CHAPTER 12 MAINTENANCE

12.1 Outline

(1) General description

This chapter explains the maintenance of this drive using following procedures.

① Troubleshooting (Section 12.2)

This section explains the troubleshooting method by the MTU error code indicated by the FSC of the MTC or the error code displayed on the MTU operator panel.

② Replacement (Section 12.3)

This section explains the replacement procedure of the spare parts.

③ Confirmation test (Section 12.4)

This section explains the confirmation test procedure using the diagnostic function of the MTU after replacement of spare parts.

④ Periodic maintenance (Section 12.4)

This section explains the periodic maintenance procedure.

(2) Easy maintenance

① Easy troubleshooting by a lot of error codes
② A few spare parts
③ Component layout with concidering the maintenance
④ No adjustment after replacement of spare parts
⑤ Easy confirmation after replacement by high performance diagnostic function

12.2 Troubleshooting

12.2.1 Overview

The messages displayed on the operator panel and sense bytes can be used for troubleshooting.

Troubleshooting analysis is normally performed on the basis of the sense byte contents, using the sense key in each sense byte as the reference. However, error codes may be displayed as the sense bytes of some types of failures. If an error code is displayed, it must be found in the error code table. If the fault symptom code (FSC) indicates that an event may be a drive-related failure, the FSC table must be referred to.

If an error is detected by the drive, the corresponding error code is indicated by the message display on the operator panel.

This chapter explains the information about the errors which can be detected by the drive.

The following items must be checked prior to troubleshooting.

(1) The DC power supply meets the requirement.

(2) The controller interface cable is connected correctly.

(3) The specified terminating resistor is installed.

(4) The address is set correctly.

(5) Other settings are correct.

(6) The cables and connectors inside the unit are connected correctly.

12.2.2 Troubleshooting procedure

	Trouble contents		Next procedure
		Detailed	
1	Power failure	The MTU power cannot be turned on or is turned off unexpectedly.	12.2.3
2	Check lamp on the CE panel of MTC is on.	FRU code is displayed on the CE panel.	12.2.4 (3)
3	Error message is displayed on the operator panel of MTU.	"■CHK xx■" is displayed on the operator panel.	12.2.5 (1)
		"##: ERRxx" is displayed on the operator panel.	12.2.5 (2)
4	UNAVAILABLE lamp is on.	The MTC is not connected to the channel.	(Note)
5	FSC is displayed.	FSC is displayed on the console display or logging list.	12.2.4 (2)
6	The host system detects the failure of the subsystem.	ICC (interface control check)	Confirm the host system.
		CC=3	
		CUB (control unit busy)	
7	Other failure	The tape is stopped with abnormal operation.	12.3.2

Note:

This error is caused by setting the ENABLE/DISABLE switch on the MTC operator panel to DISABLE. To clear this error, set the ENABLE/DISABLE switch to ENABLE.

12.2.3 Power failure

Trouble contents	Procedure			Possible failure unit Necessary action	Go to	Reference section
	Item		Decision			
Power cannot be turned on and alarm lamp on the power suppply is on.	1	Confirm which alarm lamp is on.			Item 9 or 10	
Power cannot be turned on and alarm lamp on the power supply is off.	2	Is the power control cable connected correctly?	Yes	Exchange the power supply.		
			No	Connect correctly.		
MTU power is turned off at power-on or during operating.	3	Is any alarm lamp on the power supply on?	Yes	Confirm which alarm lamp is on.	Item 9 or 10	
			No		Item 7	
	4	Is the circuit breaker of the AC unit turned off?	Yes		Item 8	
			No	Exchange the power supply.		
Power is turned off at power-on or during operating.	5	Turn on the circuit breaker. Can the power be turned on?	Yes	Wait reappear-ance. If this trouble occurs again, exchange the power supply.		
			No	Exchange the power supply.		

12.2.3 Power failure

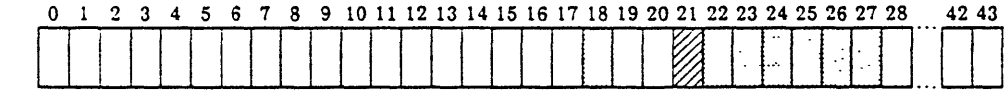
Trouble contents	Procedure			Possible failure unit Necessary action	Go to	Reference section
	Item		Decision			
Power cannot be turned on and alarm lamp on the power suppply is on.	1	Confirm which alarm lamp is on.			Item 9 or 10	
Power cannot be turned on and alarm lamp on the power supply is off.	2	Is the power control cable connected correctly?	Yes	Exchange the power supply.		
			No	Connect correctly.		
MTU power is turned off at power-on or during operating.	3	Is any alarm lamp on the power supply on?	Yes	Confirm which alarm lamp is on.	Item 9 or 10	
			No		Item 7	
	4	Is the circuit breaker of the AC unit turned off?	Yes		Item 8	
			No	Exchange the power supply.		
Power is turned off at power-on or during operating.	5	Turn on the circuit breaker. Can the power be turned on?	Yes	Wait reappear-ance. If this trouble occurs again, exchange the power supply.		
			No	Exchange the power supply.		

Trouble contents	Procedure			Possible failure unit Necessary action	Go to	Reference section
	Item		Decision			
PWR ALM lamp is on.	6			Exchange the power supply.		
DEVICE ALM lamp is on.	7	Does the fan at rear of the drive operate correctly?	Yes	Exchange PCA-DVC and power supply.		13.2.6
			No	Exchange the fan assembly.		13.2.13

12.2.4 MTC troubleshooting

(1) Sense byte

Sense byte



FSC

Item	Format Code
What code is in sense byte 18?	20
	21
	22

Item	Sub Code
What code is in sense byte 21? Upper 4 bits: Sub code Lower 4 bits: Internal retry count	1X (FMT Error)
	2X (Drive Error)
	Other than 1X and 2X

Item	Byte	Contents	Go to
What code is in sense bytes 22 to 27? Priority (26, 27) > (24, 25) > (22, 23) *1	22, 23	First Symptom Code	12.2.4 (2)
	24, 25	Second Symptom Code	
	26, 27	Last Symptom Code	

Item	Byte	Contents	Go to
What code is in sense bytes 22 to 27? Priority (26, 27) > (24, 25) > (22, 23) *1	22, 23 *3	First Check Code (Byte 23 = Check Code)	12.2.5 (1)
	24, 25	Second Check Code (Byte 25 = Check Code)	
	26, 27	Last Check Code (Byte 27 = Check Code)	

Contents
Statistical information

Contents
Hardware register error information

Contents
Host channel error information

*1: When one error occurs, it is indicated in bytes 22 and 23. When several errors occurs, the newest error is indicated in bytes 26 and 27. Previous errors are indicated in bytes 22 to 25.

*2: When FSC = 00XX, XX indicates the MTU check code.

*3 When FSC = 0000, this code indicates the MTU error.

(2) Falt symptom code

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents	Falt Symptom Code	MTU error 00XX : XX = Check Code 00XX	Reference
Drive	PCA-FA (Formatter/Analog)		See item (1) in Subsection 12.2.5.	12.3.2
	PCA-SCF (SCSI/Core function)			12.3.1
	PCA-WA (Write)	☆		12.3.7
	PCA-DVC (Drive control)	☆		12.3.5
	PCA-SV (Servo)	☆		12.3.6
	ROM kit			
	PCA-OP (Operator panel)			12.3.3
	Lifter solenoid	☆		12.3.10
	Head guide assembly	*		12.3.18
	Loader assembly	☆		12.3.9
	Threader assembly	☆		12.3.8
	Pump	☆		12.3.12
	Motor assembly (file reel)	*		
	Motor assembly (machine reel)	*		
	Fan assembnly			12.3.13
	Air filter			12.3.4
PSU	Power supply unit			
Tape	Cartridge tape			
Others	Dirty of head and tape running surface			12.5.2, 3
	Setting error			
	Operation error			
	Interface cable/terminator			
	Host system (including SCSI cable)			
ACL	Automatic cartridge loader			12.3.14

Priority of possible causes

◉ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents																	Reference
		Fait Symptom Code								Invalid Device REP Code								
										311F								
Drive	PCA-FA (Formatter/Analog)									△								12.3.2
	PCA-SCF (SCSI/Core function)									△								12.3.1
	PCA-WA (Write)	☆																12.3.7
	PCA-DVC (Drive control)	☆								◉								12.3.5
	PCA-SV (Servo)	☆																12.3.6
	ROM kit									○								
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*																12.3.18
	Loader assembly	☆																12.3 9
	Threader assembly	☆																12.3.8
	Pump	☆	-															12.3.12
	Motor assembly (file reel)	*																
	Motor assembly (machine reel)	*																
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape																	
Others	Dirty of head and tape running surface																	12.5.2, 3
	Setting error																	
	Operation error																	
	Interface cable/terminator																	
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

