe card (channel D) 01A-T1D3
17. (FRU120) buffer adapter card 01A-A1K2
18. (FRU126) power/POR card 01A-A2H4 (as associated with the channel adapter in use, local or remote)
19. (FRU117) microprocessor card 01A-A1D2
20. Remote port path between the remote and local control units if the remote channel adapter was used
21. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used
22. (FRU140) logic board 01A-A2 in the control unit that contains the channel adapter that was used
23. Cables, connectors, and nets between all FRUs identified by the FSI and this EAD.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "CEG3 Bit 2 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.

3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.
4. If steps 1–3 did not correct the problem, examine the BCSE from the diagnostic failure for the next CEG bit on.
5. **If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:**
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
6. **If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, Call your next level of support and then go to SPROC 1 "End of Call Actions."**

References

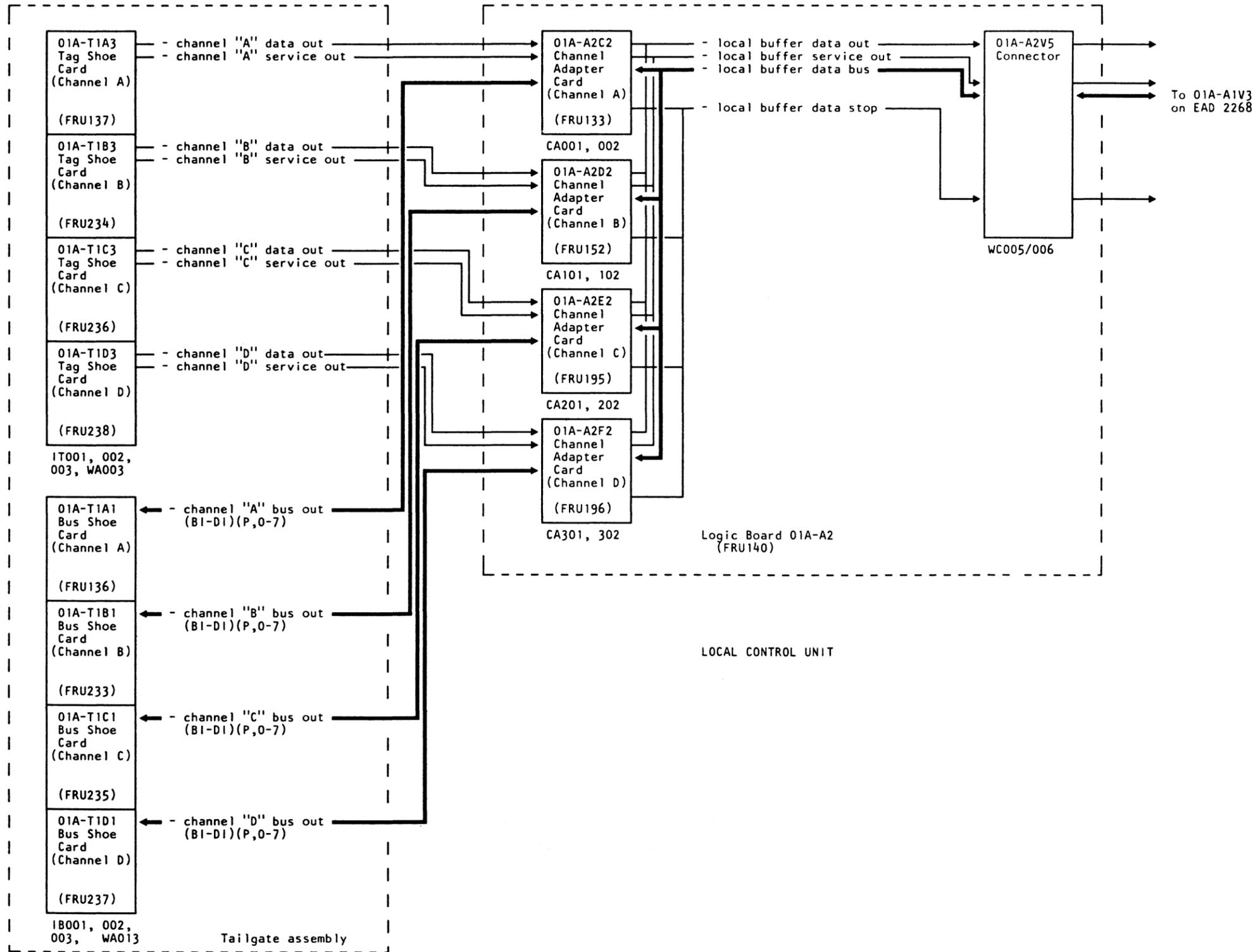
STEP	REF PAGE	DESCRIPTION/COMMENTS
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480.

CEG3 Bit 2 Net List

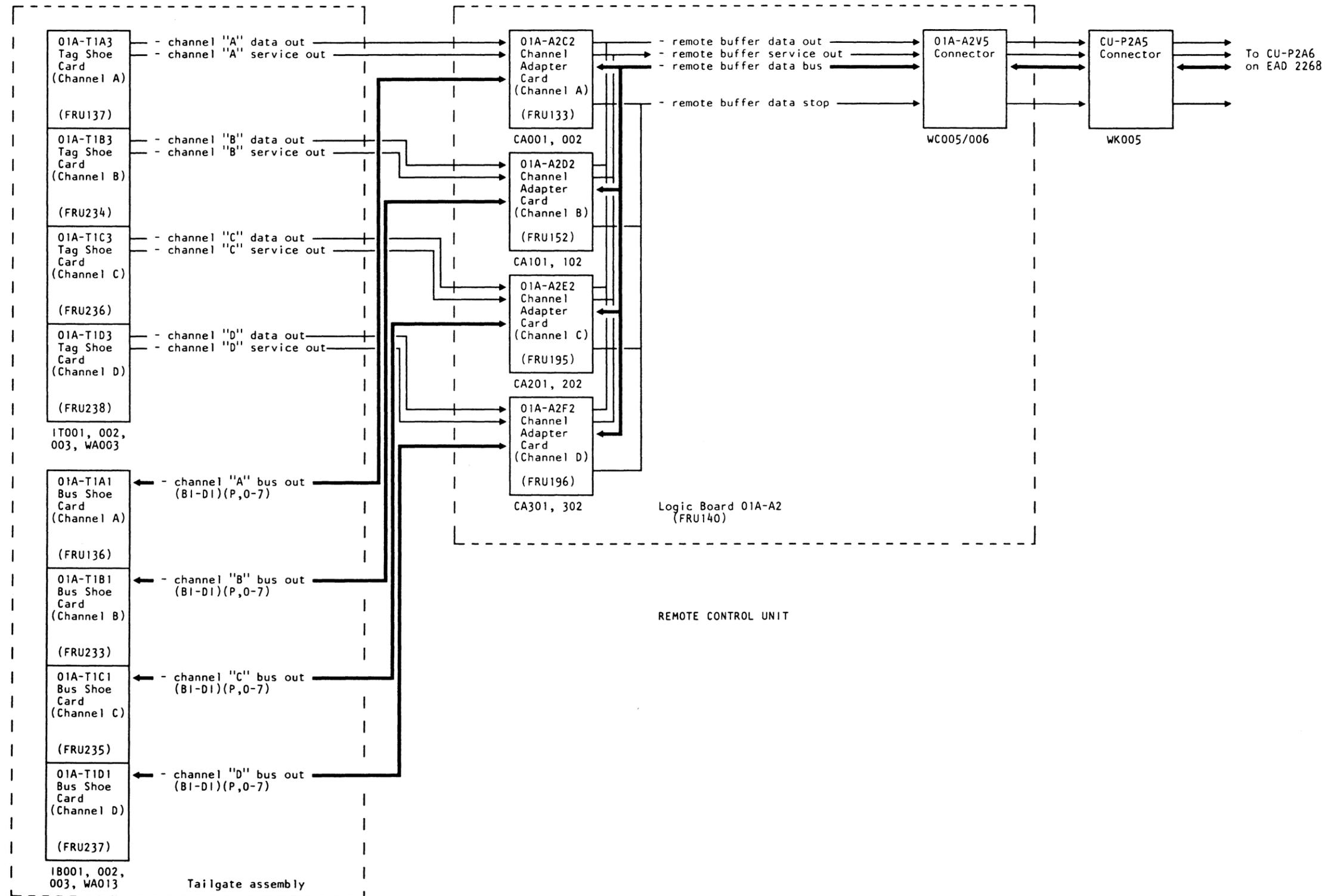
Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE33, E010	- Ketch command C	BU3025	D8A02	XXXXX
EE33, E010	- Local buffer data stop	BU3025	D8A02	90000
EE33, E010	- CHN write/+ read	BU2027	D9A02	90000
EE33, E010	- Ketch command B	BU3028	D8A02	XXXXX
EE33, E010	- Buffer data byte 0 bits 0-7	BU3028	D8A12	XXXXX
EE33, E010	- Buffer data byte 1 bits 0-7	BU3028	D8A12	XXXXX
EE33, E010	- Buffer data byte 2 bits 0-7	BU3028	D8A12	XXXXX
EE33, E010	- Buffer data byte 3 bits 0-7	BU3028	D8A12	XXXXX
EE33, E010	- Buffer check bits 0-7			
EE33, E010	+ Ketch data gate (0-7)			
EE33, E010	- Card select 0			
EE33, E010	- Card select 1			
EE33, E010	- Register select 00			
EE33, E010	- Register select 01			
EE33, E010	- Register select 10			
EE33, E010	- Register select 11			
EE33, E010	- Ketch commands A B C			
EE33, E010	- Array select 00			
EE33, E010	- Array select 01			
EE33, E010	- Wordsar 0-6			
EE33, E010	- Bitsar 0-4			
EE33, E010	- 300 ns clock 0-A			
EE33, E010	- XR load			
EE33, E010	- XR write gate			
EE33, E010	- Ketch address parity odd	BU3021	18A80	90000
EE33, E010	- Enable channel tags	BU3025	D98000	90000
EE33, E010	- CHN data end	BU3025	DD900	90000
EE33, E010	- MP transfer channel side			
EE33, E010	- CHN data ready/accepted 0	BU3021	3AD0C	70000
EE33, E010	- CHN data ready/accepted 1	BU3021	38804	70000
EE33, E010	- Channel data bits (0-7) BI-DI	BU3021	38804	10000
EE33, E010	+ CHN data toggle			



Error Diagram



Error Diagram



0 0 0 0 0 0 0 0 0 0 0 0

Error Description

The buffer-device functional area detected a hardware error during a data transfer between the tape drive and the 3480 subsystem buffer. The errors detected are data parity errors and data transfer control failures.

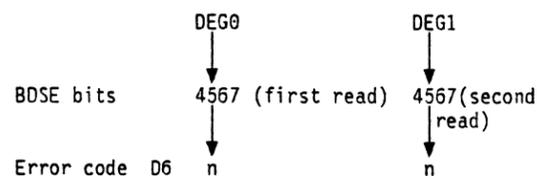
For the case where nn = 8A, the channel cables to the control unit are also suspect, as well as the buffer-device interface in the control unit.

Error Condition Theory

The buffer-device functional area includes all the hardware that is used to transfer data between the tape drives and the subsystem buffer. When this hardware detects an error, it sets bits in device error group registers 0, 1, 2, and 3 (DEG0, DEG1, DEG2, and DEG3).

The device error group registers are four-bit register that cannot be read directly. They are read by transferring their data to bits 4 through 7 of the buffer device status and error register (BDSE).

When an error is detected, the microcode reads the BDSE register which includes DEG0 in bits 4 through 7. Then the microcode sets bit 3 of the BDSE register to signal that the other DEG registers must be read. When BDSE bit 3 is on, each read of the BDSE advances a pointer to cause the next DEG to be read out. If bit 3 of the BDSE is not on, the DEG pointer does not advance, and DEG0 is read for each read of the BDSE. The data read out of the DEG registers is stored, and the microcode uses it to build sense data and the D6nn error code. DEG2 and DEG3 are stored in sense byte 9, and DEG0 and DEG1 are used to build the error code as follows.



DEG0 and DEG1 are also stored in sense byte 17.

Any error except device buffer storage data correctable error (DEG2 bit 2) causes the 'check 2' line to the microprocessor to become active and the DEGs to be read.

When an error is detected, the start bit in the buffer device control (BDC) register becomes active and remains active while the microcode reads out the DEGs. If for some reason the start bit becomes not active before all the DEGs are read, BDSE bits 4-7 contain the contents of the DEG that was loaded after the last XR read of the BDSE before the start bit became not active. Also, resetting the start bit causes some error latches in the DEGs to be reset.

Sense byte 2 points to the control unit that contains the buffer that detected the failure.

Buffer Device Status and Error Register

The contents of the BDSE are:

Bit	Meaning	Condition
Bit 0	Device pointer = stop	Set when BDP = BDS
Bit 1	Device read end	Read data flow circuits ended the data transfer to or from the buffer
Bit 2	Device data transfer complete	Set when the data transfer has been completed between the buffer and the read data flow or write data flow circuits
Bit 3	Sample device errors	Set to read out DEGs
Bit 4	Device error 0	Contains the device error group bit 0
Bit 5	Device error 1	Contains the device error group bit 1
Bit 6	Device error 2	Contains the device error group bit 2
Bit 7	Device error 3	Contains the device error group bit 3

Device Error Groups

The device error group bits have meanings as follows.

Device Error Group 0 (DEG0)

Bit	Description
0	Any device error. This bit is set by any other DEG bit being on except DEG2 bit 2.
1	Device data overrun.
2	Read data flow to buffer adapter parity error.
3	Buffer control to buffer adapter device data bus parity error.

Device Error Group 1 (DEG1)

Note: The bits of DEG1 are FRU pointers and are not used for error isolation. Use the device error group registers 0, 2, and 3 for error isolation.

Bit	Description
0	The buffer control card caused the failure.
1	The buffer adapter card caused the failure.
2	A buffer storage card caused the failure.
3	The read ECC/CORR card or the read clock and format card caused the failure.

Device Error Group 2 (DEG2)

Bit	Description
0	Device buffer storage address parity error.
1	Device buffer storage address pointer parity error.
2	Device buffer storage data correctable error.
3	Device buffer storage data uncorrectable error.

Device Error Group 3 (DEG3)

Bit	Description
0	Buffer adapter to buffer control device data bus parity error.
1	Buffer control device RAM data parity error.
2	Device CRC error.
3	Not used.

Sense Byte 2

Sense byte 2 has the following format:

Bits	Description
0-3	Not used for this EAD.
4	0 = Microprocessor, buffer, and data flow are in control unit 0. 1 = Microprocessor, buffer, and data flow are in control unit 1.
5	Not used for this EAD.
6	Not used for this EAD.
7	Not used for this EAD.

Use the bits from sense byte 2 to determine which control unit to work on.

0 0 0 0 0 0 0 0 0 0 0

Error Description

The buffer-device functional area detected a hardware error during a data transfer between the tape drive and the 3480 subsystem buffer. The errors detected are data parity errors and data transfer control failures.

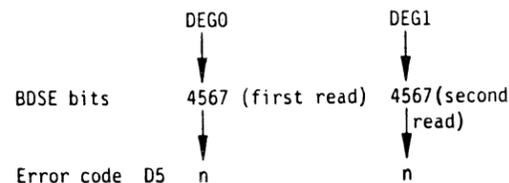
For the case where nn = 8A, the channel cables to the control unit are also suspect, as well as the buffer-device interface in the control unit.

Error Condition Theory

The buffer-device functional area includes all the hardware that is used to transfer data between the tape drives and the subsystem buffer. When this hardware detects an error, it sets bits in device error group registers 0, 1, 2, and 3 (DEG0, DEG1, DEG2, and DEG3).

The device error group registers are four-bit register that cannot be read directly. They are read by transferring their data to bits 4 through 7 of the buffer device status and error register (BDSE).

When an error is detected, the microcode reads the BDSE register which includes DEG0 in bits 4 through 7. Then the microcode sets bit 3 of the BDSE register to signal that the other DEG registers must be read. When BDSE bit 3 is on, each read of the BDSE advances a pointer to cause the next DEG to be read out. If bit 3 of the BDSE is not on, the DEG pointer does not advance, and DEG0 is read for each read of the BDSE. The data read out of the DEG registers is stored, and the microcode uses it to build sense data and the D6nn error code. DEG2 and DEG3 are stored in sense byte 9, and DEG0 and DEG1 are used to build the error code as follows.



DEG0 and DEG1 are also stored in sense byte 17.

Any error except device buffer storage data correctable error (DEG2 bit 2) causes the 'check 2' line to the microprocessor to become active and the DEGs to be read.

When an error is detected, the start bit in the buffer device control (BDC) register becomes active and remains active while the microcode reads out the DEGs. If for some reason the start bit becomes not active before all the DEGs are read, BDSE bits 4-7 contain the contents of the DEG that was loaded after the last XR read of the BDSE before the start bit became not active. Also, resetting the start bit causes some error latches in the DEGs to be reset.

Sense byte 2 points to the control unit that contains the buffer that detected the failure.

Buffer Device Status and Error Register

The contents of the BDSE are:

Bit	Meaning	Condition
Bit 0	Device pointer = stop	Set when BDP = BDS
Bit 1	Device read end	Read data flow circuits ended the data transfer to or from the buffer
Bit 2	Device data transfer complete	Set when the data transfer has been completed between the buffer and the read data flow or write data flow circuits
Bit 3	Sample device errors	Set to read out DEGs
Bit 4	Device error 0	Contains the device error group bit 0
Bit 5	Device error 1	Contains the device error group bit 1
Bit 6	Device error 2	Contains the device error group bit 2
Bit 7	Device error 3	Contains the device error group bit 3

Device Error Groups

The device error group bits have meanings as follows.

Device Error Group 0 (DEG0)

Bit	Description
0	Any device error. This bit is set by any other DEG bit being on except DEG2 bit 2.
1	Device data overrun
2	Read data flow to buffer adapter parity error
3	Buffer control to buffer adapter device data bus parity error.

Device Error Group 1 (DEG1)

Note: The bits of DEG1 are FRU pointers and are not used for error isolation. Use the device error group registers 0, 2, and 3 for error isolation.

Bit	Description
0	The buffer control card caused the failure.
1	The buffer adapter card caused the failure.
2	A buffer storage card caused the failure.
3	The read ECC/CORR card or the read clock and format card caused the failure.

Device Error Group 2 (DEG2)

Bit	Description
0	Device buffer storage address parity error
1	Device buffer storage address pointer parity error
2	Device buffer storage data correctable error
3	Device buffer storage data uncorrectable error.

Device Error Group 3 (DEG3)

Bit	Description
0	Buffer adapter to buffer control device data bus parity error
1	Buffer control device RAM data parity error
2	Device CRC error
3	Not used.

Sense Byte 2

Sense byte 2 has the following format.

Bits	Description
0-3	Not used for this EAD
4	0 = Microprocessor, buffer, and data flow are in control unit 0. 1 = Microprocessor, buffer, and data flow are in control unit 1.
5	Reserved
6	Reserved
7	Not used for this EAD

Use the bits from sense byte 2 to determine which control unit to work on.

Troubleshooting Guide

This is a common troubleshooting guide for all D6nn error codes. This troubleshooting guide helps you determine the order in which you should analyze the symptoms of the error code.

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Failures detected in a functional area can be caused by defective clock lines. All clocks for the buffer are generated by the buffer adapter card. The clock lines are listed in the individual net lists for each DEG bit and should be scoped as part of the individual troubleshooting guide.
5. Run diagnostics EE30, and EE52. If a failure is detected, see the failure ID table. Record the BCSE and BDSE error information from the diagnostic screen. Return to this EAD and compare any common FRUs or troubleshooting tips.

Did this diagnostic fail?

YES NO
Continue with the actions in the EAD.

Did the failure direct you back to the same EAD?

YES NO
Go to the place that the diagnostics sends you and do the actions.

Do the EADs have specific actions for the diagnostic failure?

YES NO
Loop the diagnostics and do any other actions specified in the EADs.

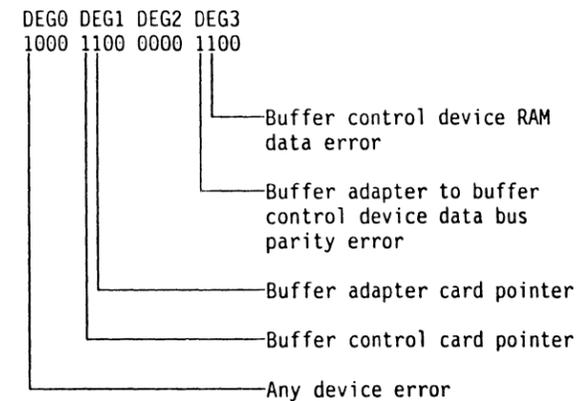
Do the actions specified for that failure.

6. If diagnostic EE30 (buffer test) does not give any valid information in the BDSE and diagnostic EE52 fails, suspect an external line between the buffer adapter and the read data flow or write data flow first and suspect an internal net second.
7. If the BDSE has no error indicated and the BCSE has an error indicated, go to the EAD for error code D5nn to continue troubleshooting.
8. If the BDSE has error bits on, continue in this EAD and analyze the DEG bits.

Note: You can obtain the DEG bits in either of two ways.

- a. If you are analyzing a failure from a diagnostic, the DEGs are displayed as the last four hexadecimal characters in the BDSE in the error display on the MD screen. (See the error screen descriptions for the diagnostic you are running.)
- b. If you are analyzing the sense data from EREP, DEG0 and DEG1 are the nn characters from the D5nn error code in sense bytes 16 and 17. DEG2 and DEG3 are in sense byte 9.

As an example, assume that we have DEG values 8C0C. The DEG bit values are:



Select the correct bit to be used for troubleshooting using the troubleshooting procedures on the EAD pages that follow by:

- a. Start with bit 1 of DEG0. (Bit 0 of DEG0 should always be on. If it isn't, go to the troubleshooting procedure for DEG0 bit 0.)
- b. Take the bits in DEG0 in order from bit 1 to bit 3. Troubleshoot for the first bit that is a 1.

- c. If no bits (other than bit 0) in DEG0 are 1 or if troubleshooting the bits in DEG0 did not locate the trouble, go to DEG2. (DEG1 is a FRU pointer.) (Use the bits from DEG1 to determine which FRU to suspect.)
- d. If no bits are on in DEG2 or if troubleshooting the bits in DEG2 did not locate the trouble, go to DEG3.

For this example, you would suspect the buffer control card and buffer adapter card because their FRU pointer bits are on in DEG1. If those cards had been replaced, you would begin your troubleshooting with DEG3 bit 0. You would find "DEG3 Bit 0, Buffer Adapter to Buffer Control Device Bus Parity Error" on EAD 1 and go to the page for the troubleshooting guide for that error. If troubleshooting with DEG3 bit 0 was not effective, you would try using DEG3 bit 1.

9. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

10. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, Call your next level of support and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables" For voltage pins positions, see the "Voltage Distribution list" in the Field Wire Net List in the Logic Diagrams.
5	DIAG 1	How to run and interpret diagnostics
8	MSG 1	How to find and interpret information in EREP
9	MD 1	How to use the MD with the 3480



DEG0 Bit 0, Any Device Error Detected

Error Code D6nn (Continued) **EAD 2282**

Error Condition Theory

Bit 0 should always be on in the D6nn error code. It is set by any other device error group bit being on. If it is not on and any other DEG bit is on, bit 0 failed to be set by internal circuitry. D600 should never occur. A check-2 error with no FRU-pointing bits should result in a D900 error code. Bit 0 should not be on by itself (D680). If bit 0 is on and no other DEG bits are on:

- A false error occurred.
- The error was reset or failed to be latched on when the device error groups were read out by the microprocessor.
- Something inhibited reading out the DEGs.

If bit 0 is on as it should be, go to the next DEG bit for troubleshooting. If bit 0 is on incorrectly, look for a valid error indicated in the sense information.

If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

Error Condition Theory

The data buffer provides the speed matching necessary to handle the difference between channel and drive data rates. The buffer also allows the channel to write a record to a drive address before the tape transport has accelerated to recording speed. In Channel Read operations, records can be pre-read sequentially from the drive and stored into the data buffer before the channel has issued a Read command for that drive (after the initial Read command). When the next Read command is issued, the record is available in the buffer for immediate transfer to the channel. All of these buffer operations serve to increase channel performance. The channel and the drive can both be reading from or writing to the buffer at the same time.

During a channel write operation, the channel is writing to the buffer while the drive is reading from the buffer and writing the data on tape. When the Channel Write operation is initiated, the tape transport mechanism in the drive is stopped. The Channel Write operation signals for the drive to start the tape transport mechanism and starts transferring data to the buffer storage cards through the channel-side circuits of the buffer adapter and buffer control cards. When the drive has the tape transport mechanism moving at the correct speed, data is transferred from the buffer storage cards through the device-side circuits of the buffer adapter and buffer control cards to the write data flow circuits. The write data flow circuits format the data and send it to the drive to be written on the tape. Meanwhile, the channel can still be transferring data to the buffer through the channel-side circuits. If the buffer control circuits detect that the drive is trying to transfer data from storage positions that the channel has not yet written, they set the device-overrun error.

During Channel Read operations, data transfers from the drive through the device-side circuits to the buffer storage cards. The channel-side circuits transfer data from the buffer storage cards to the host system channel. If the buffer adapter and buffer control circuits detect that the host system channel is trying to transfer data from storage positions that the drive has not yet written, they set the device-overrun error.

DEG1 bit 0 is set to point to the buffer control card as the probable failing FRU.

If either DEG2 bit 0 (device buffer storage address parity error) or DEG2 bit 1 (device buffer storage address pointer parity error) is set, go the error detection and troubleshooting guide for the addressing error. Either of the addressing errors causes a device overrun because they inhibit storing of data in the buffer storage cards.

Buffer Device Command Register

Bit Description

- 0 Buffer device command 0
- 1 Buffer device command 1
- 2 Buffer device command 2
- 3 Buffer device command 3
- 4 Start tape drive
- 5 Degate BCP=BDP
- 6 Disable device fetch cycle
- 7 Not used

Buffer Device Commands

BDC (Hexa-Decimal) Description

- 08 Store CRC
- 18 Read data flow to buffer storage
- 48 Microprocessor write
- 88 Buffer storage to write data flow
- 8C Erase gap (Pseudo store data flow)
- CC Microprocessor read operation
- CE Microprocessor read buffer control device RAM only
- F0 Hold buffer device control reset
- 00 No buffer device operation

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

- 1. (FRU114) buffer control card 01A-A1L2
- 2. (FRU120) buffer adapter card 01A-A1K2
- 3. (FRU119) read clock and format card 01A-A1S2
- 4. (FRU116) write data card 01A-A1P2
- 5. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "DEGO Bit 1 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.
4. If steps 1-3 did not correct the problem, examine the BDSE from the diagnostic failure for the next DEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).
5. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
6. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480.

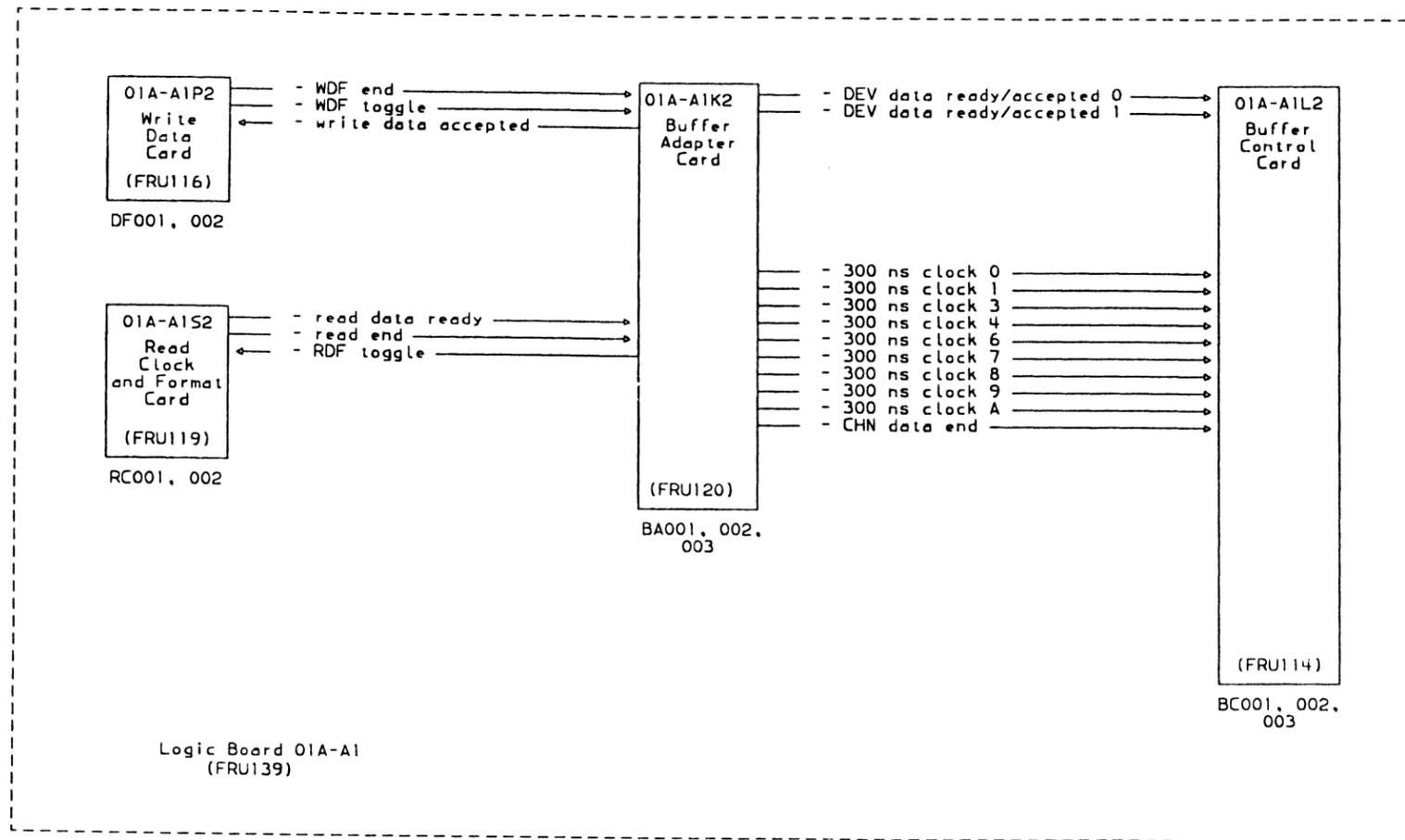


DEG0 Bit 1, Device Overrun (Continued)

DEG0 Bit 1 Net List

Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE32, E010	- DEV data ready/accepted 0	BU2022	30000	1C800
EE32, E010	- 300 ns clock A	BU2024	10000	1CA10
EE32, E010	- 300 ns clock 0, 3, 4, 8, and 9	BU2024	10000	1C800
EE32, E010	- 300 ns clock 6	BU2024	30000	9C800
EE33, E010	- 300 ns clock 1	BU3022	30000	9CA10
EE33, E010	- 300 ns clock 7	BU3022	30000	9C800
EE33, E010	- DEV data ready/accepted 0			
EE33, E010	- Write data accepted			
EE33, E010	- Read data ready			
EE33, E010	- WDF end			
EE33, E010	- WDF toggle			
EE33, E010	- RDF end			
EE33, E010	- RDF toggle			

Error Diagram



eed2286



Error Condition Theory

This bit indicates that the buffer adapter card received data with even parity from the read ECC/CORR card during a read-data-flow-to-buffer data transfer operation. Setting this bit also sets DEG1 bit 3 to indicate that the read ECC/CORR and read clock and format cards as the probable failing FRUs. Sense byte 2 points to the control unit that contains the buffer that detected the failure.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure. Use sense byte 2 to determine which control unit contains the FRUs in the following list.

1. (FRU119) read clock and format card 01A-A1S2
2. (FRU111) read ECC/CORR card 01A-A1R2
3. (FRU120) buffer adapter card 01A-A1K2
4. (FRU114) buffer control card 01A-A1L2
5. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.

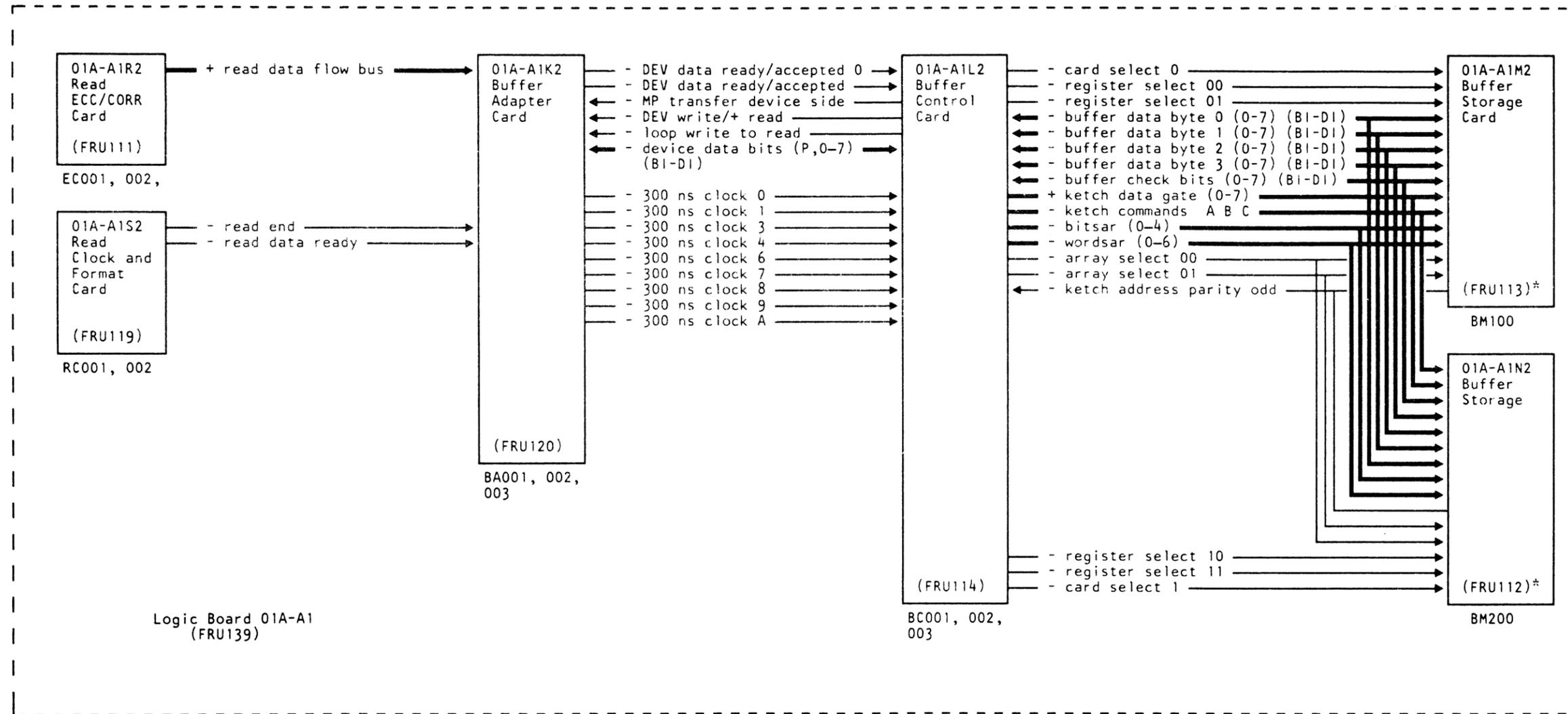
If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, *Call your next level of support* and then go to SPROC 1 "End of Call Actions."

Error Diagram

* These FRUs are EC sensitive.
FRU112 may not be present.
See CARR-CU 7.



DEG0 Bit 3, Buffer Control to Buffer Adapter Device Data Bus Parity Error

Error Code D6nn (Continued) **EAD 2289**

Error Condition Theory

This bit indicates that the buffer adapter card received data with even parity from the buffer control card during buffer-to-write-data-flow Microprocessor Read operations.

Note: The bits of DEG1 are FRU pointers and are not used for error isolation. Use the device error group registers 0, 2, and 3 for error isolation.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU120) buffer adapter card 01A-A1K2
2. (FRU114) buffer control card 01A-A1L2
3. (FRU117) microprocessor card 01A-A1D2
4. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "DEG0 Bit 3 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.
4. If steps 1–3 did not correct the problem, examine the BDSE from the diagnostic failure for the next DEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).
5. **If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:**
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.

6. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

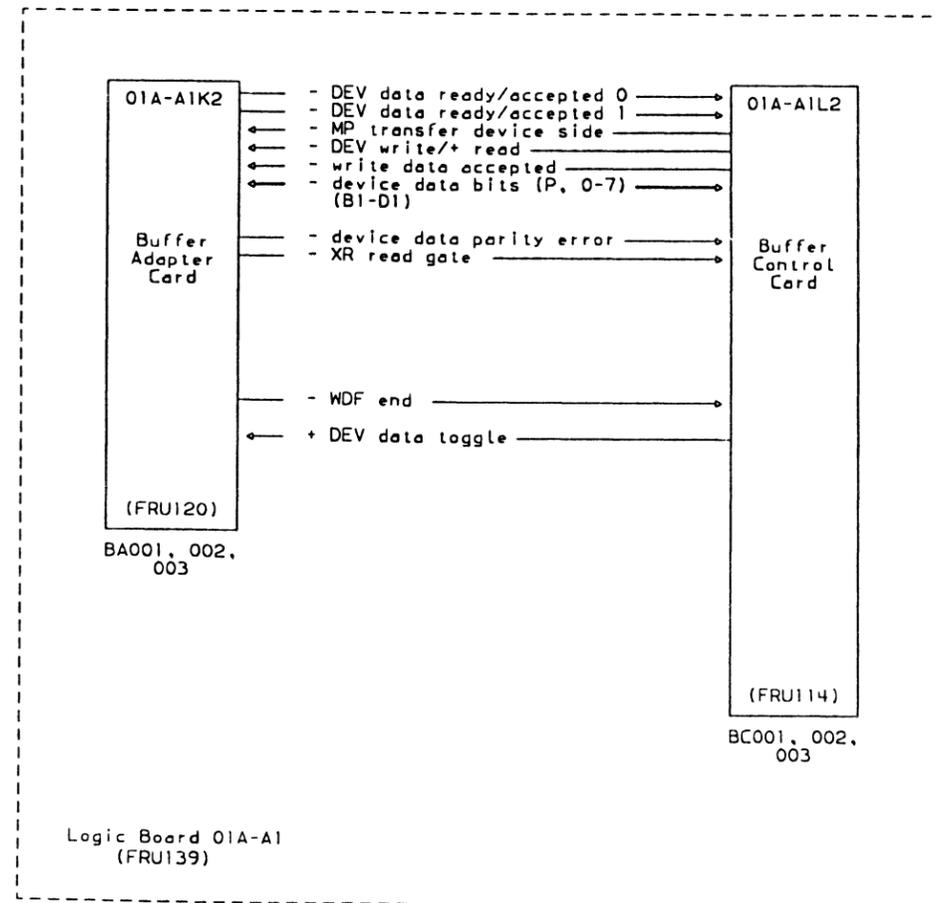
References

Step	Ref Page	Description/Comments
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480.

DEG0 Bit 3 Net List

Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE32, E010	- Write data accepted	BU2022	30000	B9800
EE32, E010	- DEV write/ + read	BU2022	30000	99800
EE32, E010	- Device data parity error	BU2022	30000	99800
EE32, E010	- DEV data ready/accepted 0	BU2022	30000	19800
EE52, E010	- device data bits (P,0–7)	LW2025	30000	B9800
EE32, E010	- WDF end			
EE32, E010	- MP transfer device side			
EE32, E010	+ device data toggle			
EE32, E010	- DEV data ready/accepted 1			
EE32, E010	- XR read gate			

Error Diagram



ead2290



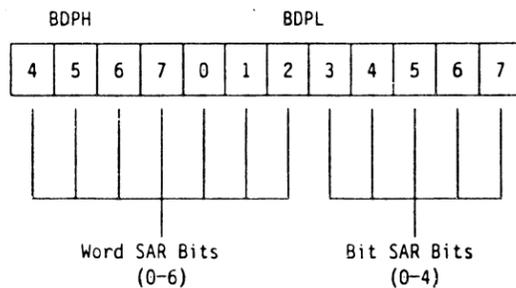
DEG2 Bit 0, Device Buffer Storage Address Parity Error

Error Code D6nn (Continued) EAD 2291

Error Condition Theory

- * These FRUs are EC sensitive.
FRU112 may not be present.
See CARR-CU 7.

This bit indicates that a miscompare occurred between the buffer storage address parity generated by the buffer control card and the address parity received by the buffer storage cards during a device storage cycle. The parity of the buffer storage address received by the buffer storage cards is sent back to the buffer control card and compared there. Address parity is checked for device memory data access cycles only. Address parity is generated from bits 4–7 of the buffer device pointer high (BDPH) external register and bits 0–7 of the buffer device pointer low (BDPL) external register as follows.



word SAR bits and bit SAR bits are combined and parity is generated to give the address parity.

DEG1 bits 0 and 2 are set to point to the buffer control card and buffer storage cards as the probable failing FRUs. Sense byte 2 bit 5 indicates the buffer storage card that was being accessed when the error occurred.

If the device buffer storage address pointer parity error (DEG2 bit 1) is also set, go to the EAD for that bit. (See EAD 1.) The device buffer storage address pointer parity error is most likely to be the primary error. This device buffer storage address parity error is likely to be the result of the device buffer storage address pointer parity error.

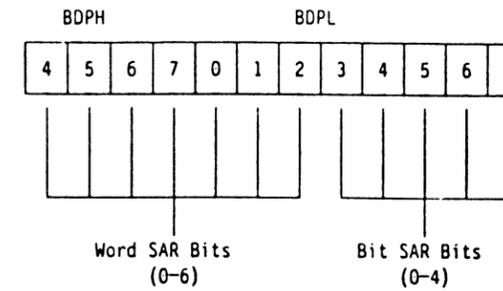
Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU114) buffer control card 01A-A1L2
2. (FRU112*) buffer storage card 01A-A1N2
3. (FRU113*) buffer storage card 01A-A1M2
4. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "DEG2 Bit 0 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.
4. If steps 1–3 did not correct the problem, examine the BDSE from the diagnostic failure for the next DEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).
5. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
6. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."



References

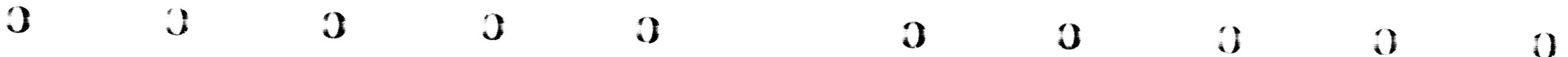
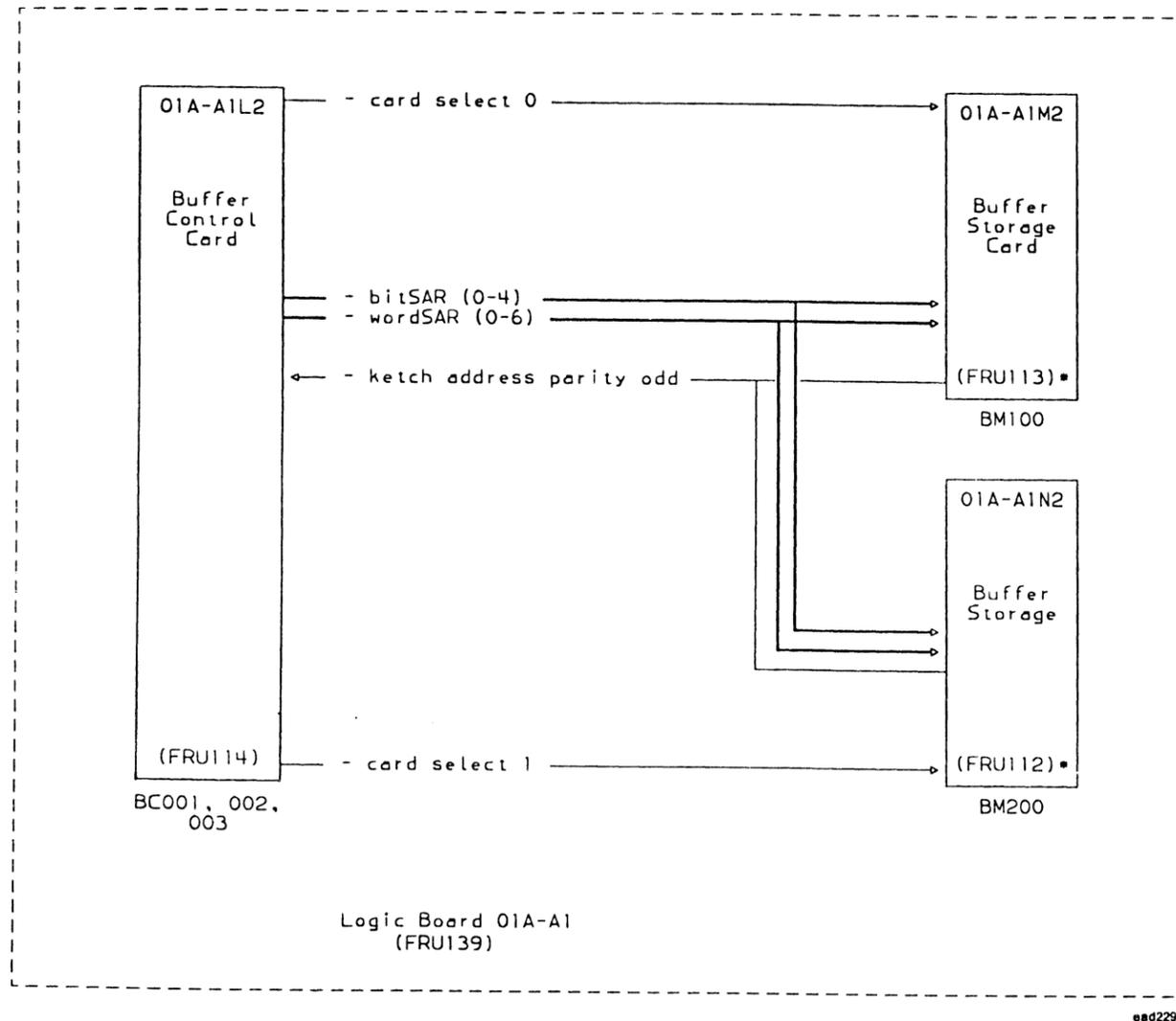
Step	Ref Page	Description/Comments
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480.

DEG2 Bit 0 Net List

Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE32, E010	- Bitsar (0–4)			
EE32, E010	- Wordsar (0–6)			
EE32, E010	- Ketch address parity odd			
EE32, E010	- Card select 0			
EE32, E010	- Card select 1			

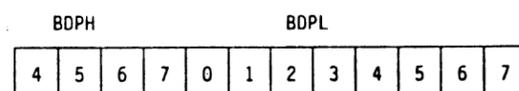
Error Diagram

* These FRUs are EC sensitive.
 FRU112 may not be present.
 See CARR-CU 7.



Error Condition Theory

This bit indicates that a parity error was detected in the buffer device pointer high (BDPH) external register or buffer device pointer low (BDPL) external register in the buffer control card during a device storage cycle. These registers act as one counter and step each device storage cycle to provide the buffer storage addressing. A buffer wrap (BWRP) external register is used to determine the segment size buffer boundary. The BDPH and BDPL step up to the boundary set by the BWRP and go back to the beginning of the segment for the next storage cycle.



For example, for a 32K wrap, BDPL steps up to hexadecimal FF and BDPH bits 6 and 7 step to hexadecimal 11. After completing the storage cycle at this address, the pointer bits are reset to zero.

The parity of the BDPH and BDPL is predicted, taking into account the wrap bits. This predicted parity is compared with the actual parity, and a miscompare results in a device buffer storage address pointer parity error.

DEG1 bit 0 is set to point to the buffer control card as the probable failing FRU.

Buffer Wrap Register (BWRP)

Bit	Meaning
0-3	Not used by this EAD
4	Device port segment size 128K
5	Device port segment size 64K
6	Device port segment size 32K
7	Device port segment size 16K

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU114) buffer control card 01A-A1L2
2. (FRU120) buffer adapter card 01A-A1K2
3. (FRU117) microprocessor card 01A-A1D2
4. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "DEG2 Bit 1 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.
4. If steps 1-3 did not correct the problem, examine the BDSE from the diagnostic failure for the next DEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).
5. **If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:**
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
6. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

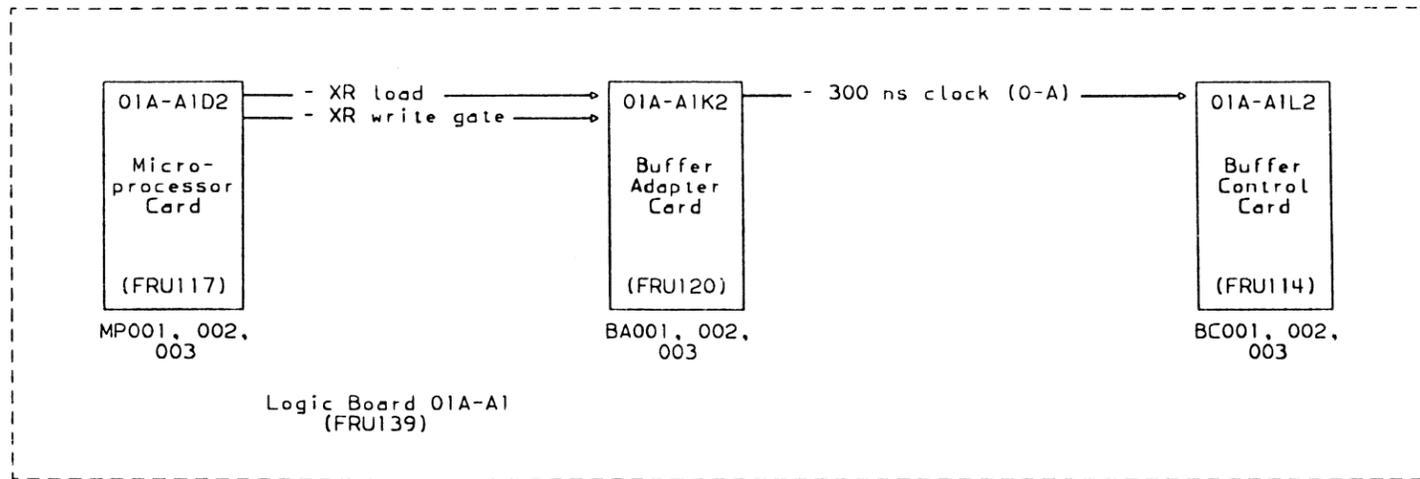
References

Step	Ref Page	Description/Comments
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480.

DEG2 Bit 1 Net List

Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE32, E010	- XR load			
EE32, E010	- XR write gate			
EE32, E010	- 300 ns clock 0-A			

Error Diagram



ead2294



Error Condition Theory

- * These FRUs are EC sensitive.
FRU112 may not be present.
See CARR-CU 7.

This bit indicates a single-bit error was detected in the data received by the buffer control card from the buffer storage card during a device read cycle. The error was corrected by the ECC circuits on the buffer control card.

DEG1 bits 0 and 2 are set to point to the buffer control card and buffer storage card as the probable failing FRUs.

This error does not cause a check 2 error and does not set the any-device-error bit in DEG0. This error bit cannot be set unless bit 4 of the buffer diagnostic 0 (BDG0) external register has been set. BDG0 bit 4 is the enable-correctable-error-status bit. BDG0 bit 4 is never set by functional microcode.

Operations continue uninterrupted after DEG2 bit 2 is set.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU114) buffer control card 01A-A1L2
2. (FRU112*) buffer storage card 01A-A1N2
3. (FRU113*) buffer storage card 01A-A1M2
4. (FRU120) buffer adapter card 01A-A1K2
5. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.

If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

DEG2 Bit 3, Device Buffer Storage Data Uncorrectable Error

Error Condition Theory

* These FRUs are EC sensitive.
FRU112 may not be present.
See CARR-CU 7.

This bit indicates that a multiple-bit error was detected in the data received by the buffer control card from the buffer storage card during a device read cycle. The error could not be corrected by the ECC circuits on the buffer control card.

DEG1 bits 0 and 2 are set to point to the buffer control card and buffer storage cards as the probable failing FRUs. Sense byte 2 bit 5 indicates the buffer storage card that was being accessed when the error occurred.

Multiple bit errors give various indications. For example:

- 3-bit errors give wrong correctable-error indications and send the wrong data.
- 4-bit errors give no indications and send the wrong data.

The buffer control card uses a cyclic redundancy check (CRC) to detect the multiple-bit errors not detected by the ECC circuits.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU114) buffer control card 01A-A1L2
2. (FRU112)* buffer storage card 01A-A1N2
3. (FRU113)* buffer storage card 01A-A1M2
4. (FRU120) buffer adapter card 01A-A1K2
5. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "DEG2 Bit 3 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.

4. If steps 1 – 3 did not correct the problem, examine the BDSE from the diagnostic failure for the next DEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).
5. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
6. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

Step	Ref Page	Description/Comments
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480.

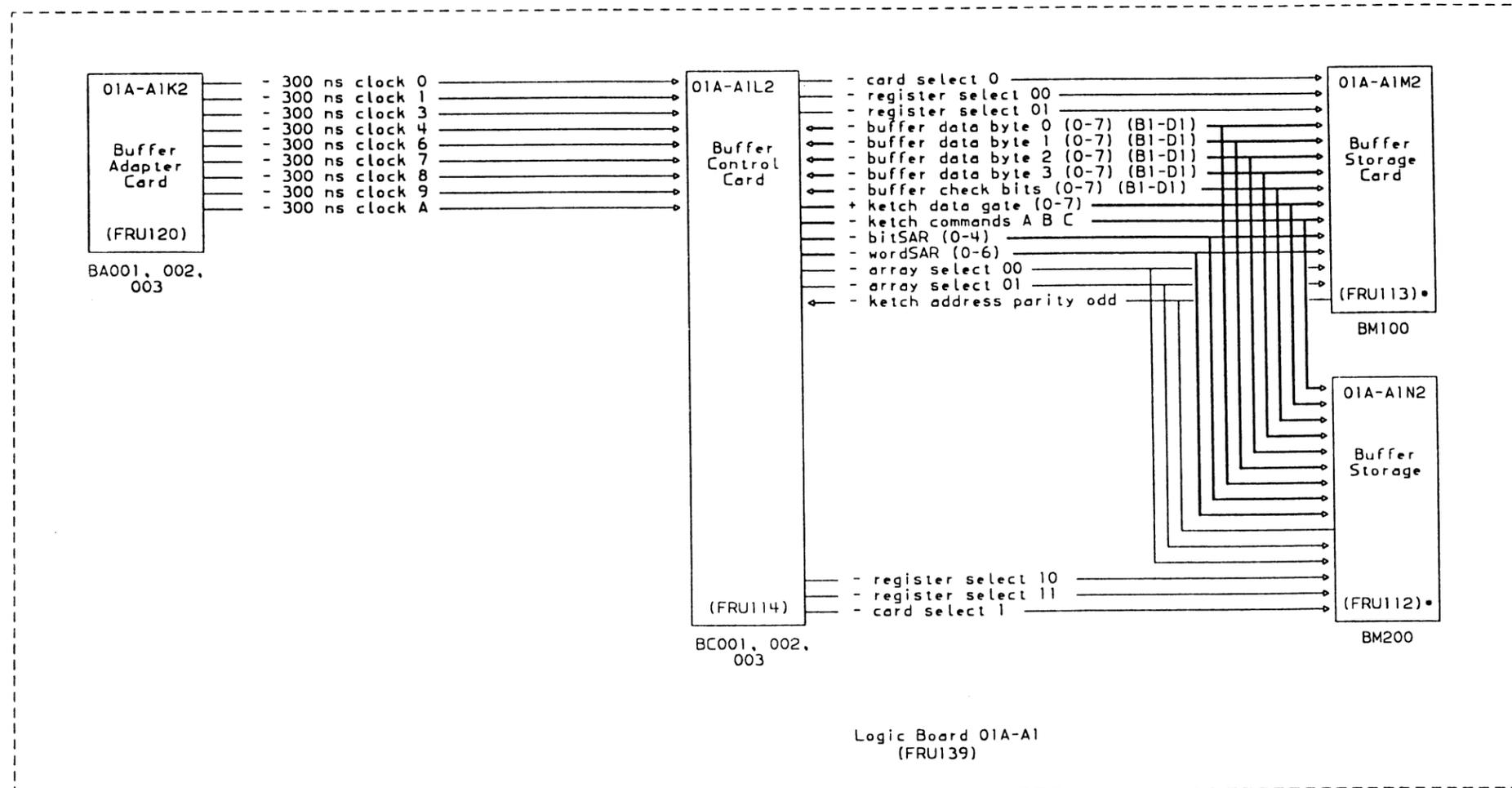
DEG2 Bit 3 Net List

Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE32, E010	- Buffer check bits 0 – 7	BU2022	30000	98A10
EE33, E010	- 300 ns clock B	BU2024	30000	98A10
EE32, E010	- 300 ns clock A	BU2024	10000	1CA10
EE32, E010	- Buffer data byte 0 bits 0 – 7	BU2024	30000	98A10
EE32, E010	- Buffer data byte 1 bits 0 – 7	BU2024	30000	98A10
EE32, E010	- Buffer data byte 2 bits 0 – 7	BU2024	30000	98A10
EE32, E010	- Buffer data byte 3 bits 0 – 7	BU2024	30000	98A10
EE33, E010	+ Ketch data gate (0 – 7)	BU2024	30000	18A10
EE32, E010	- Ketch command C	BU2024	30000	18A10
EE32, E010	- Ketch command A	BU2024	30000	18A10
EE32, E010	- Register select 10	BU2024	30000	18A10
EE32, E010	- Register select 11	BU2024	30000	18A10
EE32, E010	- Array select 00	BU2024	30000	18A10
EE32, E010	- Register select 00	BU2049	10000	98A10
EE32, E010	- Array select 01	BU2049	10000	98A10
EE32, E010	- Register select 01	BU2049	10000	98A10
EE33, E010	- 300 ns clock 0	BU3022	10000	98A10
EE33, E010	- 300 ns clock 1	BU3022	30000	9CA10
EE33, E010	- Card select 0			
EE33, E010	- Card select 1			
EE33, E010	- Ketch command B			
EE33, E010	- Wordsar 0 – 6			
EE33, E010	- Bitsar 0 – 4			
EE33, E010	- 300 ns clock 3, 4, 6, 7, and 9			

DEG2 Bit 3, Device Buffer Storage Data Uncorrectable Error (Continued)

Error Diagram

* These FRUs are EC sensitive.
FRU112 may not be present.
See CARR-CU 7.



ead2297

Error Condition Theory

This bit indicates that the buffer control card received data with even parity from the buffer adapter card during a read-data-flow-to-buffer data transfer. DEG1 bit 1 is set to point to the buffer adapter card as the probable failing FRU.

If DEG0 bit 2 (read data flow to buffer parity error) is also set, ignore this error because DEG3 bit 0 is a result of the bad parity being sent to the buffer adapter card and propagated to the buffer control card. Return to the error detection theory and troubleshooting guide for DEG0 bit 2.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU114) buffer control card 01A-A1L2
2. (FRU120) buffer adapter card 01A-A1K2
3. (FRU119) read clock and format card 01A-A1S2
4. (FRU111) read ECC/CORR card 01A-A1R2
5. (FRU117) microprocessor card 01A-A1D2
6. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "DEG3 Bit 0 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.
4. If steps 1 – 3 did not correct the problem, examine the BDSE from the diagnostic failure for the next DEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).

5. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

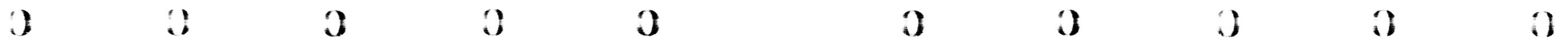
6. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

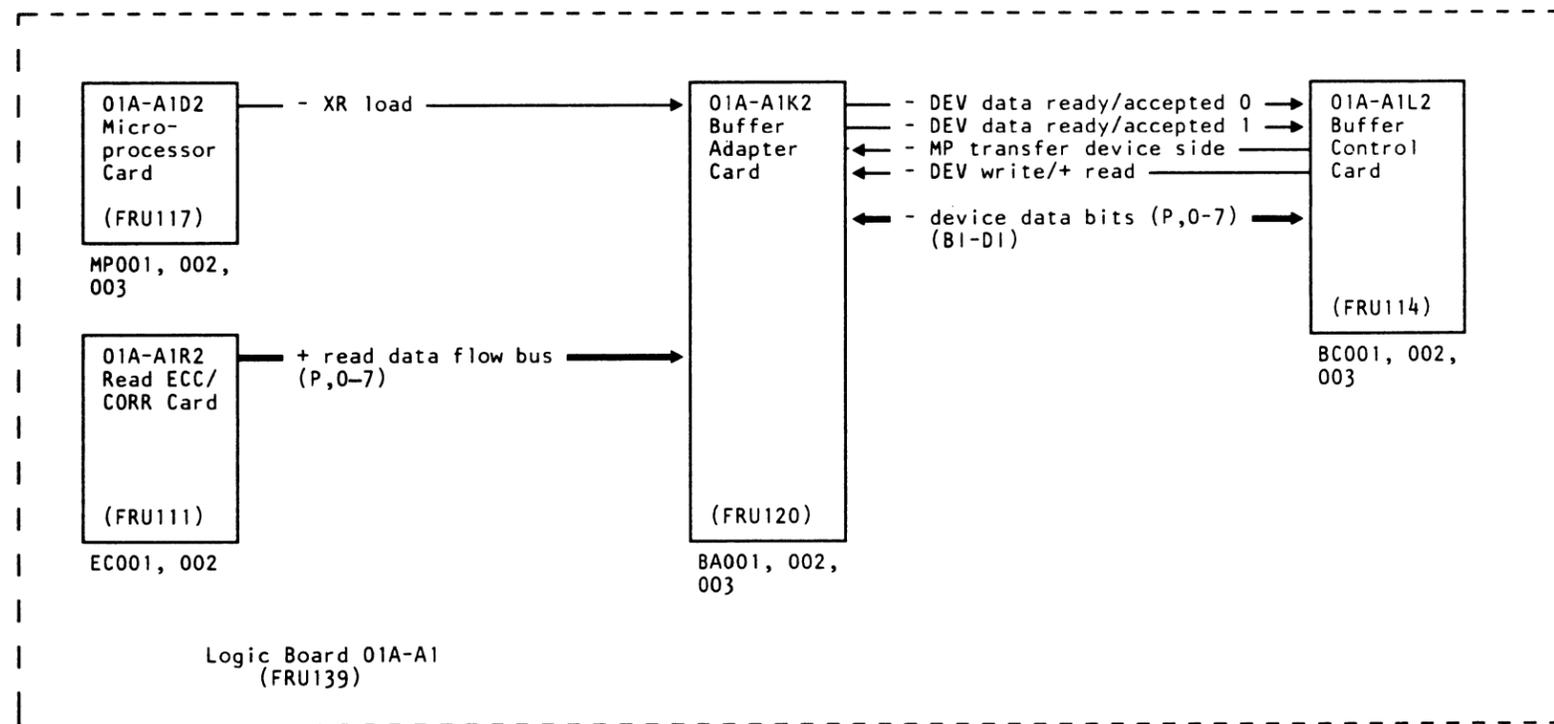
Step	Ref Page	Description/Comments
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480.

DEG3 Bit 0 Net List

Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE32, E010	- DEV data read/accepted 0			
EE32, E010	+ Read data flow bus (0 – 7)			
EE32, E010	- DEV write/+ read			
EE32, E010	- XR load			
EE32, E010	- MP transfer device side			
EE32, E010	- Device data bits (P,0 – 7)			



Error Diagram



Error Condition Theory

This bit indicates that a parity error was detected on the output of the buffer control device RAM on the buffer control card during a buffer-memory-device-store cycle while performing a read-data-flow-to-buffer data transfer. This is an internal parity check of data stored temporarily in the device RAMs before it is sent to the buffer storage card. All data written or read from the buffer storage cards must pass through the buffer control device RAM on the buffer control card.

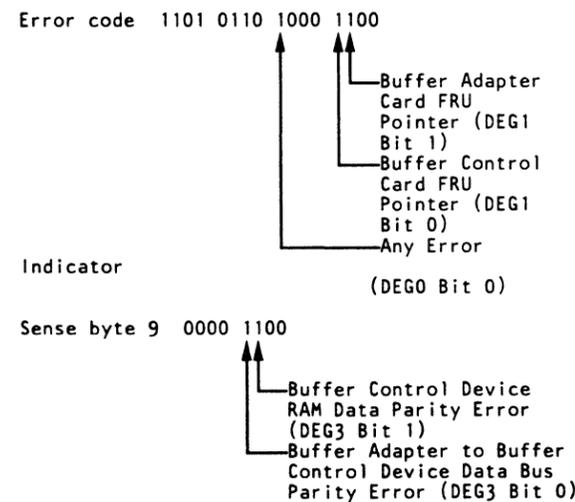
After checking the output of the buffer control device RAM, the buffer control card strips the parity and generates an error correction code (ECC) across groups of four data bytes as the data is taken from the RAM and stored in the buffer storage cards. By parity checking the data as it is read from the RAM, the buffer control card knows that each group of four bytes is correct before the ECC is concatenated to the group.

DEG1 bit 0 is set to point to the buffer control card as the probable failing FRU.

If DEGO bit 2 (read data flow to buffer adapter parity error) or DEG3 bit 0 (buffer adapter to buffer control device data bus parity error) is set, the buffer control device RAM failure is a result of the earlier error. The following examples show you how to select the correct error bit if multiple error bits are on.

Example 1

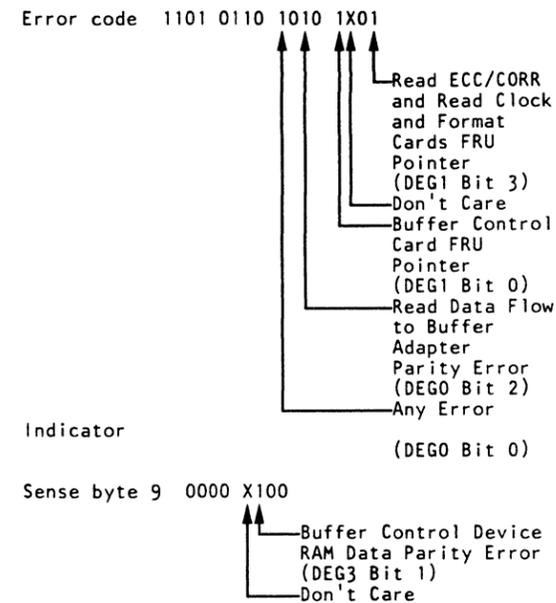
Assume that the error code is D68C and sense byte 9 is 0C



This indicates that the buffer adapter card received data with bad parity from the buffer adapter card over the device data bus. The incorrect data propagated through the buffer control card logic and was loaded into the RAM. The failure is either in the buffer adapter card, the device data bus, the control lines from the buffer adapter card to the buffer control card, or the logic on the control card that precedes the checker for the buffer adapter to buffer control device data bus parity error. Return to the error detection theory and troubleshooting guide for "DEG3 bit 0, Buffer Adapter to Buffer Control Device Data Bus Parity Error."

Example 2

Assume an error code of D6A9 or D6AD and sense byte 9 of 04 or 0C.



This indicates that the buffer adapter card received data with bad parity from the read data flow over the read data flow bus. The error data propagated through the buffer adapter card and the buffer control card logic and was loaded into the RAM. Return to the error detection theory and troubleshooting guide for "DEGO Bit 2, Read Data Flow to Buffer Adapter Parity Error."

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU114) buffer control card 01A-A1L2
2. (FRU120) buffer adapter card 01A-A1K2
3. (FRU119) read clock and format card 01A-A1S2
4. (FRU111) read ECC/CORR card 01A-A1R2
5. (FRU117) microprocessor card 01A-A1D2
6. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "DEG3 Bit 1 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.
4. If steps 1-3 did not correct the problem, examine the BDSE from the diagnostic failure for the next DEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).
5. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
6. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480.

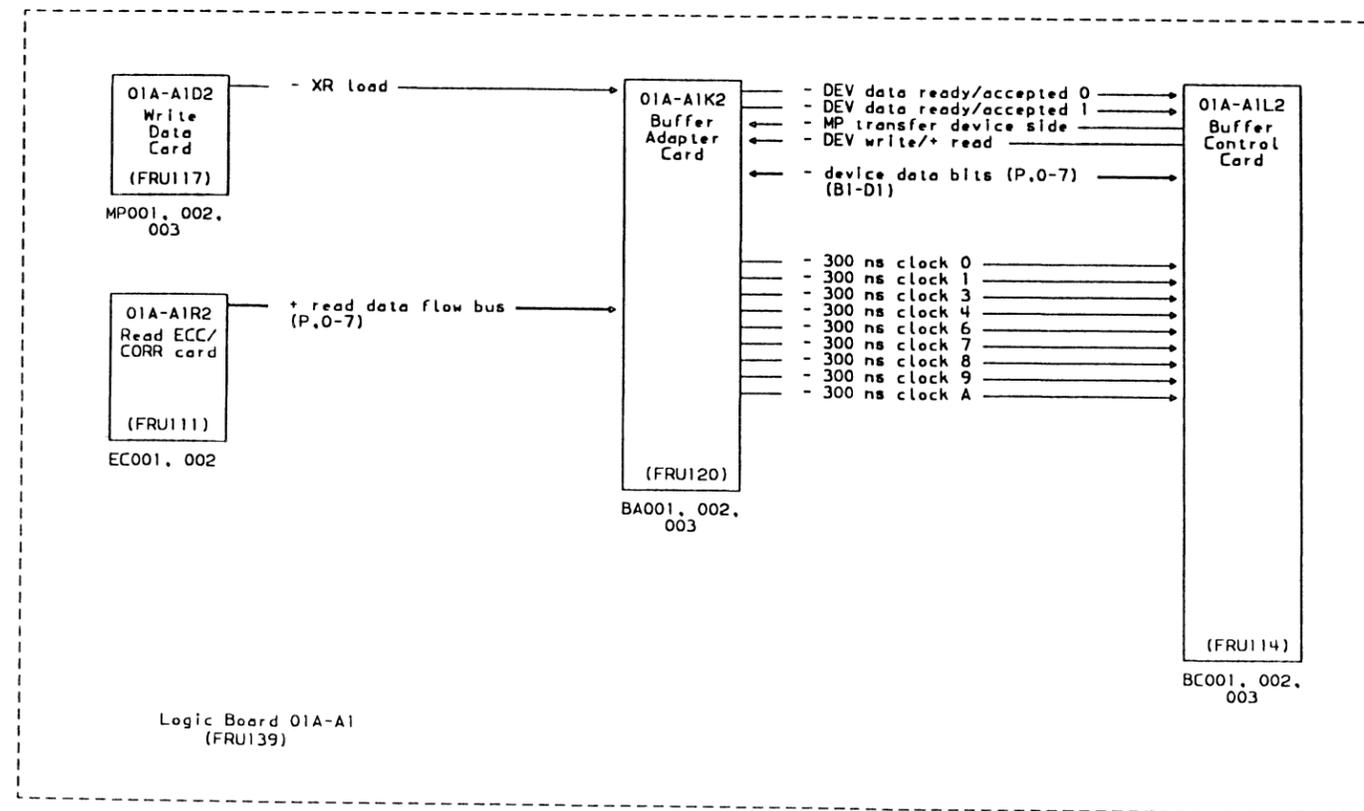
DEG3 Bit 1, Buffer Control Device RAM Data Parity Error (Continued)

Error Code D6nn (Continued) EAD 2301

DEG3 Bit 1 Net List

Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE32, E010	- 300 ns clock 0 - A			
EE32, E010	- DEV data read/accepted 0			
EE32, E010	- DEV data ready/accepted 1			
EE32, E010	+ Read data flow bus (0 - 7)			
EE32, E010	- DEV write/+ read			
EE32, E010	- XR load			
EE32, E010	- MP transfer device side			
EE32, E010	- Device data bits (P,0 - 7)			

Error Diagram



Error Condition Theory

- * These FRUs are EC sensitive.
FRU112 may not be present.
See CARR-CU 7.

This bit indicates that the contents of the buffer device CRC register was not zero at the completion of a device-to-write-data-flow data transfer. The channel circuits write data from the channel and send the data to the buffer storage cards through the channel-side circuits one byte at a time. As each byte is written, it is clocked through a CRC generator register in the channel-side circuits of the buffer control card. Thus, a CRC is generated for the entire record that is written from the channel. The buffer control card stores the CRC behind the last characters of the record.

When the device reads the record, the record is read from the buffer storage cards by the device-side circuits of the buffer control card. As each byte is sent to the device, the device-side circuits of the buffer control card clock the byte through a CRC generator. After the last byte has been sent to the device, the CRC that was stored behind the record is clocked through the CRC generator. The CRC generated by the channel-side circuits should cause the device-side CRC generator to go to zero. If the device-side CRC does not go to zero, device CRC error is detected. This CRC check ensures data integrity from the channel through the buffer storage cards to the buffer control card output to the buffer adapter card.

DEG1 bits 0 and 2 are set to point to the buffer control card and the buffer storage cards as the probable failing FRUs.

If this error is set at the same time as any of the following errors, channel CRC error is likely to be a result of the primary error. The primary errors are:

- Device buffer storage data uncorrectable error (DEG2 bit 3)
- Device buffer storage address parity error (DEG2 bit 0)
- Device buffer storage address pointer parity error (DEG2 bit 1)
- Buffer control to buffer adapter device data bus parity error. (DEG0 bit 3)

Go to the error detection theory and troubleshooting guide for the primary error.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU114) buffer control card 01A-A1L2
2. (FRU112)* buffer storage card 01A-A1N2
3. (FRU113)* buffer storage card 01A-A1M2
4. (FRU120) buffer adapter card 01A-A1K2
5. (FRU116) write data card 01A-A1P2
6. (FRU117) microprocessor card 01A-A1D2
7. (FRU139) logic board 01A-A1 in the control unit that contains the buffer that was used.

Troubleshooting Guide

1. Use the loop-on-error diagnostic option to loop the diagnostic routine that failed during the common troubleshooting procedure. Compare the failure ID from the diagnostic with the failure IDs shown in "DEG3 Bit 2 Net List."
2. Scope the nets indicated by the failure ID first. Look for a net with a bad level. If you do not find a failing net, scope the rest of the nets in the list.
3. For intermittent errors, use the loop-routine option with the diagnostic routine that failed during the common troubleshooting procedure and scope all the nets in the list. Look for a net that is not changing or is at an invalid level.
4. If steps 1 – 3 did not correct the problem, examine the BDSE from the diagnostic failure for the next DEG bit on. If another bit is on, go to the EAD for that bit (see EAD 1).
5. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
6. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
1	DIAG 1	How to use the diagnostic test options.
5	PANEL 1	How to IML functional microcode into the control unit.
5	MD 1	How to use the MD with the 3480.

DEG3 Bit 2, Device Cyclic Redundancy Check (CRC) Error (Continued)

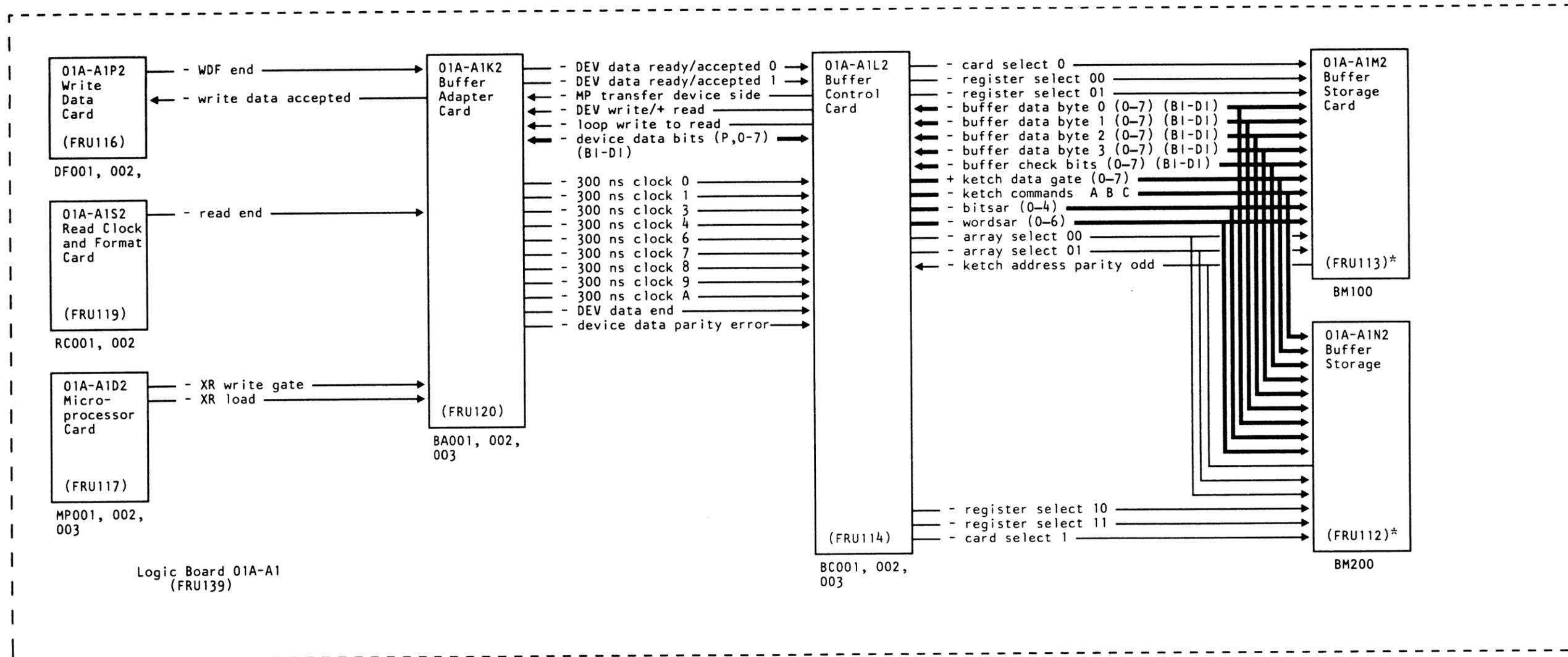
DEG3 Bit 2 Net List

Diagnostic	Net Name	Failure ID	BCSE	BDSE
EE32, E010	- Read end	BU2031	30000	38A02
EE32, E010	- Device data end	BU2031	30000	38A02
EE53, E010	- Ketch commands A and C	LW3024	D0000	B8A12
EE53, E010	- Register select 10	LW3024	D0000	B8A12
EE53, E010	- Register select 11	LW3024	D0000	B8A12
EE53, E010	- Array select 00	LW3024	D0000	B8A12
EE53, E010	+ Ketch data gate (0-7)	LW2033	30000	B8A12
EE32, E010	- DEV write/+ read	BU2022	30000	99800
EE32, E010	- Write data accepted	BU2022	30000	B9800
EE33, E010	- Ketch command B	BU3028	D8A02	xxxxx
EE32, E010	- Buffer data byte 0 bits 0-7	BU2024	30000	98A10
EE32, E010	- Buffer data byte 1 bits 0-7	BU2024	30000	98A10
EE32, E010	- Buffer data byte 2 bits 0-7	BU2024	30000	98A10
EE32, E010	- Buffer data byte 3 bits 0-7	BU2024	30000	98A10
EE32, E010	- Buffer check bits 0-7	BU2022	30000	98A10
EE33, E010	- Card select 0			
EE33, E010	- Card select 1			
EE32, E010	- Register select 00	BU2049	10000	98A10
EE32, E010	- Register select 01	BU2049	10000	98A10
EE32, E010	- Device data parity error	BU2022	30000	99800
EE32, E010	- Array select 01	BU2049	10000	98A10
EE33, E010	- Wordsar 0-6			
EE33, E010	- Bitsar 0-4			
EE32, E010	- 300 ns clock 0-A			
EE32, E010	- XR load			
EE32, E010	- XR write gate			
EE32, E010	- Ketch address parity odd	BU3021	18A80	90000
EE32, E010	- Device data bit (P,0-7)	LW2025	30000	B9800
EE32, E010	- WDF end			
EE32, E010	- MP transfer channel side			
EE32, E010	- DEV data ready/accepted 0	BU2022	30000	19800
EE32, E010	- DEV data ready/accepted 1			
EE32, E010	- XR read gate			
EE33, E010	+ DEV data toggle			



Error Diagram

* These FRUs are EC sensitive.
FRU112 may not be present.
See CARR-CU 7.

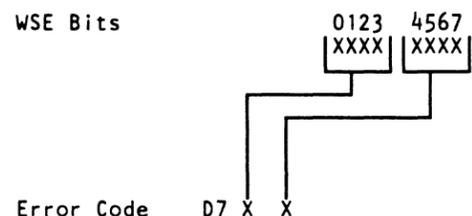


Error Description

D7nn error codes result from errors detected in the write status/error (WSE) external register.

Error Condition Theory

The Write Status/error register is contained in the Write Data Card. The Write Data Flow Card is used to communicate between the Buffer Functional Area and the drive Adapter Functional Area. The Write Data Card changes the 8 bit Write Data Flow Bus coming from the Buffer Adapter Card to the Multiplexed Data Bus going to the drive adapter Card. The Multiplexed data is a mixture of data and check bits. During the process of handling the write data and inserting the check bits, various checks are made and detected errors are recorded in the WSE register.



Common Troubleshooting Guide for All D7nn Error Codes

The bits in the write status/error (WSE) register determine the last two digits of the error code as explained above. The bits of the WSE register are: (See DF 1 to find a detailed bit description).

WSE Bit Bit Description

- 0 Write operation.
- 1 End write. This bit indicates that the last bit of the postamble is being written.
- 2 Reserved.
- 3 Reserved.
- 4 Buffer interconnection error.
- 5 Write control error.
- 6 Write data flow error.
- 7 Multiplexed data error.

1. Gather all recent sense information for D7nn errors to determine the error codes that occur most frequently. Analyze the most frequently occurring error. For error codes that indicate more than one bit is on in the write status/error register, analyze the error in the following order:

- A WSE bit 5
- B WSE bit 4
- C WSE bit 6
- C WSE bit 7
- D WSE bit 0

Note: D780 is pointed to only by diagnostics. Always analyze for WSE bit 0 if the failure is not found by analyzing any other write status/error register bit.

For example, if the error code is D70F:

- a. Follow the troubleshooting guide for WSE bit 5 on.
- b. If bit 5 is not successful, follow the troubleshooting guide for WSE bit 4, except do not repeat any procedure performed while analyzing WSE bit 5.
- c. If bit 4 is not successful, follow the troubleshooting guide for WSE bit 6.
- d. Continue with WSE bit 7, and finally with the troubleshooting guide for WSE bit 0.
- e. If none of the troubleshooting guides finds the failure, request aid from your next level of support.

Note: The specific troubleshooting guides assume that only one bit is on, and each contains procedures found in the other troubleshooting guides.

2. See DIAG 1 and run the diagnostics Basic CU Tests. If a diagnostic fails, go to the diagnostic (DIAG) section of the maintenance information for the diagnostic failure ID. If the failure ID specifies another error code in the FSI, obtain the additional information from the FSI entry (such as Explanation, FRU's and so on) and return here.
3. Go to the correct troubleshooting guide for the WSE bit selected from the diagnostic failure ID or, if the diagnostic did not fail, from the D7nn error code WSE bit selected in step 1.

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	DIAG 1	Diagnostic control options Basic CU test
3	DIAG 1	Diagnostic failure IDs



Error Code D7nn (Continued)

Troubleshooting Information for WSE Bits 0 and 1 On or Off

Use this error analysis diagram when the diagnostic generates an error code of D78X or when the procedure for any other D7nn error code does not find the failure.

Error Description

The write data card detected an error but could not generate good error information.

Error Condition Theory

This is a diagnostic-detected error. This error is not generated by the functional microcode that the customer uses in the control unit.

This error usually occurs when the top card connector in the Y position is missing, is in the wrong position, or is defective.

The troubleshooting guide for this error should also be followed when use of the troubleshooting guide for a D7nn error code (not only D780) did not find the failure.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. Top card connector A1P2 Y position
2. Source voltages at the input to the FRUs involved
3. Cables, connectors, and nets between FRUs called by FSI and EAD.

Troubleshooting Guide for WSE Bits 0 and 1

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, loop the identified diagnostic and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

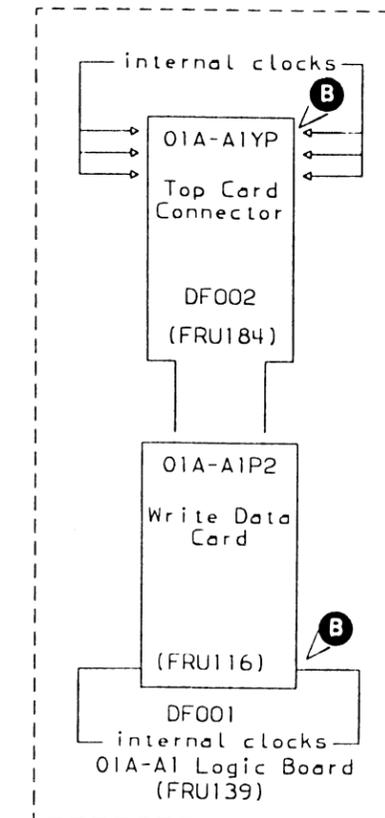
4. Failures detected in the functional area can be caused by defective clock lines. This EAD covers the internal clocks that can cause this error.
5. See DF002 and scope the clock lines listed in "WSE Bit 0 Net List" at test point B.
6. If no other write status/error register error bit is on, use the diagnostic option E010. If another diagnostic failure ID is received before the D7nn failure ID, see the diagnostic section of the maintenance information for the EAD for the earlier failure ID.
7. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
8. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution Lists" in the Field Wire Net List in the Logic Diagrams.
3	CARR-CU 1-1	Removal and replacement procedures
6	DIAG 1	Diagnostic control program options E010 diagnostic description. Diagnostic failure ID (with each diagnostic description)
7	MD 1	How to use the MD with the 3480

Error Code D7nn (Continued) EAD 2326

Error Diagram



Point-to-point wiring on a board is shown on the CU and/or DRV net wire list.

ead2326

WSE Bit 0 Net List

DIAGNOSTIC	NET NAME	LOGIC	ERROR STOP	WSE REG	ERROR DIAG REF
EE52, EE50, EEA0, E010	No name in logic	DF002	LW2025	00	B
EE50, EEA0, E010	No name in logic		LW2025	00	B
EE50, EEA0, E010	No name in logic		LW2025	00	B
EE50, EEA0, E010	No name in logic	DF001	LW2025	84	B
EE50, EEA0, E010	No name in logic		LW2025	85	B

Troubleshooting Information for WSE Bit 4 On

Use this information for first analysis of error codes D708, D709, D70A, and D70B only. For other D7nn error codes, see the "Common Troubleshooting for All D7nn Error Codes" for the correct sequence of testing multiple WSE error bits. (WSE bit 5 should be used for troubleshooting before WSE bit 4.)

Error Description

The write data card detected a buffer adapter error.

Error Condition Theory

The data coming from the Data Buffer to the WDF is checked for parity and number of bytes transferred. Write Data is gated from the Buffer Adapter card to the Write Data card. The Write Data card checks Data parity on the Write Data to ensure that the data was received correctly. Not odd parity sets WSE Bit 4 and generates an error.

The number of bytes transferred is checked, not by actual count, but by an odd/even counter. For each byte sent by the Buffer, the counter is complemented indicating an even ffl0" or odd ffl1" number sent. This signal is provided to the WDF by "WDF TOGGLE." The WDF counts received data bytes by the same method, and compares its count with that supplied by the Buffer Adapter card. Both counts should be the same even or odd. If not WSE Bit 4 is set and generates an error.

Check 2 is set with WSE Bit 4 to indicate the error to the microprocessor.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. Source voltages at the input to the FRUs involved
2. Cables, connectors, and nets between the FRUs called by FSI and EAD.

Troubleshooting Guide for WSE Bit 4

Verify from sense information that the error code that occurs most often is D708, D709, D70A, or D70B. You also use this error analysis diagram if analyzing WSE bit 5 was not successful. If another error code occurs more often, go to the EAD for that error code. If you have only the one error code, continue with this troubleshooting guide.

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.

Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
2. For intermittent errors, loop the identified diagnostics repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

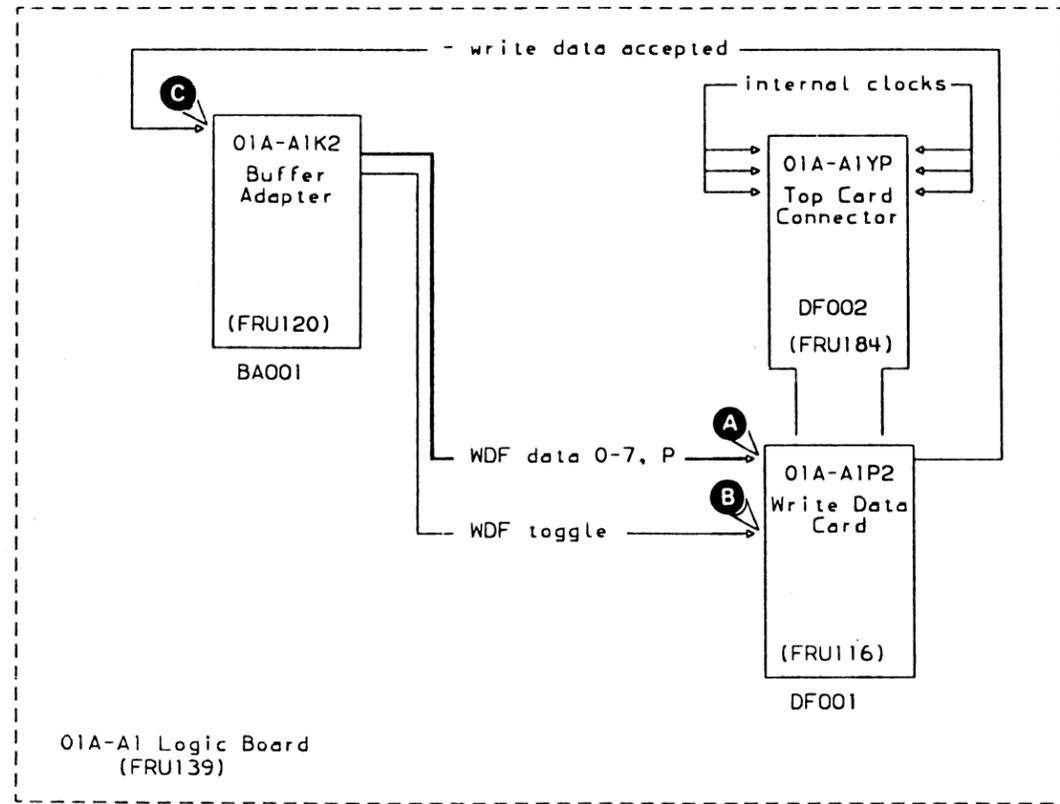
Note: *If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.*
3. Loop the falling diagnostic with the Loop on Error option. If no failure occurs, loop the Loop Write to Read diagnostic (EE52, options 1 and 7) with the Loop Routine option. Scope the lines in the WSE bit 4 net list. See "WSE Bit 4 Net List" on the next page. If a diagnostic failure ID occurs and is included in this net list, run the Loop Write to Read diagnostic with the Loop on Error option. Scope those lines (see EAD 2331) identified for the diagnostic failure ID. If any of these lines are not changing with the correct up and down logic level tolerances, that is the bad net.
4. If no bad net is found, set the Loop Write to Read diagnostic (EE52, options 2 and 7) to loop on the whole routine. Scope the rest of the nets included in the "WSE Bit 4 Net List." Look for a net that is not changing between valid levels.
5. If all nets included in the "WSE Bit 4 Net List" look good, go to the troubleshooting guide for WSE bit 0. Then look at your original error code to see if any of the other write status/error register bits are on. If another write status/error register error bit is on, go to the troubleshooting guide for that error. Be sure to follow the order described in the common Troubleshooting Guide for error code D7nn.
6. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
7. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
3	CARR-CU 1-1	Removal and replacement procedures
4,5	DIAG 1	Diagnostic control program options. Diagnostic failure ID (with each diagnostic description)
7	MD 1	How to use the MD with the the 3480



Error Diagram for WSE Bit 4 On



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists

WSE Bit 4 Net List

DIAGNOSTIC	NET NAME	LOGIC	ERROR STOP	WSE REG	ERROR DIAGRAM REF
EE50, EEA0, E010	- write data accepted	BA001	LW2025	CA	C
EE50, EEA0, E010	- WDF toggle	DF001	LW2024	CA	B
EE50, EEA0, E010	- WDF bit 0	DF001	LW2024	CA	A
EE50, EEA0, E010	- WDF bit 1	DF001	LW2024	CA	A
EE50, EEA0, E010	- WDF bit 2	DF001	LW2024	CA	A
EE50, EEA0, E010	- WDF bit 3	DF001	LW2024	CA	A
EE50, EEA0, E010	- WDF bit 4	DF001	LW2024	CA	A
EE50, EEA0, E010	- WDF bit 5	DF001	LW2024	CA	A
EE50, EEA0, E010	- WDF bit 6	DF001	LW2024	CA	A
EE50, EEA0, E010	- WDF bit 7	DF001	LW2024	CA	A
EE50, EEA0, E010	- WDF bit P	DF001	LW2024	CA	A

Troubleshooting Information for WSE Bit 5 On

Use this troubleshooting guide first for analysis of error codes D704 through D707 and D70C through D70F.

Error Description

The write data card detected a write control error.

Error Condition Theory

The write data card formats and adds the check characters to the data before it is sent to the drive adapter card.

The conditions that are checked include parity and sequencing errors that are internal to the card. When an error is detected, bit 5 of the write status/error register and check 2 are set to indicate the error.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU139) logic board 01A-A1
2. Source voltages at the input to the FRUs involved
3. Cables, connectors, and nets between the FRUs called by FSI and EAD.

Troubleshooting Guide

Verify from sense information that the most frequently occurring error code is D704 through D707 or D70C through D70F. If another error code occurs more frequently, go to the error analysis diagram for that error code.

If you came to this error analysis diagram from another error analysis diagram, continue in this EAD until you are instructed to do otherwise.

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, loop the identified diagnostics repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

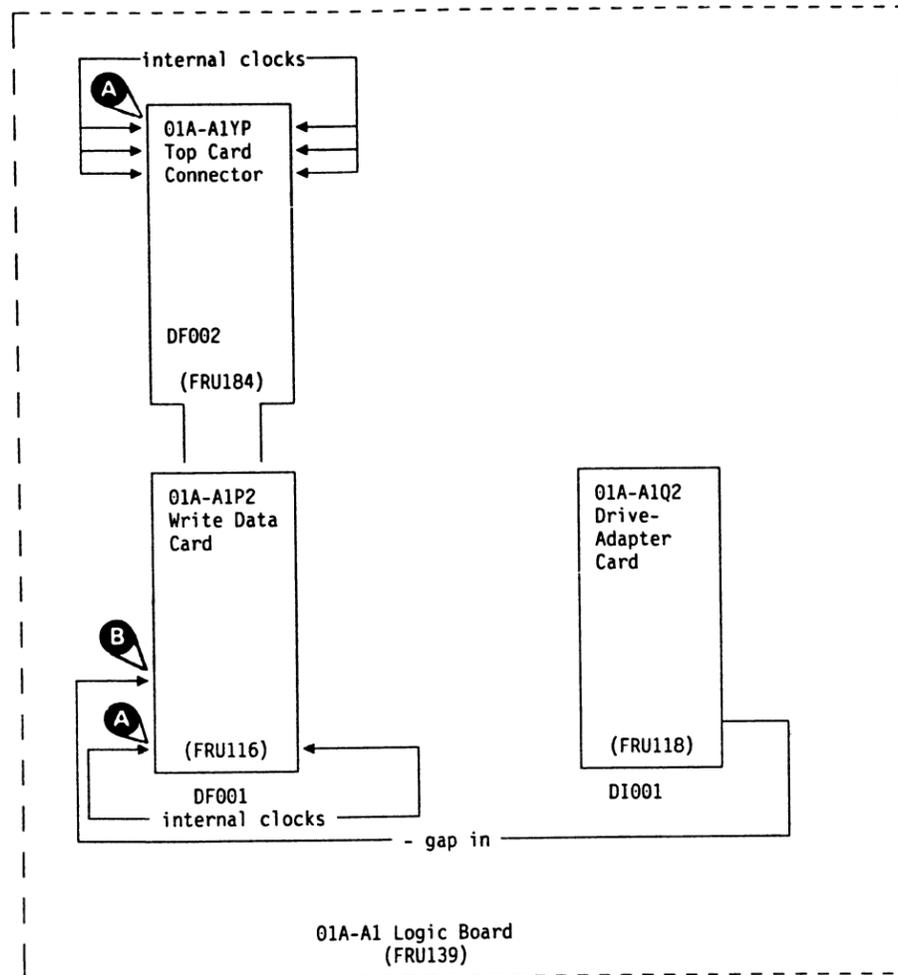
4. Failures detected in an area can be caused by defective clock lines. This error analysis diagram analyzes the clocks that can cause this error.
5. Loop the failing diagnostic with the Loop on Error option. If no failure is detected, loop the Loop Write to Read diagnostic (EE52, options 1 and 7) with the Loop Routine option. Scope the nets identified in the "WSE Bit 5 Net List." If a diagnostic failure ID occurs and is listed in "WSE Bit 5 Net List," run the Loop Write to Read diagnostic Loop on Error option. Scope those lines (see EAD 2336) included for the diagnostic failure ID. If any of these lines are not changing with correct up and down logic level tolerances, that is the bad net.
6. If no bad net is found, set the Loop Write to Read diagnostic (EE52, options 2 and 7) to loop on the whole routine. Scope the rest of the nets included in the "WSE Bit 5 Net List." Look for a net that is not changing between two valid levels.
7. If all nets included in the "WSE Bit 5 Net List" look good, go to the troubleshooting guide for WSE bit 0. Then look at your original error code to see if any of the other write status/error register bits are on. If another write status/error register error bit is on, go to the EAD that describes the troubleshooting guide for that error. Be sure to follow the order described in the common Troubleshooting guide for error code D7nn.
8. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
9. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
3	CARR-CU 1-1	Removal and replacement procedures
5,6	DIAG 1	Diagnostic control program options. Diagnostic failure ID (with each diagnostic description)
8	MD 1	How to use the MD with the 3480



Error Diagram



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

WSE Bit 5 Net List

DIAG	NET NAME	LOGIC	ERROR STOP	WSE REG	ERROR DIAGRAM REF
EE52 & EE50 & EEA0	No name in logic (card pins for internal clocks shorted back to the card at TCC and BCC) - gap in	DF001	LW2025	84	A
		DF002	LW2025	84	A
		DF001	LW2025	85	B

Troubleshooting Information for WSE Bit 6 On

Use this troubleshooting guide first for error codes D702 and D703 only. For other D7nn error codes, see "Common Troubleshooting Guide for All D7nn Error Codes" for the correct sequence of testing multiple WSE error bits on. (WSE bits 5 and 4 should be used for troubleshooting before WSE bit 6.)

Error Description

A write data error has occurred.

Error Condition Theory

Data supplied by the Buffer is checked for parity upon arrival at the WDF card. If parity later is found to be in error at the output of the WDF card, WSE Bit 6 is set.

Check characters are generated internal to the card, and are transmitted through the WDF logic with known parity. This parity is checked at the output of the WDF card. Wrong parity of these check characters will set WSE Bit 6.

The circuitry which generated the check characters is checked internally for proper operation, if a failure in this circuitry is detected WSE Bit 6 is set.

Check 2 is set with WSE Bit 7 to indicate the error to the microprocessor.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. Cable group 66 (See FSI 1 for "Cable Group Table")
2. Cable group 67 (See FSI 1 for "Cable Group Table")
3. Cable group 61 (See FSI 1 for "Cable Group Table")
4. Cable group 62 (See FSI 1 for "Cable Group Table")
5. Source voltages at the input to the FRUs involved
6. Cables, connectors, and nets between FRUs called by FSI and EAD.

Troubleshooting Guide

Verify from sense information that the most frequently occurring error code is D702 or D703. You also use this error analysis diagram if troubleshooting WSE bits 5 and 4 was not successful. If an error code other than D702 or D703 is occurring more frequently, use the error analysis diagram for that error code.

If you have only the one error code, continue in this error

analysis diagram. If you came to this error analysis diagram from another EAD, continue in this error analysis diagram until you are instructed to do otherwise.

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.

Note: The net list given with the error diagram is divided into two groups.

Net list A detects an internal diagnostic failure, that is, the internal Loop Write to Read diagnostic path is broken. This may not have any association with a hardware failure that you are analyzing.

Net list B includes nets that will cause customer failures and diagnostic failure IDs.

3. For intermittent errors, loop the identified diagnostics repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. If a diagnostic failure ID is available, compare the failure ID with the failure IDs in WSE bit 6 net lists A and B in the error diagram. If the failure ID is included in WSE bit 6 net list B, the failure is a diagnostic failure and may not be the original user's failure. Use WSE bit 6 net list B to fix this problem first, then continue with the user's failure. Loop the failing diagnostic with the Loop on Error option. If no failure is detected, loop the Loop Write to Read diagnostic (EE52, options 1 and 7) with the Loop Routine option. Scope the nets included in "WSE Bit 6 Net List." If a diagnostic failure ID occurs and is included in "WSE Bit 6 Net List," run the EE52 diagnostic with the Loop on Error option. Scope those lines (see EAD 2341) included for the diagnostic failure ID. If any of these lines are not changing with correct up and down logic level tolerances, that is the bad net. If the diagnostic failure ID is not included in "WSE Bit 6 Net List," you may be in the wrong error analysis diagram. See the diagnostic (DIAG) section for the diagnostic failure ID. The diagnostic failure ID will send you to the correct error code in the FSI.
5. If no bad net is found, set the Loop Write to Read diagnostic (EE52, options 2 and 7) to loop on the whole routine. Scope the rest of the nets included in "WSE Bit 6 Net List." Look for a net that is not changing between two valid logic levels.
6. If all nets included in the "WSE Bit 6 Net List" look good, go to the troubleshooting guide for WSE bit 0. Then look at your

original error code to see if any of the other write status/error register bits are on. If another write status/error register error bit is on, go to the EAD that describes the troubleshooting guide for that error. Be sure to follow the order described in the first EAD for error code D7nn.

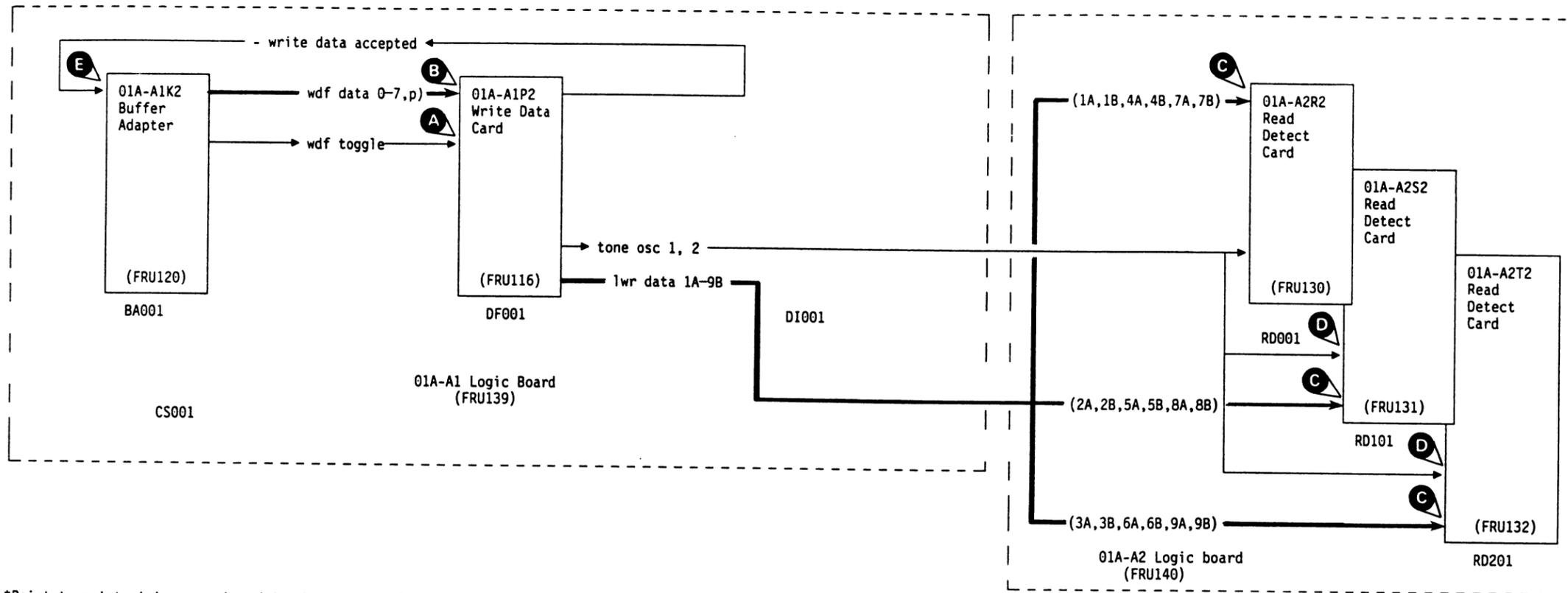
7. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
8. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution Lists" in the Field Wire Net List in the Logic Diagrams.
3	CARR-CU 1-1	Removal and replacement procedures
4,5	DIAG 1	Diagnostic control program options. Diagnostic failure ID (with each diagnostic description)
7	MD 1	How to use the MD with the 3480



WSE Bit 6 Error Diagram



*Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

WSE Bit 6 Net List A

DIAG	NET NAME	LOGIC	ERROR STOP	WSE REG	ERROR DIAGRAM REF
EE50 & EEA0 & E010	+ LWR data (2A)	RD101	LW2035	C2	C
	+ LWR data (5B)	RD101	LW2035	C2	C
	+ LWR data (1A)	RD001	LW2027	C2	C
	+ LWR data (1B)	RD001	LW2027	C2	C
	+ LWR data (2B)	RD101	LW2027	C2	C
	+ LWR data (3A)	RD201	LW2027	C2	C
	+ LWR data (3B)	RD201	LW2027	C2	C
	+ LWR data (4A)	RD001	LW2027	C2	C
	+ LWR data (4B)	RD001	LW2027	C2	C
	+ LWR data (5A)	RD101	LW2027	C2	C
	+ LWR data (6A)	RD201	LW2027	C2	C
	+ LWR data (6B)	RD201	LW2027	C2	C
	+ LWR data (7A)	RD001	LW2027	C2	C
	+ LWR data (7B)	RD001	LW2027	C2	C
	+ LWR data (8A)	RD101	LW2027	C2	C
	+ LWR data (8B)	RD101	LW2027	C2	C
	+ LWR data (9A)	RD201	LW2027	C2	C
	+ LWR data (9B)	RD201	LW2027	C2	C

WSE Bit 6 Net List B

DIAG	NET NAME	LOGIC	ERROR STOP	WSE REG	ERROR DIAGRAM REF
EE52 & E010 & EE50 & EEA0	- write data accepted	DF001	LW2025	CA	E
	- WDF toggle	DF001	LW2024	CA	A
	- WDF bit 0	DF001	LW2024	CA	B
	- WDF bit 1	DF001	LW2024	CA	B
	- WDF bit 2	DF001	LW2024	CA	B
	- WDF bit 3	DF001	LW2024	CA	B
	- WDF bit 4	DF001	LW2024	CA	B
	- WDF bit 5	DF001	LW2024	CA	B
	- WDF bit 6	DF001	LW2024	CA	B
	- WDF bit 7	DF001	LW2024	CA	B
	- WDF bit P	DF001	LW2024	CA	B
	tone osc 1	DI001	LW2027	C2	D
	tone osc 2	DI001	LW2027	C2	D

Troubleshooting Information for WSE Bit 7 On

Use this troubleshooting guide first, only for error code D701. For other D7nn error codes, see "Common Troubleshooting Guide for All D7nn Error Codes" for the correct sequence for testing multiple WSE bits on. (WSE bits 5, 4, and 6 on should be used for troubleshooting before WSE bit 7.)

Error Description

A multiplexed data error has occurred in the write data card.

Error Condition Theory

The write data card reformats the data and adds the check characters before sending the buffer data to the drive adapter card. The format consists of 18 tracks of specially decoded write data. This data is multiplexed out on the '+ mux write data' bus 9 bits at a time plus parity. This data is parity checked on the bus in the write data card.

When a multiplex parity error is detected, write status/error (WSE) register bit 7 and check 2 are set to indicate the error condition to the microprocessor.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. Source voltages at the input to the FRUs involved
2. Cables, connectors, and nets between FRUs called by FSI and EAD.

Troubleshooting Guide

Verify from sense information that the most frequently occurring error code is D701 or that analyzing WSE bits 5, 4, and 6 was not successful. If another error code is more frequent, go to the error analysis diagram for that error code. If you only have the one error code, continue with this error analysis diagram. If you came to this error analysis diagram from another EAD, continue with this error analysis diagram until you are instructed to do otherwise.

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, loop the identified diagnostics and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

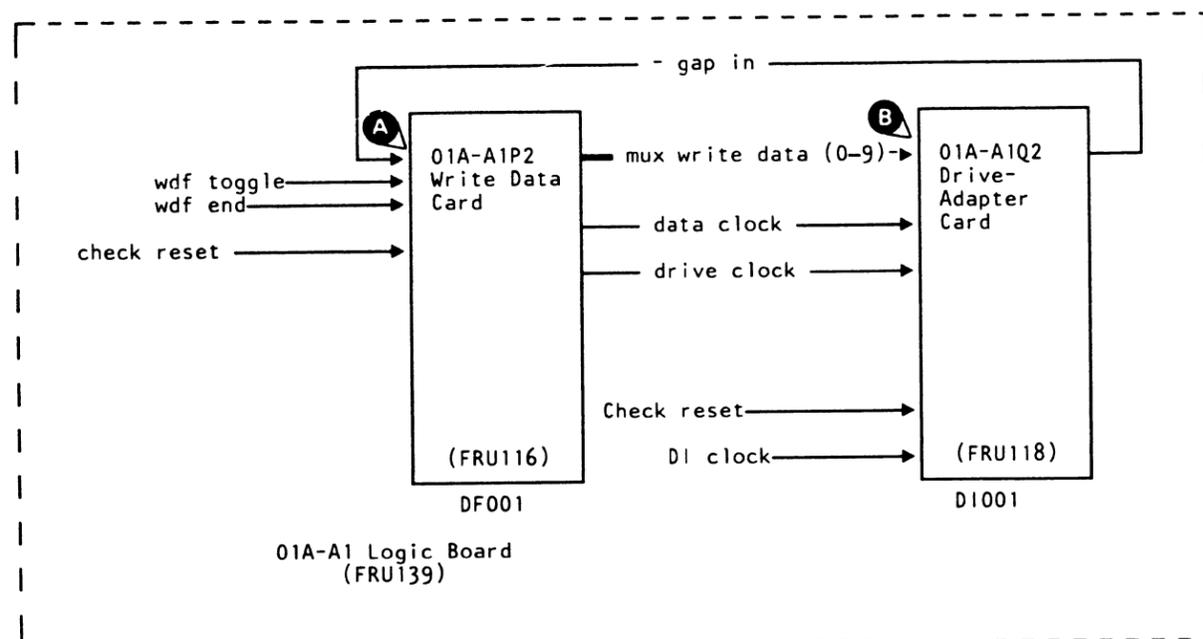
4. Loop the failing diagnostic with the Loop on Error option. If no failure is detected, run the Loop Write to Read diagnostic (EE52, options 1 and 7) with the Loop Routine option. If a diagnostic failure ID occurs and is included in "WSE Bit 7 Net List," run the Loop Write to Read diagnostic (EE52) with the Loop on Error option. Scope those lines (see EAD 2346) included for the diagnostic failure ID. If any of these lines are not changing with correct up and down logic level tolerances, that is the bad net.
5. If no bad net is found, set the short loop write to read pattern test diagnostic (EE52, options 2 and 7) to loop on the whole routine. Scope all of the nets included in "WSE Bit 7 Net List." Look for a net that is not changing between two valid logic levels.
6. Use diagnostic EE53 Short Loop write to read timing test to test the rest of this area. See the "WSE Bit 7 Net List."
7. Loop diagnostic EEA2 and scope the nets included as reference B in the "WSE Bit 7 Net List."
8. If all nets included in the "WSE Bit 7 Net List" look good, go to the troubleshooting guide for WSE bit 0. Look at your original error code. If another WSE register error bit is on, go to the EAD that describes the troubleshooting guide for that error. Be sure to follow the order described in the common troubleshooting guide for error code D7nn.
9. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
10. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution Lists" in the Field Wire Net List in the Logic Diagrams.
3	CARR-CU 1-1	Removal and replacement procedures
4,5,6,7	DIAG 1	Diagnostic control program options. Diagnostic failure ID (with each diagnostic description)
9	MD 1	How to use the MD with the 3480



Error Diagram



*Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

WSE Bit 7 Net List

DIAG	NET NAME	LOGIC	ERROR STOP	WSE REG	ERROR DIAGRAM REF
EE52	- gap in	DF001	LW2025	85	A
EE53	- mux write data	D1002			B

Error Description

A check 2 occurred, and the microprocessor card cannot detect the card that generated the check 2.

Error Condition Theory

Some of the cards generate '- check 2' to indicate to the microprocessor that an error has occurred on the card. The '- check 2' signal is bidirectional and is dot ORed by all the cards that use it. The '- check 2' signal turns on processor status register (PSR) bit 4.

When the microcode detects processor status register bit 4 active, it checks each of the cards that can activate '- check 2' to determine which card had the error.

Error code D900 is set if the microcode detects processor status register bit 4 active but cannot find a card that is indicating a failure.

Possible Causes of Failure

This failure is most likely caused by a false signal on the '- check 2' line. Because the signal is dot ORed (see the error diagram), you cannot isolate a failing card with an oscilloscope.

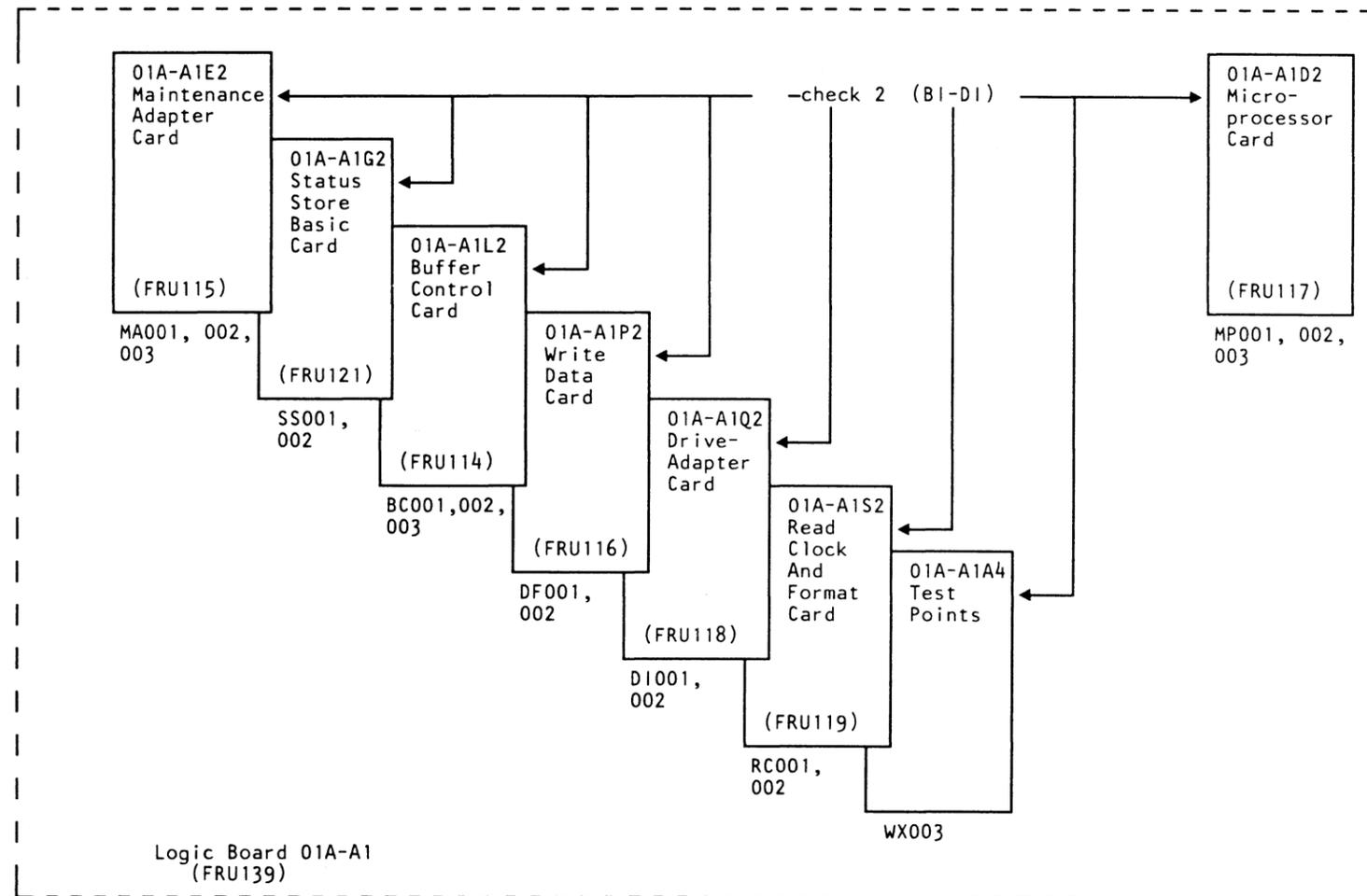
Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. If all of the cards have been replaced, replace the 01A-A1 board (FRU139).
4. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
5. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
4	MD 1	How to use the MD with the 3480.

Error Diagram



Error Code E100

Error Description

The error bits in the ERA and ERB registers indicate the cause of the existing check 1 condition. The contents of the ERA and ERB registers are transferred to the ERAH and ERBH (holding) registers at the start of check 1 error recovery. If a check 1 error condition still exists, the error from the recovery attempt sets 1 of the bits in ERA or ERB to 1. The microprocessor detects the bits in the ERA or ERB registers and in the ERAH or ERBH registers and sets check 1 bit to 1. The microprocessor then stops.

Error Condition Theory

The check 1 indicator shows that one or more of the 17 check 1 error latches has been set. These latches are the ERA and ERB registers and the PCR Register bit 5 set by the microcode.

The ERA and ERB registers are reset by power on reset or by microprocessor reset during error recovery. If a check 1 error is solid, the ERA and ERB (described in the DF section) registers are set and the check 1 error code is set even after the reset. Latches involved in check 1 indications are:

CHECK	LATCH
Check 1 latch A-F	ERB bits 2 - 7
Check 1 holding latches	ERAH/ERBH 0 - 7
MP internal or CS data bus high/low failure	ERA bit 0
Current interrupt level parity error latch	ERA bit 3
MP bus out parity error latch	ERA bit 7
Interrupt level parity error latch	ERA bit 4
Microprocessor error	ERA bit 2
LSR address parity error (internal MP card failure)	ERA bit 5
Internal microprocessor card register parity error	ERB bit 1
Microprocessor XR data bus input error	ERA bit 1
Internal MP card or XR address bus error latch	ERB bit 0
XR address parity error	ERA bit 6

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

- (FRU139) logic board 01A
- Source voltages at the input to the FRUs on this EAD
- Cables, connectors, and nets between FRUs on this EAD.

FRU Matrix by Error Register Bits

FRU	ERA 0123 4567	ERB 0123 4567
FRU117	XXXX XXXX	XXXX XXXX
FRU134	XX	X X
FRU135	X XX XXXX	XXXX XXXX
FRU115	X X	XX XXXX

Common Troubleshooting Guide for Error Code E100

- Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

- Display the ERA, ERB, ERAH, and ERBH register contents. (The error registers can be read out using the Subsystem Display/Alter program, option 3 Register Display/Alter, selection 5 CU Scan Rings. See SDISK 1, to find "Control Unit Scan Rings.")
- Look for the first ERA or ERB bit on. Go to the troubleshooting information for that bit first.
- If there is more than one ERA or ERB bit on and the troubleshooting information for the first bit does not solve the problem, go to the next bit in the ERA or ERB and use that troubleshooting information.
- Use the preceding procedure starting with ERA bit 0 and ending at ERB bit 7.
- Check that all voltages are within tolerance at the input to the boards referenced in this EAD.

Error Code E100 EAD 2650

- If the program detects an error, continue in this EAD with the next action.

- If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2,3,4	DF 1	ERA and ERB bit descriptions
6	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution Lists" in the Field Wire Net List in the Logic Diagrams
7	EAD 1	Location of clock descriptions
7,9,10	DIAG 1	Diagnostic EEFO descriptions and options
11	MD 1	How to use the MD with the 3480

- Failures detected in an area can be caused by defective clock lines. Load the Basic Control Unit Test. When a diagnostic failure ID is detected, set the Loop on Error option. If no failure ID is detected, set the Loop on Routine option and scope the clocks in the following list looking for a clock that is at the wrong logic level or for one that is not changing logic level. The location of the clock diagrams is shown on EAD 1. The functional area clocks to be scoped are:

- Subsystem clocks to the microprocessor
- XR bus and control clocks
- Maintenance adapter system clocks.

- For intermittent errors, loop the identified diagnostics and scope the EAD test points looking for unusual or deteriorating levels or signals.

- Run Basic Control Unit Test and EE85, record all the diagnostic failure IDs.

Go to DIAG 1 to find the failure ID description to determine the best error analysis diagram to use to analyze the failure.

Did this diagnostic fail?

YES NO
Continue with the actions in the EAD.

Did the failure direct you back to the same EAD?

YES NO
Go to the place that the diagnostics sends you and do the actions.

Do the EADs have specific actions for the diagnostic failure?

YES NO
Loop the diagnostics and do any other actions specified in the EADs.

Do the actions specified for that failure.

- Do not continue with this error analysis diagram if the diagnostic failure ID sends you to another error analysis diagram. If you have been sent back here, diagnostic EEFO is a helpful scoping aid for the suspected area.

- If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."

Troubleshooting Information for ERA Bits 0, 1, 2, and 6 or ERB Bit 0 On

1. ERA bit 0 = 1 Internal microprocessor or control storage data bus high/low failure.

These are failures internal to the microprocessor card except for the control storage data bus high/low. The control storage data is passed to the microprocessor card (FRU117) by way of the 'control storage data hi/lo buses' from the control storage card (FRU135).

2. ERA bit 1 = 1 Microprocessor XR data bus input error

The microprocessor card (FRU117) has detected an error from one of the XR data buses (XR data bus a/b).

3. ERA bit 2 = 1 Microprocessor error

This bit is set when the microprocessor detects that one or more of the following conditions exist:

- Control storage data error. Bad parity was detected on the high/low bus during control storage transfer, or the error is internal on the MP card.
- A local storage or external register data error occurred. Incorrect parity was detected on XR data bus A/B during register read.
- An internal microprocessor error occurred.

4. ERA bit 6 = 1 External register address parity error internal to the MP card.

This bit is set when bad parity is detected on the microprocessor external register address bus.

5. ERB bit 0 = 1 Internal microprocessor card or XR address bus failure

This bit is set when an internal microprocessor card failure or a failure of the XR address bus (P, 0-4) is detected.

Troubleshooting Guide for ERA Bits 0, 1, 2, and 6 or ERB Bit 0 On

1. For only ERA bit 0 on, scope the net groups in the order 3, 2, 1
2. For only ERA bit 1 on, scope the net groups in the order 2, 3, 1
3. For only ERA bit 2 on, scope the net groups in the order 1, 2, 3
4. For only ERA bit 6 on, scope the net groups in the order 3, 2, 1

5. For only ERB bit 0 on, scope the net groups in the order 1, 2, 3.

For multiple bits on, scope all the net groups in any order.

Note: See EAD 2652 for test points.

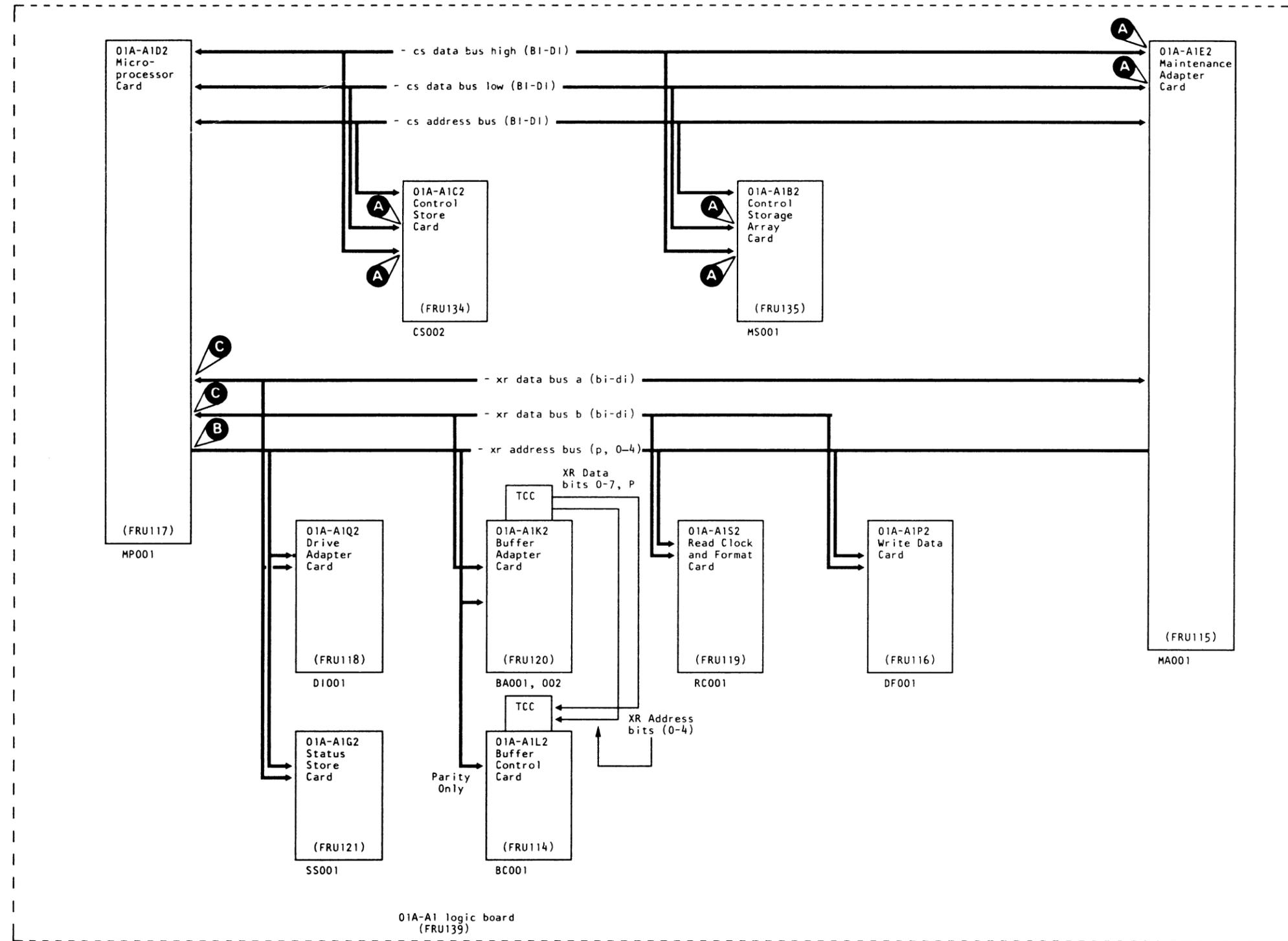
- Net Group 1
 - cs data bus high/low
 - Ⓐ from FRUs 134, 135, 115, to FRU117.
 - \$MPCSDE00 (P,0-7) CS001 to MP001
 - \$MPCSD000 (P,0-7) CS001 to MP001
- Net Group 2
 - xr data bus a/b
 - Ⓒ input to FRU117
 - \$MPXRBA00 (P,0-7) MP001
 - \$MPXRBB00 (P,0-7) MP001
- Net Group 3
 - xr address bus
 - Ⓑ from FRU117. Scope these nets at the output of the microprocessor card drivers looking for a net with a short circuit to the cards they are supplying.
 - \$MPXRAD00 (P, 0-4)

If the preceding procedure did not solve the problem and there are other ERA or ERB bits on in the diagnostic failure ID, go to troubleshooting guide for the next ERA or ERB bit on from the recorded diagnostic failure ID in the common troubleshooting guide.

6. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
7. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, Call your next level of support and then go to SPROC 1 "End of Call Actions."



Error Diagram for ERA Bits 0 - 2 and 6 or ERB Bit 0 On



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

Troubleshooting Information for ERA Bit 3 On

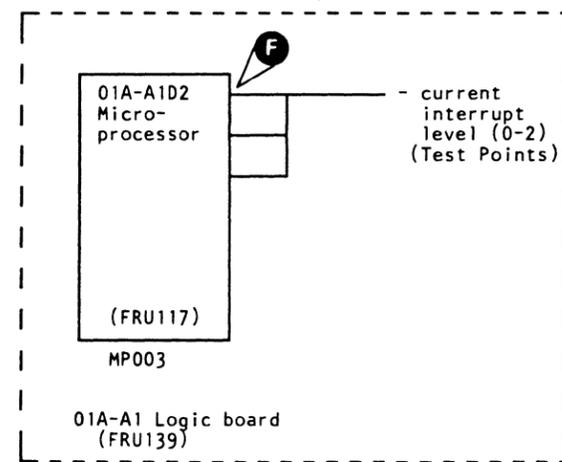
ERA bit 3 = 1 indicates that a current interrupt level parity error occurred. This bit is set when bad parity is detected on the current interrupt level latches.

This is an internal failure of the microprocessor card (FRU117) or of the external 'current interrupt level' card pins.

Troubleshooting Guide for ERA Bit 3 On

1. Scope the 'current interrupt level' output **F** (see diagram on this page). These pins are scope points only and have no board nets. If any of these pins have logic level that is not correct and the card has been exchanged, the failure can only be a short circuit to that pin.
2. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
3. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

ERROR DIAGRAM for ERA Bit 3 On



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

Troubleshooting Information for ERA Bits 4, 5, and 7 or ERB Bit 1 On

1. ERA bit 4 = 1 Processor interrupt level parity error

This bit is set when bad parity is detected on the microprocessor interrupt level latches while an interrupt request is active. The interrupt level latches are checked at S0-S1 time for correct parity.

2. ERA bit 5 = 1 Internal microprocessor card failure of the local storage address parity.

This bit is set when bad parity is detected internally on the microprocessor local storage address bus inside the card.

3. ERA bit 7 = 1 Microprocessor bus out parity error

This bit is set when bad parity is detected on the microprocessor data even/odd bus out during any register write operation.

4. ERB bit 1 = 1 Internal microprocessor card register parity error

This bit is set when bad parity is detected in the microprocessor internal interrupt mask register (IMR) or in the processor diagnostic register (PDR).

5. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

6. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

Troubleshooting Guide for ERA Bit 4, 5, and 7 or ERB Bit 1 On

1. This is an indication of a check condition internal to the microprocessor card, which has already been exchanged. The only other causes of the problem are the voltages to the FRU and the clocks to the microprocessor card defined in the EAD for error code E100 common troubleshooting guide.

2. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

3. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

Troubleshooting Information for ERB Bits 2 Through 7 On

ERB bits 2 through 7 = 1

These bits indicate that an error has been detected by the control storage array card (FRU135). The error is reported to the microprocessor card (FRU117) by the control store card (FRU134).

1. ERB bit 2 = 1 Uncorrectable control storage read error

This bit indicates that the control storage array card (FRU135) detected an ECC error that cannot be corrected (double bit) during a read operation.

2. ERB bit 3 = 1 Control storage address parity error

This bit indicates that the control storage array card (FRU135) detected bad parity on the control storage address bus. This address is sent to the control storage array card from the storage address register (SAR) on the control store card (FRU134).

3. ERB bit 4 = 1 Control storage refresh error

This bit indicates that the control storage array card (FRU135) detected a parity check condition in the refresh counter.

4. ERB bit 5 = 1 Selection check

This bit indicates that the control storage array card (FRU135) detected that a 'card select' line was active at the same time as the 'refresh select' line or that more than one 'card select' line was active. The 'card select' lines select one of the four arrays in the control storage array card.

5. ERB bit 6 = 1 Key bit check

This bit indicates that the control storage array card (FRU135) detected that the key bit does not match the key bit stored on a preceding cs write cycle.

6. ERB bit 7 = 1 Control storage write data parity error

This bit indicates that the control storage array card (FRU135) detected that the data on the 'control storage data high/low bus' from the microprocessor card has bad parity during a cs write operation.

7. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

8. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."



Troubleshooting Guide for ERB Bits 2 Through 7 On

Note: See EAD 2655 for test points.