Priority of possible causes

- ◎ High
- ○ Middle
- △ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	Data error on FIFO Wrap	Send msg retry required	Send message timeout	Rcv resp retry required	Response timeout		Self Test Rtn1 BC not as expected	Self Test Rtn1 No micro data valid	Self Test Rtn1 BFR data mismatch	Self Test Rtn1 No EOT when BC = 1	Self Test Rtn1 BC < > 0 when EOT = 1	Rtn1 BST error reported					Reference
		Fait Symptom Code	3C00	3C01	3C02	3C03	3C04		3C10	3C12	3C13	3C14	3C15	3C16					
Drive	PCA-FA (Formatter/Analog)																		12.3.2
	PCA-SCF (SCSI/Core function)		◎	◎	◎	○	◎		◎	◎	◎	◎	◎	◎					12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆																	12.3.5
	PCA-SV (Servo)	☆																	12.3.6
	ROM kit																		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3 18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12 3 12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator																		
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*. Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

Contents		Fait Symptom Code		Self Test Rtn2 BFR data mismatch		Self Test Rtn2 BST error reported				Self Test Rtn3 CRC error not set		Self Test Rtn3 BFR data mismatch		Self Test Rtn3 BC < > 0 when EOT = 1	Self Test Rtn3 BST error reported	Self Test Rtn3 CRC error not reset			Reference
				3C23		3C26				3C31		3C33		3C35	3C36	3C37			
Drive	PCA-FA (Formatter/Analog)																		12.3.2
	PCA-SCF (SCSI/Core function)			◎		◎				◎				◎	◎	◎			12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆																	12.3.5
	PCA-SV (Servo)	☆																	12.3.6
	ROM kit																		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator																		
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	Self Test Run4 BFR data mismatch		Self Test Run4 BST error reported			Self Test Run5 LWR-1v10 fail	Self Test Run5 LWR-1v11 fail			Self Test Run6/7 No m data avail	Self Test Run6/7 BFR data mismatch		Self Test Run6/7 Data reversal fail (FMT reported)	Self Test Run6/7 Data reversal fail (BFR compit not set)	Self Test Run6/7 Data decompression	Reference
		Fait Symptom Code	3C43		3C46			3C58	3C59			3C62	3C63		3C6A	3C6B	3C6C	
Drive	PCA-FA (Formatter/Analog)																	12.3.2
	PCA-SCF (SCSI/Core function)		◎		◎			◎	◎			◎	◎		◎	◎	◎	12.3.1
	PCA-WA (Write)	☆																12.3.7
	PCA-DVC (Drive control)	☆																12.3.5
	PCA-SV (Servo)	☆																12.3.6
	ROM kit																	
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*																12.3.18
	Loader assembly	☆																12.3.9
	Threader assembly	☆																12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*																
	Motor assembly (machine reel)	*																
	Fan assembnly																	12.3.13
	Air filter																	12.3 4
PSU	Power supply unit																	
Tape	Cartridge tape																	
Others	Dirty of head and tape running surface																	12.5.2, 3
	Setting error																	
	Operation error																	
	Interface cable/terminator																	
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		Buffer error reported	Compression reported error	Timeout waiting for EOT						ADT error on first pass	BFC error	Compression error					Reference
	Fait Symptom Code		3CE0	3CE1	3CE2						3CF0	3CF1	3CF2					
Drive	PCA-FA (Formatter/Analog)																	12.3.2
	PCA-SCF (SCSI/Core function)		◎	◎	◎						◎	◎	◎					12.3.1
	PCA-WA (Write)	☆																12.3.7
	PCA-DVC (Drive control)	☆																12.3.5
	PCA-SV (Servo)	☆																12.3.6
	ROM kit																	
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*																12.3.18
	Loader assembly	☆																12.3.9
	Threader assembly	☆																12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*																
	Motor assembly (machine reel)	*																
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape																	
Others	Dirty of head and tape running surface																	12.5.2, 3
	Setting error																	
	Operation error																	
	Interface cable/terminator																	
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		SCSI chip indicated error while sending data in program transfer mode and parm	SCSI chip indicated error while receiving data in program transfer mode get parm (not parity)		SCSI chip indicated error while sending message get imsg (not parity)		SCSI chip indicated error while receiving cmd in program transfer mode get parm (not parity)		SCSI chip indicated error while sending status get stat (not parity)		SCSI reported error		Reference
	Fail Symptom Code		4C01	4C02		4C11		4C22		4C31		4CE3		
Drive	PCA-FA (Formatter/Analog)													12.3.2
	PCA-SCF (SCSI/Core function)		◎	◎		◎		◎		◎		◎		12.3.1
	PCA-WA (Write)	☆												12.3.7
	PCA-DVC (Drive control)	☆												12.3.5
	PCA-SV (Servo)	☆												12.3.6
	ROM kit													
	PCA-OP (Operator panel)													12.3.3
	Lifter solenoid	☆												12.3.10
	Head guide assembly	*												12.3.18
	Loader assembly	☆												12.3.9
	Threader assembly	☆												12.3.8
	Pump	☆												12.3.12
	Motor assembly (file reel)	*												
	Motor assembly (machine reel)	*												
	Fan assembnly													12.3.13
	Air filter													12.3.4
PSU	Power supply unit													
Tape	Cartridge tape													
Others	Dirty of head and tape running surface													12.5.2, 3
	Setting error													
	Operation error													
	Interface cable/terminator													
	Host system (including SCSI cable)													
ACL	Automatic cartridge loader													12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents																				
					Back into BOT					Intervention Required		Drive Assigned Elsewhere	Drive Not Online			Bus Out Parity Check			Reference
		Fult Symptom Code			5039					5043		5045	5046			5049			
Drive	PCA-FA (Formatter/Analog)				◎											△			12.3.2
	PCA-SCF (SCSI/Core function)				◎					○		△	△			△			12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆			○					◎		◎	○			○			12.3.5
	PCA-SV (Servo)	☆			△														12.3.6
	ROM kit				○														
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error											○							
	Operation error												◎						
	Interface cable/terminator											△	△			◎			
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		Processor error	CS 1 bit error (correction successful)	CS 1 bit error (correction impossible)		Unknown cause write trap			Byte count not zero			MOD14 not equal						Reference
	Fail Symptom Code		8000	8001	8002		8004			8170			8190						
Drive	PCA-FA (Formatter/Analog)						○												12.3.2
	PCA-SCF (SCSI/Core function)		◎	◎	◎		◎			◎			◎						12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆																	12.3.5
	PCA-SV (Servo)	☆																	12.3.6
	ROM kit																		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆																	12 3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5 2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator																		
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

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Or specified assembly.

	Contents		Write FMT error reg (WER not zero) in which XX (binary)= Bit 0 - Don't care, Bit 1 - Customer data CRC error, Bit 2 - CRC write error, Bit 3 - DRC write error, Bit 4 - VRC write error, Bit 5 - write formatter path error, Bit 6 - write trigger VRC error, Bit 7 - Don't care (Bit 0 = MSB, Bit 7 = LSB)											Reference
	Falt Symptom Code		83XX											
Drive	PCA-FA (Formatter/Analog)		◎											12.3.2
	PCA-SCF (SCSI/Core function)													12.3.1
	PCA-WA (Write)	☆												12.3.7
	PCA-DVC (Drive control)	☆												12.3.5
	PCA-SV (Servo)	☆												12.3.6
	ROM kit													
	PCA-OP (Operator panel)													12.3.3
	Lifter solenoid	☆												12.3.10
	Head guide assembly	*												12.3.18
	Loader assembly	☆												12.3.9
	Threader assembly	☆												12.3.8
	Pump	☆												12.3.12
	Motor assembly (file reel)	*												
	Motor assembly (machine reel)	*												
	Fan assembnly													12.3.13
	Air filter													12.3.4
PSU	Power supply unit													
Tape	Cartridge tape													
Others	Dirty of head and tape running surface													12.5.2, 3
	Setting error													
	Operation error													
	Interface cable/terminator													
	Host system (including SCSI cable)													
ACL	Automatic cartridge loader													12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		Cannot reset RBE		Cannot detect DPOST by RFIIE		Cannot detect RDEND by RFIIE		Detect RFIIE		Cannot reset WER register						Detect RFIIE		Reference
	Fail Symptom Code		8400		8410		8420		8430		8440						8480		
Drive	PCA-FA (Formatter/Analog)		◎		○		◎		◎		◎						◎		12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆			◎		△		△								△		12.3.5
	PCA-SV (Servo)	☆			◎		△		△								△		12.3.6
	ROM kit				◎		△		△								△		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape				○		○		○								○		
Others	Dirty of head and tape running surface				○		○		○								○		12.5.2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator				○														
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		ADIN on time out	Address compare error	ADIN off time out	TSTI on time out at initiate sequence	Drive status 0 parity error at initiate sequence	STRBB on time out at initiate sequence	Drive status 1 parity error at initiate sequence	STRBB off or TSTI off time out at initiate sequence							Reference
	Fait Symptom Code		8500	8501	8502	8503	8504	8505	8506	8507							
Drive	PCA-FA (Formatter/Analog)		○	○	○	○	○	○	○	○							12.3.2
	PCA-SCF (SCSI/Core function)																12.3.1
	PCA-WA (Write)	☆															12.3.7
	PCA-DVC (Drive control)	☆	○	○	○	○	○	○	○	○							12.3.5
	PCA-SV (Servo)	☆															12.3.6
	ROM kit																
	PCA-OP (Operator panel)																12.3.3
	Lifter solenoid	☆															12.3.10
	Head guide assembly	*															12.3.18
	Loader assembly	☆															12.3.9
	Threader assembly	☆															12.3.8
	Pump	☆															12.3.12
	Motor assembly (file reel)	*															
	Motor assembly (machine reel)	*															
	Fan assembnly																12.3.13
	Air filter																12.3.4
PSU	Power supply unit																
Tape	Cartridge tape																
Others	Dirty of head and tape running surface																12.5.2, 3
	Setting error																
	Operation error																
	Interface cable/terminator		○	○	○	○	○	○	○	○							
	Host system (including SCSI cable)																
ACL	Automatic cartridge loader																12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*. Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		TST1 on time out at ending sequence	Drive status 0 parity error at ending sequence	TSTBB on time out at ending sequence	Drive status 1 parity error at ending sequence	STRBB off or TST1 off time out at initiate sequence	Drive status 2 parity error at initiate sequence	STRBB off or TST1 off time out at initiate sequence	Drive status 3 parity error at ending sequence	STRBB off or TST1 off time out at ending sequence	Drive status 2 parity error at ending sequence	STRBB on time at ending sequence	Drive status 3 parity error at ending sequence	STRBB off or TST1 off time out at ending sequence			Reference
	Fail Symptom Code		8510	8511	8512	8513	8514	8515	8516	8517	8518	8519	851A	851B	851C			
Drive	PCA-FA (Formatter/Analog)		◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎			12.3.2
	PCA-SCF (SCSI/Core function)																	12.3.1
	PCA-WA (Write)	☆																12.3.7
	PCA-DVC (Drive control)	☆	△	△	△	△	△	△	△	△	△	△	△	△	△			12.3.5
	PCA-SV (Servo)	☆																12.3.6
	ROM kit																	
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*																12.3.18
	Loader assembly	☆																12.3.9
	Threader assembly	☆																12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*																
	Motor assembly (machine reel)	*																
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape																	
Others	Dirty of head and tape running surface																	12.5 2. 3
	Setting error																	
	Operation error																	
	Interface cable/terminator		△	△	△	△	△	△	△	△	△	△	△	△	△			
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	TSTBB on time at data transfer out sequence	TSTBB off time at data transfer out sequence	TSTBB on time at data transfer in sequence	Data parity error at data transfer in sequence	TSTBB off time at data transfer in sequence	GPC time out	POSI signal off time out	ADI On at WRXFR	ADI On at RDXFR		STI HOT after IBG END	STI HOT before Set GPCO	No response to GPCO signal			Reference
		Falt Symptom Code	8520	8521	8522	8523	8524	8525	8526	8528	8529		852D	852E	852F			
Drive	PCA-FA (Formatter/Analog)		○	○	○	○	○	○	○	○	○		○	○	○			12.3.2
	PCA-SCF (SCSI/Core function)																	12.3.1
	PCA-WA (Write)	☆																12.3.7
	PCA-DVC (Drive control)	☆	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎	◎			12.3.5
	PCA-SV (Servo)	☆																12.3.6
	ROM kit																	
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*																12.3.18
	Loader assembly	☆																12.3.9
	Threader assembly	☆																12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*																
	Motor assembly (machine reel)	*																
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape																	
Others	Dirty of head and tape running surface																	12.5.2, 3
	Setting error																	
	Operation error																	
	Interface cable/terminator		◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎	◎			
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	Sense reject			Invalid status at REWIND operation		Invalid status at UNLOAD operation		Invalid status at DSE operation		Invalid status at INDICATE operation		Invalid status at SEARCH operation					Reference
		Fail Symptom Code	8530			8533		8535		8537		8539		853B					
Drive	PCA-FA (Formatter/Analog)		○			○		○		○		○		○					12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆	◎			◎		◎		◎		◎		◎					12.3.5
	PCA-SV (Servo)	☆																	12.3.6
	ROM kit																		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator		◎			◎		◎		◎		◎		◎					
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*. Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents																Reference
		Fait Symptom Code		8541				8547	8548				8551	8552			
				Invalid status when WT, WTM and ERS command are issued				Invalid status when WT, WTM and ERS command are terminated	MTU offline during MTU sense				DED off at synchronous interrupt in DVSCAN	Invalid status at synchronous interrupt in DVSCAN			
Drive	PCA-FA (Formatter/Analog)			○				○	○				○	○			12.3.2
	PCA-SCF (SCSI/Core function)																12.3.1
	PCA-WA (Write)	☆															12.3.7
	PCA-DVC (Drive control)	☆		◎				◎	◎				◎	◎			12.3.5
	PCA-SV (Servo)	☆															12.3.6
	ROM kit																
	PCA-OP (Operator panel)																12.3.3
	Lifter solenoid	☆															12.3.10
	Head guide assembly	*															12.3.18
	Loader assembly	☆															12.3.9
	Threader assembly	☆															12.3.8
	Pump	☆															12.3.12
	Motor assembly (file reel)	*															
	Motor assembly (machine reel)	*															
	Fan assembnly																12.3.13
	Air filter																12.3.4
PSU	Power supply unit																
Tape	Cartridge tape																
Others	Dirty of head and tape running surface																12.5.2, 3
	Setting error																
	Operation error																
	Interface cable/terminator			◎				◎	◎				◎	◎			
	Host system (including SCSI cable)																
ACL	Automatic cartridge loader																12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		Invalid status when RD command is issued	Invalid status when RB command is issued	Invalid status when RD, RB command are terminated			MTU unit check response on sense command									Reference
	Fail Symptom Code		8560	8561	8562			8565									
Drive	PCA-FA (Formatter/Analog)		○	○	○			○									12.3.2
	PCA-SCF (SCSI/Core function)																12.3.1
	PCA-WA (Write)	☆															12.3.7
	PCA-DVC (Drive control)	☆	◎	◎	◎			◎									12.3.5
	PCA-SV (Servo)	☆															12.3.6
	ROM kit																
	PCA-OP (Operator panel)																12.3.3
	Lifter solenoid	☆															12.3.10
	Head guide assembly	*															12.3.18
	Loader assembly	☆															12.3 9
	Threader assembly	☆															12.3.8
	Pump	☆															12.3.12
	Motor assembly (file reel)	*															
	Motor assembly (machine reel)	*															
	Fan assembnly																12.3.13
	Air filter																12.3.4
PSU	Power supply unit																
Tape	Cartridge tape																
Others	Dirty of head and tape running surface																12.5.2, 3
	Setting error																
	Operation error																
	Interface cable/terminator		◎	◎	◎			◎									
	Host system (including SCSI cable)																
ACL	Automatic cartridge loader																12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		MTU not ready			MTU off line			Cannot reset interrupt			RDEND off time out			MTU interrupt time out during disconnect command for error	DED status not received during disconnect command for error recovery		Reference
		Fult Symptom Code	8570			8580			8590			85A0			85B0	85B1		
Drive	PCA-FA (Formatter/Analog)		○			○			○			○			○	○		12.3.2
	PCA-SCF (SCSI/Core function)																	12.3.1
	PCA-WA (Write)	☆																12.3.7
	PCA-DVC (Drive control)	☆	◎			◎			◎			◎			◎	◎		12.3.5
	PCA-SV (Servo)	☆																12.3.6
	ROM kit																	
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*																12.3.18
	Loader assembly	☆																12.3.9
	Threader assembly	☆																12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*																
	Motor assembly (machine reel)	*																
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit		○			○			○			○			○	○		
Tape	Cartridge tape																	
Others	Dirty of head and tape running surface																	12.5.2. 3
	Setting error																	
	Operation error		△			△			△						△	△		
	Interface cable/terminator		◎			◎			◎			◎			◎	◎		
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	Cannot reset RDE CRS and WES register		PHOK on time out after detection of RHOH at V WDHLK		Cannot reset PHOK and DPRE after detecting RDEND		Detect pattern not equal at WT.WTM and ERS		ERASE error recovery failure		PHOK on time out after detection of RHOH at YXYDHLK		No STR CHK after PHOK on		Reference
		Fait Symptom Code	8600		8700		8710		8720		8730		8780		8790		
Drive	PCA-FA (Formatter/Analog)		◎		◎		◎		◎		◎		◎		◎		12.3 2
	PCA-SCF (SCSI/Core function)																12.3 1
	PCA-WA (Write)	☆							○		○		○		○		12.3 7
	PCA-DVC (Drive control)	☆															12.3 5
	PCA-SV (Servo)	☆															12.3.6
	ROM kit																
	PCA-OP (Operator panel)																12.3 3
	Lifter solenoid	☆															12.3.10
	Head guide assembly	*							△		△		△		△		12.3.18
	Loader assembly	☆															12.3.9
	Threader assembly	☆															12.3.8
	Pump	☆															12.3 12
	Motor assembly (file reel)	*															
	Motor assembly (machine reel)	*															
	Fan assembnly																12.3 13
	Air filter																12.3.4
PSU	Power supply unit																
Tape	Cartridge tape								◎		◎		◎		◎		
Others	Dirty of head and tape running surface								◎		◎		◎		◎		12.5.2, 3
	Setting error																
	Operation error																
	Interface cable/terminator								△		△		△		△		
	Host system (including SCSI cable)																
ACL	Automatic cartridge loader																12.3 14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents				Block not found (error block)			Backward search miss			Forward search miss								Reference
		Fait Symptom Code				8810			8820			8830								
Drive	PCA-FA (Formatter/Analog)					○			○			○								12.3.2
	PCA-SCF (SCSI/Core function)																			12.3.1
	PCA-WA (Write)	☆																		12.3.7
	PCA-DVC (Drive control)	☆				◎			◎			◎								12.3.5
	PCA-SV (Servo)	☆				△			△			△								12.3.6
	ROM kit																			
	PCA-OP (Operator panel)																			12.3.3
	Lifter solenoid	☆																		12.3.10
	Head guide assembly	*				△			△			△								12.3.18
	Loader assembly	☆																		12.3.9
	Threader assembly	☆																		12.3.8
	Pump	☆																		12.3.12
	Motor assembly (file reel)	*																		
	Motor assembly (machine reel)	*																		
	Fan assembnly																			12.3.13
	Air filter																			12.3.4
PSU	Power supply unit																			
Tape	Cartridge tape					◎			◎			◎								
Others	Dirty of head and tape running surface					◎			◎			◎								12.5.2, 3
	Setting error																			
	Operation error																			
	Interface cable/terminator																			
	Host system (including SCSI cable)																			
ACL	Automatic cartridge loader																			12.3.14