1. ERB bit 2 = 1 Uncorrectable control storage read error

Scope the following nets for correct tolerances and logic levels.
 - '- uncorrectable read data check' **W** between FRUs 135 and 134
 - '- cs check 1 a (read data ecc)' **M** between FRUs 135 and 117
2. ERB bit 3 = 1 Control storage address parity error

Scope the following nets for correct tolerances and logic levels
 - '- wp address parity bad' **W** between FRUs 134 and 135
 - '- cs check 1 b (wp adr par)' **M** between FRUs 134 and 117
 - '- cs address bus' **D** at FRU134 and bad check driver outputs on BI-DI bus at output of FRUs 135, 117, and 115.
3. ERB bit 4 = 1 A control storage refresh error has occurred.
 - Sync the oscilloscope on 'xr load' **C** at 10 microseconds/division. Display 'xr load' on channel A. Display '+ refresh timer clock' **E** on channel B. '+ refresh timer clock' should pulse once for every 27 pulses of 'xr load'. Display '- wp refresh select' **R** on channel B. '- wp refresh select' should pulse once for every 27 pulses of 'xr load'.
4. ERB bit 5 = 1 A selection check has occurred

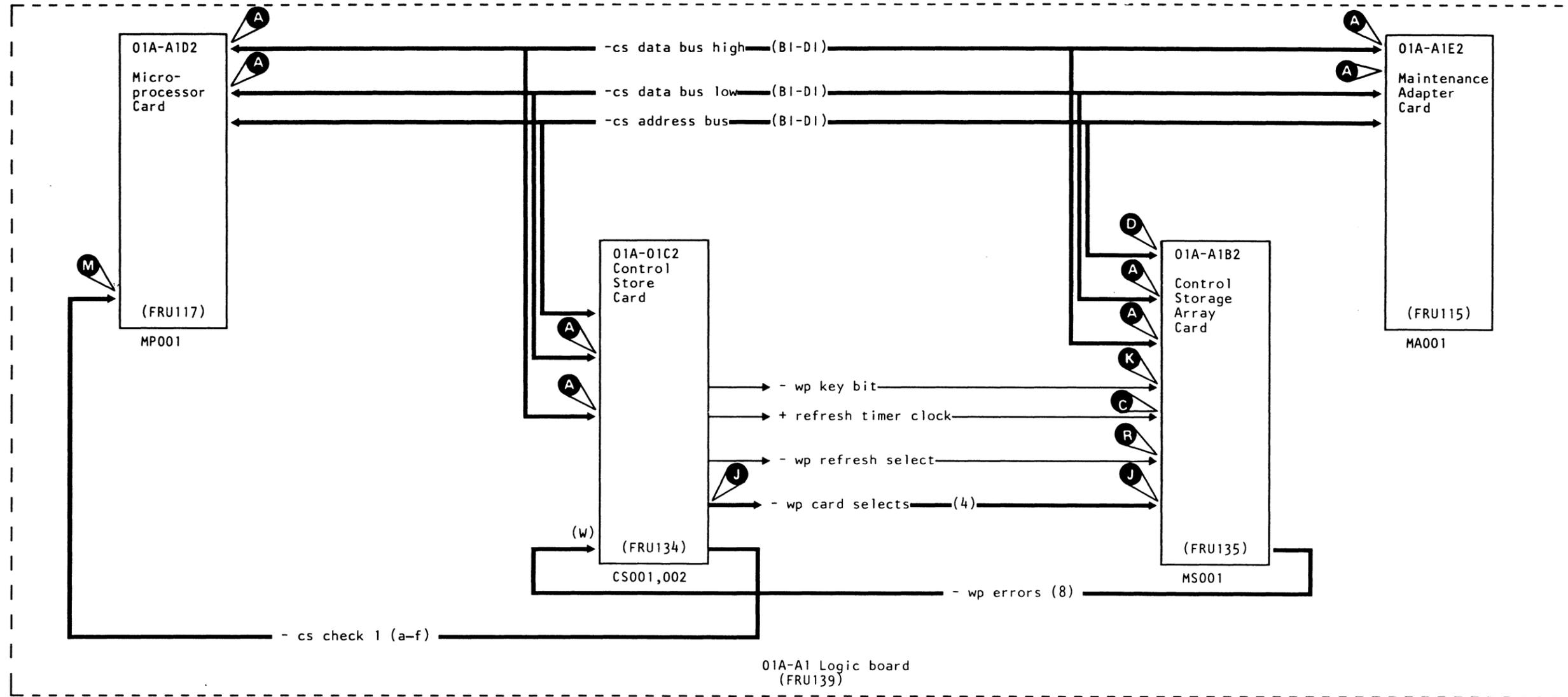
Scope the following nets for correct tolerances and logic levels.
 - '- wp card selects' **J** between FRUs 134 and 135
 - '- wp refresh select' **R** between FRUs 134 and 135
 - '- wp selection check' **W** between FRUs 135 and 134
 - '- cs check 1 d (selection)' **M** between FRUs 134 and 117

5. ERB bit 6 = 1 A key bit check error has occurred

Scope the following nets for correct tolerances and logic levels
 - '- wp key bit' **K** between FRUs 134 and 135
 - '- key bit check' **W** between FRUs 135 and 134
 - '- cs check 1 e (key bit)' **M** between FRUs 134 and 117
6. ERB bit 7 = 1 A control storage write data parity error has occurred

Scope the following nets for correct tolerances and logic levels.
 - '- wp write data parity check' **W** between FRUs 135 and 134
 - '- cs check 1 f (wrt data par)' **M** between FRUs 134 and 117
 - '- cs data bus high/low' **A** between FRUs 135 and 134, 117, 115
7. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."
8. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

Error Diagram



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.



Error Description

The maintenance adapter card cannot communicate with the MD.

Error Condition Theory

Port open errors occur during operation of the Maintenance Device/Maintenance Adapter diagnostic. The port open error indicates that the maintenance device could not shift data bits from the MD through the shift register on the maintenance adapter card and back to the MD.

MTI bit 6 errors can occur during any MD-to-maintenance adapter card operation. The MTI bit 6 error indicates that the maintenance adapter card detected even parity on the data it received from the MD. MTI bit 6 being set causes the maintenance adapter card to activate '- check 2' to the microprocessor card.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU134) control store card 01A-A1C2
2. Maintenance device
3. Cable from 01A-A1Y1 to the MD connector
4. Nets from 01A-A1Y1 to 01A-A1E2
5. (FRU139) logic board 01A-A1.

Note: FRUs 1 and 2 are identified by the maintenance package in diagnosing a correction error.

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. Check the cables and connectors between logic board 01A-A1 and the MD.

4. The MD may be failing. Use the MD test diskette to run the MD test. If another MD is available, try the other MD and another support diskette.

5. Run the Maintenance Device/Maintenance Adapter and the CU Basic diagnostics and E010.

Did this diagnostic fail?

YES NO
Continue with the actions in the EAD.

Did the failure direct you back to the same EAD?

YES NO
Go to the place that the diagnostics sends you and do the actions.

Do the EADs have specific actions for the diagnostic failure?

YES NO
Loop the diagnostics and do any other actions specified in the EADs.

Do the actions specified for that failure.

6. Meter or scope the nets indicated in the net list.

7. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

8. **If no repair action has been performed** and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
3,6	Logics WX001-MA001	Cable and net checks
4	DIAG 1	Maintenance Device/Maintenance Adapter and CU Basic diagnostics
5,6	OPER 80	Theory of Operation MD/MA Interconnection
7	MD 1	How to use the MD with the 3480

Nets to Scope

See EAD 1 for "Clocks to and from the Maintenance Adapter" and "Maintenance Device to Maintenance Adapter Timing."

All S clocks to the maintenance adapter card

- MD serial data in
- MD shift pulse
- MD status in
- MD enable
- MA read to MD
- MA write to MD
- MA serial data out to MD
- MA status out to MD
- + Streaker B clock
- + Streaker MS clock
- + KVPB L1 clock
- KVPB L2 clock

Error Description

The microprocessor uses the level 0 external interrupt for the maintenance adapter, operation external registers errors and data transfer from the IML diskette drive. Level 0 interrupt is the highest priority interrupt and cannot be masked. When the microprocessor receives a level 0 interrupt, and can find no valid reason for its occurrence it attempts to post the correct Fnnn code as determined by the external register address in use at the time of the failure.

When the microprocessor detects a level 0 interrupt, it checks the processor status register (PSR) bit 0 for an external register error. If PSR bit 0 is 0, the microprocessor checks bit 0 of the maintenance tag in (MTI) register, which is set to 1 if the maintenance device was communicating with the control unit. If both register bits are 0, the microprocessor checks to see if the IML diskette drive is set to transfer data. If none of the three conditions spelled out above are set, the microprocessor sets error code F00D, which indicates unknown cause of the level 0 interrupt.

Additional Possible Causes of Failure

In addition to the previously called FRUs (as listed in the FSI), these items are possible causes of the failure:

1. (FRU134) control storage card 01A-A1C2
2. (FRU194) cable IML diskette drive
3. (FRU086) IML diskette drive
4. (FRU139) logic board 01A-A1
5. Source voltages at the input to the FRUs on this EAD
6. Cables, connectors, and nets between FRUs on this EAD
7. (FRU134) control storage card 01A-A1C2 (in the other control unit).

Troubleshooting Guide

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, perform the following procedures repeatedly and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Failures detected in the functional area can be caused by defective clock lines. If clocking to the functional area is suspected, verify that the clocks to the functional area are as shown in the "Control Unit Clocks" pages of this volume.
5. The scan controls and clocks to the functional areas can cause the functional area to indicate a failure and should also be checked to ensure that they are not in their active condition.

The functional areas are the microprocessor, the control storage, and the maintenance adapter.

6. Run all diagnostics from the support diskette and use the diagnostic information in the DIAG section of the maintenance information for any failure. If no failure is detected, or a diagnostic failure ID points to this EAD, go to step 7.
7. Select and loop EE10 diagnostics from the support diskette to test these functional areas. (Selecting diagnostic EE10 runs the EE12—EE14 and EE85 diagnostics as one test.) For scoping, if there is no diagnostic failure, use the loop section option; if there is a diagnostic failure, use the loop on error option.

Note: See EADs 2696 and 2697 for test points.

If it becomes necessary to scope the XR data bus, **G** or the XR address bus, **D** there is a diagnostic available (EEFO) that will allow you to select one XR register in each functional area and loop the diagnostic while scoping the nets and clocks, that affect selection and data movement to the XR registers in the functional area selected.

8. Scope 'mp external interrupt 0' **A** for bad levels.
9. Scope 'xr error ungated' **B** for glitches or bad levels. Any down logic level is an error and should be traced to find the cause.
10. Scope 'collision detect' **F** signal for an active state (- level).

Scope points **E** and **G** (**G** is in the other control unit) to isolate the problem.

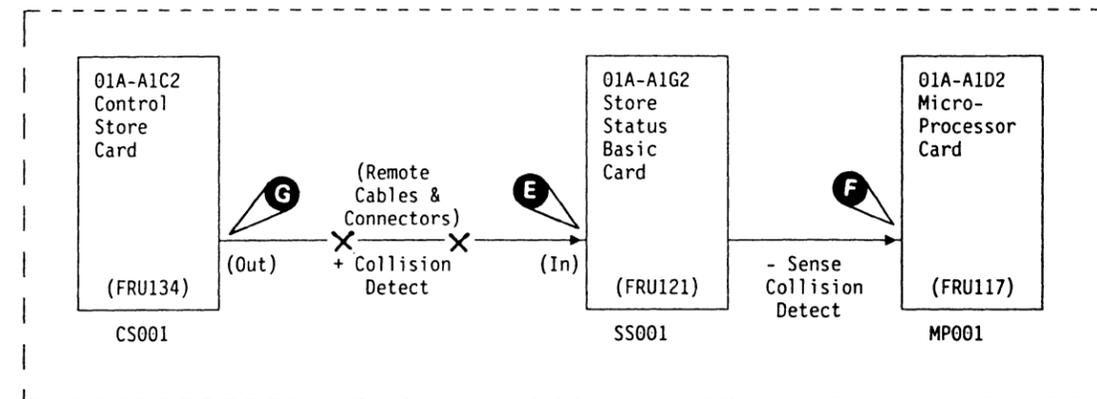
11. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

12. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables". For voltage pin positions, see the "Voltage Distribution List" in the Field Wire Net List in the Logic Diagrams.
6,7	DIAG 1	How to operate diagnostics
10,11	MD 1	How to use the MD with the 3480
7	DIAG 1	How to use EEFO

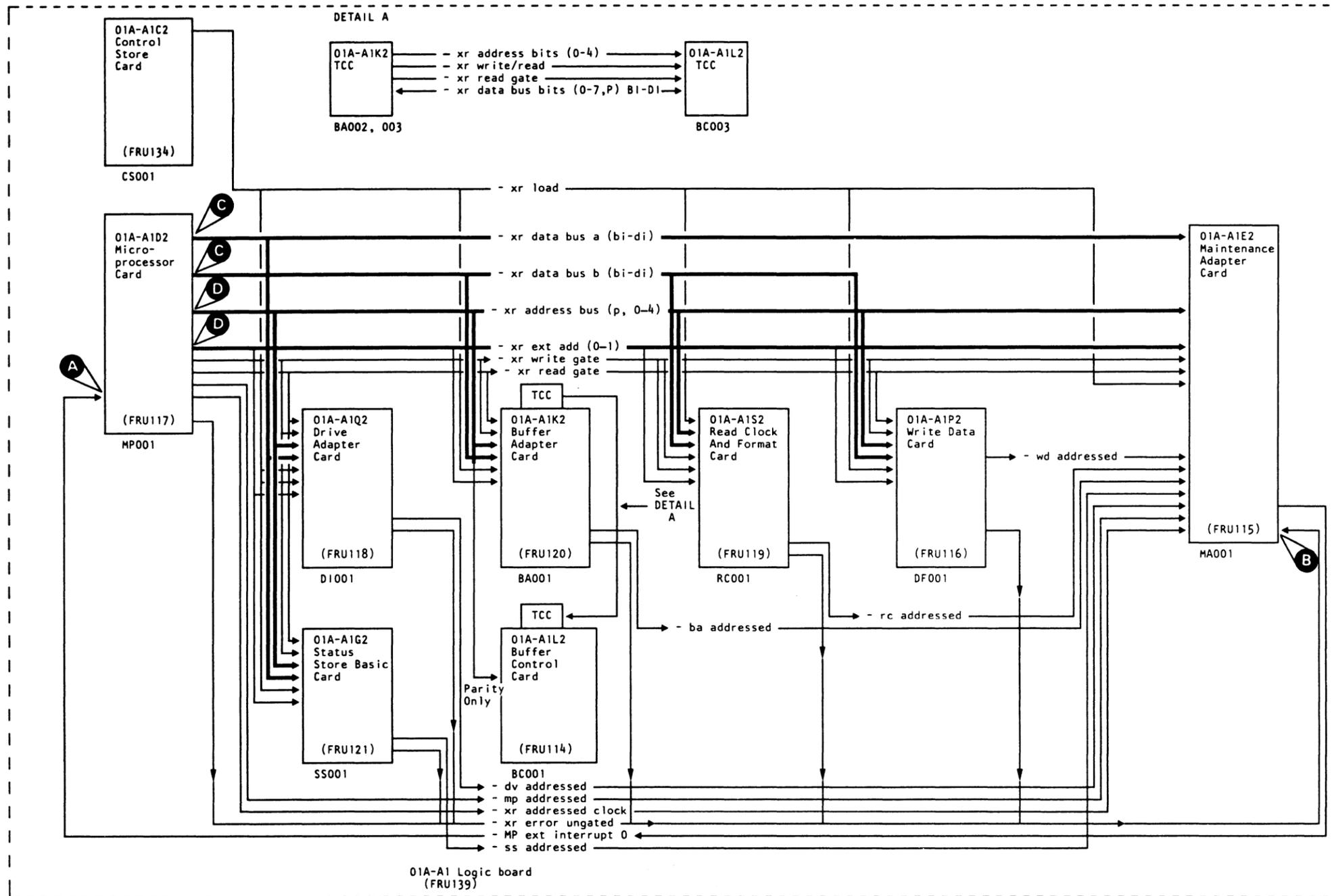


Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.



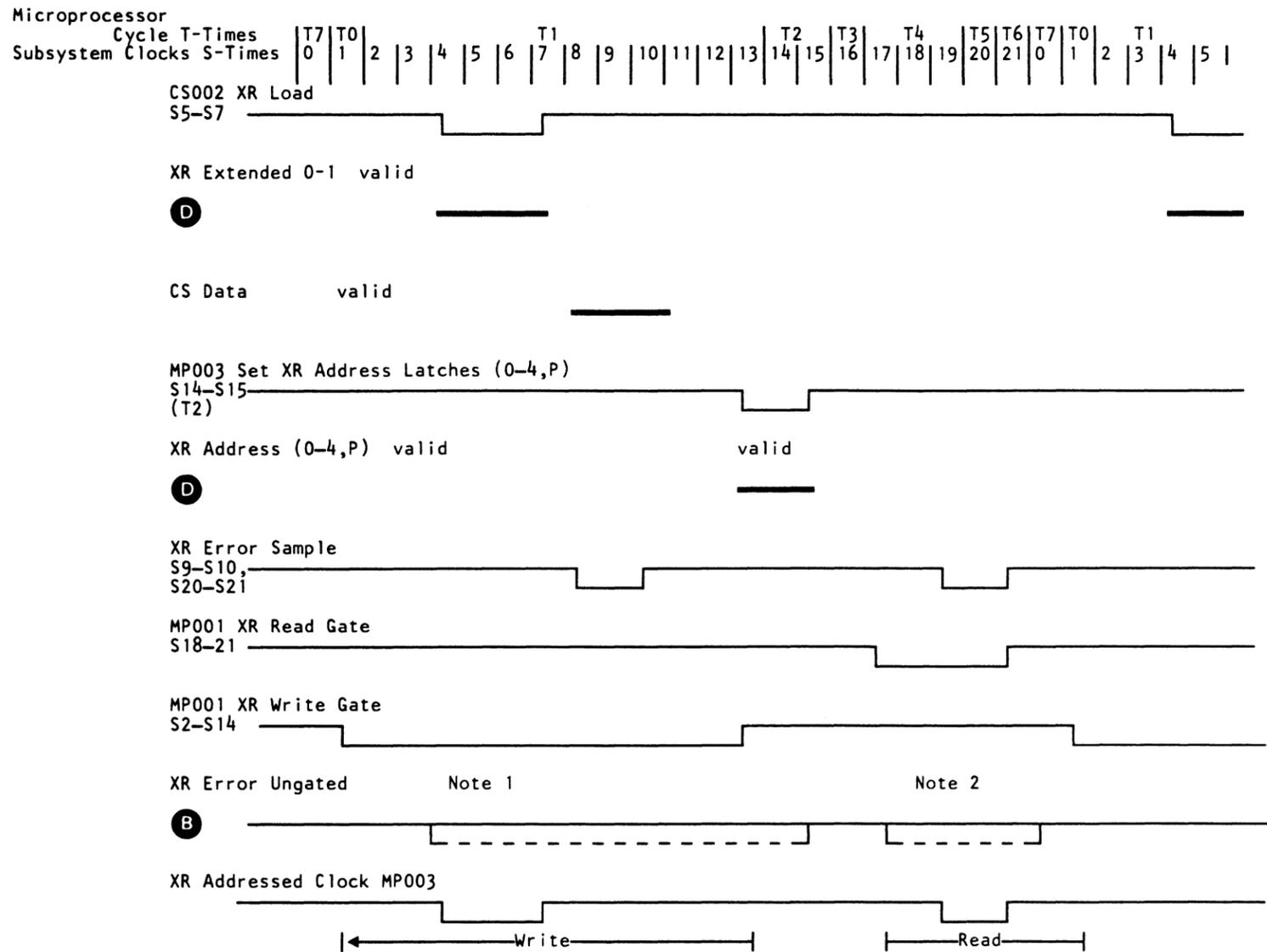
Error Diagram

XR Data and Address



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.

XR Register Address/Data Transfer Timing



Note 1: The line goes down only if an error and a write is included in the instruction.
 Note 2: The line goes down only if an error and a read is included in the instruction.



Error Code Fnnn

If you have entered this EAD from the DIAG section, record the XRA register contents at the time of the error (displayed on the MD keyboard). Use that data along with the chart on this page to obtain the 'nnn' part of error code Fnnn.

Error Description

An external register error was detected in a functional area. The error code is F plus a character representing the functional area plus two characters representing the contents of the external register address (XRA) register.

Error Condition Theory

The microprocessor communicates with the functional areas by way of the external registers (XRs). An 'xr error ungated' from the failing functional area causes a microprocessor level 0 external interrupt.

The microprocessor analyzes the source of the level 0 interrupt by checking the processor status register (PSR) bit 0 (XR error). If PSR bit 0 = 1, the external register address (XRAO) register contains the address of the external register at the time of the failure.

The microprocessor also defines the external register error as an addressing or a data error.

External Register Data Error

Each of the functional area FRUs makes 'xr error ungated' active if an error condition is detected by the addressed FRU during a read or write operation.

- When the external registers are being read by the microprocessor ('read gate' active), a parity check is performed on the data active on the microprocessor scan path. If the microprocessor detects bad parity, it sets processor error register (PER) bit 4, XR read parity error.
- During 'xr read gate' operation, the microprocessor checks 'xr error ungated' at 'xr addressed clock' time. If 'xr error ungated' is active, the microprocessor sets processor error register (PER) bit 5, XR user read error.
- During 'xr write gate' operation, the microprocessor checks 'xr error ungated' during 'xr addressed clock' time. If 'xr error ungated' is active, the microprocessor sets processor error register (PER) bit 6, XR user write error.
- The maintenance adapter checks 'xr data bus a' during external register write operations to the maintenance adapter. If 'xr data bus a' has even parity, the maintenance adapter activates 'maintenance tag in' (MTI) bit 5, XR data parity check.

Note: MTI bit 5 will also indicate that the MA register is in error if the processor status register (PSR) bit 0 is not 1.

External Register Addressing Error

- The maintenance adapter checks the xr user addressed lines from each of the functional areas. Each functional area activates its own user addressed line to the maintenance adapter when the address received from the microprocessor matches one of the valid addresses for the functional area.

The maintenance adapter checks that one and not more than one of the functional areas has activated a user addressed line any time the microprocessor addresses an external register.

If none or more than one user addressed line is active while an external register read or write operation is in process, the maintenance adapter activates 'xr error ungated' and activates 'maintenance tag in' bit 4.

When the microprocessor detects 'maintenance tag in' bit 4, it activates 'maintenance tag out' bit 2 to gate the active xr user signals into the maintenance data in (MDI) register, which the microprocessor then sets in sense byte 9 as the sense data for this error. The bit definitions for the maintenance data in the sense byte 9 are:

Bit Meaning

- | Bit | Meaning |
|-----|--|
| 0 | Buffer adapter addressed or contents of PER |
| 1 | Status store addressed or contents of PER |
| 2 | Device adapter addressed or contents of PER |
| 3 | Read clock and format addressed or contents of PER |
| 4 | Microprocessor addressed or contents of PER |
| 5 | Write data addressed or contents of PER |
| 6 | Maintenance adapter addressed or contents of PER |
| 7 | If 1, bits are defined as shown above; if 0, contents of PER (see EAD 2701). |

Sense byte 9 is also saved in word 2, bits 8—15 of the sense error history table (control unit flag byte). If bit 7 of sense byte 9 is 1, sense byte 9 contains active xr user addressed information and shows a user select error. If bit 7 is 0, sense byte 9 contains processor error register data and shows an xr data error.

- The maintenance adapter checks the 'xr address bus' for parity during external register read and write operations to ensure that the address has been sent correctly by the microprocessor. If 'xr address bus' has bad parity with 'read gate' or 'write gate' active, the maintenance adapter activates the 'maintenance tag in' (MTI) bit 3 and activates 'xr error ungated'.

How to Find the 'nnn' Value for Error Code Fnnn

- Use the contents of the XRA register. This byte is the last two numbers (nn) of the Fnnn error code.
- Use these numbers under 'nn' in the chart below to find the value of the first two numbers 'Fn' of the error code.

Example 1: XRA reg=21. Under the nn column find 21. These are the last two numbers of error code F421.

Example 2: XRA reg=C9. Under the nn column find C9. The complete Fnnn error code is F2C9.

Note: If the XRA register value cannot be found in the following chart, the error code is F6nn where nn is the value of the XRA register.

Error Code Fnnn EAD 2700

nn	nn	nn
F100	F462	F2C0
F103	F464	F2C3
F105	F467	F2C5
F106	F468	F2C6
F109	F46B	F2C9
F10F	F46D	F2CA
F416	F46E	F2CC
F421	F770	F2CF
F422	F773	F2D1
F424	F775	F2D2
F730	F776	F2D4
F733	F779	F2D7
F735	F77A	F2D8
F736	F77C	F2DB
F739	F77F	F2DD
F73A	F3A1	F2DE
F73C	F3A2	F2E1
F73F	F3A4	F2E2
F940	F3A7	F2E4
F943	F7B0	F2EB
F545	F7B3	F2ED
F546	F7B5	F2EE
F549	F7B6	F7F0
F54A	F7B9	F7F3
F54C	F7BA	F7F5
F54F	F7BC	F7F6
	F7BF	F7F9
		F7FA
		F7FC
		F7FF

Registers

The registers that are active for the Fnnn error code are:

- PROCESSOR ERROR REGISTER (PER)

0	1	2	3	4	5	6	7
MP CK 2	ITA/B = 0	Collision detect	Online	XR read parity error	XR user read error	XR user write error	Normal mode

Bits 0, 4, 6 Set to 0 by power on reset or microprocessor reset or by microcode issued MP/MA check reset.

Bits 1, 3, 7 Set to 0 by power on reset or microprocessor reset; updated on the first execute cycle.

- PROCESSOR STATUS REGISTER (PSR)

CK 2

0	1	2	3	4	5	6	7
XR error				Check 2			

Check 2 error line

Bits 1—3, 5—7 Set to 1 by power on reset or microprocessor reset

Bits 0,4 Set to 0 by power on reset or microprocessor reset; updated on first execute cycle

- MAINTENANCE TAG IN (MTI)

0	1	2	3	4	5	6	7
MA request response	Data transfer	MD enabled	XR address bus parity error	XR addressed line error	MA internal card error	MD parity error	Check 1

- MAINTENANCE TAG OUT (MTO)

0	1	2	3	4	5	6	7
Reserved	Wait light	Read X/R active	Data ready	MP status out	Data demand	Command data received	Reserved

- EXTERNAL REGISTER ADDRESS (XRA)

0	1	2	3	4	5	6	7
XR add ext 0	XR add ext 1	XR add bus 0	XR add bus 1	XR add bus 2	XR add bus 3	XR add bus 4	XR add bus P

Set to hex 00 by power on reset or microprocessor reset.

Set to the status of the xr address on the first execute cycle.

Note: See the DF section for bit meanings.



Possible Causes of Failure

The Fnnn error codes are generated by functional microcode as determined by the xr/address at the time of the failure. Any or all cards that share the common XR data, address, control, and error indication nets should be considered as possible causes.

If you have entered this EAD from the DIAG section, record the XRA register contents at the time of the error (displayed on the MD keyboard). Use that data along with the chart on EAD 2700 to obtain the 'nnn' part of error code Fnnn. See the FSI for error codes F1nn, F2nn, and so on for the errors.

1. (FRU139) logic board 01A-A1
2. (FRU157) top card connector WKL
3. (FRU158) top card connector XKL
4. (FRU159) top card connector YKL
5. Source voltages at the input to the FRUs on this EAD
6. Cables, connectors, and nets between the FRUs on this EAD.

Troubleshooting Guide

Note: See EADs 2703 and 2704 for test points.

1. Verify that all FRUs identified by the product maintenance package have been exchanged and all procedures have been followed correctly before continuing troubleshooting using this EAD.
2. Check that all voltages are within tolerance at the input to the boards referenced in this EAD.
3. For intermittent errors, loop the identified diagnostics and scope the EAD test points looking for unusual or deteriorated levels or signals.

Note: If the following troubleshooting procedures point to the failure of a FRU that has already been exchanged by the product maintenance package, exchange the FRU a second time. The exchanged FRU may have been defective.

4. Failures detected in the functional area can be caused by defective clock lines. If clocking to the functional area is suspected, verify that the clocks to the functional area are as shown on the "Control Unit Clocks" pages of this EAD volume.

Note: The scan controls and clocks to the functional areas are as defined by the error code or external register address.

5. Review and record sense byte 9.

6. Run the CU basic support diagnostics E010 (also run EE85) and use the diagnostic descriptions from the DIAG section for all errors detected. If no error is detected, select the correct diagnostic for your error code from Chart 1.

Did this diagnostic fail?

YES NO
Continue with the actions in the EAD.

Did the failure direct you back to the same EAD?

YES NO
Go to the place that the diagnostics sends you and do the actions.

Do the EADs have specific actions for the diagnostic failure?

YES NO
Loop the diagnostics and do any other actions specified in the EADs.

Do the actions specified for that failure.

Loop the selected diagnostic.

If it is necessary to scope the XR data bus or XR address bus, diagnostic EEFO can be used to select one XR register in each functional area. The diagnostic can be looped when scoping the nets and clocks that affect the selection and data movement to the registers.

7. If sense byte 9 bit 7 is 0, the external register error is a data parity error. Scope '- xr data bus a and b' **A** from the microprocessor card to the failing functional area for glitches or bad signal levels.

Note: If the drive adapter card has been exchanged or it is suspected to be at fault, check the control unit serial number/EC level switches on the card for correct parity. The registers affected by these switches are the EC level register, the serial number high register, and the serial number low register.

8. If sense byte 9 bit 7 is 1, the external register error is an external register address parity check error or an external register user addressed error. Scope '- xr address bus (P, 0-4)' and '- xr extended 0-1' **B** from the microprocessor card to the failing functional area for glitches or bad signal levels. Scope the xr addressed lines **D** to the maintenance adapter card. One and only one should be active at any time.

9. Scope '- xr error ungated' **C** for glitches or bad levels. Operates correctly.

10. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

11. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

References

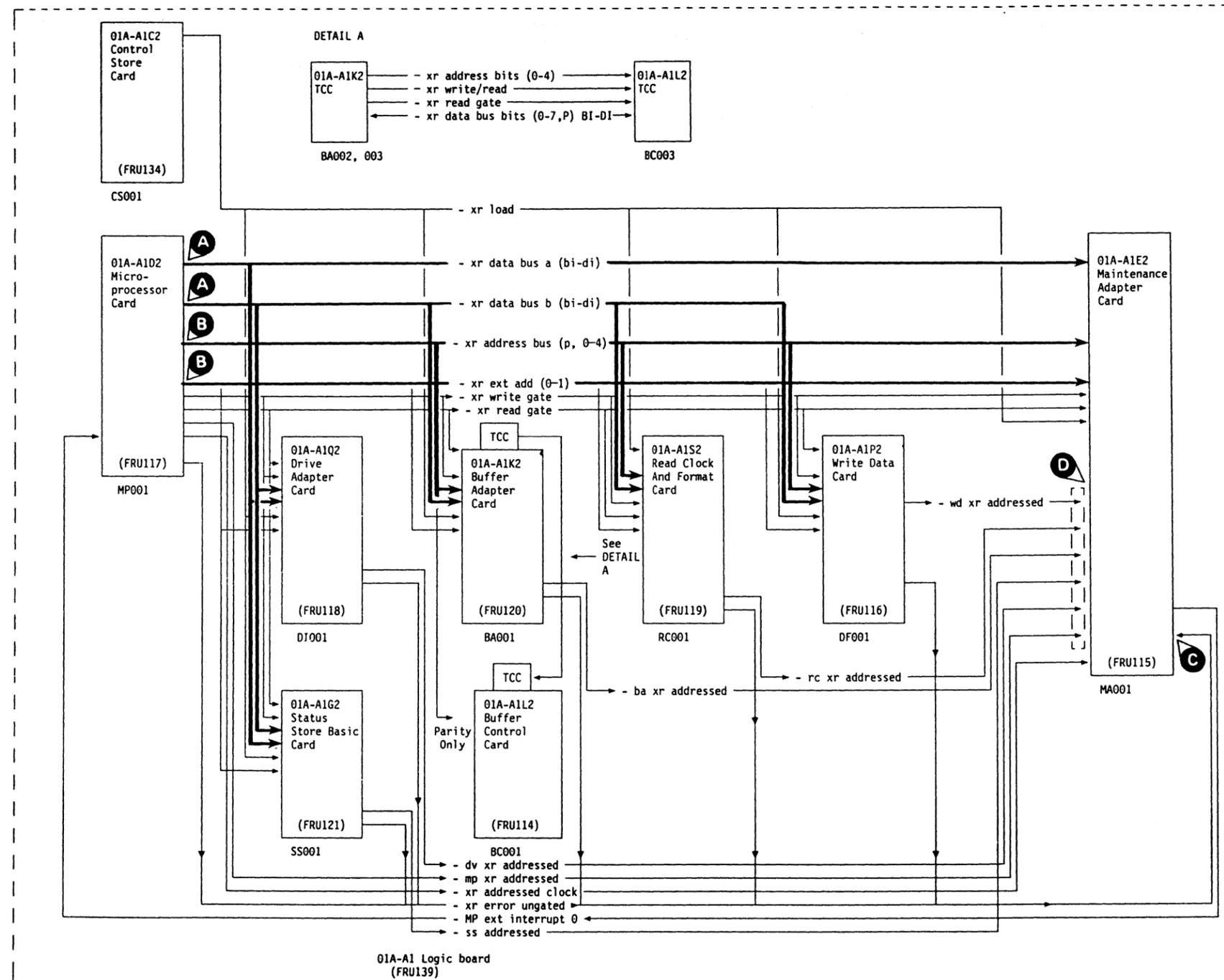
STEP	REF PAGE	DESCRIPTION/COMMENTS
2	PWR 1	"Voltage Tolerance Tables." For voltage pin positions, see the "Voltage Distribution Lists" in the Field Wire Net List in the Logic Diagrams.
6	DIAG 1	How to run diagnostics
5,7,8	SENSE 1	Sense byte 9
7	CARR-CU 1-1	Control unit serial and EC switches
10	MD 1	How to use the MD with the 3480
6	DIAG 1	How to use EEFO

CHART 1

ERROR CODE	DIAGNOSTIC
F1nn	EE90, E010, EE85 Status store
F2nn	EE30, E010, EE85 Buffer
F3nn	EE10, E010, EE85 Maintenance adapter
F4nn	EE40, E010, EE85 Drive adapter
F5nn	EE50, E010, EE85 Read data flow
F6nn	EE85, E010, Invalid Address
F7nn	EE10, E010, EE85 Microprocessor
F9nn	EE50, E010, EE85 Write data flow

Error Diagram

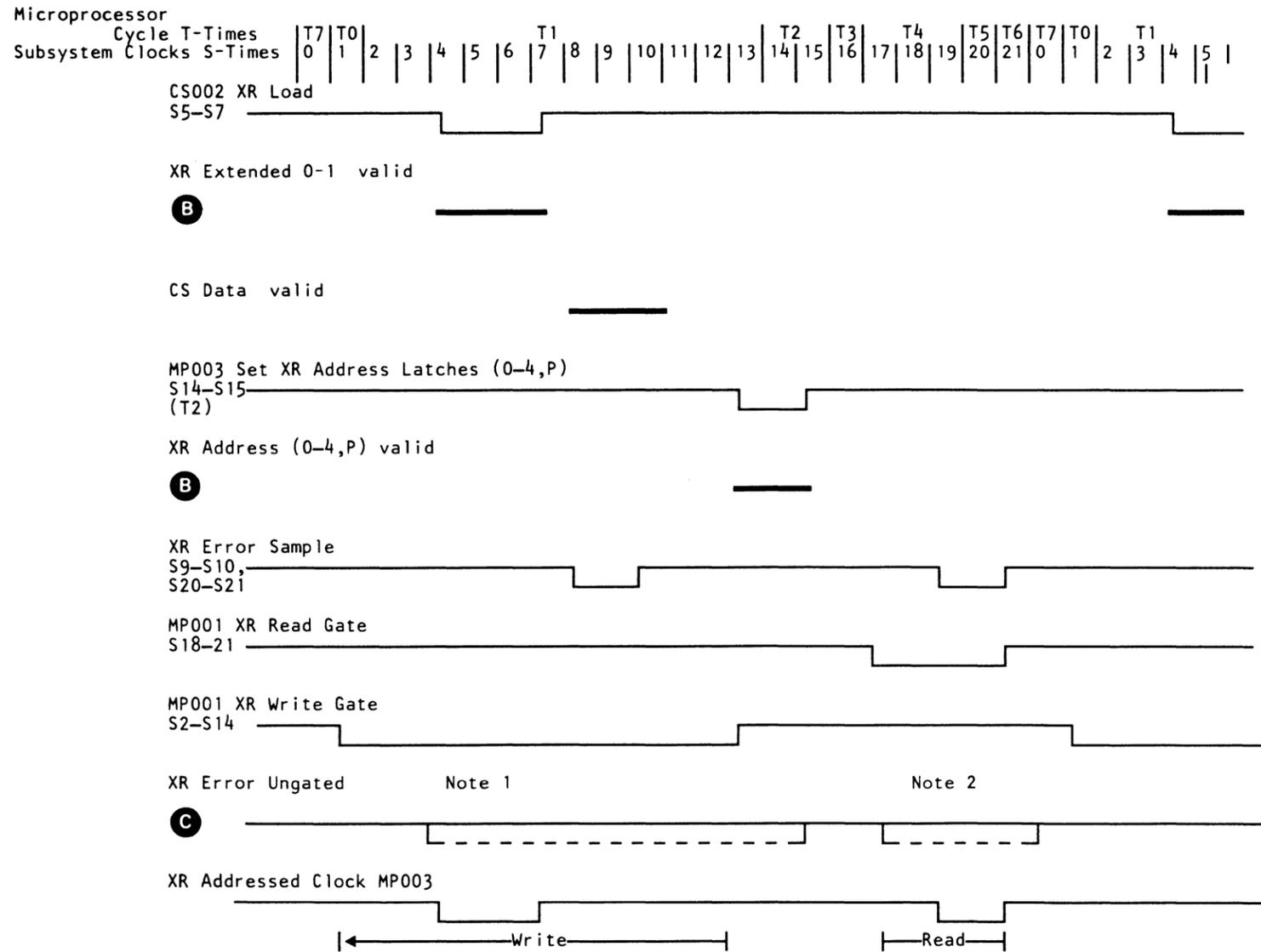
XR Data and Address



Point-to-point wiring on a board is shown on the CU and/or DRV net wire lists.



XR Register Address/Data Transfer Timing



Note 1: The line goes down only if an error and a write is included in the instruction.
 Note 2: The line goes down only if an error and a read is included in the instruction.

Error Description

An error was detected during the IML.

Error Condition Theory

When a power on reset (POR) occurs, the microprocessor is forced to address 0000 in the read only memory (ROM) where execution of the IML bootstrap code begins.

The IML process is divided into four phases:

1. Go/Nogo checks of the hardware.
2. Load of second bootstrap
3. Execution of POR diagnostics
4. Load functional microcode

If any errors are detected during any phase of the IML, the control unit error LED is turned on. When available, data relative to the error is entered in a table residing in the control unit control storage. The table is named "COMTAB" and is used by the maintenance package to assist in problem determination and maintenance actions.

A bit is posted in COMTAB word 0 to indicate the failing area of the control unit. Addition error information, if available, is entered in three words reserved for each functional area (words 2 through 38 or COMTAB). The information consists of an error code and identity of the diagnostic that failed. (See COMTAB description.)

COMTAB DESCRIPTION

- Word 0 Compcode (failing area indicators)
- Word 1 Parameters
- Word 2-4 MP area fail data
- Word 5-7 External register (XR) area fail data
- Word 8-10 Buffer area fail data
- Word 11-13 Read/write area fail data
- Word 14-16 Status store area fail data
- Word 17-19 Channel A area fail data
- Word 20-22 Channel B area fail data
- Word 23-25 Channel C area fail data
- Word 26-28 Channel D area fail data
- Word 29-31 Hardware checkers fail data
- Word 32-34 Reserved
- Word 35-38 IML fail data

COMPCODE DESCRIPTION

- Word 0 (failing area indicators)
- Bit 0 Install code wait
- Bit 1-3 Return codes (internal mapping)
- Bit 4 MP area fail indicator
- Bit 5 XR area fail indicator
- Bit 6 Buffer area fail indicator
- Bit 7 Read/write area fail indicator
- Bit 8 Status store area fail indicator
- Bit 9 Hardware checker fail indicator
- Bit 10 Reserved
- Bit 11 Channel A area fail indicator
- Bit 12 Channel B area fail indicator
- Bit 13 Channel C area fail indicator
- Bit 14 Channel D area fail indicator
- Bit 15 IML area fail indicator

Common Troubleshooting Guide

1. Display the IML failure log (COMTAB) using the control unit tables function of the 'Subsystem Display/Alter Facility'. (See SDISK 1.)
2. This will provide a display of the contents of COMTAB. Using the COMTAB description (on this page), determine the failing area.
3. If the failure is in the IML area, go to the IML section of this EAD.
4. If the failure is in the POR area, go to the POR section of this EAD.
5. If no failure is indicated in COMTAB, the control unit has been powered off and on since the reported failure. No failure was detected by the POR diagnostics during the current or most recent IML sequence. Therefore, the reported failure must be considered intermittent. Information is no longer available to provide troubleshooting aid. Advise the customer to leave the control unit in the failure state on the next occurrence of the reported failure.

POR Failure

The power-on diagnostics have detected a problem. Display the contents of COMTAB. The failing area 'parameters' will contain a failure error code and the diagnostic which produced that failure. The first word of the failing area contains the error code generated by the diagnostic listed in the second word.

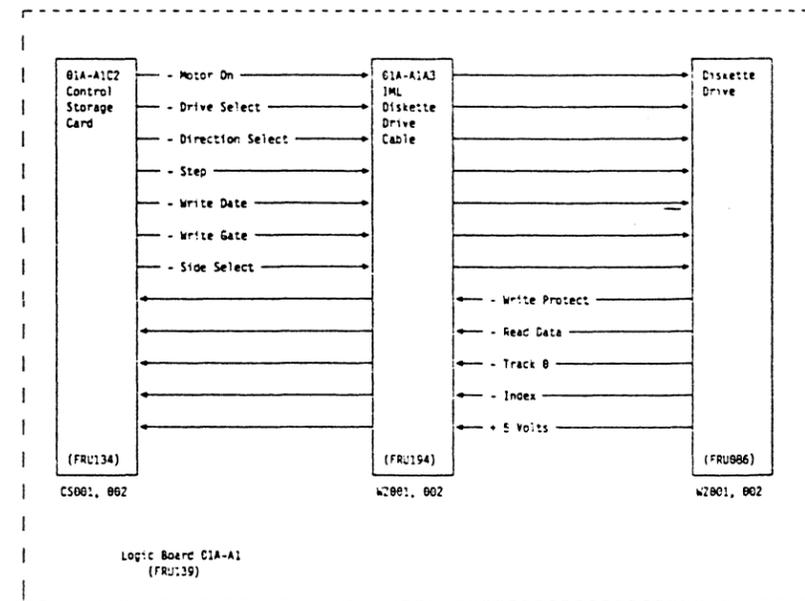
The POR diagnostics are abbreviated forms of diagnostics available on the support diskette. Proceed to the DIAG section of the maintenance package and run listed diagnostic for isolation and correction.

IML Area Failure

A failure has been detected while attempting an IML. Use an oscilloscope to scope the IML device control and data lines to isolate the problem.

IML control and data lines may be activated by setting the control unit Online/Offline switch to Offline and then pressing the IML switch.

Error Diagram



Fault Symptom Code 1000 (FSC1000)**Error Description**

FSC1000 is an error code generated by the Maintenance Device (MD) under the following circumstances:

1. START REPAIR was selected.
2. No drive check code was provided when solicited by the MD.
3. No Sense Data was provided when solicited by the MD.
4. Questions about HOST/INTERFACE symptoms were answered NO.
5. Questions about Cartridge Loader problems were answered NO.
6. The maintenance package has been completed to this point without detecting an error.
7. The MD has found an entry in the COMTAB, indicating that a POR/IML failure was recorded the last time that an IML was performed.

Error Condition Theory

The 3480 Initial Microcode Load (IML) process is normally considered to be one function. It is, in reality, divided into several different steps briefly described as follows:

- IML button is depressed or Power on Reset (POR).
 - Note:** POR and IML are synonymous, because the IML switch actually toggles a logic line in the Control Unit called 'POR'.
- Execution of 'hard-core' diagnostics. These diagnostics check storage to ensure that data can be read and written successfully, and they also check some of the microprocessor functions.
- Execution of Power on Reset (POR) diagnostics, which consist of a modified set of microdiagnostics (buffer tests, and loop write to read tests, etc).
- IML or microcode loading (actual IML is considered to be reading from the diskette and storing the data in control storage).
- Initialize or setup routines are performed (the control unit sends additional microcode to channel adapters and initializes internal control unit cables).
- Control Unit comes 'online' to the other control unit of the subsystem pair and is available for host access through 'enabled' and attached interface cables.

When power is applied, internal diagnostic tests check voltages, perform a general reset of the control and finally, a basic function test of the control unit is performed. Errors detected during this sequence are reported as 'red light' error conditions and the process terminates at this point.

If the basic function test is completed successfully, the control unit loads what is called the '2nd bootstrap' which will load the following microdiagnostics from the diskette:

- EE10
- EE30
- EE52
- EE53
- EE64
- EE85
- EE90

These microdiagnostics are referred to as the 'POR' tests and if failures are detected during execution, the control unit will save the error data in a microcode table known as 'COMTAB' and stop with the Check 1 error light on. 'COMTAB' data will be used by the MD to troubleshoot the failure and will contain the error code and the failing microdiagnostic routine if applicable.

Note: If the MD is attached during execution of the POR diagnostics and failure is detected, the error will still be logged in 'COMTAB' but setting the Check 1 error light and stopping the control unit will be bypassed.

Channel adapter diagnostic failures can be detected during POR diagnostics and while recorded for later use, will not prevent the control unit from coming on-line as long as there is one functioning channel adapter.

Following the POR diagnostics, the control unit reads the functional microcode from the diskette, which is kept in the reader at all times. The data from this read operation is sent to control storage and each block of data is checked to ensure that it is correct. If read errors occur, the control unit error light turns on and the IML process is terminated. Since the control unit is offline, no information is sent to the host system.

If the POR microdiagnostics and the subsequent loading of functional microcode completes successfully (no read errors occur), additional microdiagnostic tests are performed to ensure that the microprogram has been loaded without errors and is executing correctly. Once complete, the control unit wait light will come on solid and the error light will remain off. Moving the control unit Online/Offline switch to the online position, causes the diskette reader to run again and load any necessary control unit or drive patches, and to load the automatic cartridge loader microcode if required.