Priority of possible causes

◉ High
○ Middle
△ Low

*. Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	Cannot reset timer carry signal at V. WRSUP	Cannot reset WBEND at V. WRSUP	Cannot reset WCNE at V. WRSUP	WBEND not off until prescribed time at WTM or ERS	WBEND not off until prescribed time at WIDS	WBEND time out	Timer not overflow at analog disable operation			
		Fail Symptom Code	8900	8910	8920	8930	8940	8950	8960			Reference
Drive	PCA-FA (Formatter/Analog)		◉			○	○	○	◉			12.3.2
	PCA-SCF (SCSI/Core function)		○	◉	◉	◉	◉	◉	○			12.3.1
	PCA-WA (Write)	☆										12.3.7
	PCA-DVC (Drive control)	☆										12.3.5
	PCA-SV (Servo)	☆										12.3.6
	ROM kit											
	PCA-OP (Operator panel)											12.3.3
	Lifter solenoid	☆										12.3.10
	Head guide assembly	*										12.3.18
	Loader assembly	☆										12.3.9
	Threader assembly	☆										12.3.8
	Pump	☆										12.3.12
	Motor assembly (file reel)	*										
	Motor assembly (machine reel)	*										
	Fan assembnly											12.3.13
	Air filter											12.3.4
PSU	Power supply unit											
Tape	Cartridge tape											
Others	Dirty of head and tape running surface											12.5.2, 3
	Setting error											
	Operation error											
	Interface cable/terminator											
	Host system (including SCSI cable)											
ACL	Automatic cartridge loader											12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents																		Reference
					Back into BOT			Invalid command							Compression flag error				
	Fail Symptom Code				8A30			8A40							8AA0				
Drive	PCA-FA (Formatter/Analog)				◎										◎				12.3.2
	PCA-SCF (SCSI/Core function)				○			◎											12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆																	12.3.5
	PCA-SV (Servo)	☆																	12.3.6
	ROM kit																		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator																		
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◉ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		Slow begin	Slow end before DPOST is detected	Slow end before HBM is detected		Cannot detect DBDB at IDS write	Cannot detect DHBG at IDS write										Reference
	Fail Symptom Code		9000	9001	9002		9004	9005										
Drive	PCA-FA (Formatter/Analog)		○	○	○		○	○										12.3.2
	PCA-SCF (SCSI/Core function)		○	○	○		○	○										12.3.1
	PCA-WA (Write)	☆																12.3.7
	PCA-DVC (Drive control)	☆	○	○	○		◉	◉										12.3.5
	PCA-SV (Servo)	☆	◉	◉	◉		△	△										12.3.6
	ROM kit																	
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*	△	△	△		△	△										12.3.18
	Loader assembly	☆																12.3.9
	Threader assembly	☆																12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*																
	Motor assembly (machine reel)	*																
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape		△	△	△		△	△										
Others	Dirty of head and tape running surface		△	△	△		△	△										12.5.2, 3
	Setting error																	
	Operation error																	
	Interface cable/terminator						△	△										
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*. Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		Over regular counts of DBOB and DTM before HBOB is detected	DBOB off between HBOB and DPRE	DPRE on time out after PHOK on	DBOB off before DPOST is detected	RDEND on before DPOST is detected	RDEND on time out after out DPOST is detected	DBOB and DTM detected after IBG of (n) block end is detected	DBOB and DTM detected after IBG (n-1) block end is detected	Long IBG detected						Reference
	Fait Symptom Code		9180	9181	9182	9183	9184	9185	9186	9187	9188						
Drive	PCA-FA (Formatter/Analog)		○	○	○	○	◎	◎	○	○	○						12.3.2
	PCA-SCF (SCSI/Core function)		○	○	○	○	◎	◎	○	○	○						12.3.1
	PCA-WA (Write)	☆	△	△	△	△	△	△	△	△	○						12.3.7
	PCA-DVC (Drive control)	☆	○	○	○	○	△	△	○	○	○						12.3.5
	PCA-SV (Servo)	☆															12.3.6
	ROM kit																
	PCA-OP (Operator panel)																12.3.3
	Lifter solenoid	☆															12.3.10
	Head guide assembly	*	△	△	△	△			△	△	△						12.3.18
	Loader assembly	☆															12.3.9
	Threader assembly	☆															12.3.8
	Pump	☆															12.3.12
	Motor assembly (file reel)	*															
	Motor assembly (machine reel)	*															
	Fan assembnly																12.3.13
	Air filter																12.3.4
PSU	Power supply unit																
Tape	Cartridge tape		◎	◎	◎	◎	△	△	◎	◎	◎						
Others	Dirty of head and tape running surface		◎	◎	◎	◎	△	△	◎	◎	◎						12.5.2, 3
	Setting error																
	Operation error																
	Interface cable/terminator																
	Host system (including SCSI cable)																
ACL	Automatic cartridge loader																12.3.14

Priority of possible causes

◉ High
○ Middle
△ Low

*. Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		RECA drppsd at DID write	Cannot set RECA at DID write	Drop out detected at IDS write	Drop out detected at IDG after IDS write												Reference
		Fail Symptom Code	918A	918B	918C	918D												
Drive	PCA-FA (Formatter/Analog)		◉	◉	○	○												12.3.2
	PCA-SCF (SCSI/Core function)																	12.3.1
	PCA-WA (Write)	☆			○	○												12.3.7
	PCA-DVC (Drive control)	☆			○	○												12.3.5
	PCA-SV (Servo)	☆																12.3.6
	ROM kit																	
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*			△	△												12.3.18
	Loader assembly	☆																12.3.9
	Threader assembly	☆																12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*																
	Motor assembly (machine reel)	*																
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape		△	△	◉	◉												
Others	Dirty of head and tape running surface		△	△	◉	◉												12.5.2, 3
	Setting error																	
	Operation error																	
	Interface cable/terminator																	
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		Cannot detect regular DTM length	Cannot detect regular length after DTM	Drop out length over after DTM and IBG		Cannot detect regular DERS length	Cannot detect regular IBG length after DERS	BOB or DTM length over after DERS and IBG		DBOB off after BOB detected								Reference
	Fait Symptom Code		9190	9191	9192		9194	9195	9196		9198								
Drive	PCA-FA (Formatter/Analog)		◎	◎		○	◎	◎	◎		○								12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆	△	△	△		△	△	△		△								12.3.7
	PCA-DVC (Drive control)	☆	○	○	○		○	○	○		○								12.3.5
	PCA-SV (Servo)	☆																	12.3.6
	ROM kit																		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*	△	△	△		△	△	△		△								12.3.18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape		○	○	◎		○	○	○		◎								
Others	Dirty of head and tape running surface		○	○	◎		○	○	○		◎								12.5.2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator																		
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

			Contents	Abnormal TM format	Abnormal ERS format	Cannot detect DUDMK at preblock IBG inline LWR3	Cannot detect DHOB at block inline LWR3	Cannot detect DUDMK at postblock IBG inline LWR3	Cannot detect DIBG at inline medium test									Reference
			Fail Symptom Code	919A	919B	919C	919D	919E	919F									
Drive	PCA-FA (Formatter/Analog)			○	○	◎	◎	◎	△									12.3.2
	PCA-SCF (SCSI/Core function)																	12.3.1
	PCA-WA (Write)	☆		△	△	△	△	△	△									12.3.7
	PCA-DVC (Drive control)	☆		○	○	△	△	△	△									12.3.5
	PCA-SV (Servo)	☆		△	△	△	△	△	△									12.3.6
	ROM kit																	
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆							△									12.3.10
	Head guide assembly	*		△	△				△									12.3.18
	Loader assembly	☆																12.3.9
	Threader assembly	☆																12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*																
	Motor assembly (machine reel)	*																
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape			◎	◎				◎									
Others	Dirty of head and tape running surface			◎	◎				◎									12.5.2, 3
	Setting error																	
	Operation error																	
	Interface cable/terminator					○	○	○										
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

Priority of possible causes

- ● High
- ○ Middle
- △ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly

	Contents		Cannot detect DBOB at inline medium test	Cannot detect DIBG at inline medium test	Read CRC error at inline read test	Read data error at inline read test													Reference
	Fail Symptom Code		91A0	91A1	91A2	91A3													
Drive	PCA-FA (Formatter/Analog)		△	△	△	△													12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆	○	○	○	○													12.3.7
	PCA-DVC (Drive control)	☆	△	△	△	△													12.3.5
	PCA-SV (Servo)	☆																	12.3.6
	ROM kit																		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆	△	△	△	△													12.3 10
	Head guide assembly	*	△	△	△	△													12.3.18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape		●	●	●	●													
Others	Dirty of head and tape running surface		●	●	●	●													12.5.2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator																		
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

			Contents	1. Inline 60 - LWR 1v1 0 failure (read error or 1 or more tracks correcting) 2. Data miscompare 3. Inline 61 - 1 or more tks not correcting when they should	Inline 60. LWR 1v1 2 fails (read error or 1 or more tracks correcting)	Read CRC error at inline read test	1. Inline 60 - Multiple read failures 2. Inline 61 - Multiple read failures on prewritten tape or 1 or more tracks correcting when they should not	Cannot detect file-protected stress tape							Reference
			Fait Symptom Code	91F0	91F1	91F2	91F3	91F4							
Drive	PCA-FA (Formatter/Analog)			◎	◎	◎	◎								12.3.2
	PCA-SCF (SCSI/Core function)														12.3.1
	PCA-WA (Write)	☆						○							12.3.7
	PCA-DVC (Drive control)	☆				△		△							12.3.5
	PCA-SV (Servo)	☆						○							12.3.6
	ROM kit														
	PCA-OP (Operator panel)														12.3.3
	Lifter solenoid	☆													12.3.10
	Head guide assembly	*													12.3.18
	Loader assembly	☆													12.3.9
	Threader assembly	☆						◎							12.3.8
	Pump	☆													12.3.12
	Motor assembly (file reel)	*													
	Motor assembly (machine reel)	*													
	Fan assembnly														12.3.13
	Air filter														12.3.4
PSU	Power supply unit														
Tape	Cartridge tape					◎	△	◎							
Others	Dirty of head and tape running surface					◎	△								12.5.2, 3
	Setting error														
	Operation error														
	Interface cable/terminator														
	Host system (including SCSI cable)														
ACL	Automatic cartridge loader														12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents									Reference
		Fait Symptom Code	Detect SRCK after DPHE in which XX (binary) = Bit 0 - Uncorrectable error Bit 1 - Multiple track error Bit 2 - Skew error Bit 3 - Drop out error Bit 4 - CRC error Bit 5 - Postamble error Bit 6 - Start read check Bit 7 - End data check (Bit 0 = MSB, Bit 7 = LSB)			CRS is not equal to 00 when WTH.WE in which XX (binary) = Bit 0 - 1 track correction Bit 1 - 2 track correction Bit 2 - 3 track correction Bit 3 - 4 track correction Bit 4 - Don't care Bit 5 - Don't care Bit 6 - Error trk 8 in A set Bit 7 - Error trk 8 in B set (Bit 0 = MSB, Bit 7 = LSB)			
			92XX			93XX					
Drive	PCA-FA (Formatter/Analog)		○			○					12.3.2
	PCA-SCF (SCSI/Core function)										12.3.1
	PCA-WA (Write)	☆	○			○					12.3.7
	PCA-DVC (Drive control)	☆	○			○					12.3.5
	PCA-SV (Servo)	☆									12.3.6
	ROM kit										
	PCA-OP (Operator panel)										12.3.3
	Lifter solenoid	☆									12.3.10
	Head guide assembly	*	△			△					12.3.18
	Loader assembly	☆									12.3.9
	Threader assembly	☆									12.3.8
	Pump	☆									12.3.12
	Motor assembly (file reel)	*									
	Motor assembly (machine reel)	*									
	Fan assembnly										12.3.13
	Air filter										12.3.4
PSU	Power supply unit										
Tape	Cartridge tape		◎			◎					
Others	Dirty of head and tape running surface		◎			◎					12.5.2, 3
	Setting error										
	Operation error										
	Interface cable/terminator										
	Host system (including SCSI cable)										
ACL	Automatic cartridge loader										12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	EFME and RSYE detected at V. WSNSG						Cannot detect (1 - 1) block at WR WTM and ERS		Cannot detect IBG at WT WTM and ERS		XBID and RBID not equal at VSNG		ERE and FWRE not equal at V WSNSG			Reference
		Fait Symptom Code	9400						9600		9610		9620		9630			
Drive	PCA-FA (Formatter/Analog)		◎						◎		◎		◎					12.3.2
	PCA-SCF (SCSI/Core function)																	12.3.1
	PCA-WA (Write)	☆							△		△		△		○			12 3.7
	PCA-DVC (Drive control)	☆							○		○		△		○			12.3.5
	PCA-SV (Servo)	☆																12.3.6
	ROM kit														○			
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*																12.3.18
	Loader assembly	☆																12.3.9
	Threader assembly	☆																12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*																
	Motor assembly (machine reel)	*																
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape		△						◎		◎		◎		◎			
Others	Dirty of head and tape running surface		△						◎		◎		◎		◎			12.5.2, 3
	Setting error																	
	Operation error																	
	Interface cable/terminator																	
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive. Or specified assembly.

			Contents: 1 track correction in which XX (binary) = Bit 0 - 1 track correction; Bit 1 - 2 track correction; Bit 2 - 3 track correction; Bit 3 - 4 track correction; Bit 4 - Don't care; Bit 5 - Don't care; Bit 6 - Error trk 8 in A set; Bit 7 - Error trk 8 in B set (Bit 0 = MSB, Bit 7 = LSB)											Reference
		Fault Symptom Code	97XX											
Drive	PCA-FA (Formatter/Analog)		○											12.3.2
	PCA-SCF (SCSI/Core function)													12.3.1
	PCA-WA (Write)	☆	△											12.3.7
	PCA-DVC (Drive control)	☆	○											12.3.5
	PCA-SV (Servo)	☆												12.3.6
	ROM kit													
	PCA-OP (Operator panel)													12.3.3
	Lifter solenoid	☆												12.3.10
	Head guide assembly	*	△											12.3.18
	Loader assembly	☆												12.3.9
	Threader assembly	☆												12.3.8
	Pump	☆												12.3.12
	Motor assembly (file reel)	*												
	Motor assembly (machine reel)	*												
	Fan assembnly													12.3.13
	Air filter													12.3.4
PSU	Power supply unit													
Tape	Cartridge tape		◎											
Others	Dirty of head and tape running surface		◎											12.5.2, 3
	Setting error													
	Operation error													
	Interface cable/terminator													
	Host system (including SCSI cable)													
ACL	Automatic cartridge loader													12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