Errors that have been saved by the control unit under these circumstances can be accessed by the Customer Engineer (CE) while attempting to perform subsequent maintenance. This information, stored in 'COMTAB', will only be accessed by the MD Product Diskette under the following conditions:

- Start Repair was selected
- no drive check code was provided
- no sense data was entered
- questions about host/interface symptoms were answered - NO
- questions about Automatic Cartridge Loader problems were also answered - NO
- the tape drive diagnostics have been completed without detecting any problems.

If ALL of the preceding conditions are met, the MD Product Diskette will interrogate 'COMTAB' and report the contents, if any, to the CE.

Troubleshooting Guide

This data may or may not be related to any current problem; as the contents of 'COMTAB' could be left over from a problem that occurred a long time ago.

Care must be exercised when using the data from 'COMTAB', especially if the control unit is performing properly with all other drives.

The MD will provide the Diagnostic ID which detected the error and also provide a diagnostic failure code. By referring to the displayed diagnostic data in Volume 4 of the MI, a description of the error and a suggested FRU List are provided.

0 0 0 0 0 0 0 0 0 0 0

Error Description

Loose or defective cables or open board nets can cause failures that are difficult to analyze. You have been sent to this error analysis diagram by the fault symptom index (FSI) or another error analysis diagram because the analysis indicates that a cable or the board may be at fault. If you enter this EAD from the FSI, do step 1 of the troubleshooting guide then return to the FSI for other additional actions. If you enter this EAD from another EAD, do steps 2, 3, and 4 then return to the EAD that sent you here.

Possible Causes of Failure

1. FRU139 Logic board 01A-A1
2. FRU140 Logic board 01A-A2
3. FRU058 Logic board 02A-A1
4. Cables

Cable groups involved with failing functional units are identified by the "Additional Actions" column in the FSI or by the EAD that sent you here. The cable groups are explained in the cable group chart that immediately follows the FSI. The cable group chart shows the FRU number and from/to locations for each cable in the cable group. See FSI 1 to find "Cable Group Table."

Troubleshooting Guide

1. Visually inspect and reseat the cables and card connectors appropriate to the error code you are working on.
 - a. From the cable group list (following the FSI) identify the from and to connections of the cables affecting the error code you are working on.
 - b. Examine the logic board pins and the receptacle, jack, or plug for bent or pushed-back pins or connectors.
 - c. Examine the flat-cable ends for bent or broken connectors.
 - d. Examine the logic board's top card connectors (TCC) and bottom card connectors (BCC) for broken or bent pins. Also check the TCC's wiring for short or open circuits.

- e. Check the TCCs for broken or bent pins. Check the TCC'w wiring for short or open circuits.

TCCs are used to jumper the same pins on the logic cards that are next to each other. For example, the TCC pin for Y02 only connects the Y02 pins between logic cards 01A-A1C2, D2, and E2. Y02 should have no connections to any other pins. See logic page AA000 for the correct part number and plugging position for the TCCs. Ensure that the cut out part of the TCC is in the upper right hand corner when the TCC is installed.
- f. If the contacts of a discrete wire cable are pushed back inside the plug, the cable can often be repaired by straightening the locking tab on the connector and reinserting the connector into the plug.
- g. Reseat connectors, plugs, and cables and retest the machine to verify that the original failure does not recur.

2. Test for open cables and nets.

- a. If you are testing a logical net, remove the logic cards that are part of the net.
- b. If you are testing a discrete wire cable net, remove the plugs from the receptacles on the net.
- c. Use the CE meter to test the net from the source pin to the receiving pin. If no continuity is found, work back from the receiving pin toward the source pin until continuity is found. Use the logics and the field net wire lists to determine if the open is in a board net or in a cable. If the net involves two boards with a cable connecting them, the cable can be disconnected to permit checking the board nets and the cable individually.
- d. Replace defective boards or flat cables.
- e. You can test discrete wire cables in the same way. Check from a source pin to a receiving pin. Flexing a cable where it terminates at a plug can reveal poor wire crimps that can be repaired in the field.

3. Test for grounded nets.

- a. If you are testing a logical net, remove the cards that are part of the net.
- b. If you are testing a discrete wire net, remove the plugs from the receptacles on the net.
- c. Use the service meter to test for grounds. Connect one lead to the frame or to a logic ground.

CAUTION

Check the logic pages or the field net wire lists for logic board ground pins. Not all D08 pins are ground.

Probe the net with the other lead. If the net has two boards connected by a cable, remove the cable at each board and check the pieces individually. If a ground is found, replace the affected board. If no ground is found on either board, connect one end of the cable and retest the net on the board with the cable connected. If a ground is found, replace the cable. If no ground is found, disconnect the connected end of the cable and connect the other end to the other board. Test again for grounds. Use logic pages to identify the I/O connections for lines going from or to boards.

- d. Check for bent pins in the net or for bare wire ends from wire wrapping. Check for other foreign material that might ground the net. Flex the cables at tie points to find out if the ground is caused by chafing at the tie points. If a ground is caused by chafing, you may be able to reinsulate the cable and repair the problem.
- e. If the ground is in the board or cable, replace the defective part.
- f. For discrete wire cables, connect the ground lead of the meter to the frame. Remove the plugs from the receptacles and use the other meter lead to probe the failing pin. Flex the cable at tie points or other possible chafing points to find out if the ground is caused by chafing. If a ground is caused by chafing, you may be able to reinsulate the cable and repair the problem.

Note: The remote buffer buses and control lines are terminated to ground through resistors on the 01A-A2H4 card (logic PR001). Remove the 01A-A2H4 card in addition to normal logic cards when you test these lines.

4. Test for Short Circuited Cable Nets

- a. If you suspect two or more nets, test to ensure that they are not shorted together.
- b. If you are testing a logical net, remove the cards in the net.
- c. If you are testing a discrete wire net, remove the plugs from the receptacles.
- d. Check for continuity between the suspected nets. Check for both nets shorted to ground. Look for:
 - Bent board pins
 - Bent or broken cable connector contacts
 - Bare wire ends
 - Other foreign material that could short the nets together.
- e. If nets are shorted on a board or in a cable, replace the defective part.

If the nets are on two boards connected by a cable, remove the cable at each board and check the individual board nets. If a short is found, replace the affected board. If no short is found on either board, connect one end of the cable and retest the nets on the board that has the cable connected. If no short is found, remove the cable from the board where it is connected and connect the other end to the other board. Test the nets on the board that has the cable connected. Use logics to identify the I/O pin connections for lines going to or from boards.

Error Description

This is a general Error Analysis Diagram (EAD) that describes the hardware (D2nn error code) and microcode detected errors in the status store and channel adapter functional areas of the subsystem.

You are here because:

- The FSI section called out this EAD.
- OR
- A diagnostic failure ID called out this EAD.

The prerequisites for entering this EAD are:

1. The initial FRUs called out by the maintenance device (MD), using the product diskette, have been replaced.
2. All FRUs called out by the FSI section have been replaced.
3. All additional actions that were called out by the FSI section have been completed.

Error Condition Theory

Note: See Figure 1 for the overview diagram of this description. For additional information, see "Control Unit Functional Area Diagram" on OPER 1.

If you are here for host/channel problems (such as IFCC, CC3 or Channel Data Checks), diagnostic EE62 should be run. (See DIAG 1).

The two functional areas described in this EAD are:

- Channel Adapters
- Status Store.

These two functional areas are closely integrated and are used in the **balancing** process of the control unit's workload. The channel adapter is the interconnection to the host system for commands, status, and data information. The channel adapter communicates with the status store and data buffer functional areas.

The status store functional area:

- Stores the drive status information
- Polls the installed channel adapters
- Maintains the drive path assignments
- Shares information with the remote status store

- Communicates with the microprocessor.

The microcode monitors the operation of the communication paths and sets the different error codes in sense bytes 10-15 to describe the failures detected.

The channel error register (CER) is set when the hardware checkers detect incorrect parity on the buses in the status store or channel adapter functional areas. A D2nn error code is also set in sense bytes 16-17 when any CER bits are set (nn equals the CER bits). The following is an explanation of the CER bits:

Bit 0 Status store basic card error

The status store basic registers on the status store channel adapter interconnection are parity checked. CER register bit 0 is set and a check 2 condition is sent to the microprocessor when a parity error is detected.

Bit 1 Status store communication card error

Bit 2 Remote control unit transfer error

Bit 3 Status store external register bus parity error

The status store card parity checks the external register data bus. CER register bit 3 is set and a check 2 condition is sent to the microprocessor when a parity error is detected.

Bits 4-7 Channel adapters A-D register parity errors

The channel adapters signal the status store card when errors are detected by raising the 'adapter fail' line. Some of the errors that cause this line to rise are:

- Data parity error on a buffer to channel adapter data transfer
- An irrecoverable error within the channel adapter card
- A parity check on the 'address assign' bus (this is the bus from the control unit address switches).

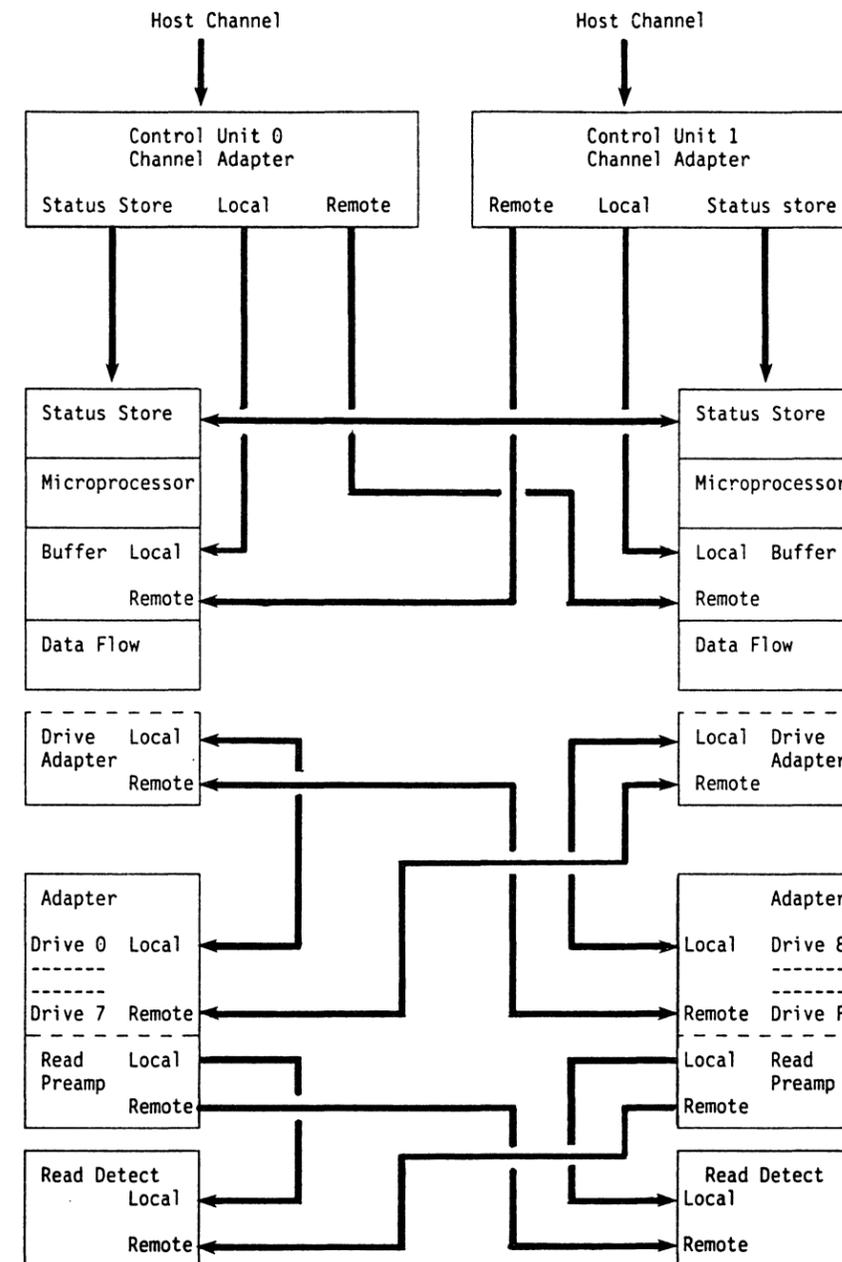


Figure 1. Status Store/Channel Adapter Overview

Troubleshooting Guide - General

Reviewing the Product Trained Service Representative Problem Analysis

Before continuing, review the work done by the product trained service representative.

1. If the problem analysis continues to indicate a FRU already replaced by the product trained service representative, replace that FRU a second time.
2. Run the product package functional verify program. If the problem remains, continue with this EAD.

External System Problems

Check with the customer or account service representative and determine if any changes (such as PTFs, APARS, or other changes) have been made to the operating system.

Determine if any hardware changes have been made. For example:

- Has any microcode change been made?
- Has any MES or EC been installed on the subsystem?
- Check with the higher level of support for information on any problems with the changes that have been made.
- Has any drive been added or removed from the subsystem?
- Has any system cabling change been made?
- Has any addressing or UCW plugging been changed?

If any change has been made, remove or try to bypass the change to see if the problem still exists.

Sense Data and Diagnostic Failure ID Analysis

Determine which interface and interface lines are failing.

1. Review the available sense data (from the console messages or EREP). See "Error Path Isolation" on START 1 for more information.

The drive address (in the console message or EREP) and the contents of sense byte 2 must be used to determine which data path was in use at the time of the failure.

For example:

Channel adapter A, on control unit 0 (CU0), is attached to channel one of a processor.

Channel adapter A, on control unit 1 (CU1), is attached to channel five of a processor. Channel five is the alternate path for channel one. The operating system selects channel five if it finds channel one busy.

The console message reports a failure on drive 187, and sense byte 2 equals:

SENSE BYTE 2	CHANNEL ADAPTER LOCATION	BUFFER LOCATION	DRIVE PATH
00100000	CU0	CU0	Local
00110000	CU1	CU0	Local
00101000	CU0	CU1	Remote
00111000	CU1	CU1	Remote

Figure 1. Sense Byte 2 Path Possibilities

The chart (see Figure 1) shows four different paths for selecting drive 7, depending on which channel adapter/control unit and which data buffer/control unit combinations are used.

2. Review the microcode and hardware detected errors shown in the sense data. These are helpful in determining what type of failure occurred and which interface failed (other than a data path). See "Formats 19 and 20 Sense Bytes 8-15 Description" on SENSE 1, for a description of the microcode detected errors. See "Formats 19 and 20 Sense Bytes 16-23 Description" on SENSE 1, for a description of the hardware errors. See the failure descriptions in the FSI section to find common areas of the failures.

Note: The microcode detected errors in sense bytes 10-11, 12-13, and 14-15 are in a first error, second error, and last error order. It is possible that the second and last errors are the result of the error recovery procedures performed for the first error. See "Formats 19, 20, and 21 Sense Byte 3 Description" on SENSE 1, for a description of the error recovery procedures.

3. Run the "Basic Control Unit Test - Routine E010" (see DIAG 1) if it has not been previously run and review the results. See "How to use the Support Diagnostics" on DIAG 1.

Note: The control unit and its attached drives must be off-line to the host processor before running this test.

Did this diagnostic fail?

YES NO
Continue with the actions in the EAD.

Did the failure direct you back to the same EAD?

YES NO
Go to the place that the diagnostics sends you and do the actions.

Do the EADs have specific actions for the diagnostic failure?

YES NO
Loop the diagnostics and do any other actions specified in the EADs.

Do the actions specified for that failure.

A diagnostic failure ID can verify the original error failure code. It may also display a failing line or net. The diagnostic failure IDs are defined in the individual diagnostic pages in the DIAG section.

4. Go to the troubleshooting guides for the channel adapter interface (status store or data buffer) that is failing.

Troubleshooting Guide - Channel Adapter to Status Store Communication Path

Single Channel Adapter Failing

1. If the failing path indicates that one channel adapter, or the channel adapter in a single channel adapter control unit failed, remove the top card cable connectors from the failing channel adapter. This prevents any failures in the shoe cards from affecting diagnostic EE64 when it is run.

2. Run "Channel Adapter Function Test - Routine EE64" (see DIAG 1).

Note: The control unit and its attached drives must be off-line to the host processor before running this test.

3. If any errors occur, go to step 4 of the "Multiple Channel Adapters Failing" on EAD 5007.
4. If no errors occur, reinstall the top card cable connectors and run "Channel Interface Wrap Test - Routine EE62" (see DIAG 1).

Note: The control unit and its attached drives must be off-line to the host processor before running this test.

If failures occur:

- Check the seating of the shoe cards and the crossover cables at the I/O connectors.
- Check the flat cable (going from the channel adapter W2 and Z2 connectors to the bus and tag shoe cards) for bent or broken connectors.
- Check the shoe card pins for bent or broken connectors.
- Ensure that the right interposer, part 5997533, is installed on the top card connector of the channel adapter card, and that no pins are bent or broken.

5. Check the dc power cable going to the shoe cards for broken wires or bent pins.
6. Replace the bus or tag shoe card, depending on the diagnostic failure ID. Replace the cable group, going from the shoe card to the channel adapter, using the diagnostic failure ID as a guide on which set to replace.

Exchange the following FRUs (even if they were exchanged by the product package, exchange them a second time). Test the subsystem after each FRU is exchanged. Possible FRUs:

FRU136	Bus shoe card channel adapter A
FRU137	Tag shoe card channel adapter A
FRU233	Bus shoe card channel adapter B
FRU234	Tag shoe card channel adapter B
FRU235	Bus shoe card channel adapter C
FRU236	Tag shoe card channel adapter C
FRU237	Bus shoe card channel adapter D
FRU238	Tag shoe card channel adapter D
	Cable groups 20 and 21 (see "Cable Group Table" on FSI 1)
FRU121	Status store card
FRU134	Control store card
FRU117	Microprocessor card

7. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
8. If no repair action has been performed and no additional actions are listed in the EAD or in the FSI, Call your next level of support and then go to SPROC 1 "End of Call Actions."

Multiple Channel Adapters Failing

If the failing path indicates that multiple channel adapters are failing, start with the step below.

- Remove channel adapter cards:
 - 01A-A2D2 - channel B
 - 01A-A2E2 - channel C
 - 01A-A2F2 - channel D
- Run "Channel Adapter Function Test - Routine EE64" (see DIAG 1).

Note: The control unit and its attached drives must be off-line to the host processor before running this test.

If channel adapter A fails, go to step 4.

If channel adapter A does not fail, reinstall the other channel adapter cards, one at a time, and rerun test EE64 after each card is replaced. If one of the channel adapters fail, replace that card and rerun EE64 to verify correct operation. If channel adapter failures continue, go to step 4.

Note: If the problem is intermittent or the diagnostics have stopped failing, do the next three steps and record these actions in the CE log for future reference.

- Run "Channel Interface Wrap Test - Routine EE62" (see DIAG 1) to verify the complete data path from the shoe connectors to the microprocessor.

Note: The control unit and its attached drives must be off-line to the host processor (See DIAG 1 for "Channel Interface Test,") before running this test.

- Inspect the 01A-A2C2-F2 card sockets, and 01A-A1Z2-Z3 and 01A-A2Y2-Y cable sockets for bent or broken pins. Inspect the 01A-A1 and 01A-A2 board cable connectors and card-bottom card connectors for bent or broken connectors.

- Check the voltages on the 01A-A1 and 01A-A2 boards. See the voltage distribution lists in the logic manuals, or the comments section of the logic pages for the location of the voltage pins. See PWR 1 for the voltage tolerance table. If any voltages are incorrect, go to "Map 400 - Control Unit DC Power" on PWR 1. If any voltages are missing, check the power distribution cables.

Possible FRUs:

- FRU048 DC cable 01A-A1Y2
- FRU091 DC cable 01A-A1Y5
- FRU097 DC cable 01A-A1Z5
- FRU103 DC cable 01A-A1Z2

- FRU156 DC cable 01A-A2Y5
- FRU167 DC cable 01A-A2Y2
- FRU179 DC cable 01A-A2Z5
- FRU217 DC cable 01A-A2Z2
- FRU160 Cables CU-PS-02-J4, J9, J11
- FRU164 DC distribution cable
- FRU145 DC power supply

- Remove 01A-A2C2-F2 and 01A-A1G2 cards.
- Using the CE meter and logic pages CA001, SS001, WC001, and WC002 for reference, check the interface adapter bus and interface adapter response bus for open, shorted, or grounded lines (see "Cable and Board Interconnection Failures" on EAD 1).

Possible FRUs

- FRU250 Cable 01A-A1Z2 to 01A-A2Y2
- FRU251 Cable 01A-A1Z3 to 01A-A2Y3
- FRU139 Board 01A-A1
- FRU140 Board 01A-A2

- If the channel adapter to status store problem still exists, exchange the following FRUs (even if they were exchanged by the product package, exchange them a second time). Test the subsystem after each FRU is exchanged. Exchange the following FRUs:

- FRU121 01A-A1G2 Status store basic card
- FRU134 01A-A1C2 Control store card
- FRU117 01A-A1D2 Microprocessor card

If any line needs scoping, see "Oscilloscope Information" on EAD 5008.

- If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

- If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

Troubleshooting Guide - Channel Adapter to Buffer Failures

Error codes described in this EAD are the data parity errors that are detected by the channel adapter.

Note: Problems in the buffer area are described by other EADs.

When the two control unit feature is installed, a channel adapter has a data path to the data buffer in its control unit or to the data buffer in the remote control unit. The data path is controlled by the microcode. This permits the use of unused resources to increase throughput.

Channel Adapter to Local Buffer Failures

- If the error code and sense data indicates a problem between the channel adapters and the local data buffer, remove channel adapter cards 01A-A2D2-F2.

- Run "Channel Adapter Function Test - Routine EE64" (see DIAG 1) on channel A.

Note: The control unit and its attached drives must be off-line to the host processor before running this test.

- If channel adapter A fails, go to step 5.
- If channel adapter A does not fail, reinstall the other channel adapter cards, one at a time, and rerun EE64 after each one is replaced. If one of the channel adapters fail, replace that card and rerun routine EE64 to verify correct operation. If channel adapter failures continue, go to step 5.

- Check the 01A-A1 and 01A-A2 boards for bent or broken pins. Check the cable from 01A-A2V5 to 01A-A1V3 for bent or broken connectors. If any channel adapter cards, buffer cards, or cables between the boards have been removed or replaced, check that the card bottom connectors and cable connectors have not been damaged. Ensure that all cards and cables are seated correctly.

Possible FRUs:

- FRU256 Cable 01A-A1V3 to 01A-A2V5
- FRU139 Board 01A-A1
- FRU140 Board 01A-A2

- Check the voltages on the 01A-A1 and 01A-A2 boards. See the voltage distribution lists in the logic manual, or in the comments section of the logic pages for the location of the voltage pins on the boards. See PWR 1 for the voltage tolerance table. If any voltages are incorrect, go to "Map 400 - Control Unit DC Power" on PWR 1. If any voltages are missing, check the power distribution cables.

Possible FRUs:

- FRU048 DC cable 01A-A1Y2
- FRU091 DC cable 01A-A1Y5
- FRU097 DC cable 01A-A1Z5
- FRU103 DC cable 01A-A1Z2
- FRU156 DC cable 01A-A2Y5
- FRU167 DC cable 01A-A2Y2
- FRU179 DC cable 01A-A2Z5
- FRU217 DC cable 01A-A2Z2
- FRU160 Cables CU-PS-02-J4, J9, J11
- FRU164 DC distribution cable
- FRU145 DC power supply

- Remove 01A-A2C2-F2 and 01A-A1G2 cards.

- Using the CE meter and logic pages CA001, BA001, WC005, and WC006 for reference, check the local port bus for open, shorted, or grounded lines (see "Cable and Board Interconnection Failures" on EAD 1).

Possible FRUs:

- FRU256 Cable 01A-A1V3 to 01A-A2V5
- FRU139 Board 01A-A1
- FRU140 Board 01A-A2

If any lines needs scoping, see "Oscilloscope Information" on EAD 5008.

If you have completed all activities for this EAD, return to the FSI section to see if any additional actions are specified. If any are, follow the FSI's direction. If the FSI does not provide any more directions, do the following:

- After each repair action, or if the call has to be deferred, return to the Support Procedures section for the end of call action.

- If no repair action has been found, call your next level of support

After an assisted repair action, return to the Support Procedures section for the end of call actions.

Note: Channel adapter to remote buffer failure is on the next page.



Channel Adapter to Remote Buffer Failures

There is no diagnostic to exercise the remote data bus. If failures occur, perform the following steps by using an OLT read/write test as an exerciser. OLT error sense data will have to be analyzed to determine the CE action.

1. If the error code and error sense data indicates a problem between the channel adapters and the remote data buffer, remove channel adapters cards 01A-A2D2-F2.

Note: The control unit, its attached drives, and the paths to channels B, C, and D must be off-line to the host processor before running this test.

2. Run the OLT diagnostic on channel adapter A.
3. If channel adapter A does not fail, reinstall the other channel adapter cards, one at a time, and rerun the OLT diagnostic. If a channel adapter card fails, replace that card. If the failure still exists, continue with the next step.
4. In order to continue the maintenance action, the CE will need both control units of the subsystem. The alternative is to isolate the two control units and run as two, one by sixteen, control units and defer the maintenance to a later time.

If the customer chooses to isolate the control units, go to "Subsystem Control Unit Isolation" on EAD 5008, otherwise continue the repair action with the complete subsystem.

5. Replace the 01A-A1K2 card in the remote control unit (replace it again, even if it has been replaced before). Rerun the OLT diagnostic that indicated a failure on the failing channel adapter.
6. If the failure continues, check the 01A-A1 and 01A-A2 boards for bent or broken pins. Check the cable from 01A-A1Y4 to CU-P2-A3 and 01A-A2Z2 to CU-P2-A5 for bent or broken connectors. If any channel adapter cards, buffer cards, or the cables between the boards have been removed or replaced, check that the card-bottom connectors or cable connectors are not damaged. Ensure that all cards and cables connectors are seated correctly.
7. Check the voltages on the 01A-A1 and 01A-A2 boards. See the voltage distribution lists in the logic manual, or in the comments section of the logic pages for the location of the voltage pins on the boards. See PWR 1 for the voltage tolerance table. If any voltages are incorrect, go to "Map 400 - Control Unit DC power" on PWR 1. If any voltages are missing, check the power distribution cables.

Possible FRUs:

- FRU048 DC cable 01A-A1Y2
- FRU091 DC cable 01A-A1Y5
- FRU097 DC cable 01A-A1Z5
- FRU103 DC cable 01A-A1Z2
- FRU156 DC cable 01A-A2Y5
- FRU167 DC cable 01A-A2Y2
- FRU179 DC cable 01A-A2Z5
- FRU217 DC cable 01A-A2Z2
- FRU160 Cables CU-PS-02-J4, J9, J11
- FRU164 DC distribution cable
- FRU145 DC power supply

8. Remove 01A-A2C2-F2, 01A-A1K2, and 01A-A2H4 (A2H4 is a terminator card for the remote bus).
9. Using a CE meter and logic pages CA001, BA001, WK005, and WK006 for reference, check the remote port bus net for open, shorted, or grounded lines (see "Cable and Board Interconnection Failures" on EAD 1).

Possible FRUs:

- FRU048 DC cable 01A-A1Y2
- FRU091 DC cable 01A-A1Y5
- FRU097 DC cable 01A-A1Z5
- FRU103 DC cable 01A-A1Z2
- FRU156 DC cable 01A-A2Y5
- FRU167 DC cable 01A-A2Y2
- FRU179 DC cable 01A-A2Z5
- FRU217 DC cable 01A-A2Z2
- FRU160 Cables CU-PS-02-J4, J9, J11
- FRU164 DC distribution cable
- FRU145 DC power supply

Oscilloscope Information

1. See Figure 1 for the channel adapter and status store clock timing chart. Scope the clock lines using the scope points shown below. Verify that the clock pulse timing relationship is correct and that they are available to the logic cards. If problems are found, suspect bent pins on the card side of the logic board, incorrect board nets, bad cable connectors, or bad cables. See "Cable and Board Interconnection Failure" on EAD 1, for more information, when checking board nets or cables.
2. Scope the suspected bus or control lines.

The channel adapter to status store and channel adapter to local data buffer bus are VTL voltage levels (+5 Vdc and 0 volts). The channel adapter to remote data bus and status store bus are NPL voltage levels (+3 Vdc and 0 volts).

The three functional areas operate in asynchronous mode, so scoping is generally only a search for bad levels or non-pulsing lines. BIDI buses are validated by various tag or other control lines, so a proper sync point must be chosen to view meaningful information.

The channel adapter/status store interface and the channel adapter/data buffer local interface are exercised by diagnostic routine EE64. Use the loop option to create a scoping loop.

Subsystem Control Unit Isolation

If it becomes necessary to isolate the two control units in a subsystem, use the following procedure:

1. For maximum safety in protecting the customers data, it is best that the customer permit all tape jobs to complete, and halt the starting of any new jobs until the isolation has taken place.
2. If this is not possible, then the customer should halt all I/O operations with a Quiesce command. This permits all I/O sequences to complete and then halts the program execution.
3. Remove the cable connectors at the CU-P2 connector in either control unit (see LOC 1 for cable locations). This opens the remote buffer to channel adapter interface, and the status store to status store interconnection.
4. IML both control units separately.
5. The customer may now restart the system. The system has access to both control units and attached drives. Dynamic 'load balancing' is eliminated.

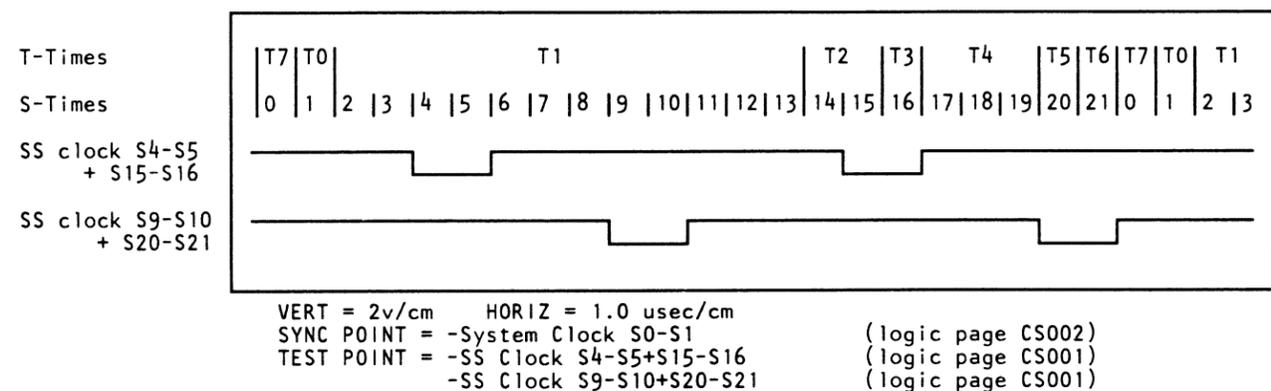


Figure 1. Control Storage To Status Store Card Timing Chart

Drive Interconnections

Tape Unit Without Bill of Material 6460006 and Control Unit Without Bill of Material 6460460

Error Description – General

* This FRU is EC sensitive.
See CARR-DR 4.

This is a general Error Analysis Diagram (EAD) that describes troubleshooting of the Device Data Bus and the Read Bus. Errors relating to these functional areas can show up against the control unit, or one or more drives. Parts of this EAD contain procedures to isolate the failure to a failing drive or control unit.

Troubleshooting in this EAD is for:

- Write and Control Problems – Device Data Bus (DDB)
- Read Problems – Read Bus

Note: Figure 2 lists the lines and functions of the DDB.

Device Data Bus Problems – General

Write and control problems result in hardware (D4nn error code) and microcode detected errors in the device data adapter functional area of the subsystem.

See figure 1 for the overview of this description. Error indicators are set when:

- The microcode detects errors on the device data bus. Error codes are set in the sense data.
- The microcode detects errors on the serial bus. Error codes are set in the sense data.
- The hardware parity checkers detect parity errors on the inputs to the adapter card. FRU bits are set in the device status error (DSE) register, and D4nn is set in sense bytes 16-17 (nn equals the contents of the DSE register). The following is an explanation of the DSE bits:
Bit 0 Incorrect parity from the drive on the device data bus
Bit 1 Data parity error on the write data card to the drive adapter card
Bit 2 Drive adapter internal parity error
Bit 3-7 Not used for error code D4nn
- For any Device Data Bus FSC that references the contents of the DSE register, and DSE bits 0-2 equals zero, follow the troubleshooting guide for error code D4nn and DSE bit 0 equals one (see EAD 5012).

If multiple bits are on in DSE bits 0-2, troubleshoot DSE bits 1 and 2 first, then bit 0.

You are here because:

- The FSI section called out this EAD.

OR

3480 MI EC336395

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- The product package determined that the FRU cannot be isolated to a drive or a control unit, when in concurrent mode.

The prerequisites for entering this EAD are:

1. The initial FRUs called out by the maintenance device (MD), using the product diskette, have been replaced.
2. All prior actions that were called out by the FSI section have been completed.

Additional error descriptions and troubleshooting guides are defined under specific FSC conditions to follow.

Read Bus Problems General

Read problems can show up in many ways. Each specific read FSC will have troubleshooting action for the logic in the FSI or EAD for that error code. This EAD only addresses troubleshooting of the read bus cables and related logic boards. You should not directly use this EAD for troubleshooting any read problems unless you have followed the prior actions in the FSI or EAD first for that read FSC, and were referenced to this EAD.

See "CU Subsystem Cable Diagrams" on EAD 5015-5017 for the read bus connections.

Troubleshooting Guide - General

1. Before continuing, review the work done by the product trained CE to determine that all actions and FRU exchanges called out by the Product Maintenance package have been performed correctly.
2. If problem analysis in this EAD continues to indicate a FRU already replaced by the product trained CE, replace that FRU a second time.

External System Problems

Check with the customer or account CE and determine if any changes (such as PTFs, APARS, or other changes) have been made to the operating system.

Determine if any changes or updates have been made to other parts of the subsystem. For example:

- Has any microcode change been made?
- Has an MES or EC been installed on the subsystem? Check with the higher levels of support for information on any possible problems with the change that has been made.
- Has any drive been added or removed from the subsystem?
- Has any system cabling change been made?
- Has any addressing or UCW plugging been changed?

If any changes have been made, try to bypass the change to see if the problem still exists. If the problem goes away, correct and reinstall the change.

Tape Unit Problems

Repair any drive failures that may be present. If there are any audio or visual problems, a drive display, or drive error codes in sense byte 18-23, (except a CHK 82, or an FSC 0082), return to the product maintenance package or the FSI section and repair these conditions first. If data bus or read bus problems continue, return to this EAD.

Note: Drive check 82 is a data bus problem and is detected at the drive. For a CHK 82 or an FSC of 0082, troubleshoot following the Troubleshooting Guide for DSE Register, Bit 0 equals 1, Procedures 1 or 2.

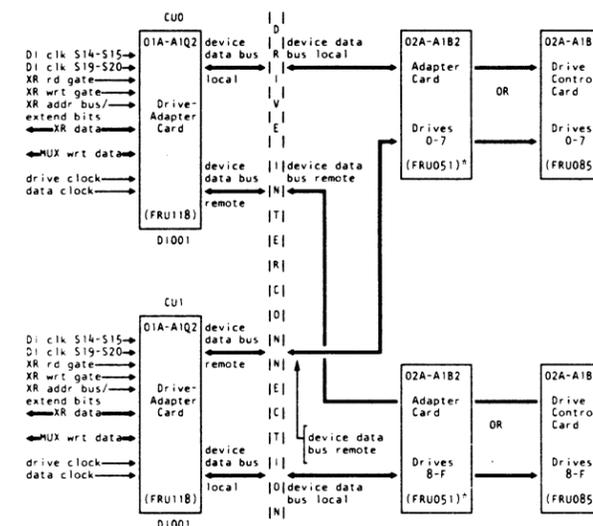


Figure 1. Device Interconnection Overview - DDB

Troubleshooting references

- "Device Data Bus Problem Information" on pages EAD 5011-5014
- DDB and Read Bus Connections on CU Subsystem Cable Diagrams, pages EAD 5015-5017
- "Read Bus Problem Information" on pages EAD 5019 and 5020

NUMBER OF LINES	FUNCTION
112	56 DDB local 56 DDB remote
9	DDB data bus bits: P, 0-7 (BI-DI) - write data - read status
8	DDB parallel tags Select out Address out Address in Command Status in Gap in/out (BI-DI) Clock A out Clock B in/out (BI-DI)
3	DDB serial control tags Serial clock out Serial data out Repositioning in
36	DDB read data bus: 18 differential analog signal tracks

Figure 2. DDB Line Definitions

Drive Interconnections (Continued)

Tape Unit Without Bill of Material 6460006 and
Control Unit Without Bill of Material 6460460

Device Data Bus Problem Information (Continued)

Information for - FSC 8803-8805, 9602, or CF80
(Serial Bus Errors)

Error Condition Theory

See Figure 1.

The microcode detects the errors on the serial bus and sets error codes 8803, 8804, 8805, 9602, or CF80 in the sense data.

An MD option is available that inhibits 'starts' on the serial bus. This could be used to defer maintenance to a later time. See "Trace Match Control" on SDISK 1. However, customer operation will be degraded until the MD Trace Match Control option restores normal serial bus operation.

Oscilloscope Information

The data bus uses an NPL voltage level (+3 Vdc and 0 V). It is a bidirectional bus with several inbound and outbound tags that are similar in purpose to a normal channel interface. Scoping is usually a search for incorrect voltage levels or non-pulsing lines. The sync points must be carefully chosen in order to display meaningful information on the oscilloscope. The clock signals that are checked on the boards are shown in figures 2 and 3.

Troubleshooting Guide

There are specific diagnostics (EE44 and EEA2) that test the internal card logic for the serial interconnection control. However, since logic cards have already been replaced by the product maintenance package, the remainder of the support maintenance package troubleshoots the interconnections between the control unit and the drives. This is the common DDB that has multiple functions (write and control, both parallel and serial).

If the errors codes indicate serial bus errors are occurring, use the Troubleshooting Guide for DSE Register, Bit 0 for determining the problem.

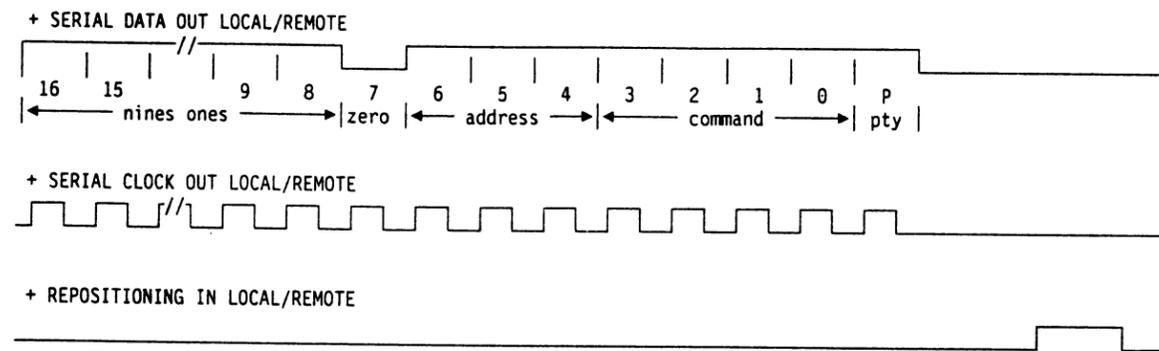
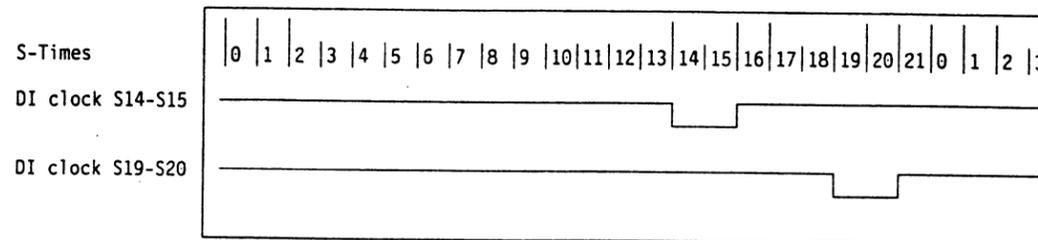


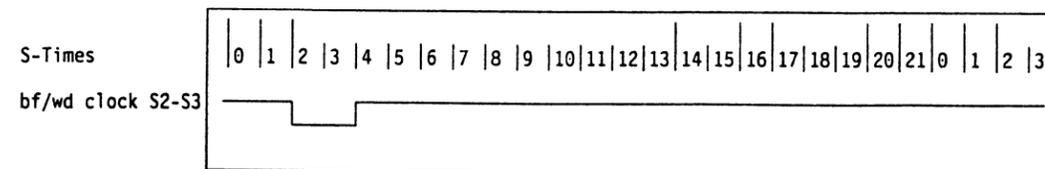
Figure 1. Serial Sequence Device Interconnections (Logic page DI001)



VERT = 2v/cm HORIZ = 1.0 usec/cm
SYNC POINT = -System Clock S0-S1 (logic page CS002)
TEST POINT = -bf/wd clock S2-S3 (logic page DF001)

Note:
One S Clock time equals 23.17 nanoseconds.
For example, S14 becomes active
324.38 nanoseconds after S0 becomes active.

Figure 2. Control Storage Clocks to Device Adapter Card



VERT = 2v/cm HORIZ = 1.0 usec/cm
SYNC POINT = -System Clock S0-S1 (logic page CS002)
TEST POINT = -bf/wd clock S2-S3 (logic page DF001)

Note:
One S Clock time equals 23.17 nanoseconds.
For example, S2 becomes active
46.34 nanoseconds after S0 becomes active.

Figure 3. Control Storage Clocks to Write Data Card

Drive Interconnections (Continued)

Tape Unit Without Bill of Material 6460006 and Control Unit Without Bill of Material 6460460

Device Data Bus Problem Information (Continued)

* This FRU is EC sensitive.
See CARR-DR 4.

Information For - FSC D4nn, DSE Register, Bit 0 Equals 1, or Other Non-D4nn DDB FSC that reference this EAD

Note: If DSE bits 1 or 2 also equals 1, follow "Troubleshooting Guide - FSC D4nn and DSE Bits 1 or 2 Equal 1" (see EAD 5014) first, before troubleshooting DSE bit 0 equals 1.

Error Condition Theory - D4nn and DSE Bit 0 equals 1

Note: See Figure 1 for the overview diagram of this description.

The drive adapter card in the control unit communicates with the tape units via a bi-directional (BI-DI) bus; the device data bus (DDB). This bus is connected in series to all tape units and is terminated in the last tape unit on the string. See "Write Data Flow" on OPER 1 for more information.

Note: All control information, to and from the drives and write data to the drives, is transferred on this bus.

The drive adapter card does not correct any data errors on the data that passes through it. If it receives incorrect parity (even) from the control unit or drive, the drive adapter card signals a check 2 error to the microprocessor. An error is set in the DSE register and the data is sent to the receiving function. See the DSE bit definitions above.

The drive adapter monitors the DDB for odd parity, except for the three following exceptions:

- **Alerts:** Drives signalling that they need service. Any combination of drives can signal that service is needed, therefore, parity is not checked. Alerts can be signalled only when 'select out' is not on.
- **Address-out/Address-in Time:** The control unit puts the drive address on the bus, and the drive returns a complemented 'P' bit which causes an even parity condition.

Note: For a period of time, the BI-DI bus will be set with all ones. The BI-DI bus will be correct when sampled by the microcode during 'address in' time, but the address is not checked for parity.

- **Address-in Response to Command Out:** Bits on the BI-DI bus indicate that drive errors exist, and can be in any combination. See error code 8Fnn.

Error Condition Theory - Non-D4nn Microcode Detected, Device Data Bus FSC(S)

The microcode also detects errors in device data bus functional area. Each FSC is defined in the FSI section of the MI. For Device Data Bus FSCs that reference this EAD (except FSCs 8803-8805, 9602, or CF80) follow the Troubleshooting Guide for DSE Register Bit 0 Equals 1. For FSCs 8803-8805, 9602, or CF80 follow the Troubleshooting Guide for those FSCs (see EAD 5011).

Troubleshooting Guide - DSE Register, Bit 0 equals 1, and other Non-D4nn Device Data Bus FSC(S)

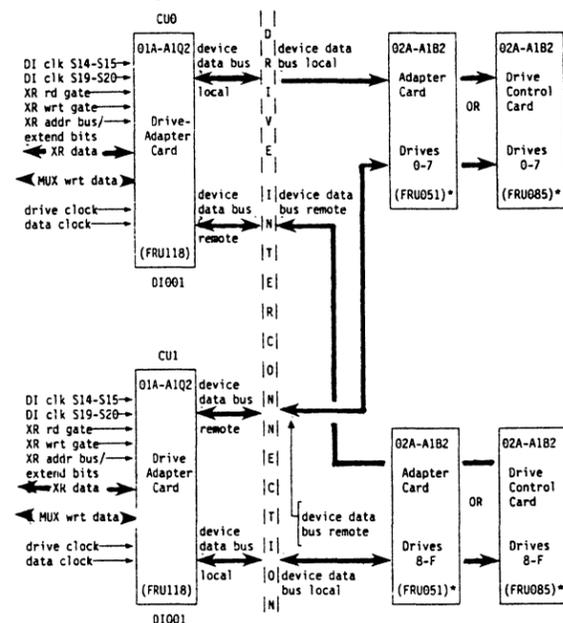


Figure 1. Device Interconnection Overview - DDB

Troubleshooting Guide - FSC D4nn, DSE Register, Bit 0 Equals 1, or Other Non-D4nn DDB FSC That Reference This EAD

1. Review the error codes in sense bytes 10-15 and 16-17. See the SENSE section for sense byte meanings and check for common areas of failures. Use the data in sense byte 2, and "Error Path Isolation" on START 1, to determine the failing data path.