			Contents	Out of data block sequence		RDEND signal not found		Invalid code found during read TH		Not capable		IBG not detected at Y%RDSTT		IBG not detected at Y%SRBG		Data block not found				Reference
			Fail Symptom Code	9900		9910		9920		9930		9940		9960		9970				
Drive	PCA-FA (Formatter/Analog)			○		○		○		○		◎		◎		◎				12.3.2
	PCA-SCF (SCSI/Core function)							△								△				12.3.1
	PCA-WA (Write)	☆		△		△		△		△		△		△		△				12.3.7
	PCA-DVC (Drive control)	☆		○		○		○		○		○		◎		◎				12.3.5
	PCA-SV (Servo)	☆		△		△		△		△		△		△		△				12.3.6
	ROM kit																			
	PCA-OP (Operator panel)																			12.3.3
	Lifter solenoid	☆																		12.3.10
	Head guide assembly	*		△		△		△		△		△		△		△				12 3.18
	Loader assembly	☆																		12 3.9
	Threader assembly	☆																		12.3.8
	Pump	☆																		12.3.12
	Motor assembly (file reel)	*																		
	Motor assembly (machine reel)	*																		
	Fan assembnly																			12.3.13
	Air filter																			12.3.4
PSU	Power supply unit																			
Tape	Cartridge tape			○		◎		◎		◎		◎		◎		◎				
Others	Dirty of head and tape running surface			○		◎		◎		○		◎		◎		◎				12.5.2, 3
	Setting error																			
	Operation error																			
	Interface cable/terminator																			
	Host system (including SCSI cable)																			
ACL	Automatic cartridge loader																			12.3.14

Priority of possible causes

- ◎ High
- ○ Middle
- △ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive. Or specified assembly.

	Fault Symptom Code		9AXX					9C00						Reference
	Contents		RDE is not equal to 0 at RD operation in which XX (binary) -- Bit 0 - Uncorrectable error; Bit 1 - Multiple track error; Bit 2 - Skew error; Bit 3 Drop out error; Bit 4 CRC error; Bit 5 Postamble error; Bit 6 - Start read check; Bit 7 - End data check (Bit 0 = MSB, Bit 7 = LSB)					Detected BFHE and RSYE at Y%RDSNS						
Drive	PCA-FA (Formatter/Analog)		○											12.3.2
Drive	PCA-SCF (SCSI/Core function)													12.3.1
Drive														
Drive	PCA-WA (Write)	☆	○											12.3.7
Drive	PCA-DVC (Drive control)	☆	◎											12.3.5
Drive	PCA-SV (Servo)	☆												12.3.6
Drive	ROM kit													
Drive	PCA-OP (Operator panel)													12.3.3
Drive	Lifter solenoid	☆												12.3.10
Drive	Head guide assembly	*	○											12.3.18
Drive	Loader assembly	☆												12.3.9
Drive	Threader assembly	☆												12.3.8
Drive	Pump	☆												12.3.12
Drive	Motor assembly (file reel)	*												
Drive	Motor assembly (machine reel)	*												
Drive	Fan assembnly													12.3.13
Drive	Air filter													12.3.4
Drive														
PSU	Power supply unit													
PSU														
Tape	Cartridge tape		◎											
Others	Dirty of head ana tape running surface		◎											12.5.2. 3
Others	Setting error													
Others	Operation error													
Others	Interface cable/terminator													
Others	Host system (including SCSI cable)													
Others														
ACL	Automatic cartridge loader													12.3.14
ACL														
ACL														

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		Running over constant but block and TM not found		Detect no signal status successive							DID detected while block read		XBID and RBID not equal while read				Reference
	Fait Symptom Code		9D00		9D10							9E00		9E10				
Drive	PCA-FA (Formatter/Analog)		○		○							○		◎				12.3.2
	PCA-SCF (SCSI/Core function)		△		△							△		△				12.3.1
	PCA-WA (Write)	☆	○		○							○		○				12.3.7
	PCA-DVC (Drive control)	☆	◎		○							○		○				12.3.5
	PCA-SV (Servo)	☆																12.3.6
	ROM kit	-																
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*	△		△							△		△				12.3.18
	Loader assembly	☆																12.3.9
	Threader assembly	☆																12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*																
	Motor assembly (machine reel)	*																
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape		◎		◎							◎		○				
Others	Dirty of head and tape running surface		◎		◎							◎		○				12.5.2, 3
	Setting error																	
	Operation error																	
	Interface cable/terminator																	
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3 14

Priority of possible causes

- ◎ High
- ○ Middle
- △ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive. Or specified assembly.

			Contents: 1 track correction in which XX (binary) = Bit 0 - 1 track correction, Bit 1 - 2 track correction, Bit 2 - 3 track correction, Bit 3 - 4 track correction, Bit 4 - Don't care, Bit 5 - Don't care, Bit 6 - Error trk 8 in 1 set, Bit 7 - Error trk 8 in 1 set (Bit 0 = MSB, Bit 7 = LSB)											Reference
		Falt Symptom Code	9FXX											
Drive	PCA-FA (Formatter/Analog)		○											12.3.2
	PCA-SCF (SCSI/Core function)													12.3.1
	PCA-WA (Write)	☆	○											12.3.7
	PCA-DVC (Drive control)	☆	○											12.3.5
	PCA-SV (Servo)	☆	○											12.3.6
	ROM kit													
	PCA-OP (Operator panel)													12.3.3
	Lifter solenoid	☆												12.3.10
	Head guide assembly	*	△											12.3.18
	Loader assembly	☆												12.3.9
	Threader assembly	☆												12.3.8
	Pump	☆												12.3.12
	Motor assembly (file reel)	*												
	Motor assembly (machine reel)	*												
	Fan assembnly													12.3.13
	Air filter													12.3.4
PSU	Power supply unit													
Tape	Cartridge tape		◎											
Others	Dirty of head and tape running surface		◎											12.5.2, 3
	Setting error													
	Operation error													
	Interface cable/terminator													
	Host system (including SCSI cable)													
ACL	Automatic cartridge loader													12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	EOT not set in BST at end of data transfer	Time out waiting for transfer to complete	Overflow set in BST on buffer fetch	Response FIFO not serviced by SIC												Reference
		Fail Symptom Code	E001	E002	E003	E004												
Drive	PCA-FA (Formatter/Analog)																	12.3.2
	PCA-SCF (SCSI/Core function)		◎	◎	◎	◎												12.3.1
	PCA-WA (Write)	☆																12.3.7
	PCA-DVC (Drive control)	☆																12.3.5
	PCA-SV (Servo)	☆																12.3.6
	ROM kit																	
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*																12.3.18
	Loader assembly	☆																12.3.9
	Threader assembly	☆																12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*																
	Motor assembly (machine reel)	*																
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape																	
Others	Dirty of head and tape running surface																	12.5.2, 3
	Setting error																	
	Operation error																	
	Interface cable/terminator																	
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

Priority of possible causes

◎ High

○ Middle

△ Low

*. Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents															
		Fait Symptom Code	E1XX								E200						Reference
		ADT/buffer error in which XX (binary) = contents of BST: Bit 0 - EOT Bit 1 - M data valid Bit 2 - Not used Bit 3 - Transferred parity error Bit 4 - CRC error Bit 5 - Parity error Bit 6 - Overrun Bit 7 - Overflow (Bit 0 = MSB Bit 7 = LSB)									No BFR space assigned to MTU during inline						
Drive	PCA-FA (Formatter/Analog)																12.3.2
	PCA-SCF (SCSI/Core function)		◎								◎						12.3.1
	PCA-WA (Write) ☆										Otherwise Host Reset						12.3.7
	PCA-DVC (Drive control) ☆																12.3.5
	PCA-SV (Servo) ☆																12.3.6
	ROM kit																
	PCA-OP (Operator panel)																12.3.3
	Lifter solenoid ☆																12.3.10
	Head guide assembly *																12.3.18
	Loader assembly ☆																12.3.9
	Threader assembly ☆																12.3.8
	Pump ☆																12.3.12
	Motor assembly (file reel) *																
	Motor assembly (machine reel) *																
	Fan assembnly																12.3.13
	Air filter																12.3.4
PSU	Power supply unit																
Tape	Cartridge tape																
Others	Dirty of head and tape running surface																12.5.2, 3
	Setting error																
	Operation error																
	Interface cable/terminator																
	Host system (including SCSI cable)																
ACL	Automatic cartridge loader																12.3.14

(3) Field replaceable unit (FRU) code

The MTC detects an error and finds an FRU by a hardware check mechanism and a firmware diagnostic routine.

When a hardware error is detected, a firmware creates and indicates an FRU code on the CE panel. This FRU code indicates a possible failure unit in the MTC section. Each of three-digit hexadecimal number next to "E" indicates the possible failure unit. The nearest hexadecimal number to "E" has a low priority.

FRU code; E x y z

- z — Possible failure unit: High priority
- y — Possible failure unit: Middle priority (normally "0")
- x — Possible failure unit: Low priority (normally "0")

Example: FRU code; E 0 3 2

- 2 — PCA-SCF
- 3 — PCA-FA
- 0 — No possible failure unit

When the above FRU code is displayed on the CE panel, the PCA-SCF has the highest possibility of trouble and the PCA-FA has a second possibility of trouble.

FRU code table

Code	Possible failure unit
0	No possible failure unit
1	PCA-SCF (SCSI interface)
2	PCA-SCF (Core function)
3	PCA-FA (Formatter)
4	PCA-FA (Read analog)
5	Reserved
6	Reserved
7	Reserved
8	Reserved
9	Reserved
A	Reserved
B	Reserved
C	Reserved
D	Reserved
E	Reserved
F	Reserved

12.2.5 MTU troubleshooting

(1) Check code

Priority of possible causes

- ◎ High
- ○ Middle
- △ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive. Or specified assembly.

		Contents	MICRO PROCESSOR ERROR	RAM ERROR	REGISTER ERROR	TIMER ERROR	INTERRUPT ERROR (WRONG IRQ TO SERVO)	TOO MANY FTP INTERRUPTS	TOO FEW FTP INTERRUPTS	INTERRUPT ERROR (NMI) FROM INTERFACE MPU	POWER ON RESET HARDWARE ERROR	MACHINE REEL TACHOMETER PHASE ERROR	MACHINE REEL ROTATION COUNTER OVERFLOW	RRC COUNTER COUNTER OVERFLOW	GAP COUNTER PHASE ERROR	ERROM DATA CHECK (SUM CHECK ERROR)	ERROM HARDWARE CHECK		Reference
		CODE	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	
Drive	PCA-FA (Formatter/Analog)																		12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆	◎	◎	◎	◎	◎	△	○	◎	◎		◎	○	○	◎	◎		12.3.5
	PCA-SV (Servo)	☆						○	◎				△	△	△				12.3.6
	ROM kit		○	○	○	○	○				○								
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*							△				△	△					12.3.18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*						◎	◎				△	○	◎				
	Motor assembly (machine reel)	*							○			◎	○	◎					
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape								△					△	△				
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator												△						
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents	PUMP ALARM (TOO LOW A/R OR STOP)	POWER AMPLIFIER OVER CURRENT AT REEL SERVO		NO TIMER INTERRUPT ERROR		TAPE LENGTH ERROR (TOO LONG OR SHORT)	INTERFACE MPU DOES NOT BECOME READY	RRC CAN NOT BE DETERMINED	MACHINE REEL RUN AWAY IN LOADING	INVALID GAP OUT TIME	BACKWARD HITCH ERROR AT LOAD POINT	WRITE VEROCITY CHECK	FILE PROTECT SENSOR FAILURE IN POWER UP	GAP IN HARDWARE ERROR	REEL MOTER DRIVE CIRCUIT/PHASE DECODER FAILURE		Reference
	CODE	10	11	12	13	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F	
Drive	PCA-FA (Formatter/Analog)																	12.3.2
	PCA-SCF (SCSI/Core function)																	12.3.1
	PCA-WA (Write) ☆																	12.3.7
	PCA-DVC (Drive control) ☆	△			◎		○	◎		△	○	◎		○	◎	○		12.3.5
	PCA-SV (Servo) ☆	○	◎						◎	◎	◎	○	◎		△	◎		12.3.6
	ROM kit				○			○										
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid ☆																	12.3.10
	Head guide assembly *																	12.3.18
	Loader assembly ☆		△											◎				12.3.9
	Threader assembly ☆		△															12.3.8
	Pump ☆	◎	△															12.3.12
	Motor assembly (file reel) *		○				△		△	○	◎	◎	○		○			
	Motor assembly (machine reel) *		○				△		△	○	○	△			△			
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape						◎		○	○	△	△	○	△				
Others	Dirty of head and tape running surface																	12.5.2.3
	Setting error																	
	Operation error													○				
	Interface cable/terminator	△														○		
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents	CODE	20	21	22	23 OVER CURRENT DURING LOADER DRIVING	24 THREADER SENSORS COMBINATION ERROR	25 THREADER ARM IS NOT HOME WHEN LOADING STARTS	26	27 OVER CURRENT DURING THREADER DRIVING	28	29 CLEANING CARTRIDGE SENSOR FAILURE IN POWER UP	2A	2B	2C	2D	2E SOFTWARE INTERRUPT ERROR OR MPU FAILURE	2F UNDEFINED INTERNAL COMMAND	Reference
Drive	PCA-FA (Formatter/Analog)																		12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆				◎	○	○		◎		○					◎	○	12.3.5
	PCA-SV (Servo)	☆				○				○									12.3.6
	ROM kit																○	◎	
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3 10
	Head guide assembly	*																	12.3 18
	Loader assembly	☆				○						◎							12.3 9
	Threader assembly	☆					◎	◎		○									12.3 8
	Pump	☆								△									12.3 12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error							△											
	Interface cable/terminator						△												
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents	CODE	30	31	32	33 MOTION COMMAND DURING SERVO OFF	34	35	36	37 OUT OF RENGE TO EOT LOCATION TABLE	38	39 TOO LOOSE WRAP TAPE CARTRIDGE IS LOADED	3A	3B	3C BACKWARD COMMAND AT LOAD POINT	3D WRITE TYPE COMMAND WITH FILE PROTECT	3E	3F	Reference
Drive	PCA-FA (Formatter/Analog)														◎	◎			12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆				○				△					○	○			12.3.5
	PCA-SV (Servo)	☆														○			12.3.6
	ROM kit					◎									△	△			
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆														△			12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape											◎							
Others	Dirty of head and tape running surface									◎									12.5.2, 3
	Setting error																		
	Operation error									○						△			
	Interface cable/terminator																		
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

- ⊙ High
- ○ Middle
- △ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		LOADER MOVE TIMEOUT	TAPE PATH SENSOR <CT>&<MR>BOTH ON IN THREAD	TIMER ERROR (HARDWARE)	LEADER BLOCK CANNOT BE PULLED OUT FROM CART	CARTRIDGE LOAD RETRY OUT	TAPE THREAD RETRY OUT	MACHINE REEL TURNS TOO SLOW IN UNLOADING	MACHINE REEL TURNS TOO FAST IN UNLOADING	CARTRIDGE IS STILL IN (NOT EJECTED)	TOO LOOSE OR BROKEN TAPE IS LOADED	THREAD TIME OUT	UNTHREAD TIME OUT	CARTRIDGE UNLOAD TIME OUT	TAPE UNLOAD TIME OUT	TOO FAST THREADING TIME ERROR	TOO FAST UNTHREADING TIME ERROR	Reference
	CODE		40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F	
Drive	PCA-FA (Formatter/Analog)																		12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆	○	○	⊙		△	○	○	○	○	△	○	○	○	○	○	○	12.3.5
	PCA-SV (Servo)	☆							⊙	⊙						⊙			12.3.6
	ROM kit				○														
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆	⊙				○				⊙	○			⊙				12.3.9
	Threader assembly	☆		⊙		△		⊙					⊙	⊙			⊙	⊙	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*										○				○			
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error					○	⊙			△	△		△	△	△	△	△	△	
	Interface cable/terminator					⊙						⊙							
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	THREADER ARM IS NOT HOME DURING CART LOADING	FILE PROTECT SENSOR IS ALWAYS OFF (WRITE ENABLE)	FILE REEL DIRECTION ERROR BY LOOSE WRAPPING	FILE REEL TURNS TOO FAST BY LOOSE WRAPPING	TAPE PATH SENSOR <CT> IS NOT OFF IN THREADING	FILE REEL DIRECTION ERROR IN THREADING	FILE REEL TURNS TOO SLOW IN UNTHREADING	FILE REEL DIRECTION ERROR IN UNTHREADING	CARTRIDGE "IN" OR "MOUNT" SENSOR FAILURE	MACHINE REEL TACHOMETER FAILURE IN LOADUNLOAD	ABNORMAL REEL CLUTCHING IN LOAD	NO CARTRIDGE OR FILE PROTECT SENSOR ERROR(I.D.)	CARTRIDGE IS NOT LOADING POSITION AT START I.D	FILE REEL TURNS TOO FAST AFTER UNTHREADING	MACHINE REEL TURNS TOO SLOW IN CLEANING	MACHINE REEL TURNS TOO FAST IN CLEANING	Reference
		CODE	50	51	52	53	54	55	56	57	58	59	5A	5B	5C	5D	5E	5F	
Drive	PCA-FA (Formatter/Analog)																		12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆	△		○		○	△	△	△	○	○		○	△			○	12.3.5
	PCA-SV (Servo)	☆			○	○		○		○		○					○	◎	12.3.6
	ROM kit																		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆		◎							◎		○	◎	◎				12.3.9
	Threader assembly	☆	◎	○			◎	◎	◎	◎						○			12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*			◎	○		○	○	○			○			○			
	Motor assembly (machine reel)	*										◎					◎		
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape					◎					△		◎		○	◎			
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error		○		△		△	△		△	△		△	△	◎	△	△		
	Interface cable/terminator																		
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