Note: The output message of the product maintenance package may have defined the failing control unit and data path.

2. Run "Control Unit to Drive Test - Section EE40" (see DIAG 1). When requested to select a drive, select 'All' ('FF'), if they have not been previously run and review the results. If diagnostic EE40 runs with no errors, run "Tape Movement Tests - Routine EEA0" (see DIAG 1). When requested to select a drive, select the drive address that has the most errors.
3. Run "Control Unit to Drive Bus Out and Drive Wrap Test - Routine EE42" and "Control Unit to Drive Bus and Tag Test - Routine EE43," using the 'ALL' option with the Support Diagnostics (see DIAG 1), if they have not been previously run, and review the results.
4. Use the diagnostic failure IDs and the sense data in the following steps:
 - a. If only one drive on one data path is failing, or only one drive on both data paths is failing, go to "Procedure 1."
 - b. If multiple drives on one string fail on one or both device data buses, go to "Procedure 2."
 - c. If multiple drives on both strings fail on one or both device data buses, go to "Procedure 2."
 - d. If sense data is missing or not complete, go to "Procedure 3."

Procedure 1

Ensure that the drive is off-line to all attached host systems. Before replacing any FRUs, or disconnecting any cables, ensure that the control unit and drive string are off-line to the host processor.

One drive failing on one or both data buses.

1. Check the voltages on the drive logic board. See "Tape Unit DC Voltages 50 Hz and 60 Hz" on PWR 1. If the voltages are not correct, go to "Map 210 - Drive DC Power" on PWR 1.

Possible FRUs:

- FRU079* DC power distribution cable drive internal
 - FRU080 DC power distribution cable
2. It is possible for terminator problems to show up on only one drive, if there is a defective or damaged terminator card. If the terminator is defective, the terminator on the other data bus can be exchanged to see if the problem moves. Exchange the following FRUs (even if they were exchanged by the product package, exchange them a second time). Test the subsystem after each FRU is exchanged.

Device Data Bus Problems (Continued) EAD 5012

Possible FRUs:

- FRU199 Terminator card - local
- FRU248 Terminator card - remote

If the failing drive is the last drive in the string, it is possible to have an open in the cabling in the tape unit (shorts would affect more than one drive).

Use "CU Subsystem Cable Diagrams" on EAD 5015-5017 for reference. Use "Cable and Board Interconnections Failures" of EAD 1 for cable checking instructions.

1. Remove the 01A-A1Q2 card from the failing control unit.

Note: The device data bus is terminated at the 01A-A1Q2 card as well as at the terminator card.

2. Using a CE meter (R X 1 scale) and logic page DI001 as reference, attach one lead to a ground pin, and check the termination of the failing device data bus (on the pin side of the board). The normal termination resistance is 90 ohms. Infinite resistance indicates open lines.

If the resistance of a line is not correct, use logic pages ZW101-203 as a reference, and move the CE meter lead (along the failing line) closer to the terminator. When the correct termination resistance is measured, the break in the line has been located. Replace the affected board or defective cable.

Possible FRUs:

- Cable groups 80-86
- FRU058 02A-A1 Drive logic board

If the previous actions have not corrected the problem, exchange the following FRUs that were exchanged by the product package (even if they were replaced before), exchange them a second time. Run "Control Unit to Drive Bus Out and Driver Wrap Test - Routine EE42" (see DIAG 1) after each FRU replacement.

- FRU051* 02A-A1B2 - Adapter card
- FRU052* 02A-A1D2 - Processor card
- FRU050* 02A-A1C2 - Digital Servo card
- FRU085* 02A-A1B2 - Drive control card

3. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, continue in this EAD with the next action.
4. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

Tape Unit without Bill of Material 6460006 and Control Unit without Bill of Material 6460460

Device Data Bus Problem Information (Continued)

Procedure 2

Multiple drives failing on one or both strings on one or both device data buses (DDB).

Note: Before performing this procedure, the control unit, drive string, and failing data path must be offline to the host processor(s).

Run "Control Unit to Drive Bus Out and Driver Wrap Test - Routine EE42" and "Control Unit to Drive Bus and Tag Test - Routine EE43" (see DIAG 1) after each step.

1. Visually check the data bus connections and terminators. See "CU Subsystem Cable Diagrams" on EAD 5015-5017, for reference. If any logic card or cable has been removed or replaced, check the board pins or cable contacts for being bent or broken. Replace any damaged parts.

- FRU058 02A-A1 - Drive logic board
- FRU139 01A-A1 - Control unit logic board
- Cable groups 80-86

2. Isolate the failure to a failing tape unit.

- a. Remove the back sub-cover from the tape unit you wish to be the last one in the string.
- b. The error path isolation that was determined in "Troubleshooting - DSE register, Bit 0" step 1, identifies which cables are related to the failing tape unit string. See LOC 1 for the location of the TU-P2 connector. See "CU Subsystem Cable Diagram" on EAD 5015-5017.

If multiple drives fail on a common string, select a control unit as a test unit and the cables to test as follows:

Failing CU and Drive String	Test Unit	Open Cable Connector
CU0-Drives 0-7	CU0	DDB at TU-P2-A2
CU0-Drives 8-F	CU0	DDB at TU-P2-B2
CU1-Drives 0-7	CU1	DDB at TU-P2-B2
CU1-Drives 8-F	CU1	DDB at TU-P2-A2

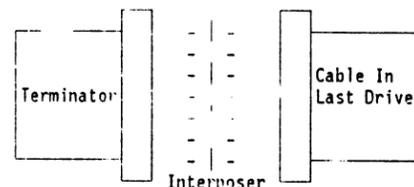
Opening a TU-P2-A/B2 connector disconnects all tape units past the connector, further away from the control unit.

The remaining drives, closer to the control unit, will be running without any termination with the TU-P2-A/B2 connector open. See the note below.

Run "Control Unit to Drive Bus Out and Drive Test - Routine EE42" and "Control Unit to Drive Bus and Tag Test - Routine EE43" (see DIAG 1) to test the selected control unit. Repeat this step, moving up or down the device data bus, depending on the run or failure of the diagnostics.

Note: It is not necessary to move the terminator when EE4x diagnostics are used. It is necessary to move the terminator to the last tape unit being tested, when any Read or Write diagnostics are used.

To move a terminator, after removing the cable from the drive TU-P2 connector, install interposer, part 5997533, then install the terminator. See the diagram below.



If a failing tape unit is located, isolate the failure to the failing drive by removing the device data bus cable from the drive (see LOC 1) as follows:

- For Local (A) at - TU-D0/1-A1A2 or TU-D0/1-P1WA1
- For Remote (B) at - TU-D0/1-A1A4 or TU-D0/1-P1WB1

If all drive are failing in one or both strings, the problem is in the Device Data Bus Local/Remote between the control unit's 01A-A1Q2 card connection (control unit logic D1001), and the first tape unit drive board connector at TU-D0-A1A2 (local) or TU-D0-A1A4 (remote) tape unit logic WW010.

If multiple drives on both strings are failing on both device data buses, get the subsystem from the customer and troubleshoot each local device data bus independently. Test or troubleshoot the remote data buses if necessary. If a failing drive is found, use "Procedure 1" for troubleshooting.

3. If no drive fails, or if the problem is intermittent, check the device data bus as follows:

Use "CU Subsystem Cable Diagrams" on EAD 5015-5017 for reference. Use "Cable and Board Interconnection Failures" on EAD 1 for cable checking instructions.

- a. Remove the 01A-A1Q2 card from the failing control unit.

Note: The device data bus is terminated at the 01A-A1Q2 card as well as at the terminator card.

- b. Using a CE meter (R X 1 scale) and logic page D1001 as reference, attach one lead to a ground pin, and check the termination of the failing device data bus (on the pin side of the board). The normal termination resistance is 90 ohms. Resistance less than 90 ohms can indicate a shorted line. For example, two lines shorted together would read approximately 45 ohms on each line. Resistance that is zero ohms can indicate a ground and infinite resistance indicates open lines.

If the resistance of a line is not correct, use logic pages ZW101-203 as a reference, move the CE meter lead (along the failing line) closer to the terminator. When the correct termination resistance is measured, the short or open in the line has been located. Replace the affected board or defective cable.

- c. It is possible to have a defective or damaged terminator card. If the terminator is defective, the terminator on the other data bus can be used in the above test.

Exchange the following FRUs (even if they were exchanged by the product package, exchange them a second time). Test the subsystem after each FRU is exchanged.

Possible FRUs:

- FRU058 02A-A1 Drive logic board
- FRU139 01A-A1 Control unit logic board
- FRU199 Terminator card local
- FRU248 Terminator card remote
- Cable groups 80-86

4. Check the control unit logic board voltages.

Check the voltages at the pins listed in the lower left hand corner on logic pages D1001. See PWR 1 for the "Voltage Tolerance Tables." The "Field Wire Net List" voltage pins in the logic diagrams may also be used to determine the voltage pins. If the voltages are not correct, see "Map 400 - Control Unit DC Power" on PWR 1.

Possible FRUs:

- FRU048 DC cable 01A-A1Y2
- FRU091 DC cable 01A-A1Y5
- FRU097 DC cable 01A-A1Z5
- FRU103 DC cable 01A-A1Z2
- FRU160 Cables CU-PS-02-P4, P9, P11,
- FRU164 DC distribution cable
- FRU145 DC power supply

5. If the earlier actions have not corrected the problem, exchange the following FRUs (even if they were exchanged by the product maintenance package, exchange them a second time). Test the subsystem after each FRU is exchanged.

- FRU117 01A-A1D2 Microprocessor card
- FRU134 01A-A1C2 Control storage card
- FRU121 01A-A1G2 Status store card
- FRU120 01A-A1K2 Buffer adapter card
- FRU119 01A-A1S2 Read clock and format card
- FRU115 01A-A1E2 Maintenance adapter card
- FRU139 01A-A1 Control unit logic board

6. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

7. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, call your next level of support and then go to SPROC 1 "End of Call Actions."

Procedure 3

The sense data is missing or not complete. For these problems, it may be helpful to request assistance from your next level of support.

Customer programs sometimes exercise the subsystem more than the diagnostics and should be used when possible. Set up procedures with the customer to report the failures. Include in the report such items as; the time, the jobs being run, the drives being used, visual symptoms, and console messages at the time of the failure. Review the daily EREP printouts to see if any other system events occurred at the same time as the failure, such as, channel checks, processor checks, and so on. Review the tape volume reports to see if any particular volumes are in use at the reported times of failure.

If a particular path or drive is suspected, vary the path or paths offline, and see if the problem disappears.

See the "Status Store/Channel Adapter" EAD, for the procedure to eliminate the communications path between the two control units, in a two control unit subsystem, and see if the symptoms change.

If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, call your next level of support and then go to SPROC 1 "End of Call Actions."

0 0 0 0 0 0 0 0 0 0 0

Tape Unit Without Bill of Material 6460006 and Control Unit Without Bill of Material 6460460

Device Data Bus Problem Information (Continued)

Procedure 2

Multiple drives failing on one or both strings on one or both device data buses (DDB).

Note: Before performing this procedure, the control unit, drive string, and failing data path must be off-line to the host processor(s).

Run "Control Unit to Drive Bus Out and Driver Wrap Test - Routine EE42" and "Control Unit to Drive Bus and Tag Test - Routine EE43" (see DIAG 1) after each step.

1. Visually check the data bus connections and terminators. See "CU Subsystem Cable Diagrams" on EAD 5015-5017, for reference. If any logic card or cable has been removed or replaced, check the board pins or cable contacts for being bent or broken. Replace any damaged parts.

- FRU058 02A-A1 - Drive logic board
- FRU139 01A-A1 - Control unit logic board
- Cable groups 80-86

2. Isolate the failure to a failing tape unit.
 - a. Remove the back sub-cover from the tape unit you wish to be the last one in the string.
 - b. The error path isolation that was determined in "Troubleshooting - DSE register, Bit 0" step 1, identifies which cables are related to the failing tape unit string.

See LOC 1 for the location of the TU-P2 connector. See "CU Subsystem Cable Diagram" on EAD 5015-5017.

If multiple drives fail on a common string, select a control unit as a test unit and the cables to test as follows:

Failing CU and Drive String	Test Unit	Open Cable Connector
CU0-Drives 0-7	CU0	DDB at TU-P2-A2
CU0-Drives 8-F	CU0	DDB at TU-P2-B2
CU1-Drives 0-7	CU1	DDB at TU-P2-B2
CU1-Drives 8-F	CU1	DDB at TU-P2-A2

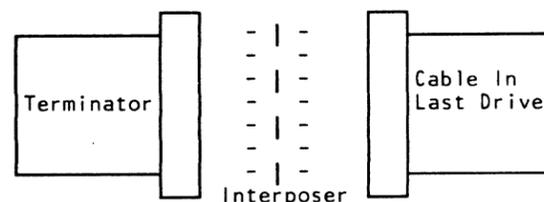
Opening a TU-P2-A/B2 connector disconnects all tape units past the connector, further away from the control unit.

The remaining drives, closer to the control unit, will be running without any termination with the TU-P2-A/B2 connector open. See the note below.

Run "Control Unit to Drive Bus Out and Drive Test - Routine EE42" and "Control Unit to Drive Bus and Tag Test - Routine EE43" (see DIAG 1) to test the selected control unit. Repeat this step, moving up or down the device data bus, depending on the run or failure of the diagnostics.

Note: It is not necessary to move the terminator when EE4x diagnostics are used. It is necessary to move the terminator to the last tape unit being tested, when any Read or Write diagnostics are used.

To move a terminator, after removing the cable from the drive TU-P2 connector, install interposer, part 5997533, then install the terminator. See the diagram below.



If a failing tape unit is located, isolate the failure to the failing drive by removing the device data bus cable from the drive (see LOC 1) as follows:

- For Local (A) at - TU-DO/1-A1A2 or TU-DO/1-P1WA1
- For Remote (B) at - TU-DO/1-A1A4 or TU-DO/1-P1WB1

If all drive are failing in one or both strings, the problem is in the Device Data Bus Local/Remote between the control unit's 01A-A1Q2 card connection (control unit logic D1001) and the first tape unit drive board connector at TU-DO-A1A2 (local) or TU-DO-A1A4 (remote) tape unit logic WWO10.

If multiple drives on both strings are failing on both device data buses, get the subsystem from the customer and troubleshoot each local device data bus independently. Test or troubleshoot the remote data buses if necessary. If a failing drive is found, use "Procedure 1" for troubleshooting.

3. If no drive fails, or if the problem is intermittent, check the device data bus as follows:

Use "CU Subsystem Cable Diagrams" on EAD 5015-5017 for reference. Use "Cable and Board Interconnection Failures" on EAD 1 for cable checking instructions.

- a. Remove the 01A-A1Q2 card from the failing control unit.

Note: The device data bus is terminated at the 01A-A1Q2 card as well as at the terminator card.

- b. Using a CE meter (R X 1 scale) and logic page D1001 as reference, attach one lead to a ground pin, and check the termination of the failing device data bus (on the pin side of the board). The normal termination resistance is 90 ohms. Resistance less than 90 ohms can indicate a shorted line. For example, two lines shorted together would read approximately 45 ohms on each line. Resistance that is zero ohms can indicate a ground and infinite resistance indicates open lines.

If the resistance of a line is not correct, use logic pages ZW101-203 as a reference, move the CE meter lead (along the failing line) closer to the terminator. When the correct termination resistance is measured, the short or open in the line has been located. Replace the affected board or defective cable.

- c. It is possible to have a defective or damaged terminator card. If the terminator is defective, the terminator on the other data bus can be used in the above test.

Exchange the following FRUs (even if they were exchanged by the product package, exchange them a second time). Test the subsystem after each FRU is exchanged.

Possible FRUs:

- FRU058 02A-A1 Drive logic board
- FRU139 01A-A1 Control unit logic board
- FRU199 Terminator card local
- FRU248 Terminator card remote
- Cable groups 80-86

4. Check the control unit logic board voltages.

Check the voltages at the pins listed in the lower left hand corner on logic pages D1001. See PWR 1 for the "Voltage Tolerance Tables." The "Field Wire Net List" voltage pins in the logic diagrams may also be used to determine the voltage pins. If the voltages are not correct, see "Map 400 - Control Unit DC Power" on PWR 1.

Possible FRUs:

- FRU048 DC cable 01A-A1Y2
- FRU091 DC cable 01A-A1Y5
- FRU097 DC cable 01A-A1Z5
- FRU103 DC cable 01A-A1Z2
- FRU160 Cables CU-PS-02-P4, P9, P11,
- FRU164 DC distribution cable
- FRU145 DC power supply

5. If the earlier actions have not corrected the problem, exchange the following FRUs (even if they were exchanged by the product maintenance package, exchange them a

second time). Test the subsystem after each FRU is exchanged.

- FRU117 01A-A1D2 Microprocessor card
- FRU134 01A-A1C2 Control storage card
- FRU121 01A-A1G2 Status store card
- FRU120 01A-A1G2 Buffer adapter card
- FRU119 01A-A1S2 Buffer adapter card
- FRU115 01A-A1E2 Maintenance adapter card
- FRU139 01A-A1 Control unit logic board

6. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

7. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

Procedure 3

The sense data is missing or not complete. For these problems, it may be helpful to request assistance from your next level of support.

Customer programs sometimes exercise the subsystem more than the diagnostics and should be used when possible. Set up procedures with the customer to report the failures. Include in the report such items as; the time, the jobs being run, the drives being used, visual symptoms, and console messages at the time of the failure. Review the daily EREP printouts to see if any other system events occurred at the same time as the failure, such as, channel checks, processor checks, and so on. Review the tape volume reports to see if any particular volumes are in use at the reported times of failure.

If a particular path or drive is suspected, vary the path or paths off-line, and see if the problem disappears.

See the "Status Store/Channel Adapter" EAD, for the procedure to eliminate the communications path between the two control units, in a two control unit subsystem, and see if the symptoms change.

If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

Tape Unit Without Bill of Material 6460006 and Control Unit Without Bill of Material 6460460

Device Data Bus Problem Information (Continued)

Information For - FSC D4nn and DSE Bit 1 or 2 equals 1 (Control Unit Device Adapter Write Data Flow Error)

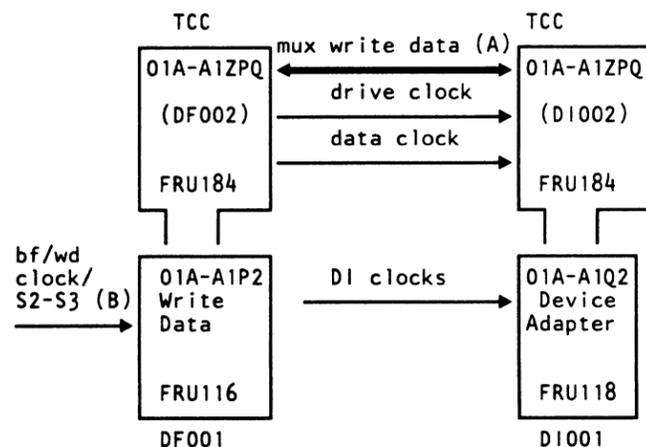
Error Condition Theory - FSC D4nn and DSE Bit 1 Equals 1

The control unit communicates with the drive via the device adapter card, when writing a record. The buffered data is sent to the write data card and:

- Formatted for writing
- Check characters added

It is then gated to the device adapter card.

The device adapter card communicates with the write data card over a multiplex write data bus ('MUX data bus'). Parity of the write data is checked as it enters the device adapter card. If even parity is detected on the '+mux write data' bus, the DSE register, bit 1, and a check 2 condition are set to indicate the error condition. See the diagram below.



Note: : All the connections between A1P2 and A1Q2 are on a top card connector.

Error Condition Theory - FSC D4nn and DSE Bit 2 Equals 1

The data is parity checked internally on the device adapter card. Parity errors can be caused by bad input data from either the write data card or from the device data bus. The device adapter card can also cause parity errors.

Troubleshooting Guide - FSC D4nn and DSE Blts 1 or 2 Equals 1

1. Check that the top card connector at 01A-A1ZPQ is in the correct location and is seated correctly. See logic page AA000 for the location and part number. The cut out on the top card connector is always on the upper right side.

Possible FRUs:

- FRU184 Top card connector 01A-A1ZPQ
- FRU139 01A-A1 Control unit logic board

2. Check the voltages at the pins listed in the lower left hand corner on logic pages DI001 and DF001. See PWR 1 for the "Voltage Tolerance Tables." The "Field Wire Net List" in the logic diagrams may also be used to determine the voltage pins. Check the clocks shown in figures 2 and 3 on EAD 5011.

Possible FRUs:

- FRU048 DC cable 01A-A1Y2
- FRU091 DC cable 01A-A1Y5
- FRU097 DC cable 01A-A1Z5
- FRU103 DC cable 01A-A1Z2
- FRU160 Cables CU-PS-02-P4, P9, P11
- FRU164 DC distribution cable
- FRU145 DC power supply

3. If the previous actions have not corrected the problem, replace the following FRUs (even if they were exchanged by the product package, exchange them a second time).

- FRU134 Control storage card 01A-A1C2
- FRU118 Drive adapter card 01A-A1Q2
- FRU116 Write data card 01A-A1P2

4. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, continue in this EAD with the next action.

5. If no repair action has been performed and no additional actions are listed in this EAD or in the FSI, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."



Drive Interconnections (Continued)

Tape Unit Without Bill of Material 6460006
and Control Unit Without Bill of Material 6460460

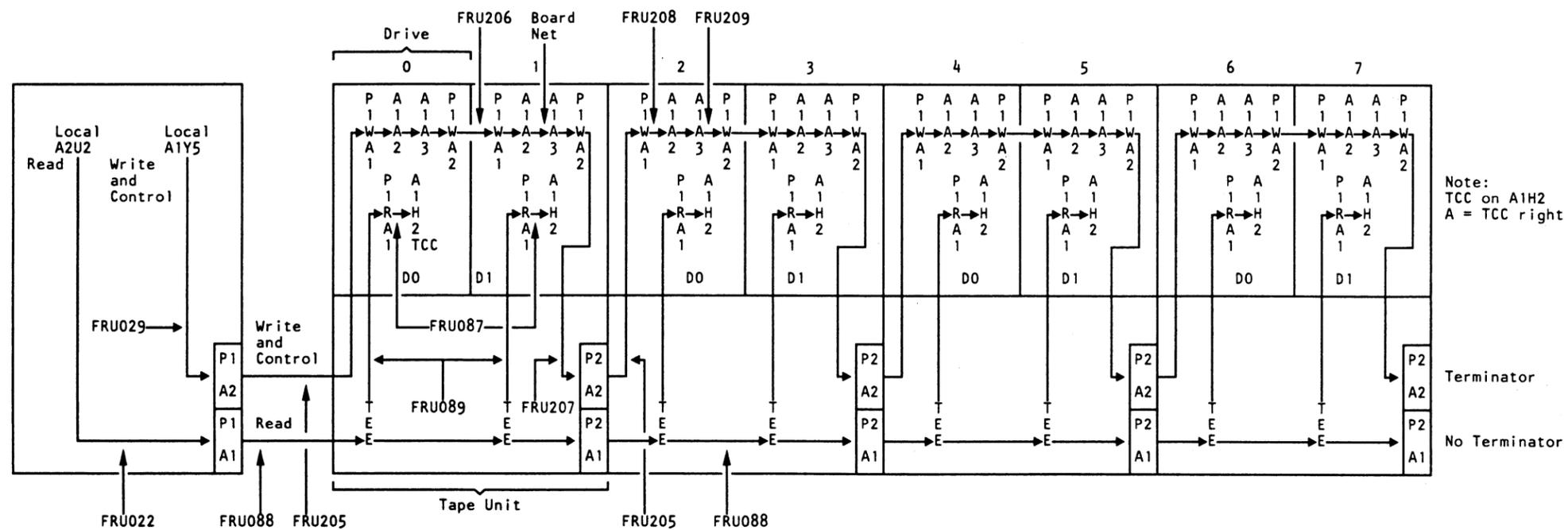
Control Unit Subsystem Cable Diagrams

Single Control Unit Subsystem Cable Diagram

Drive isolation requires you to disconnect cables and move terminator cards. The drawings on this error analysis diagram and the two following show drive to control unit interconnection cable paths.

Warning: Moving cables or terminators may disrupt customer operation.

.....
.....
.....



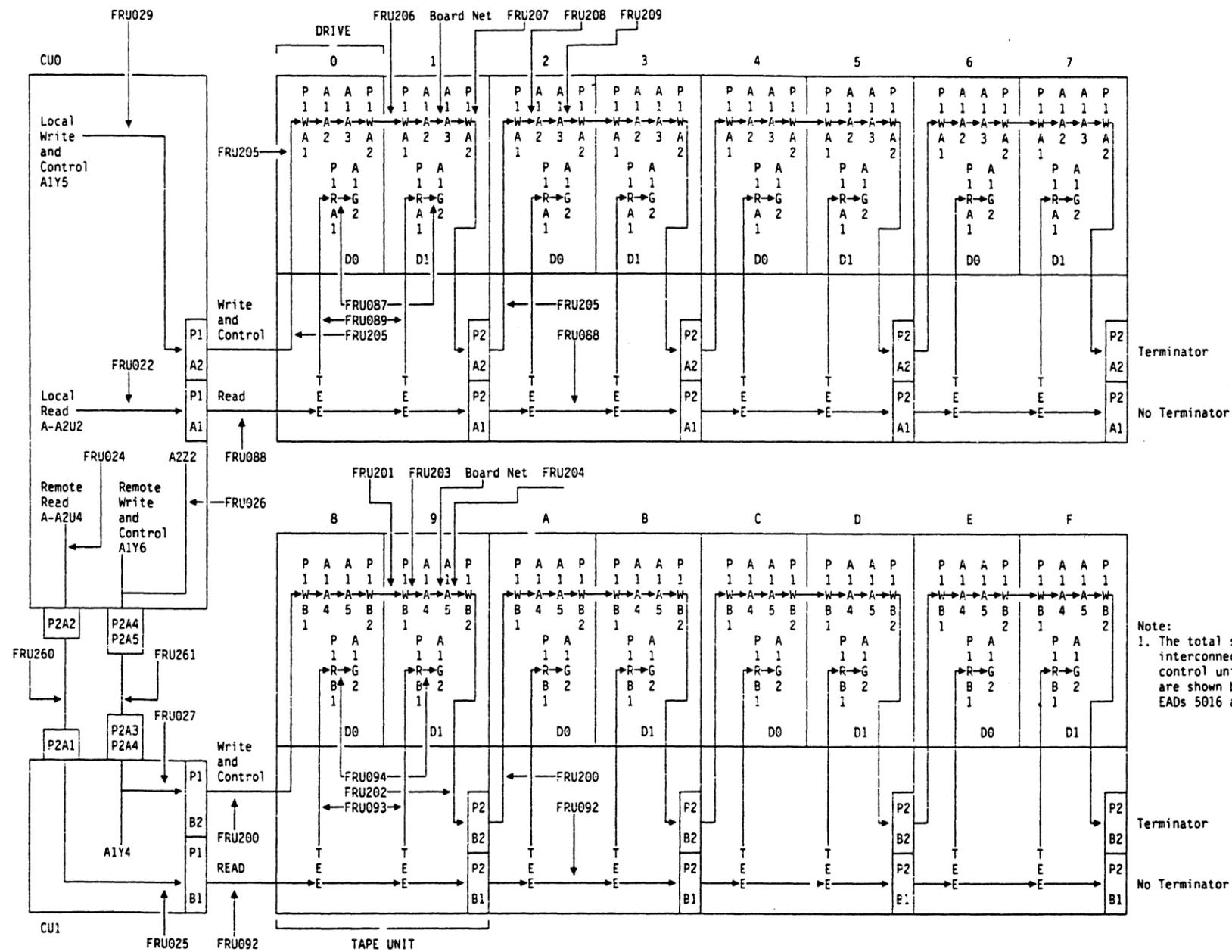
Tape Unit Without Bill of Material 6460006 and
Control Unit Without Bill of Material 6460460

Control Unit Subsystem Cable Diagrams
(Continued)

Dual Control Unit Subsystem Cable Diagram

Cables from Control Unit 0 (CU0)

Local = Drives 0-7
Remote = Drives 8-F



Note:
1. The total subsystem drive interconnections for a two control unit configuration are shown by combining EADs 5016 and 5017.

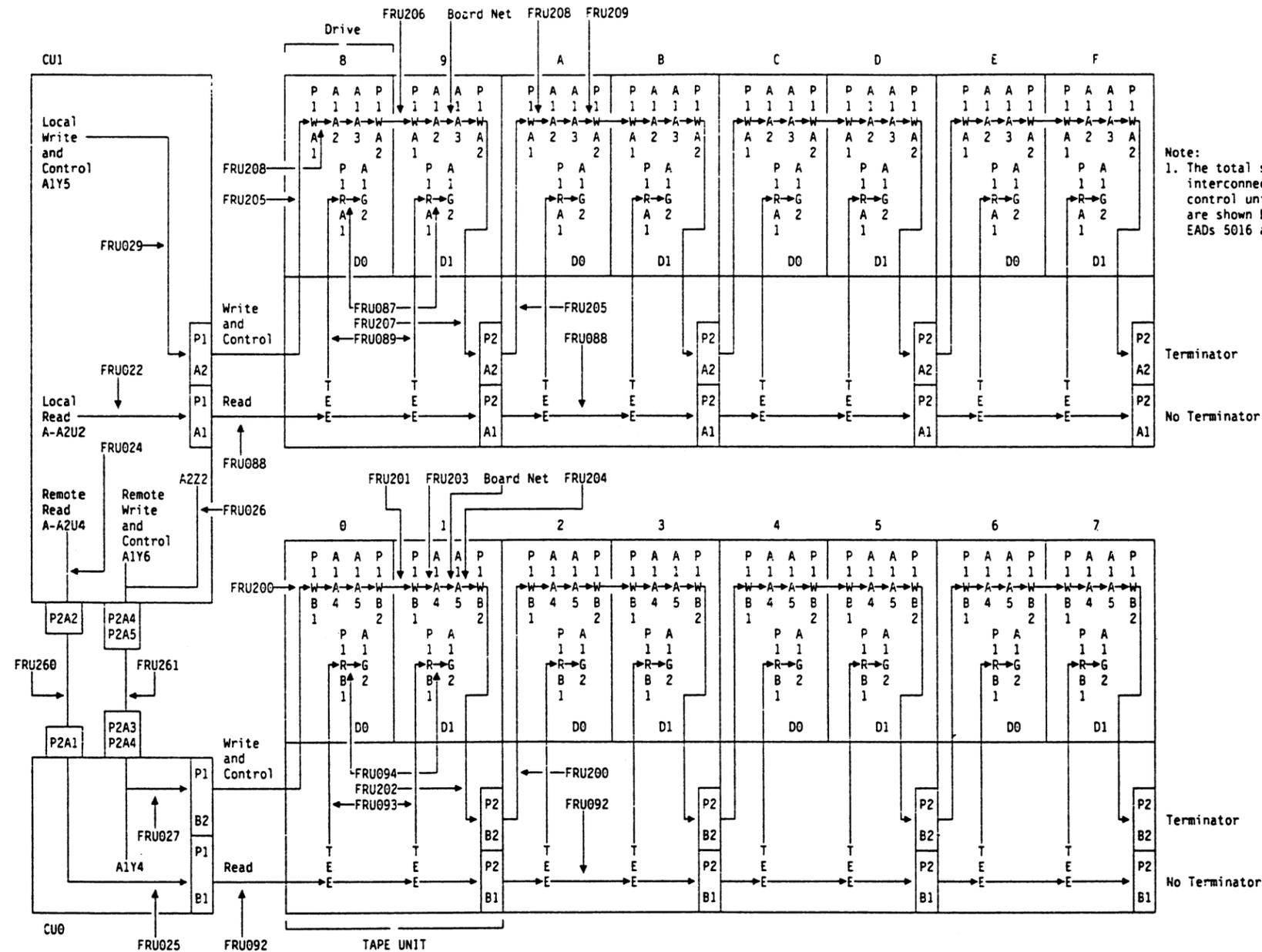
Drive Interconnections (Continued)

Tape Unit Without Bill of Material 6460006 and
Control Unit Without Bill of Material 6460460

Control Unit Subsystem Cable Diagrams
(Continued)

Dual Control Unit Subsystem Cable Diagram
(Continued)

Cables from Control Unit 1 (CU1)
Local = Drives 8-F
Remote = Drives 0-7



Note:
1. The total subsystem drive interconnections for a two control unit configuration are shown by combining EADs 5016 and 5017.

Tape Unit Without Bill of Material 6460006 and Control Unit Without Bill of Material 6460460

Read Bus Problem Information

Error Description - Read Problems

Read problems are normally corrected by following troubleshooting actions in the FSI or another EAD for that specific read FSC. This EAD assumes those actions have already been followed, that address the possible logic causes of a read problem. This EAD strictly troubleshoots the related read cabling and logic boards, and isolates a problem to a Tape Unit, or a Control Unit out of a string of subsystem drives.

The results of read bus shorts can be errors showing up in a random manner, therefore more effort is required to isolate the problem. An open on the read bus can effect one drive, or all drives past the open, further away from the control unit.

The read bus connections are shown on EADs 5015-5017. The impedance across the differential read data pins (m to p), for each track, is 100 ohms, nominal, developed by the terminators in the control unit read detect cards 01A-A2R2, S2, and T2 (logic pages RD001, 101, 201). With the control unit read detect cards removed, at least 1 megohm is measured across the differential read data bus pins (m to p). An impedance greater than 3000 ohms between adjacent read data bus track pins and from either side of a differential read data bus pin (m or p) to ground, is considered good.

Troubleshooting Guide - Read Bus Problems

Power must be off for the entire subsystem being tested for shorts or opens. While following this troubleshooting guide, check related logic board pins, and cable connectors for being bent or broken. Replace any damaged parts.

1. Open Tests

- One drive failing:

Check for continuity of the read data bus pins between 02A-A1J2 (drive logic RP000) and TU-D0/D1-RA(Tee) or TU-D0/D1-RB(Tee) (drive logic WW020) for the failing drive. See "Control Unit Subsystem Cable Diagrams" on EADs 5015-5017 for reference.

Correct any cable problem found. If the cabling is not the problem, replace the failing drive logic board, 02A-A1.

Possible FRUs:

- FRU089** Read adapter A cable TU Tee (TU-D0/D1-RA(Tee)) to TU-D0/D1-P1-RA1
- FRU087** Read adapter A cable TU-D0/D1-P1-RA1 to 02A-D0/D1-A1G2 (right TCC)

- FRU093** Read adapter B cable TU Tee (TU-D0/D1-RB(Tee)) to TU-D0/D1-P1-RB1
- FRU094** Read adapter B cable TU-D0/D1-P1-RB1 to 02A-D0/D1-A1G2 (left TCC)
- FRU058** 02A-A1 Drive logic board

- Multiple drives failing

Review EREP or the system console messages to define the failing drive addresses. Identify the failing drive address that is closest to the control unit. Check for continuity of the read data bus pins between TU-D1-P2A1 or TU-D1-P2B1 of the adjacent non-failing tape unit closer to the control unit and the same connector TU-D1-P2A1 or TU-D1-P2B1 in the tape unit with the failing drive closest to the control unit. For example, if drives 5-7 were failing, continuity should be checked from drive 3 TU-D1-P2A1 or B1 to drive 5 TU-D1-P2A1 or B1.) Use control unit logic pages WT004, 006, 008, and 010 pin assignments for CU-P1A1 or CU-P1B1 to identify the pin assignments of TU-D1-P2A1 or TU-D1-P2B1. (CU-P1A1 and CU-P1B1 have the same pin assignments as TU-D1-P2A1 and TU-D1-P2B1.) See "Control Unit Subsystem Cable Diagrams" on EADs 5015-5017 for reference.

Correct any cable problem found.

Possible FRUs:

- FRU088** Read bus A adapter cable previous TU-D1-P2A1 to TU-D1-P2A1
- FRU092** Read bus B adapter cable previous TU-D1-P2B1 to TU-D1-P2B1

If the failing drive closest to the control unit is in the first tape unit in the string, check continuity from the control unit at 01A-A2R2, 01A-A2S2, and 01A-A2T2, (CU logic RD001, 101, 201) for read data 1A local through read data 9B remote to the first tape unit at TU-D1-P2A1 or TU-D1-P2B1. Use control unit logic pages WT004, 006, 008, and 010 pin assignments for CU-P1A1 or CU-P1B1 to identify the pin assignments of TU-D1-P2A1 or TU-D1-P2B1. (CU-P1A1 and CU-P1B1 have the same pin assignments as TU-D1-P2A1 and TU-D1-P2B1.) See "Control Unit Subsystem Cable Diagrams" on EADs 5015-5017 for reference.

Correct any cable problem found. If the cabling is not the problem, replace the control unit logic board 01A-A2.

Possible FRUs:

- FRU088** Read bus A adapter cable CU-P1A1 to TU-D1-P2A1 of first TU (from CU0 if the failing connection was from CU0 to drives 0-7; from CU1 if the failing connection was from CU1 to drives 8-F)

- FRU022** CU read bus local cable 01A-A2U2 to CU-P1A1 (in CU0 if the failing connection was from CU0 to drives 0-7; in CU1 if the failing connection was from CU1 to drives 8-F)
- FRU092** Read bus B adapter cable CU-P1B1 to TU-D1-P2B1 of first TU (from CU0 if the failing connection was from CU1 to drives 0-7; from CU1 if the failing connection was from CU0 to drives 8-F)
- FRU025** CU read bus remote cable CU-P2A1 to CU-P1B1 (in CU0 if the failing connection was from CU1 to drives 0-7; in CU1 if the failing connection was from CU0 to drives 8-F)
- FRU260** Read bus remote cable - read bus part of cable assembly CU-P2A2 to other CU-P2A1 (from CU0-P2A2 to CU1-P2A1 if the failing connection was from CU0 to drives 8-F; from CU1-P2A2 to CU0-P2A1 if the failing connection was from CU1 to drives 0-7)
- FRU 024** CU Read bus remote cable 01A-A2U4 to CU-P2A2 (in CU0 if the failing connection was from CU0 to drives 8-F; in CU1 if the failing connection was from CU1 to drives 0-7)
- FRU140** 01A-A2 CU logic board

2. Short Test

Shorts can be isolated to a failing tape unit by looping a failing program, or diagnostic and separating groups of tape units until the failure is isolated to a single tape unit and then taking resistive measurements within the shorted tape unit, or by taking resistive measurements of the subsystem read bus while separating groups of tape units until the problem is isolated.

Resistive Measurements:

- 100 ohms nominal across the differential read data pins (m to p) for each track for read data 1A local through read data 9B remote, and at least 3000 ohms between adjacent read data bus track pins and from either side of a differential read data bus pin (m or p) to ground, at control unit logic cards 01A-A2R2, 01A-A2S2, and 01A-A2T2 (logic cards must be installed). (See RD001, RD101, and RD201 for reference).

OR

- 100 ohms nominal across the differential read data pins (m to p) for each track for read data 1A local through read data 9B remote, and at least 3000 ohms between adjacent read data bus track pins and from either side of a differential read data bus pin (m or p) to ground in the last tape unit in the string at TU-D1-P2A1, or TU-D1-P2B1. Use control unit logic pages WT004, 006, 008, and 010 pin assignments for CU-P1A1 or CU-P1B1 to identify the pin assignments of TU-D1-P2A1 or TU-D1-P2B1. (CU-P1A1 and CU-P1B1 have the same pin assignments as TU-D1-P2A1 and TU-D1-P2B1.) See "Control Unit

Subsystem Cable Diagrams" on EADs 5015-5017 for reference.

To isolate a short between the control unit and the tape units, open the connector at CU-P1A1 or CU-P1B1. Check the resistance measurements at the first tape unit TU-D1-P2A1 or TU-D1-P2B1 and at CU cards 01A-A2R2, 01A-A2S2, and 01A-A2T2 (logic cards must be installed).

IF THE SHORT IS IN A TAPE UNIT:

Open the connectors at TU-D0-RA(Tee) and TU-D1-RA(Tee), or at TU-D0-RB(Tee) and TU-D1-RB(Tee).

If the short remains, the problem is in the area of the cable from the previous TU-D1-P2A1 (or if the first tape unit, from CU-P1A1) to TU-D1-P2A1; or from the previous TU-D1-P2B1 (or if the first tape unit, from CU-P1B1) to TU-D1-P2B1.

Possible FRUs:

- FRU088** Read bus A adapter cable from previous TU-D1-P2A1 (or if the problem is isolated to the first tape unit, CU-P1A1 to TU-D1-P2A1); (from CU0, if the failing connection was from CU0 to Drive addresses 0, or 1; from CU1, if the failing connection was from CU1 to Drives 8, or 9)
- FRU092** Read bus B adapter cable from previous TU-D1-P2B1 (or if the problem is isolated to the first TU, CU-P1B1) to TU-D1-P2B1 (from CU0, if the failing connection was from CU1 to Drive addresses 0, or 1; from CU1, if the failing connection was from CU0 to Drives 8, or 9)

If the short disappeared when the TU-D0/1-RA(Tees) or TU-D0/1-RB(Tees) were opened, reconnect the Tees, one at a time, until the short returns, to determine which read drive bus (D0 or D1) has the short. Check the cabling from the Tee connector to the failing drive logic board. If a cabling problem is found, replace the defective cable. If no cable problem is found, replace the failing drive logic board 02A-A1.

Possible FRUs:

- FRU089** Read Adapter A Cable TU Tee (TU-D0/D1-RA(Tee)) to TU-D0/D1-P1-RA1
- FRU087** Read Adapter A Cable TU-D0/D1-P1-RA1 to 02A-D0/D1-A1G2 (Right TCC)
- FRU093** Read Adapter B Cable TU Tee (TU-D0/D1-RB(Tee)) to TU-D0/D1-P1-RB1
- FRU094** Read Adapter B Cable TU-D0/D1-P1-RB1 to 02A-D0/D1-A1G2 (Left TCC)
- FRU058** 02A-A1 Drive Logic Board

Drive Interconnections (Continued)

Tape Unit Without Bill of Material 6460006 and Control Unit Without Bill of Material 6460460

Troubleshooting Guide - Read Bus Problems (Continued)

IF THE SHORT IS IN THE CONTROL UNIT:

Review EREP or the system console messages to determine if the problem is in CU0 or CU1, and to drives 0-7 or 8-F.

Select a control unit and the cables to test as follows:

Failing CU/ Drive String	Check for shorts At:
CU0 DRVs 0-7	CU0 at CU-P1-A1 Local
CU0 DRVs 8-F	CU0 at CU-P1-B1 Remote
CU1 DRVs 0-7	CU1 at CU-P1-B1 Remote
CU1 DRVs 8-F	CU1 at CU-P1-A1 Local

See control unit logic pages WT004, 006, 008, and 010 for pin assignments of CU-P1A1 or CU-P1B1. See "Control Unit Subsystem Cable Diagrams" on EADs 5015-5017 for reference.

Check for shorts in the control unit back to 01A-A2R2, 01A-A2S2, and 01A-A2T2, (CU logic RD001, 101, 201) for read data 1A local through read data 9B remote.

Correct any cable problem found. If cabling is not found to be the problem, replace the control unit logic board 01A-A2.

Possible FRUs:

- FRU022** CU read bus local cable 01A-A2U2 to CU-P1A1 (in CU0, if the failing connection was from CU0 to drives 0-7; in CU1, if the failing connection was from CU1 to drives 8-F).
- FRU025 *** CU read bus remote cable CU-P2A1 to CU-P1B1 (in CU0, if the failing connection was from CU1 to drives 0-7; in CU1, if the failing connection was from CU0 to drives 8-F).
- FRU260** Read bus remote cable - Read bus part of cable assembly CU-P2A2 to other CU-P2A1 (from CU0-P2A2 to CU1-P2A1, if the failing connection was from CU0 to drives 8-F; from CU1-P2A2 to CU0-P2A1, if the failing connection was from CU1 to drives 0-7).
- FRU024** CU read bus remote cable 01A-A2U4 to CU-P2A2 (in CU0, if the failing connection was from CU0 to drives 8-F; in CU1, if the failing connection was from CU1 to drives 0-7).
- FRU140** 01A-A2 CU logic board.

* This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.

If you have completed all activities for this EAD, return to the FSI section to see if any additional actions are specified. If any are, follow the FSI's direction. If the FSI does not provide any more directions, do the following:

- After each repair action, or if the call has to be deferred, return to the Support Procedures section for the end of call action.
- If no repair action has been found, call your next level of support.

After an assisted repair action, return to the Support Procedures section for the end of call actions.

Notes

Notes EAD 5025

Notes EAD 5025

0 0 0 0 0 0 0 0 0 0 0 0

Drive Interconnections

Tape Unit With Bill of Material 6460006 and Control Unit With Bill of Material 6460460

Error Description – General

This is a general Error Analysis Diagram (EAD) that describes troubleshooting of the Device Data Bus and the Read Bus. Errors relating to these functional areas can show up against the control unit, or one or more drives. Parts of this EAD contain procedures to isolate the failure to a failing drive or control unit.

Troubleshooting in this EAD is for:

- Write and Control Problems – Device Data Bus (DDB)
- Read Problems – Read Bus

Drive Interconnections - Overview

The drives and control units are interconnected by two physically distinct cables; the read bus and the device data bus (DDB).

- The **Read Bus** is an 18 signal, analog, differential bus used to send read data from a previously selected drive to a control unit.
- The **Device Data Bus** is a bi-directional (BI-DI) digital bus used to send control information, commands, addresses, and status information between the drives and control units. Write data from a control unit to a previously selected drive is also sent on this bus, and sometimes identified as the write and control bus.

The DDB is separated into two physical connections:

- A parallel interconnection which all functions of control, command, status, and write are sent.
- The serial interconnection is used to start motion operations to prepare for a read or write operation on one drive while the parallel connection is in use by another drive. However, the command must be sent again on the normal interconnection to complete any command function other than motion type operation.

The subsystem can inhibit the use of the serial interconnection when some type of errors are detected, however, subsystem performance is affected.

Figure 1 shows the lines and functions of the drive interconnections.

NUMBER OF LINES	FUNCTION
112	56 DDB local 56 DDB remote
9	DDB data bus bits: P, 0-7 (BI-DI) (write data/read status)
8	DDB parallel control tags: Select out Address out Address in Command out Status in Gap in/out (BI-DI) Clock A out Clock B in/out (BI-DI)
3	DDB serial control tags Serial clock out Serial data out Repositioning in
36	DDB read data bus: 18 differential analog signal tracks

Figure 1. DDB lines Definitions

Each control unit and each drive is provided with two sets of interconnections so that, in a dual control unit configuration, each drive has a unique path to each control unit.

Subsystem Cable diagrams on EAD 5044-5046 show the complete cabling for the interconnections.

Troubleshooting Procedures

Before continuing with this procedure, repair all drive problems.

If there are any audio or visual problems, a drive display, or drive error codes in sense byte 18-23, (except a CHK 82, or an FSC 0082), return to the product maintenance package or the FSI section and repair these problems first. If data bus or read bus problems continue, return to this EAD.

Note: Drive check 82 is a data bus problem and is detected at the drive. For a CHK 82 or an FSC of 0082, follow "Troubleshooting Procedure 2" on EAD 5032.

The Fault Symptom Codes (FSCs) that refer you to this EAD are shown in Figure 2. The Troubleshooting Procedure Number and Page column shows the EAD page and troubleshooting procedure number to go to. If the step number in the "Additional Action/Comments" column in the FSI section that sent you here is anything other than the first step, make sure that the preceding actions have been done before proceeding. If the FSC number is not listed in Figure 2, you should not be using this EAD.

FSC	TRUBLESHOOTING PROCEDURE NUMBER and EAD PAGE	FSC	TRUBLESHOOTING PROCEDURE NUMBER and EAD PAGE
0080	2 5032	7502	3 5040
0081	2 5032	7503	4 5042
0082	2 5032	76nn	4 5042
00A0	3 5040	7701	3 5040
00A2	3 5040	7702	4 5042
00A6	2 5032	8005	3 5040
00A8	3 5040	8007	3 5040
00A9	3 5040	8009	3 5040
00AD	3 5040	800A	3 5040
00AE	3 5040	800C	3 5040
00C0	3 5040	8208	3 5040
00C2	3 5040	8216	3 5040
1700	4 5042	8300	3 5040
1701	4 5042	840A	3 5040
1705	4 5042	840C	3 5040
33E7	3 5040	840D	3 5040
33E8	3 5040	8600	3 5040
41F0	3 5040	8601	3 5040
4780	4 5042	86A0	3 5040
5310	4 5042	86C0	3 5040
5311	4 5042	86F0	3 5040
5320	4 5042	86F1	3 5040
7041	4 5042	8803	3 5040
7042	4 5042	8804	3 5040
7051	4 5042	8805	3 5040
7052	4 5042	89nn	3 5040
7061	4 5042	8Bnn	3 5040
7062	4 5042	8C01	3 5040
7071	4 5042	8C03	3 5040
7074	4 5042	8C07	3 5040
7076	3 5040	8Dnn	3 5040
7081	4 5042	8E05	3 5040
7093	4 5042	8E06	3 5040
7094	4 5042	8Fnn	3 5040
70C2	4 5042	9601	3 5040
70C3	4 5042	9602	2 5040
70C4	4 5042	CF80	3 5040
70E3	3 5040	D0nn	4 5042
70E5	3 5040	D4nn (see Figure 3)	
7141	4 5042	D8nn	4 5042
7142	4 5042	E067	4 5042
7143	4 5042	E073	4 5042
7145	3 5040	E0FF	3 5040
7151	4 5042	E301	4 5042
7152	4 5042	E302	4 5042
7153	4 5042	E303	4 5042
7154	4 5042	E304	4 5042
7155	4 5042	E305	4 5042
7156	4 5042	E306	4 5042
7159	4 5042	E307	4 5042
7161	4 5042	E800	4 5042
7174	4 5042	E810	4 5042
71A1	3 5040	EC11	4 5042
74nn	4 5042	EC12	4 5042
7501	4 5042		

Figure 2. FSC Cross Reference Chart

General Information EAD 5030

FSC	nn BITS								TRUBLESHOOTING PROCEDURE NUMBER AND EAD PAGE	
	8	9	10	11	12	13	14	15		
D4nn	0	0	0	x	x	x	x	x	2	5032
	x	1	x	x	x	x	x	x	1	5032
	x	x	1	x	x	x	x	x	1	5032
	1	x	x	x	x	x	x	x	2	5032

Figure 3. D4nn Bits

If multiple D4nn bits 8-10 are on, troubleshoot in the order shown in Figure 3.

Tape Unit With Bill of Material 6460006 and Control Unit With Bill of Material 6460460

Troubleshooting Procedure 1

For FSC D4nn (nn bits 9 or 10 equals one)

1. Check that the top card connector (TCC) at 01A-A1ZPQ is in the correct location and is seated correctly. See logic page AA000 for the location and part number of the TCC. The cut out on the TCC is always on the upper right side.

Possible FRUs:

- FRU184 Top card connector 01A-A1ZPQ
- FRU139 01A-A1 Control unit logic board

2. Check the clocks shown in Figure 1.
3. Check the voltages at the pins listed in the lower left hand corner on logic pages D1001 and DF001. See PWR 1 for the voltage tolerance tables. The "Field Wire Net List" voltage pins may also be used to determine the voltage pins.

Possible FRUs:

- FRU048 DC cable 01A-A1Y2
- FRU091 DC cable 01A-A1Y5
- FRU097 DC cable 01A-A1Z5
- FRU103 DC cable 01A-A1Z2
- FRU160 Cables CU-PS-02-P4, P9, P11
- FRU164 DC distribution cable
- FRU145 DC power supply

4. If the previous actions have not corrected the problem, replace the following FRUs, that were replaced by the product package, a second time.

- FRU134 Control storage card 01A-A1C2
- FRU118 Drive adapter card 01A-A1Q2
- FRU116 Write data card 01A-A1P2

5. If the FSC is D4nn, and nn bit 8 also equals 1, follow "Troubleshooting Procedure 2," on this page.
6. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

Additional Information for Troubleshooting Procedure 1

Additional Information For - FSC D4nn and nn Bit Equals One

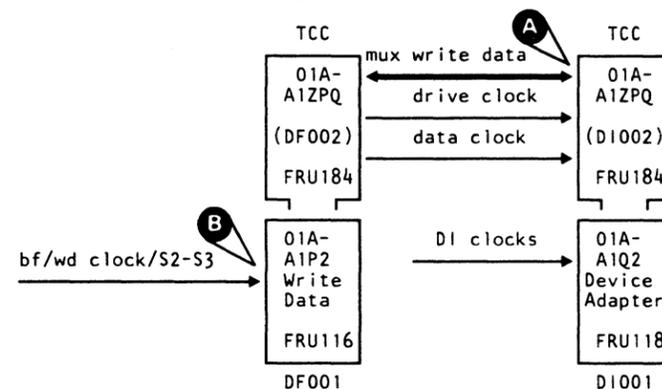
FSC D4nn bit 9 comes from the DSE external register (XR) bit 1.

The control unit communicates with the drive through the device adapter card when writing a record. The buffered data is sent to the write data card and:

- Formatted for writing
- Check characters added

It is then gated to the device adapter card.

The device adapter card communicates with the write data card over a multiplex write data bus ("MUX data bus"). Parity of the write data is checked as it enters the device adapter card. If even parity is detected on the '+mux write data' bus, the DSE register bit 1, and a check 2 condition are set to indicate the error condition. See the diagram below.



Note: All the connections between A1P2 and A1Q2 are on a top card connector.

For FSC D4nn and nn Bit 10 Equals One

FSC D4nn bit 10 comes from the DSE external register (XR) bit 2.

The data is parity checked internally on the device adapter card. Parity errors can be caused by bad input data from either the write data card or from the device data bus. The device adapter card can also cause parity errors.

Troubleshooting Procedure 2

For FSCs 0080, 0081, 0082, 00A6, 9602, and D4nn bit 8 equals one or bits 8-10 equals zero.

Note: If you are here for a D4nn FSC and nn bits 9 or 10 also equal one, follow "Troubleshooting Procedure 1" (on this page) first, before doing this procedure.

This procedure troubleshoots the device data bus (DDB) for both parallel and serial functions combined. The "Additional Information for Troubleshooting Procedure 2" on EAD 5036 gives more information pertaining to the different FSCs for the DDB.

1. Review the error codes in sense bytes 10-15 and 16-17. See the FSI section for sense byte meanings and check for common areas of failures. Use the data in sense byte 2, and "Error Path Isolation" on START 1, to determine the failing data path.

Note: The output message of the product maintenance package may have defined the failing control unit and data path.

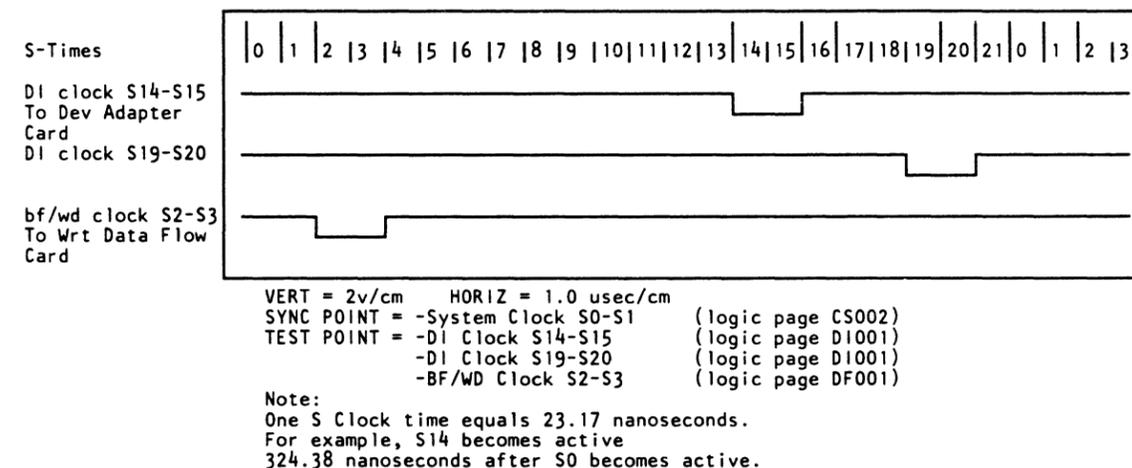


Figure 1. Control Storage Clocks to Device Adapter and Write Data Cards

2. Run "Control Unit to Drive Test - Section EE40" (see DIAG 1). When requested to select a drive, enter 'FF' and review the test results. If EE40 runs with no errors, run "Tape Movement Tests - Routine EEA0" (see DIAG 1). When requested to select a drive, select the drive that has the most errors.
3. Use the diagnostic failure IDs and the sense data in the following steps:
 - a. If only one drive on one data path is failing, or only one drive on both data paths is failing, go to "Troubleshooting Procedure 2 - Part 1" on EAD 5034.
 - b. If multiple drives on one string fail on one or both device data buses, go to "Troubleshooting Procedure 2 - Part 2" on EAD 5034.
 - c. If multiple drives on both strings fail on one or both device data buses, go to "Troubleshooting Procedure 2 - Part 2" on EAD 5034.
 - d. If the sense data is missing or not complete, and there were no Diagnostic Failure IDs, go to "Troubleshooting Procedure 2 - Part 3" on EAD 5036.

Drive Interconnections (Continued)

Tape Unit With Bill of Material 6460006 and Control Unit With Bill of Material 6460460

Troubleshooting Procedure 2 (Continued)

* This FRU is EC sensitive.
See CARR-DR 4.

Troubleshooting Procedure 2 - Part 1

One drive failing on one or both data buses.

1. Ensure that the drive is offline to all attached host systems.
2. Before replacing any FRUs, or disconnecting any cables, ensure that the control unit and drive string are offline to the host processor.
3. Check the voltages on the drive logic board. See "Tape Unit DC Voltages 50 Hz and 60 Hz" on PWR 1. If the voltages are not correct, go to "Map 210 - Drive DC Power" on PWR 1.

Possible FRUs:

FRU079 DC power distribution cable drive internal
FRU080 DC power distribution cable

4. Terminator problems may show up on only one drive, if there is a defective or damaged terminator card.

Possible FRUs:

FRU266 Terminator card - local and remote

Note: FRU266 is located in the P2A/B2 connector of the last tape unit attached to the control unit.

5. If the failing drive is the last drive in the string, it is possible to have an open in the cabling in the tape unit (short circuits would affect more than one drive).

Use "Control Unit Subsystem Cable Diagrams" on EAD 5044-5046 for reference. Use "Cable and Board Interconnections Failures" of EAD 1 for general cable checking instructions.

- a. Remove the 01A-A1Q2 card from the failing control unit.

Note: The device data bus is terminated at the 01A-A1Q2 card and the terminator card.

- b. Using a CE meter (R X 1 scale) and logic page DI001 as reference, attach one lead to a ground pin, and check the termination of the failing device data bus (on the pin side of the board). The normal termination resistance is 90 ohms. Infinite resistance indicates open lines.

If the resistance of a line is not correct, use logic pages ZW101-203 as a reference, and move the CE meter lead (along the failing line) closer to the terminator.

When the correct termination resistance is measured, the break in the line has been located. Replace the affected board or defective cable.

Possible FRUs:

Cable groups 180-186
FRU058 02A-A1 Drive logic board

6. If the previous actions have not corrected the problem, replace the following FRUs that were replaced by the product package a second time. Run "Control Unit to Drive Bus Out and Driver Wrap Test - Routine EE42" (see DIAG 1) after each FRU replacement.

FRU085* 02A-A1B2 - Drive control card

7. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:
 - If no errors are detected, go to SPROC 1 "End of Call Actions."
 - If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, *Call your next level of support* and then go to SPROC 1 "End of Call Actions."

Troubleshooting Procedure 2 - Part 2

Multiple drives failing on one or both strings on one or both device data buses (DDB)

Note: Before performing this procedure, the control unit, drive string, and failing data path must be offline to the host processor(s).

Run "Control Unit/Drive Active Bus and Tag Test - Routine EE42" and "Control Unit to Drive Bus and Tag Test - Routine EE43" (see DIAG 1) after doing each step.

1. Visually check the data bus connections and the terminator. See "Control Unit Subsystem Cable Diagrams" on EAD 5044-5046, for reference. If any logic card or cable has been removed or replaced, ensure that the board pins or cable contacts are not bent or broken. Replace any damaged parts.

FRU058 02A-A1 - Drive logic board
FRU139 02A-A1 - Control unit logic board
Cable groups 180-186

2. Isolate the failure to a failing tape unit.

- a. The error path isolation that was determined in "Troubleshooting Procedure 2," step 1, on EAD 5032, identifies which cables are associated with the failing local or remote control unit and the attached drives.
- b. If multiple drives fail on a control unit data path, select a control unit and cables to test as follows:

Failing CU and Attached Drives	Test Unit	Open Cable Connector
CU0-Drives 0-7	CU0	DDB at TU-D1-A1A3
CU0-Drives 8-F	CU0	DDB at TU-D1-A1A5
CU1-Drives 0-7	CU1	DDB at TU-D1-A1A5
CU1-Drives 8-F	CU1	DDB at TU-D1-A1A3

Notes:

- 1) See LOC 1 for "02A-A1 Logic Board, Card Side" for the location of the TU-D1-A1A3 and A1A5 connectors. See "Control Unit Subsystem Cable Diagram" on EAD 5044-5046.
- 2) Opening the connectors at CU-P1-A/B2 or TU-D1-A1A3 and A5, will open both the local (A), and remote (B) lines to the attached drives from both control units. (For example, opening drive address 3, TU-D1-A1A3 and TU-D1-A1A5, removes drive addresses 4-7 from both control units.)

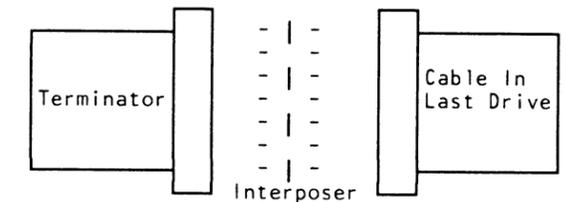
The remaining drives will be running without any termination with the TU-D1-A1A3 or TU-D1-A1A5 connectors open. See the note below.

Device Data Bus Problems EAD 5034

- c. Run "Control Unit/Drive Active Bus and Tag Test - Routine EE42" and "Control Unit to Drive Bus and Tag Test - Routine EE43" (see DIAG 1) to test the selected control unit.
- d. Repeat the preceding step, moving up or down the device data bus, until the failing area is determined.

Note: It is not necessary to move the terminator when EE4x diagnostics are used. It is necessary to move the terminator to the last tape unit being tested, when any Read or Write diagnostics are used.

To move a terminator, remove the cable from the drive TU-P2 connector, install interposer part 5997533, then install the terminator. See the diagram below.



Note: See the earlier note in step 2b.

If a failing tape unit is located, isolate the failure to the failing drive by removing the device data bus cable from the drive (see LOC 1) as follows:

- For Local (A) at - TU-D0/1-A1A2
 - For Remote (B) at - TU-D0/1-A1A4
- e. If all drives are failing in one or both groups of the attached drives, the problem is in the Device Data Bus Local/Remote connection between the control unit 01A-A1Q2 card (CU logic DI001) and the first tape unit drive board connector at TU-D0-A1A2 (local) and TU-D0-A1A4 (remote) (TU logic WW010).
 - f. If multiple drives on both groups of attached drives are failing on both device data buses, get the subsystem from the customer and troubleshoot each local device data bus independently. Test or troubleshoot the remote data buses if necessary. If a failing drive is found, use "Troubleshooting

Procedure 2 - Part 1" for troubleshooting.

Drive Interconnections (Continued)

Tape Unit With Bill of Material 6460006 and Control Unit With Bill of Material 6460460

Troubleshooting Procedure 2 - Part 2 (Continued)

3. If no drive fails, or if the problem is intermittent, check the device data bus as follows:

Use "Control Unit Subsystem Cable Diagrams" on EAD 5044-5046 for reference. Use "Cable and Board Interconnection Failures" on EAD 1 for general cable checking instructions.

- a. Remove the 01A-A1Q2 card from the failing control unit.

Note: The device data bus is terminated at the 01A-A1Q2 card and the terminator card.

- b. Using a CE meter (R X 1 scale) and logic page DI001 as reference, attach one lead to a ground pin, and check the termination of the failing device data bus (on the pin side of the board). The normal termination resistance is 90 ohms. Resistance less than 90 ohms can indicate a shorted line. For example, two lines shorted together would read approximately 45 ohms on each line. Resistance that is zero ohms can indicate a ground and infinite resistance indicates open lines.

If the resistance of a line is not correct, and using logic pages ZW101-203 for reference, move the CE meter lead (along the failing line) closer to the terminator. When the correct termination resistance is measured, the short or open in the line has been located. Replace the affected board or defective cable.

- c. It is possible to have a defective or damaged terminator card. If the terminator is defective, the terminator on the other group of drives can be used in the above test if this a dual control unit configuration.

Possible FRUs:

FRU058 02A-A1 Drive logic board
FRU139 01A-A1 Control unit logic board
FRU266 Terminator card local and remote
 Cable groups 180-186

Note: FRU266 (terminator card local and remote) is located in the P2A/B2 connector of the last tape unit attached to the control unit.

4. Check the control unit logic board voltages.

- a. Check the voltages at the pins listed in the lower left hand corner on logic page DI001. See PWR 1 for the voltage tolerance tables. The "Field Wire Net List" voltage pins may also be used to determine the voltage pins.

- b. If the voltages are not correct, see "Map 400 - Control Unit DC Power" on PWR 1.

Possible FRUs:

FRU048 DC cable 01A-A1Y2
FRU091 DC cable 01A-A1Y5
FRU097 DC cable 01A-A1Z5
FRU103 DC cable 01A-A1Z2
FRU160 Cables CU-PS-02-P4, P9, P11,
FRU164 DC distribution cable
FRU145 DC power supply

5. Check the clock timings shown in Figure 1.

6. If the earlier actions have not corrected the problem, exchange the following FRUs (even if they were exchanged by the product maintenance package, exchange them a second time). Test the subsystem after each FRU replacement.

FRU117 01A-A1D2 Microprocessor card
FRU134 01A-A1C2 Control storage card
FRU121 01A-A1G2 Status store card
FRU120 01A-A1G2 Buffer adapter card
FRU119 01A-A1S2 Buffer adapter card
FRU115 01A-A1E2 Maintenance adapter card
FRU139 01A-A1 Control unit logic board

7. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

Troubleshooting Procedure 2 - Part 3

The sense data is missing or not complete and there are no diagnostic failure IDs.

For these problems, it may be helpful to request assistance from your next level of support.

Customer programs sometimes exercise the subsystem more than the diagnostics and should be used when possible. Set up procedures with the customer to report the failures. Include in the report such items as; the time, the jobs being run, the drives being used, visual symptoms, and console messages at the time of the failure. Review the daily EREP printouts to see if any other system events occurred at the same time as the failure, such as channel checks, processor checks, and so on. Review the tape volume reports to see if any particular volumes are in use at the reported times of failure.

If a particular path or drive is suspected, vary the path or paths offline, and see if the problem disappears.

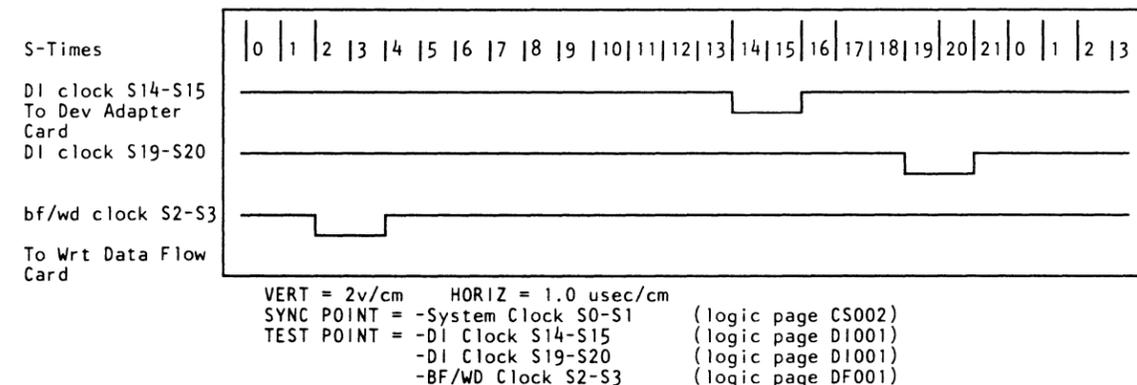
See the "Status Store/Channel Adapter" EAD, for the procedure to eliminate the communications path between the two control units and see if the symptoms change. **If you have performed a repair action**, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, **Call your next level of support** and then go to SPROC 1 "End of Call Actions."

Additional Information For Troubleshooting Procedure 2

Additional Information for General Device Data Bus Problems

Figure 1 shows the clocks that are needed for correct operation of the DDB, for both parallel and serial functions. **Additional Information for Device Data Bus (PARALLEL)**



Note:
 One S Clock time equals 23.17 nanoseconds.
 For example, S14 becomes active 324.38 nanoseconds after S0 becomes active.

Figure 1. Control Storage Clocks to Device Adapter and Write Data Cards

Device Data Bus Problems EAD 5036

Note: See Figure 1 on EAD 5038 for the overview of this description.

Parallel write and control problems result in hardware (D4nn error codes) and microcode detected errors in the device data adapter functional area of the subsystem.

Error indicators are set when:

- The microcode detects errors on the device data bus. The error codes are set in the sense data.
- The hardware parity checkers detects parity errors on the inputs to the adapter card. Error bits are set in the device status error (DSE) register, and D4nn is set in sense bytes 16-17 (D4 nn bits 8-15 equals the contents of the DSE register bits 0-7). The following is an explanation of the DSE bits:

Bit 0 Incorrect parity from the drive on the device data bus
Bit 1 Data parity error on the write data card to the drive adapter card
Bit 2 Drive adapter internal parity error
Bit 3-7 Not used for D4nn error code

- For any Device Data Bus FSC that references the contents of the DSE register, and DSE bits 0-2 equals zero, follow Troubleshooting Procedure 2.

If multiple bits are on in DSE bits 0-2, troubleshoot DSE bits 1 and 2 first using Troubleshooting Procedure 1, then bit 0 using Troubleshooting Procedure 2.

Tape Unit With Bill of Material 6460006 and Control Unit With Bill of Material 6460460

Troubleshooting Procedure 2 (Part 2) (Continued)

3. If no drive fails, or if the problem is intermittent, check the device data bus as follows:

Use "Control Unit Subsystem Cable Diagrams" on EAD 5044-5046 for reference. Use "Cable and Board Interconnection Failures" on EAD 1 for general cable checking instructions.

a. Remove the 01A-A1Q2 card from the failing control unit.

Note: The device data bus is terminated at the 01A-A1Q2 card and the terminator card.

b. Using a CE meter (R X 1 scale) and logic page DI001 as reference, attach one lead to a ground pin, and check the termination of the failing device data bus (on the pin side of the board). The normal termination resistance is 90 ohms. Resistance less than 90 ohms can indicate a shorted line. For example, two lines shorted together would read approximately 45 ohms on each line. Resistance that is zero ohms can indicate a ground and infinite resistance indicates open lines.

If the resistance of a line is not correct, and using logic pages ZW101-203 for reference, move the CE meter lead (along the failing line) closer to the terminator. When the correct termination resistance is measured, the short or open in the line has been located. Replace the affected board or defective cable.

c. It is possible to have a defective or damaged terminator card. If the terminator is defective, the terminator on the other group of drives can be used in the above test if this a dual control unit configuration.

Possible FRUs:

- FRU058 02A-A1 Drive logic board
- FRU139 01A-A1 Control unit logic board
- FRU266 Terminator card local and remote Cable groups 180-186

Note: FRU266 (terminator card local and remote) is located in the P2A/B2 connector of the last tape unit attached to the control unit.

4. Check the control unit logic board voltages.

a. Check the voltages at the pins listed in the lower left hand corner on logic page DI001. See PWR 1 for the voltage tolerance tables. The "Field Wire Net List" voltage pins may also be used to determine the voltage pins.

b. If the voltages are not correct, see "Map 400 - Control Unit DC Power" on PWR 1.

Possible FRUs:

- FRU048 DC cable 01A-A1Y2
- FRU091 DC cable 01A-A1Y5
- FRU097 DC cable 01A-A1Z5
- FRU103 DC cable 01A-A1Z2
- FRU160 Cables CU-PS-02-P4, P9, P11,
- FRU164 DC distribution cable
- FRU145 DC power supply

5. Check the clock timings shown in Figure 1.
6. If the earlier actions have not corrected the problem, exchange the following FRUs (even if they were exchanged by the product maintenance package, exchange them a second time). Test the subsystem after each FRU replacement.

- FRU117 01A-A1D2 Microprocessor card
- FRU134 01A-A1C2 Control storage card
- FRU121 01A-A1G2 Status store card
- FRU120 01A-A1K2 Buffer adapter card
- FRU119 01A-A1S2 Read clock and format card
- FRU115 01A-A1E2 Maintenance adapter card
- FRU139 01A-A1 Control unit logic board

7. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, call your next level of support and then go to SPROC 1 "End of Call Actions."

Troubleshooting Procedure 2 (Part 3)

The sense data is missing or not complete and there are no diagnostic failure IDs.

For these problems, it may be helpful to request assistance from your next level of support.

Customer programs sometimes exercise the subsystem more than the diagnostics and should be used when possible. Set up procedures with the customer to report the failures. Include in the report such items as; the time, the jobs being run, the drives being used, visual symptoms, and console messages at the time of the failure. Review the daily EREP printouts to see if any other system events occurred at the same time as the failure, such as channel checks, processor checks, and so on. Review the tape volume reports to see if any particular volumes are in use at the reported times of failure.

If a particular path or drive is suspected, vary the path or paths offline, and see if the problem disappears.

See the "Status Store/Channel Adapter" EAD, for the procedure to eliminate the communications path between the two control units and see if the symptoms change. If you have performed a repair action, verify correct operation by running the program that detected the failure and select one of the following:

- If no errors are detected, go to SPROC 1 "End of Call Actions."
- If the program detects an error, return to the FSI and do one of the following:
 - Perform any additional actions.
 - If there are no additional actions, call your next level of support and then go to SPROC 1 "End of Call Actions."

Additional Information For Troubleshooting Procedure 2

General Device Data Bus Problems

Figure 1 shows the clocks that are needed for correct operation of the DDB, for both parallel and serial functions.

Device Data Bus (PARALLEL)

Note: See Figure 1 in EAD 5038 for the overview of this description.

Parallel write and control problems result in hardware (D4nn error codes) and microcode detected errors in the device data adapter functional area of the subsystem.

Error indicators are set when:

- The microcode detects errors on the device data bus. The error codes are set in the sense data.
- The hardware parity checkers detects parity errors on the inputs to the adapter card. Error bits are set in the device status error (DSE) register, and D4nn is set in sense bytes 16-17 (D4 nn bits 8-15 equals the contents of the DSE register bits 0-7).

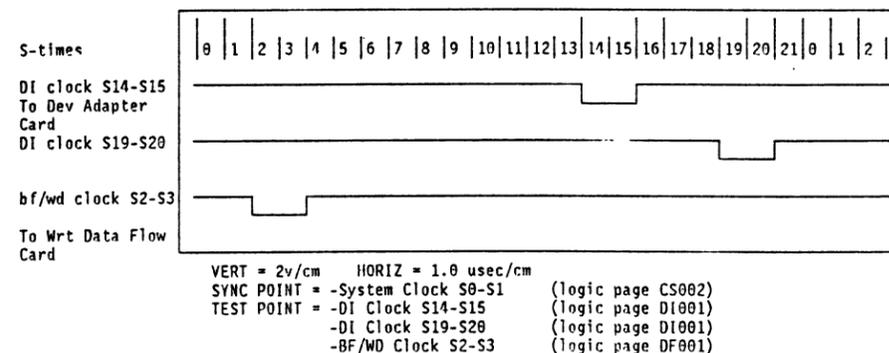


Figure 1. Control Storage Clocks to Device Adapter and Write Data Cards

The following is an explanation of the DSE bits:

- Bit 0 Incorrect parity from the drive on the device data bus
- Bit 1 Data parity error on the write data card to the drive adapter card
- Bit 2 Drive adapter internal parity error
- Bit 3-7 Not used for D4nn error code

• For any Device Data Bus FSC that references the contents of the DSE register, and DSE bits 0-2 equals zero, follow Troubleshooting Procedure 2.

If multiple bits are on in DSE bits 0-2, troubleshoot DSE bits 1 and 2 first using Troubleshooting Procedure 1, then bit 0 using Troubleshooting Procedure 2.

0 0 0 0 0 0 0 0 0 0 0

Drive Interconnections (Continued)

**Tape Unit With Bill of Material 6460006
and Control Unit With Bill of Material
6460460**

Troubleshooting Procedure 2 (Continued)

* This FRU is EC sensitive.
See CARR-DR 4.

Additional Information For - Troubleshooting Procedure 2

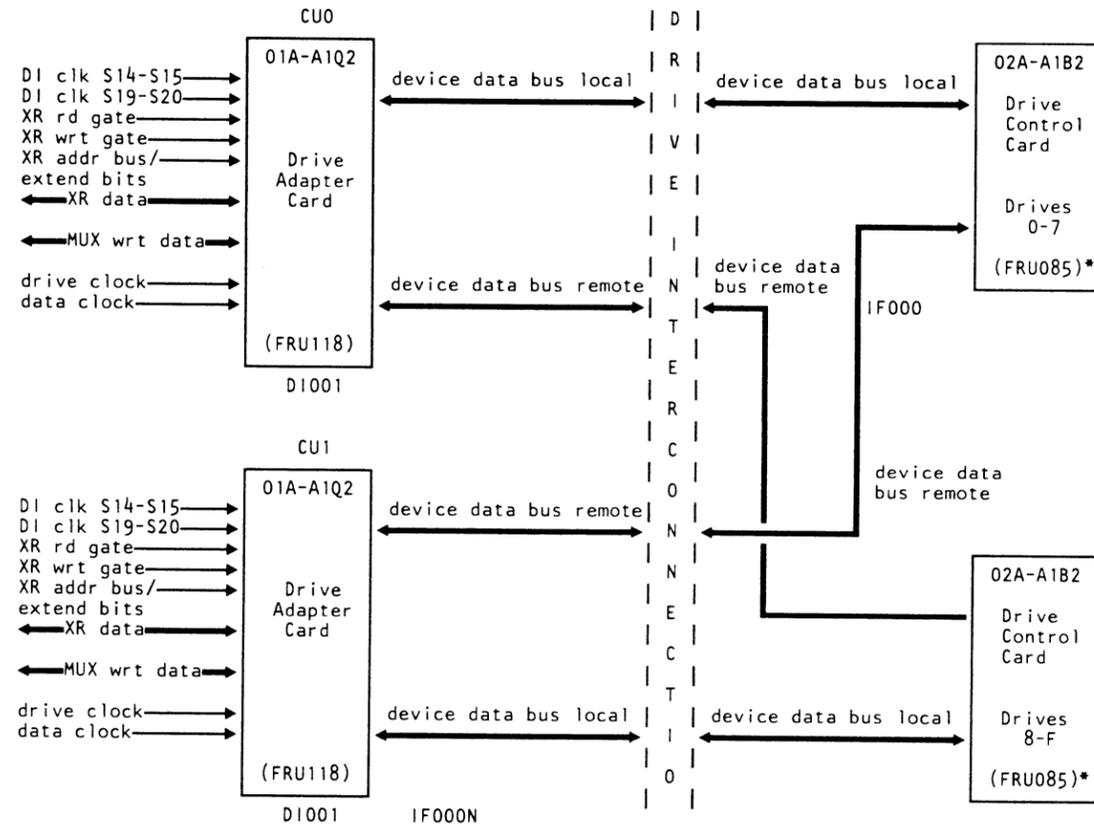


Figure 1. Device Interconnection Overview - DDB

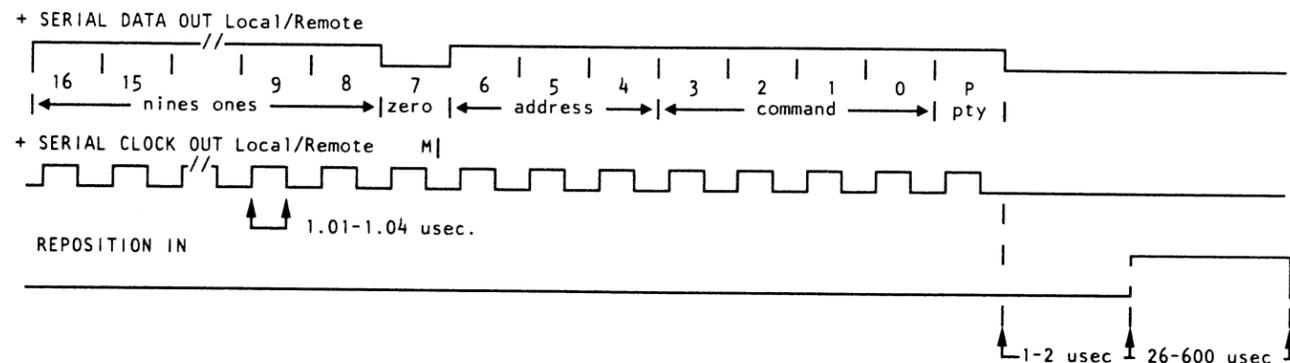


Figure 2. Serial Sequence Device Interconnections (logic page DI001)

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Device Data Bus Problems EAD 5038

Additional Information For - Non-D4nn Microcode Detected Device Data Bus FSCs

The microcode also detects errors in the device data bus functional area. Each FSC is defined in the FSI section of this maintenance information. For Device Data Bus FSCs that reference this EAD, follow the Troubleshooting Procedure referenced in the table on EAD 5030.

Additional Information For - 8803-8805, 9602, or CF80 (Serial Bus Errors)

The microcode detects the errors on the serial bus and sets error codes 8803, 8804, 8805, 9602, or CF80 in the sense data.

Note: An MD option is available that inhibits 'starts' on the serial bus. This can be used to defer maintenance to a later time. See "Trace Match Control" on SDISK 1. However, the performance of the subsystem will be affected until the MD Trace Match Control option restores normal serial bus operation.

The "Control Unit/Drive Serial Interconnection Test - Routine EE44" verifies that the serial bus can send commands.

Oscilloscope Information

The data bus uses an NPL voltage level (+3 Vdc and 0 V). It is a bi-directional bus with several inbound and outbound tags that are similar in purpose to a normal channel interface. Scoping is used to look for incorrect voltage levels or non-pulsing lines. The sync points must be carefully chosen in order to display meaningful information on the oscilloscope. The clock signals that are checked on the boards are shown in figures 2 and 3.

Troubleshooting Hint

If the errors codes indicate serial bus errors are occurring, Troubleshooting Procedure 2 should be used to determine the problem.

Additional Information For - FSC D4nn, nn Bit 8 Equals One

FSC D4nn bit 8 comes from the DSE external register (XR) bit 0.

Notes:

- See Figure 1 for the overview diagram of this description.
- If D4 nn bits 9 or 10 also equals one, follow "Troubleshooting Procedure 1" first, before following "Troubleshooting Procedure 2."

The drive adapter card in the control unit communicates with the tape units via a bi-directional (BI-DI) bus; the device data bus (DDB). This bus is connected in parallel to all tape units and is terminated in the last tape unit on the attached group of tape units. See "Write Data Flow" on OPER 1 for more information.

Note: All control information to and from the drives, and write data to the drives is transferred on this bus.

The drive adapter card does not correct any data errors on the data that passes through it. If it receives incorrect parity (even) from the control unit or drive, the drive adapter card signals a check 2 error to the microprocessor. An error is set in the DSE register and the data is sent to the receiving function. See the DSE bit definitions above.

The drive adapter monitors the DDB for odd parity, except for the three following exceptions:

- Alerts:** Drives signalling that they need service. Any combination of drives can signal that service is needed, therefore, parity is not checked. Alerts can be signalled only when 'select out' is not on.
- Address-out/Address-in Time:** The control unit puts the drive address on the bus, and the drive returns a complemented 'P' bit that causes an even parity condition.

Note: For a period of time, the BI-DI bus will be set with all ones. The BI-DI bus will be correct when sampled by the microcode during 'address in' time, but the address is not checked for parity.

- Address-in Response to Command Out:** Bits on the BI-DI bus indicate that drive errors exist, and can be in any combination. See error code 8Fnn in the FSI section.

**Tape Unit With Bill of Material 6460006
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6460460**

Troubleshooting Procedure 3

Multiple functions are shared on the device data bus (DDB) connections. Therefore, after an operation fails with an FSC, a different FSC can occur at an earlier time when the error condition is tested in a sequence of operations. For example, the first FSC occurred during an ending sequence operation and a different FSC occurs during the initial selection sequence part of another operation that uses and checks the same function.

In the chart on this page, the Beginning Operation FSCs shown in column one can occur more frequently since they are the first FSCs that check for the error condition in a sequence of operation.

BEGINNING OPERATION FSC	OTHER RELATED FSCs	AFFECTED DRIVE INTERCONNECTIONS
70E3 7502 7701	00AD 00AE	Status In/Gap Out
8005	00A0, 70E5, 86A0 00A8, 7145, 8Bnn 00C0, 71A1, 8C01 00C2, 800A, 8Dnn 3F14, 800C, 8E06 41F0, 8216, 8Fnn 7076,	Data Bus/Select Out
8007 8009	86F1	Address In/Out
800A	00A0, 70E5, 86A0 00A8, 7145, 8Bnn 00C0, 71A1, 8C01 00C2, 8005, 8Dnn 3F14, 800C, 8E06 41F0, 8216, 8Fnn 7076,	Hardware Detected DDB
8600	8300, 840C 840A, 8601	Clock B In/Clock A Out
8600	00A2, 86F1 00A9, 8C03 8601, 8C07	Status In/Command Out
86F0	86F1	Address In
8Dnn	00A0, 70E5, 8216 00A8, 7145, 86A0 00C0, 71A1, 8Bnn 00C2, 8005, 8C01 3F14, 800A, 8E06 41F0, 800C, 8Fnn 7076,	Hardware Detected DDB
8E05	00A2, 86F1 00A9, 8C03 8601, 8C07	Status In/Command Out
8E06	00A0, 70E5, 8216 00A8, 7145, 86A0 00C0, 71A1, 8Bnn 00C2, 8005, 8C01 3F14, 800A, 8Dnn 41F0, 800C, 8Fnn 7076,	Unit Check DDB Bit 6
8Fnn	00A0, 70E5, 86F1 00A2, 7145, 89nn 00A8, 71A1, 8Bnn 00A9, 8005, 8C01 00C0, 800A, 8C03 00C2, 800C, 8C07 3F14, 8216, 8Dnn 41F0, 86A0, 8E06 7076,	Address In/Command Out
9601		Gap In
CF80	8803 8804	Repositioning In/ Serial Data/ Serial Clock

The FSCs listed in the chart on this page are for specific functional errors that can occur during control unit and drive communications. The product maintenance package troubleshoots and replaces logic FRUs that can correct the specific failures. The remaining area to troubleshoot is the device interconnections between the already replaced FRUs. DDB interconnections problems can affect multiple drives. These problems can appear as varying symptoms because of the shared functions of selection, control, and writing of data for both parallel and serial operations.

It is possible for only one drive to fail because of an interconnection problem if it is the last drive in a group of drives.

1. Determine if any failure pattern can be found, using the console messages, EREP, or customer definition of the problem. For example:
 - All drives failing past a certain drive in a group of drives
 - Drive failures common to a local or remote bus from either control unit
 - All drives failing from one control unit
 - A single drive failure that is the last drive in a group of drives.
 - a. If only one drive is failing (other than the last drive in a group) you should re-check earlier actions specified in the FSI for that FSC, because it is probably not a drive interconnection problem.
 - b. If the FSC occurred multiple times without causing an initial failure FSCs, you should re-check earlier actions specified in the FSI for that FSC, because it is probably not a drive interconnection problem.

In steps a and b, if there are no further actions in the FSI, and all FRUs called out by the product maintenance package were replaced, call your next level of support.

- c. If drive interconnection problems are suspected (multiple drives, or the last drive in a group) follow "Troubleshooting Procedure 2" (see EAD 5032).

The lines relating to the FSCs are shown in the chart (on this page) as "Affected Drive Interconnections." The logic connection points are on DI001 for the control unit, and IF000 for the tape drive.

Drive Interconnections (Continued)

Tape Unit With Bill of Material 6460006 and Control Unit With Bill of Material 6460460

Troubleshooting Procedure 4

Note: Make sure that you have followed the earlier FSI additional actions for the FSCs before doing this procedure.

If the FSC description in the FSI relates to the Read Back Check part of a write command, then you must also follow "Troubleshooting Procedure 2" on EAD 5032 for possible write and control line DDB problems.

Read Bus Problems Caused by the DDB Read Bus

The FSCs shown below are for specific data flow errors that can occur during control unit and drive communications, because of DDB read data bus problems.

READ BUS PROBLEMS - FSCs		
1700	70C2	76nn
1701	70C3	7702
1705	70C4	D0nn
4780	7141	D8nn
5310	7142	E067
5311	7143	E073
5320	7151	E301
7041	7152	E302
7042	7153	E303
7051	7154	E304
7052	7155	E305
7061	7156	E306
7062	7159	E307
7071	7161	E800
7074	7174	E810
7081	74nn	EC11
7093	7501	EC12
7094	7503	

The product maintenance package troubleshoots and replaces logic FRUs that can correct the specific failures. The remaining area to troubleshoot is the device interconnections between the already replaced FRUs.

Troubleshooting Procedure 4 is for troubleshooting problems with interconnections of the DDB Read bus. DDB interconnections problems can affect multiple drives. These problems can appear as varying symptoms because of the shared functions of read back checks during write operations and for read operations.

It is possible to have only one drive failing because of an interconnection problem if it is the last drive in a group. The failure could also be a connection problem in a parallel connection that is internal to the drive and beyond the 'Tee' of the main read bus series connection to other drives.

- Determine if any failure pattern can be found, using the console messages, EREP, or customer definition of the problem:
 - All drives failing past a certain drive in a group of drives
 - Drive failures common to a local or remote bus from either control unit
 - All drives failing from one control unit
 - A single drive failure that is the last drive in a group
 - A single drive failure that has changing FSCs within the FSCs listed for Troubleshooting Procedure 4.

- If only one drive is failing, (other than the last drive in a group) with a single FSC, you should check preceding actions specified in the FSI for that FSC, it is probably not a drive interconnection problem. If there are no further actions in the FSI, and all FRUs called out by the Product Maintenance package were replaced, call your next level of support.

- If drive interconnection problems are suspected, continue with Troubleshooting Procedure 4.

Note: Power must be off for the complete subsystem being checked for shorted or open circuits.

Ensure that the associated logic board pins and cable connectors are not bent or broken. Replace any damaged parts.

4. Checking for Open Circuits

- One drive failing:
 - Check for continuity of the read data bus pins between 02A-A1J2 (drive logic RP000) and TU-D0/D1-RA(Tee) or TU-D0/D1-RB(Tee) (drive logic WW020) for the failing drive. See "Control Unit Subsystem Cable Diagrams" on EADs 5044-5046 for reference.
 - Correct any cable problem found.
 - If the cabling is not the problem, replace the failing drive logic board, 02A-A1.

Possible FRUs:

- FRU057** Read adapter A cable TU Tee (TU-D0/D1-RA(Tee)) to 02A-D0/D1-A1G2 (right TCC).
- FRU055** Read adapter B cable TU Tee (TU-D0/D1-RB(Tee)) to 02A-D0/D1-A1G2 (left TCC).
- FRU058** 02A-A1 Drive logic board.

- Multiple drives failing
 - Review EREP or the system console messages to define the failing drive addresses.
 - Identify the failing drive address that is closest to the control unit. Check for continuity of the read data bus pins between TU-D1-P2A1 or TU-D1-P2B1 of the next non-failing tape unit closer to the control unit and the same connector TU-D1-P2A1 or TU-D1-P2B1 in the tape unit with the failing drive closest to the control unit. For example, if drives 5-7 were failing, continuity should be checked from drive 3 TU-D1-P2A1 or B1 to drive 5 TU-D1-P2A1 or B1. Use control unit logic pages WT004, 006, 008, and 010 pin assignments for CU-P1A1 or CU-P1B1 to identify the pin assignments of TU-D1-P2A1 or TU-D1-P2B1. (CU-P1A1 and CU-P1B1 have the same pin assignments as TU-D1-P2A1 and TU-D1-P2B1.) See "Control Unit Subsystem Cable Diagrams" on EADs 5044-5046 for reference.

Correct any cable problem found.

Possible FRUs:

- FRU088** Read bus A adapter cable previous TU-D1-P2A1 to TU-D1-P2A1.
- FRU092** Read bus B adapter cable previous TU-D1-P2B1 to TU-D1-P2B1.

- If the failing drive closest to the control unit is in the first tape unit in the group, check continuity from the control unit at 01A-A2R2, 01A-A2S2, and 01A-A2T2, (CU logic RD001, 101, 201) for read data 1A local through read data 9B remote to the first tape unit at TU-D1-P2A1 or TU-D1-P2B1. Use control unit logic pages WT004, 006, 008, and 010 pin assignments for CU-P1A1 or CU-P1B1 to identify the pin assignments of TU-D1-P2A1 or TU-D1-P2B1. (CU-P1A1 and CU-P1B1 have the same pin assignments as TU-D1-P2A1 and TU-D1-P2B1.) See "Control Unit Subsystem Cable Diagrams" on EADs 5044-5046 for reference.

Correct any cable problem found.
- If the cabling is not the problem, replace the control unit logic board 01A-A2.

Read Bus - Cabling/Board Only EAD 5042

Possible FRUs:

- FRU088** Read bus A adapter cable CU-P1A1 to TU-D1-P2A1 of first TU (from CU0 if the failing connection was from CU0 to drives 0-7; from CU1 if the failing connection was from CU1 to drives 8-F). (See Note 1.)
- FRU022** CU read bus local cable 01A-A2U2 to CU-P1A1 (in CU0 if the failing connection was from CU0 to drives 0-7; in CU1 if the failing connection was from CU1 to drives 8-F).
- FRU092** Read bus B adapter cable CU-P1B1 to TU-D1-P2B1 of first TU (from CU0 if the failing connection was from CU1 to drives 0-7; from CU1 if the failing connection was from CU0 to drives 8-F).
- FRU025 *** CU read bus remote cable CU-P2A1 to CU-P1B1 (in CU0 if the failing connection was from CU1 to drives 0-7; in CU1 if the failing connection was from CU0 to drives 8-F).
- FRU260** Read bus remote cable - read bus part of cable assembly CU-P2A2 to other CU-P2A1 (from CU0-P2A2 to CU1-P2A1 if the failing connection was from CU0 to drives 8-F; from CU1-P2A2 to CU0-P2A1 if the failing connection was from CU1 to drives 0-7). (See Note 2.)
- FRU 024** CU Read bus remote cable 01A-A2U4 to CU-P2A2 (in CU0 if the failing connection was from CU0 to drives 8-F; in CU1 if the failing connection was from CU1 to drives 0-7).
- FRU140** 01A-A2 CU logic board.

*This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.

5. Checking for Short Circuits

Short circuits can be isolated to a failing tape unit by looping a failing diagnostic and separating groups of tape units until the failure is isolated to a single tape unit. Make resistive measurements in the tape unit with the short circuit or the subsystem read bus while separating groups of tape units until the problem is isolated.

Notes:

- FRU022** connects from 01A-A2U2 to CU-P1A1 on control units without EC A57689 installed. **FRU022** connects from 01A-A2Q4 to CU-P1A1 on control units with EC A57689 installed.
- FRU024** connects from 01A-A2U4 to CU-P2A2 on control units without EC A57689 installed. **FRU024** connects from 01A-A2Q2 to CU-P2A2 on control units with EC A57689 installed.

Drive Interconnections (Continued)

Tape Unit With Bill of Material 6460006 and Control Unit With Bill of Material 6460460

Troubleshooting Procedure 4 (Continued)

6. Resistive Measurements

- a. 100 ohms is the nominal resistance across the differential read data pins (m to p) for each track for read data 1A local through read data 9B remote, and at least, 3000 ohms between adjacent read data bus track pins and from either side of a differential read data bus pin (m or p) to ground, at control unit logic cards 01A-A2R2, 01A-A2S2, and 01A-A2T2 (logic cards must be installed). (See RD001, RD101, and RD201 for reference.)

OR

- b. 100 ohms is the nominal resistance across the differential read data pins (m to p) for each track for read data 1A local through read data 9B remote, and at least, 3000 ohms between adjacent read data bus track pins and from either side of a differential read data bus pin (m or p) to ground in the last tape unit in the string at TU-D1-P2A1, or TU-D1-P2B1. Use control unit logic pages WT004, 006, 008, and 010 pin assignments for CU-P1A1 or CU-P1B1 to identify the pin assignments of TU-D1-P2A1 or TU-D1-P2B1. (CU-P1A1 and CU-P1B1 have the same pin assignments as TU-D1-P2A1 and TU-D1-P2B1.) See "Control Unit Subsystem Cable Diagrams" on EADs 5044-5046 for reference.

To isolate a short between the control unit and the tape units, open the connector at CU-P1A1 or CU-P1B1. Check the resistance measurements at the first tape unit TU-D1-P2A1 or TU-D1-P2B1 and at CU cards 01A-A2R2, 01A-A2S2, and 01A-A2T2 (logic cards must be installed).

7. Short Circuit In A Tape Unit

- a. Open the connectors at TU-D0-RA(Tee) and TU-D1-RA(Tee), or at TU-D0-RB(Tee) and TU-D1-RB(Tee).
- b. If the short circuit remains, the problem is in the area of the cable from the previous TU-D1-P2A1 (or if the first tape unit from CU-P1A1) to TU-D1-P2A1; or from the previous TU-D1-P2B1 (or if the first tape unit from CU-P1B1) to TU-D1-P2B1.

Possible FRUs:

FRU088 Read bus A adapter cable from previous TU-D1-P2A1 (or if the problem is isolated to the first tape unit, CU-P1A1 to TU-D1-P2A1); (from CU0, if the failing connection was from CU0 to Drive addresses 0 or 1; from CU1, if the failing connection was from CU1 to Drives 8 or 9).

FRU092 Read bus B adapter cable from previous TU-D1-P2B1 (or if the problem is isolated to the first TU, CU-P1B1) to TU-D1-P2B1 (from CU0, if the failing connection was from CU1 to Drive addresses 0 or 1; from CU1, if the failing connection was from CU0 to Drives 8 or 9).

- c. If the short disappeared when the TU-D0/1-RA(Tees) or TU-D0/1-RB(Tees) were opened, reconnect the Tees, one at a time, until the short circuit returns, to determine which read drive bus (D0 or D1) has the short circuit. Check the cabling from the Tee connector to the failing drive logic board. If a cabling problem is found, replace the defective cable. If no cable problem is found, replace the failing drive logic board 02A-A1.

FRU057 Read Adapter A Cable TU Tee (TU-D0/D1-RA(Tee) to 02A-D0/D1-A1G2 (Right TCC).

FRU055 Read Adapter B Cable TU Tee (TU-D0/D1-RB(Tee) to 02A-D0/D1-A1G2 (Left TCC).

FRU0-58 02A-A1 Drive Logic Board.

8. Short Circuit In The Control Unit

- a. Review EREP or the system console messages to determine if the problem is in CU0 or CU1, and to drives 0-7 or 8-F.
- b. Select a control unit and the cables to test as follows:

Failing CU/ Drive Group	Check For Short Circuits At:
CU0 DRVs 0-7	CU0 at CU-P1-A1 Local
CU0 DRVs 8-F	CU0 at CU-P1-B1 Remote
CU1 DRVs 0-7	CU1 at CU-P1-B1 Remote
CU1 DRVs 8-F	CU1 at CU-P1-A1 Local

See control unit logic pages WT004, 006, 008, and 010 for pin assignments of CU-P1A1 or CU-P1B1. See "Control Unit Subsystem Cable Diagrams" on EADs 5044-5046 for reference.

- c. Check for short circuits in the control unit back to 01A-A2R2, 01A-A2S2, and 01A-A2T2, (CU logic RD001, 101, 201) for read data 1A local through read data 9B remote. Correct any cable problem found. If cabling is not found to be the problem, replace the control unit logic board 01A-A2.

Possible FRUs:

FRU022 (See Note 1.)

CU read bus local cable 01A-A2U2 to CU-P1A1 (in CU0, if the failing connection was from CU0 to drives 0-7; in CU1, if the failing connection was from CU1 to drives 8-F).

FRU025 * CU read bus remote cable CU-P2A1 to CU-P1B1 (in CU0, if the failing connection was from CU1 to drives 0-7; in CU1, if the failing connection was from CU0 to drives 8-F).

FRU260 Read bus remote cable-Read bus part of cable assembly CU-P2A2 to other CU-P2A1 (from CU0-P2A2 to CU1-P2A1, if the failing connection was from CU0 to drives 8-F; from CU1-P2A2 to CU0-P2A1, if the failing connection was from CU1 to drives 0-7).

FRU024 (See Note 2.)

CU read bus remote cable 01A-A2U4 to CU-P2A2 (in CU0, if the failing connection was from CU0 to drives 8-F; in CU1, if the failing connection was from CU1 to drives 0-7).

FRU140 01A-A2 CU logic board.

*This FRU is a feature on 3480 Model A11 and standard on 3480 Model A22.

If you have completed all activities for this EAD, return to the FSI section to see if any additional actions are specified. If any are, follow the FSI's direction. If the FSI does not provide any more directions, do the following:

- After each repair action, or if the call has to be deferred, return to the Support Procedures section for the end of call actions.
- If no repair action has been found, call your next level of support.
- After an assisted repair action, return to the Support Procedures section for the end of call actions.

Read Bus-Cabling/Board Only EAD 5043

Additional Information For Troubleshooting Procedure 4

Read problems are normally corrected by following troubleshooting actions in the FSI or another EAD for that specific read FSC.

This EAD assumes those actions have already been followed, that address the possible logic causes of a read problem. This EAD strictly troubleshoots the related read cabling and logic boards, and isolates a problem to a Tape Unit, or a Control Unit out of a string of subsystem drives.

The results of read bus shorts can be errors showing up in a random manner; therefore, more effort is required to isolate the problem. An open on the read bus can effect one drive, or all drives past the open, further away from the control unit.

The read bus connections are shown on EADs 5044-5046. The impedance across the differential read data pins (m to p), for each track, is 100 ohms, nominal, developed by the terminators in the control unit read detect cards 01A-A2R2, S2, and T2 (logic pages RD001, 101, 201).

With the control unit read detect cards removed, at least 1 megohm is measured across the differential read data bus pins (m to p). An impedance greater than 3000 ohms between adjacent read data bus track pins and from either side of a differential read data bus pin (m or p) to ground, is considered good.

Notes:

1. FRU022 connects from 01A-A2U2 to CU-P1A1 on control units without EC A57689 installed. FRU022 connects from 01A-A2Q4 to CU-P1A1 on control units with EC A57689 installed.
2. FRU024 connects from 01A-A2U4 to CU-P2A2 on control units without EC A57689 installed. FRU024 connects from 01A-A2Q2 to CU-P2A2 on control units with EC A57689 installed.

Drive Interconnections (Continued)

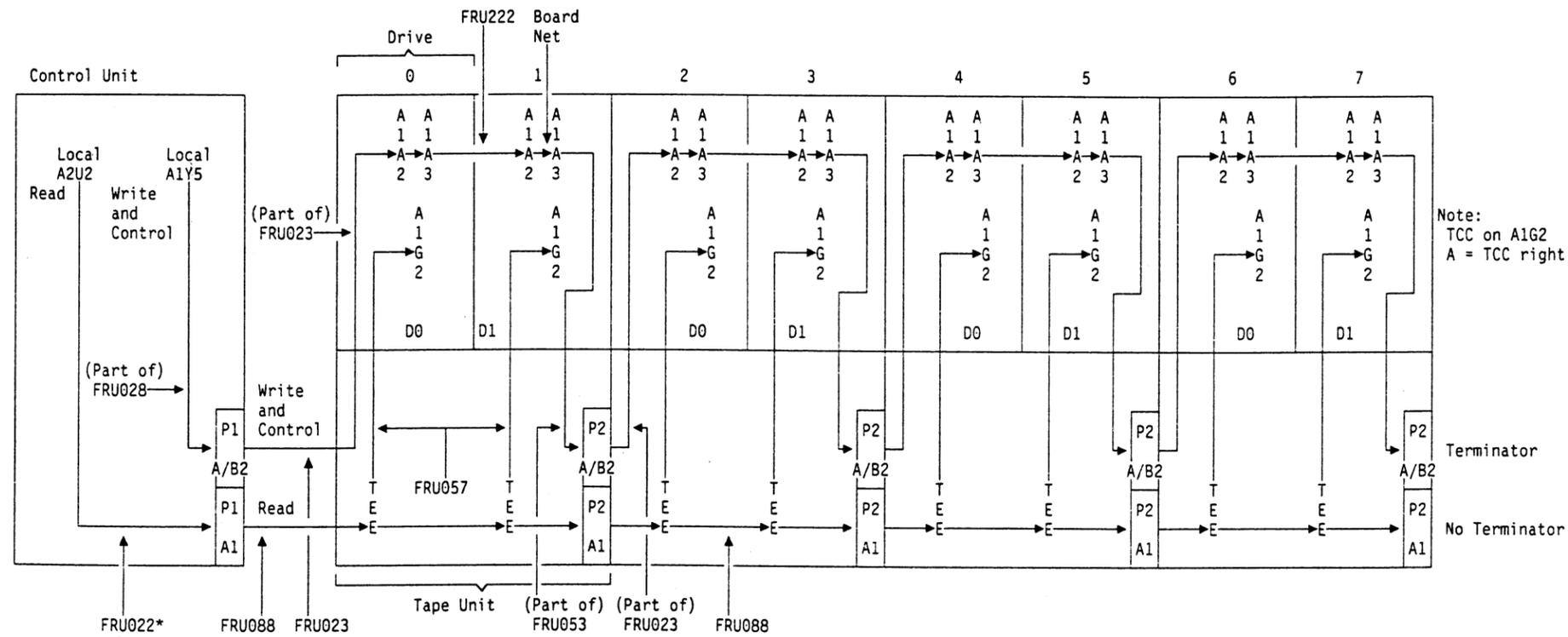
Tape Unit With Bill of Material 6460006 and
Control Unit With Bill of Material 6460460

Control Unit Subsystem Cable Diagrams

Single Control Unit Subsystem Cable Diagram

Drive isolation requires you to disconnect cables and move terminator cards. The drawings on this error analysis diagram and the two following show drive to control unit interconnection cable paths.

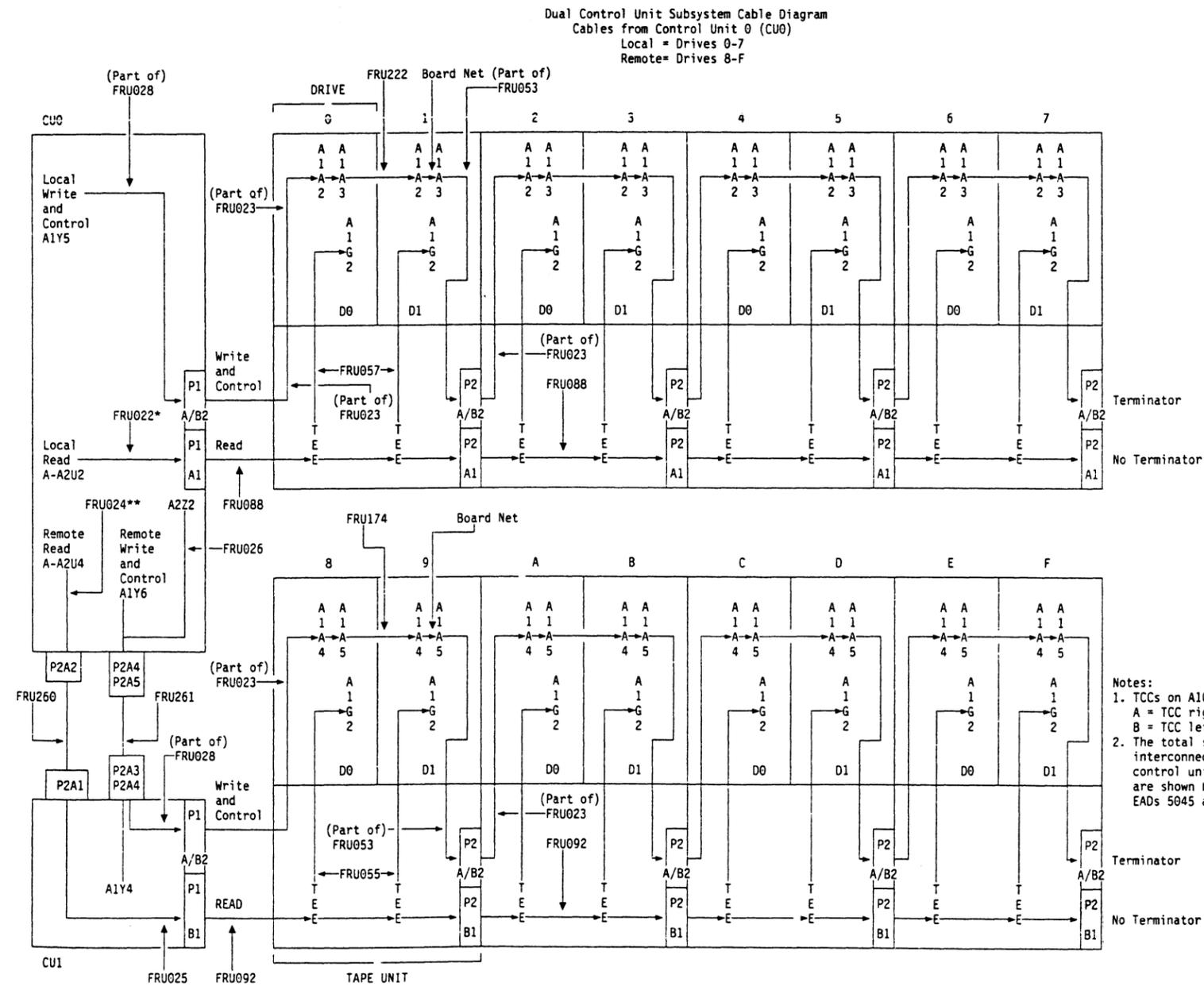
CAUTION
Moving cables or terminators may disrupt customer operation.



*FRU022 connects from 01A-A2U2 to CU-P1A1 on control units without EC A57689 installed.
FRU022 connects from 01A-A2Q4 to CU-P1A1 on control units with EC A57689 installed.

Tape Unit With Bill of Material 6460006 and
Control Unit With Bill of Material 6460460

Control Unit Subsystem Cable Diagrams
(Continued)

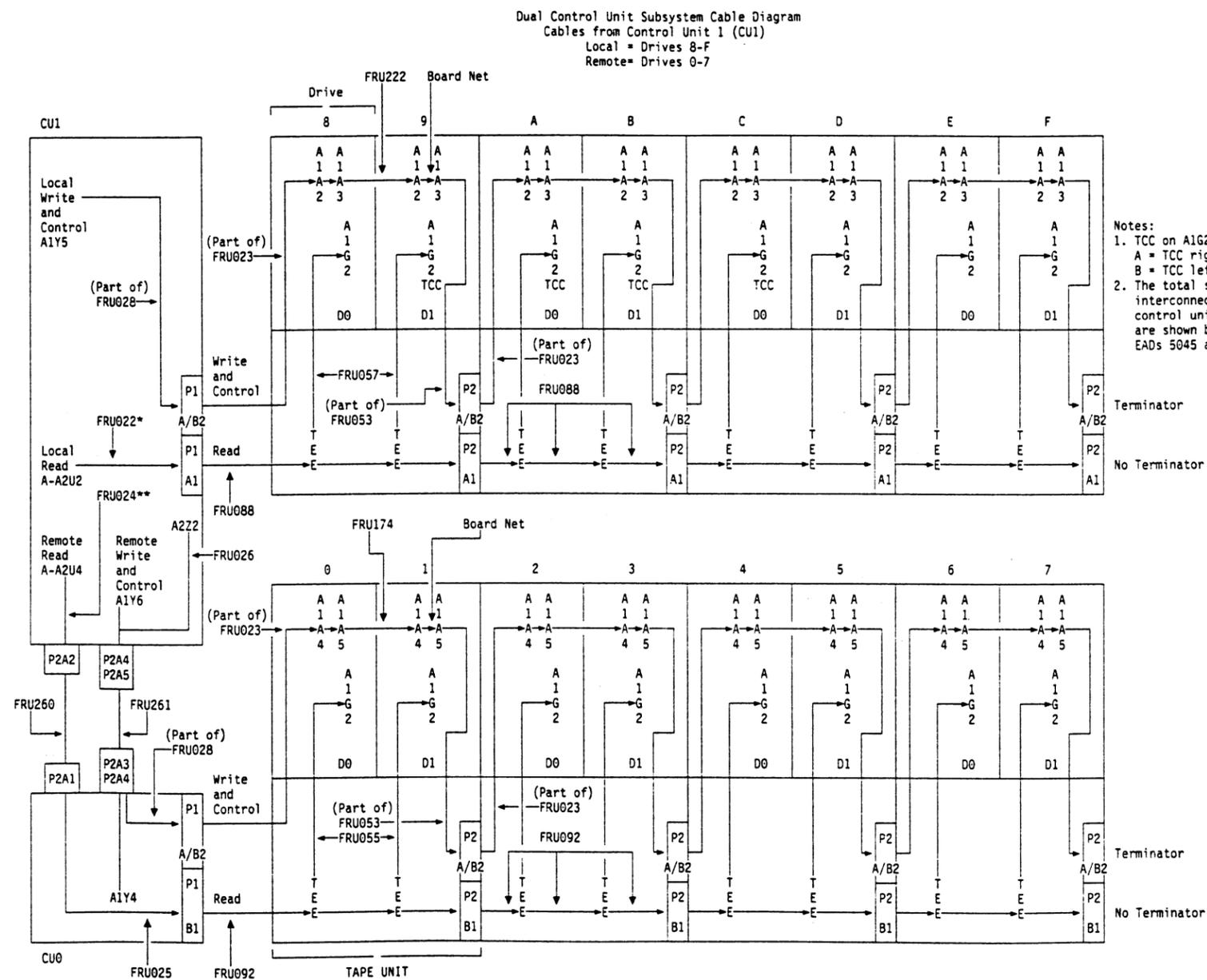


*FRU022 connects from 01A-A2U2 to CU-P1A1 on control units without ECA57689 installed.
FRU022 connects from 01A-A2Q4 to CU-P1A1 on control units with ECA57689 installed.
**FRU024 connects from 01A-A2U4 to CU-P2A2 on control units without ECA57689 installed.
FRU024 connects from 01A-A2Q2 to CU-P2A2 on control units with ECA57689 installed.

Drive Interconnections (Continued)

Tape Unit With Bill of Material 6460006 and
Control Unit With Bill of Material 6460460

Control Unit Subsystem Cable Diagrams
(Continued)



*FRU022 connects from 01A-A2U2 to CU-P1A1 on control units without ECA57689 installed.
FRU022 connects from 01A-A2Q4 to CU-P1A1 on control units with ECA57689 installed.

**FRU024 connects from 01A-A2U4 to CU-P2A2 on control units without ECA57689 installed.
FRU024 connects from 01A-A2Q2 to CU-P2A2 on control units with ECA57689 installed.

Error Description

This Error Analysis Diagram (EAD) describes:

1. The errors that the microprocessor detects on the dual control unit communication paths of the status store to status store functional areas of the subsystem.
2. The parity errors that the hardware checkers detect on the internal and external buses of the dual control unit status store communicator.
3. The use of error codes furnished by the product package, after examining a check 1 error.
4. A data path error isolation procedure requiring sense analysis.

You are here because:

- The FSI section called out this EAD.
- OR
- A diagnostic failure ID called out this EAD.

Note: In a dual control unit configuration, there are device data buses, read buses, and remote paths between the channel adapters and buffers that are used for data transfers and communication in the subsystem. Problems in the read or device data buses are discussed in the "Drive Interconnections" EAD pages. Channel adapter to buffer paths problems are discussed in the "Status Store/Channel Adapter" EAD pages.

Error Condition Theory

When the dual control unit feature is installed, the status store function provides a communications path between the two control units (see "Control Unit to Control Unit Communication" on OPER 1).

The connection between the two control units is made under control of the orders from the microprocessor. The data that concerns the status of the subsystem is passed between the two status stores. This permits both status stores to be repeatedly updated and contain the same information about all the drives in the subsystem (see figure 1). The connect lines 1 are active after a power-on-reset and remain active until a control unit is taken offline with the control unit offline switch, or another power-on-reset occurs.

To update a storage location in status store, the control unit that has the master state 2 places a byte of data on the data bus 7 and the address of that byte on the address bus 6 and raises memory write 5. The information is placed in both status stores.

The two microprocessors communicate with each other by placing bytes of data (a 'message') in specific locations in the status store RAM. When the message is complete, the sending status store raises the send 3 line. After the data has been transferred to control storage, the receiving microprocessor raises acknowledge 4.

The microcode monitors the sequence of events on the dual control unit bus and develops error codes that define the error detected. Because of the continuing communications between the two control units, a problem in one control unit can cause data that is in error to be sent to the other control unit. This can cause check conditions and microcode hangs in either or both control units.

There are several buses between the status store card and the status store communication card that are parity checked. See DF 1 for the bit definitions for "Channel Error Register." Results of these hardware checks are set in sense data bytes 16 and 17 as D2nn error codes. 'nn' is the contents of the channel error register.

Dual Control Unit

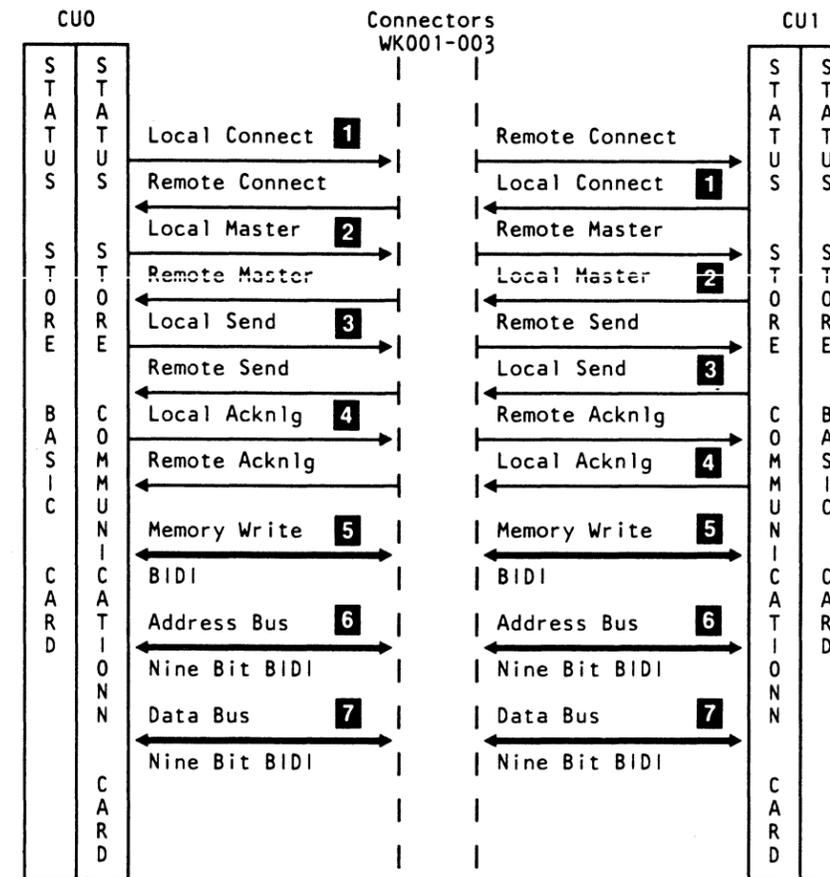


Figure 1. Status Store to Status Store Connections

Note: The voltage level of the status store to status store signal lines is NPL (0 Vdc and +3 Vdc).

Troubleshooting Guide – General

1. Before continuing, review the work done by the product trained CE to determine that all actions and FRU replacements called out by the product maintenance package have been performed correctly.
2. If the problem indicates a status store to status store error and the FRUs called out by the product package have been replaced, replace the same FRUs in the other control unit before continuing with this EAD.
3. After a repair action has been made, test the subsystem using the product package functional verify program, OLTs, diagnostics, or customer program that caused the original failure.

External System Problems

Check with the customer or account CE and determine if any changes (such as PTFs, APARS, or other changes) have been made to the operating system.

Determine if any changes or updates have been made to other parts of the subsystem.

For example:

- Has any microcode change been made?
- Has an MES or EC been installed on the subsystem? Check with the higher levels of support for information on any possible problems with the change that has been made.
- Has any drive been added or removed from the subsystem?
- Has any system cabling change been made?
- Has any addressing or UCW plugging been made?

If any changes have been made, try to bypass the change to see if the problem still exists. If the problem goes away, correct and reinstall the change.

Sense Data Analysis

1. Review the microcode and hardware detected errors in the sense data. The status store to status store communications are an asynchronous operation with respect to the other control unit functions.

The error description discussed that erroneous data can cause check or hang conditions in one or both control units. In some of these conditions, no sense data will be available.

2. Go to "Procedure 1" on this page, if the sense data is available. Go to "Procedure 2" on EAD 5065 if either or both control units are in a check 1 or hang condition. Run the product package to clear the control unit and get the scan ring data. If the product package provides an error code, use it with the FSI to determine the failing area of the subsystem.

Troubleshooting Guide

Procedure 1

Sense Data Available

This procedure should be used if the sense data is available to find a common failing path or common failing area of the dual control unit subsystem.

1. Get all the sense data that is available from the console messages or EREP and review it.

The drive address in the console message, EREP, and the contents of sense byte two, may be used to determine which data path was in use at the time of the failure.

Note: The data path in use at the time of the failure, indicated by sense byte two, may not always be the actual failing path.

In most cases, sense byte two will indicate the correct path for maintenance. If a successful repair action cannot be made on the indicated path, then suspect the possibility of another path failing. See START 1 for "Error Path Isolation."

For example:

- Channel adapter A on control unit 0 is attached to channel 1 of a system.
- Channel adapter A on control unit 1 is attached to channel 5 of a subsystem. Channel 5 is the alternate path for channel 1. (The operation system selects channel 5 if it finds channel busy).
- The console message reports a failure on drive 187 and sense byte two may have one of the following values (see the figure below).

SENSE BYTE 2	CHANNEL ADAPTER LOCATION	BUFFER LOCATION
00100000	CU0	CU0
00110000	CU1	CU0
00101000	CU0	CU1
00111000	CU1	CU1

Figure 1. Sense Byte Two - Path Possibilities

2. Review the microcode and hardware detected error in the sense data. These will be helpful in determining what type of failure occurred and, also, what internal interconnection failed (other than a data path). See SENSE 1 "Format 19 and 20 Sense Bytes 8-15 Description" for the microcode detected errors and "Format 19 and 20 Sense Bytes 16-23 Description" for hardware errors. Read the failure descriptions in the FSI to find common areas of failure.

Note: The microcode detected errors set in sense bytes 10-11, 12-13, and 14-15 are in a first error, second error, and last error order. It is possible that the second and last errors are an effect of the error recovery procedure taken for the first error. See "Format 19, 20, and 21 Sense Byte 3" on SENSE 1.

When a specific path is failing, the "Drive Interconnection" and "Status Store/Channel Adapter" pages (see EAD 1) can be helpful in isolating the problem and should be used when a drive path is suspected. The "Force Pathing" procedure (on the next page) can be used when isolating drive path failures.

Troubleshooting Guide (Continued)

Force Pathing

Force pathing is a tool that can be used for problem determination in a dual control unit configuration when a path to a specific drive is suspected of failing. Force pathing is also useful for isolating intermittent failures on a path since it can assign a drive to a buffer and left in force pathing mode for a reasonable test period.

The Force Pathing utility is resident on the support diskette. See "Select Control Options" under "Trace/Match Control" on SDISK 1 for the procedures. The MD must be connected to the control unit, with the buffer, to have a drive path forced to it. Force pathing prompts the selection of a specific drive address. The next channel command for the selected drive forced to use the buffer in the control unit connected to the MD. Once the drive is selected, the force pathing mode is maintained until the MD is disconnected, or a system reset, control unit reset, or an IPL is performed.

Since the MD is used to force pathing, OLTs must be used to operate the selected drive. OLTs can be used to determine if a suspected failure was eliminated or to try to re-create an intermittent failure on the forced path.

Use sense byte two to assist in determining which control unit, channel adapter, and buffer that was in use at the time of the failure, when selecting the drive and buffer to forced pathing.

Use figure 1 to determine which cable groups are involved when a failure occurs when using one of the listed buffer/drive paths. Check the cables and connectors in each indicated cable group (see "Cable Group Table" on FSI 1) of a failing path for pinched or broken wires, bent or damaged pins, and loose connections or crimped wires.

For each buffer/drive path possibility in figure 1, the cable groups that are associated with a failing operation are indicated as follows:

- 1 is the cable groups that are used for read operations only.
- 2 is the cable groups that are used for all operations.
- 3 is the cable groups that are used for all operations, except read.

Suspect the O1A-A1 boards of the control units if the cable groups cannot be determined as the cause of the failure. See "Drive Interconnections" and "Status Store/Channel Adapter" on EAD1 for more path failure determination information. Repair any problems found and test the subsystem using the program that first detected the problem.

CU0 or CU1 BUFFER/DRIVE PATHS	CABLE GROUP NUMBER									
	50	61	62	65	66	67	80	82	85	86
SENSE BYTE 2										
Local Buffer/ Local Drive		1		2	1		3		3	
Local Buffer/ Remote Drive			1	2		1		3		3
Remote Buffer/ Local Drive	2	1		2	1		3		3	
Remote Buffer/ Remote Drive	2		1	2		1		3		3

Figure 1. Buffer/Drive Paths and Cable Groups

Troubleshooting Guide (Continued)

Procedure 2

Control Unit Check 1 or Hang Condition

Note: Troubleshooting problems on the two control unit communication paths requires both control units.

The product maintenance package examines the control unit check conditions, stores the sense error data, and develops an error code. Use the product maintenance package, if it has not already been done, to get the error code.

Be sure that this check or hang condition is the same or similar to the one that was first reported. If the product maintenance package produces an error code other than the original error code, use this error code as an entry back to the FSI section. If the FSI section keeps sending you back to this EAD, continue with this procedure.

- Because erroneous data sent between the status stores of the control units can cause one or both control units to have check 1 errors, replacing the FRUs called out by the product maintenance package in both control units must be considered first.
- Determine if the check 1 condition was caused by a status store to status store error, by separating the dual control units using the "Subsystem Control Unit Isolation" procedure on this page.
- Perform the "Status Store to Status Store Cable Continuity Check" procedure on this page.

Subsystem Control Unit Isolation

The subsystem control unit isolation procedure may be used to separate a dual control unit subsystem when it is necessary to defer maintenance and the customer prefers to run in a degraded mode.

If it becomes necessary to isolate the two control units in a subsystem, use the following procedure:

1. For maximum safety in protecting the customer's data, it is best that the customer permit all tape jobs to complete. Also, do not initiate any new tape jobs until the isolation procedure is complete.

If this is not possible, the customer should quiesce the system. This permits all I/O sequences to complete and then halts program execution.

2. At either control unit, remove the cables at the P2 connector (see LOC 1 "CU P2 Cable Connectors"). This opens the remote buffer to channel adapter interconnection, and the status store to status store interconnection.
3. IML both control units.
4. The customer may now restart the system. The system has both control units and access to the attached drives. Dynamic load balancing is eliminated.
5. Depending on the customer set up, some alternate paths may be eliminated by the separation of the two control units.

Status Store to Status Store Cable Continuity Check

Note: This check requires that both control units be offline and powered off.

If the dual control unit communication cable is suspected of causing the failure, this basic continuity check can be used.

This procedure checks the continuity of the status store to status store communication lines through the 01A-A1 boards, the A1Y2 and A1Y3 to CU P2A4 cables and connectors in both control units. The local CU P2A4 to remote CU P2A4 communication cable is also checked.

1. See logic pages WK001 and WK003 for the pin locations at the 01A-A1Y2 and A1Y3 board positions. The measurements will be made at these locations.
2. Switch power off in both control units.
3. Remove the 01A-A1F2 card from the control unit in which the measurements will be made. This control unit will be referred to as the local control unit.
4. Using a CE meter (R X 1 scale), connect one lead to ground. Use the other lead to measure the resistance of the signal lines.

The status store to status store BI-DI signal lines are terminated in both control units by the 01A-A1F2 cards. Removing the 01A-A1F2 card in the local control unit eliminates one termination. For the remote CU address bus and the CU data bus lines (bits P,0-7) an indication of good continuity is approximately 90 ohms. A reading of about zero ohms indicates a line shorted to ground. If the reading is about 45 ohms, suspect that two lines are shorted together. If a measurement is greater than 90 ohms, suspect an open cable or loose connection. The status store to status store signal lines (memory write, CU master, CU connected local, CU send local, CU acknowledge local) have the same measurement indications as the address and data bus lines.

Do the following to check the CU connected, CU send, and the CU acknowledge remote signal lines:

1. Disconnect the CE meter and replace the 01A-A1F2 card that was removed from the local control unit.
2. Remove the 01A-A1F2 card from the remote control unit.
3. Use the CE meter (R x 1 scale), and measure the continuity of the CU connected local, CU send local, and CU acknowledge local lines in the remote control unit. These local lines are the same lines that are labeled as remote lines in the local control unit.
4. Compare the measurements with the measurements of the CU address and CU data bus lines. Approximately 90 ohms is a good measurement, 45 ohms indicates that two lines are shorted together, zero ohms indicates a line shorted to ground, and greater than 90 ohms indicates an open or loose connection.
5. If a wrong indication is found, suspect the status store basic and the status store communication card TCCs (01A-A1WFG, XFG, YFG, and ZFG) and cables in cable group 52 (see "Cable Group Table" on FSI 1). Also suspect the 01A-A1 boards in both control units.

For each cable listed in cable group 52, check the cables and connectors for pinched or broken wires, bent or damaged pins, and loose connections or wire crimps.

When a cable cannot be determined as the cause of the failure, suspect the 01A-A1 boards in the control units. Use the logic pages and a CE meter to isolate the failing net to the failing logic board.

If all the activities for this EAD have been completed, see the FSI and determine if any additional actions are specified. If the FSI does not provide any continuing actions, follow the instructions below.

After each repair action, or if the call has to be deferred, return to the Support Procedures (SPROC) section for "End of Call Actions."

If no repair action has been found, call your next level of support.

After an assisted repair action, return to the Support Procedures section for the "End of Call Actions."

No Trouble Found Procedures

Introduction

This EAD is used when:

- A reported problem cannot be identified or repaired.
- Repeated similar incidents have not been resolved.

Two key actions when dealing with these problems are:

- Use your next level of support and other support facilities to the fullest possible extent.
- Create and/or maintain a history: collect and record information.

Additional Subsystem Checks

1. If at this point you have not been directed to measure the voltages, do it now:

In the control unit (in each control unit if two are involved), measure the voltages at both boards. Work back toward the power supply test jack. At TB's or other connectors, check for loose or faulty connections. Move the power distribution cabling around to expose faulty cabling or connections. If any problem is discovered, trace it to its source and repair it. Repeat these procedures in tape units that are suspected of contributing to the problem. In the tape unit, measure the voltages in each drive and work back to the common power supply test jack. See the "Voltage Distribution List" in the tape logic diagram Manual.

2. If the air pressure and vacuum have not been checked, perform the measurements on all suspected drives. See PNEU 5.
3. Use the LOC section for reference and locate the fans in the suspected drives and control units. Ensure that the fans are operating and moving air in the correct direction.

Documenting and Tracking

1. Run a subsystem checkout when the symptoms shown by a problem are misleading, erratic, confusing, or otherwise cause the wrong repair actions to be taken, or do not lead to a repair. Try running OLTs, basic control unit tests, and drive diagnostics and see if the failure occurs with different symptoms.
2. Obtain and record the console message information at the time of failure.

3. Note and record other data about the failures:

- How often is it happening?
- When is it happening?
- What else is happening in the same time period?
- Who are the people involved when it happens?
- What systems, applications, programs, are active when it happens?

4. Compare previous history with the current results to analyze repeated incidents.

5. Record any problems occurring in other parts of the system (interface control checks, processor errors, and so on).

6. Given a history of repeated incidents, you should use each entry into this EAD as a reason to attempt some action or perform some experiment designed to resolve or further isolate the problem. Record what you are attempting, what you expect might happen as a result, and what it might mean if your expected results occur or don't occur. Let the next person who might be working on the problem know what you are doing and thinking.

Get Assistance

Use whatever means of support and assistance that have been provided for you. With their help, any or all of the following can be considered and accomplished if available and appropriate:

1. Information exchange:

- Collection and transmission of data related to the problem such as subsystem dumps.
- Problem/Incident data base search.
- Emergency patches.

2. Mechanically reconfigure to keep the customer running, or verify or eliminate the condition of the problem.

- Move drives within the string or between strings.
- Separate dual control units into single control units.
- Substitute an unused channel adaptor position for a suspected one, or exchange channel cables between two channel adaptors.

3. Setup special operating conditions for the subsystem, with advice and assistance to see if problem is eliminated, changes, or to trap additional information.

- Change channel mode or control unit addressing.
- Prevent load balancing.
- Prevent control unit error recovery.
- Define and setup trace/match control options.
- Prevent ECC.
- Force pathing.
- Force error logging.
- Monitor key activity
 - SMF
 - Channel interface monitors
 - Logic analyzers

Other Things to Check

1. System Conditions

Check for recent changes to programs, system or channel, or 3480 subsystem, such as:

- Engineering changes
- REAs
- APARs
- PTFs
- PUT tapes
- New programming applications
- Reconfiguration activity
 - Channel recabling
 - I/O address changes
 - UCWs and channel operating modes

No Trouble Found Procedures EAD 5070

2. Environmental Conditions

Consider if any abnormal conditions in the following areas may be contributing to the problem:

- Power
- Circuit loading
- Inductive or reactive loads on the same circuit as the 3480.
- Time of day
- Condition of the wiring and connectors

3. Temperature and humidity

4. Control of static and dust

5. EMC

6. Operational Conditions

Are operating conditions contributing to the problem?

- Tape storage, transportation, and handling
- Operator actions
- System resources in use at the time of failure
- Path grouping - vary on-line and off-line status

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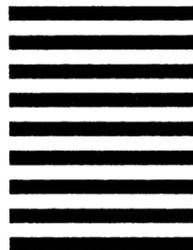


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