- ⊙ High
- ○ Middle
- △ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		MACHINE REEL TACHOMETER PHASE ERROR THREAD/UNTHREAD		MACHINE REEL STOP LOCK ERROR IN THREAD/UNTHREAD	FILE REEL DIRECTION ERROR IN CLEANING	MACHINE REEL DOES NOT TURN IN POWER UP	MACHINE REEL TACHOMETER OR DIRECTION ERROR (P U)	FILE REEL DOES NOT TURN IN POWER UP	FILE REEL TACHOMETER OR DIRECTION ERROR (P U)					STOP LOCK ERROR BY LOOP, WRAP THEN UNLOAD CARTRIDGE				Reference
	CODE		60	61	62	63	64	65	66	67	68	69	6A	6B	6C	6D	6E	6F	
Drive	PCA-FA (Formatter/Analog)																		12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆	○		○	○									○				12.3.5
	PCA-SV (Servo)	☆			⊙	○	○	○	○	○									12.3.6
	ROM kit																		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆			△														12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*				⊙			⊙	⊙									
	Motor assembly (machine reel)	*	⊙		⊙		⊙	⊙							○				
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit						○		○										
Tape	Cartridge tape														⊙				
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error					△													
	Interface cable/terminator						△												
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents																				Reference
				SERVO MPU HARDWARE ERROR							NO RESPONSE FROM CONTROL UNIT							INTERFACE PROGRAM ERROR	
	CODE		90	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	
Drive	PCA-FA (Formatter/Analog)										◎								12.3.2
	PCA-SCF (SCSI/Core function)										◎								12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆		◎														◎	12.3.5
	PCA-SV (Servo)	☆																	12.3.6
	ROM kit			○														○	
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator																		
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents	CODE	A0	A1 SELECT OUT NOT DOWN	A2 COMMAND OUT FAILURE	A3 MOTION COMMAND WITH NOT READY	A4 WRITE OR D.S.E. COMMAND WITH FILE PROTECT	A5	A6 ONLINE DIAGNOSTIC ERROR	A7 INVALID ONLINE DIAGNOSTIC REQUEST	A8 INVALID COMMAND	A9 COMMAND OUT FAILURE 2	AA CLOCK A CHANGE TIME OUT ERROR	AB	AC MOTION COMMAND DURING DISCONNECT EXECUTION	AD	AE	AF	Reference
Drive	PCA-FA (Formatter/Analog)			◎	◎	○	○				◎	◎	◎		◎				12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆		○	○	○	○				◎	○	○		○				12.3.5
	PCA-SV (Servo)	☆																	12.3.6
	ROM kit			△	△	△	△				△	△	△		△				
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆																	12.3 9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error					◎	◎			◎									
	Interface cable/terminator				○						○								
	Host system (including SCSI cable)									○									
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

- ◉ High
- ○ Middle
- △ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		TRANSFER DATA COUNT ERROR		INVALID SECTOR	INDICATE BYTES ERROR	INDICATE INVALID	INVALID SERIAL COMMAND		START INLINE COMMAND WITHOUT REQUEST		OPTION DATA PARITY ERROR	SET DIAG DATA PARITY ERROR	RESET DIAG DATA PARITY ERROR	INDICATE DATA PARITY ERROR	DIAG DATA PARITY ERROR	SECTOR BYTE PARITY ERROR		Reference
	CODE		B0	B1	B2	B3	B4	B5	B6	B7	B8	B9	BA	BB	BC	BD	BE	BF	
Drive	PCA-FA (Formatter/Analog)				◉	◉	◉	◉		◉		◉	◉	◉	◉	◉	◉		12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆	○		○	○		○		○		○	○	○	○	○	○		12.3.5
	PCA-SV (Servo)	☆																	12.3.6
	ROM kit				△	△	△	△		△		△	△	△	△	△	△		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator		○					○											
	Host system (including SCSI cable)		◉																
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		LOAD MAGAZINE COMMAND CAN NOT EXECUTE	LOAD MAGAZINE COMMAND PARAMETER ERROR	MOVE MAGAZINE COMMAND CAN NOT EXECUTE	REMOVE MAGAZINE ERROR WHEN CTG LOADING	ACL OVER CURRENT	PINION PHASE ADJUST TIME OUT	BOTTOM STOPPER-ARM MOVING RETRY OUT	BOTTOM STOPPER SENSOR <UP> & <DW> BOTH ON	DOWNWARD MAGAZINE MOVING TIME OUT	UPWARD MAGAZINE MOVING TIME OUT	MAGAZINE POSITION MISCALCULATE	MAGAZINE TOP DETECTED DURING MOVING UP OR UNLOADING	CLEANING COMPLETED	CLEANING COMPLETED AFTER SELECT CTG COMMAND			Reference
		CODE	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF	
Drive	PCA-FA (Formatter/Analog)																		12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆	○	○	○	○	○												12.3.5
	PCA-SV (Servo)	☆																	12.3.6
	ROM kit		◎	◎	◎		△	○					○						
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape										○	○		○					
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error													○					
	Interface cable/terminator																		
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader					◎	◎	◎	◎	◎	◎	◎	◎	◎					12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		ACL SENSOR CABLE CHECK	SENSE BYTE LENGTH ERROR	FEEDER ARM SENSOR <OP> & <CL> BOTH ON	MOUNT ARM SENSOR FAILURE	FEED IN TOO FAST	FEED IN RETRY OUT ERROR	CARTRIDGE IN MAGAZINE EVER ON	CARTRIDGE CATCH TIME OUT	MOUNT ARM DOES NOT BACK TO HOME	MOUNT CARTRIDGE RETRY OUT	UNFEED RETRY OUT ERROR	UNFEED TOO FAST (CINMSN IS ALWAYS "1")	INTERLOCK SW DETECT ERROR		DEVICE TYPE UNMATCH ERROR	UNFEED SENSOR IS ON IN UNFEED COMPLETE	Reference
	CODE		D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF	
Drive	PCA-FA (Formatter/Analog)																○		12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆		◎			○										○		12.3.5
	PCA-SV (Servo)	☆															◎		12.3.6
	ROM kit		○	△													△		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆										◎							12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape											○							
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																○		
	Operation error				○	○	△	○	○	○	○			○	◎			○	
	Interface cable/terminator																		
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader		◎		◎	◎	◎	◎	◎	◎	◎	○	◎	◎	○	○		◎	12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	FILE PROTECTED DURING WRITE	FILE PROTECTED DURING RSE			WRITE HEAD OPEN ERROR	READ HEAD BIAS ERROR	WRITE HEAD DRIVER ERROR	WRITE VOLTAGE ERROR	WRITE DATA PARITY ERROR	PLL ROCK ERROR			NOVRAM READ DATA ERROR				Reference
		CODE	E0	E1	E2	E3	E4	E5	E6	E7	E8	E9	EA	EB	EC	ED	EE	EF	
Drive	PCA-FA (Formatter/Analog)											○							12.3.2
	PCA-SCF (SCSI/Core function)										○								12.3.1
	PCA-WA (Write)	☆	○	○			○		◎	◎	◎	◎							12.3.7
	PCA-DVC (Drive control)	☆	○	○			△	○				○			◎				12.3.5
	PCA-SV (Servo)	☆	○	○			○		◎	◎	◎	◎							12.3.6
	ROM kit		△	△			△	△	△	△	△	△			△				
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*					◎	◎											12.3.18
	Loader assembly	☆	◎	◎						△									12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit								○	○									
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5.2.3
	Setting error																		
	Operation error																		
	Interface cable/terminator		○	○							○	○							
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents																				Reference
		CODE	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	FA	FB	FC	FD	FE	FF	POWER ON		
				FAN STOP OR LOW ROT. ERROR (FAN1 OR AND FAN2)	FAN STOP OR LOW ROT ERROR (FAN2 OR AND FAN1)	FAN1 AND FAN2 ARE STOPPED	FAN STOP OR LOW ROT (FAN1)			FAN STOP OR LOW ROT (FAN1 TO 3)											
Drive	PCA-FA (Formatter/Analog)																				12.3.2
	PCA-SCF (SCSI/Core function)																				12.3.1
	PCA-WA (Write)	☆																			12.3.7
	PCA-DVC (Drive control)	☆		○	○	○	○			○											12.3.5
	PCA-SV (Servo)	☆																			12.3.6
	ROM kit																				
	PCA-OP (Operator panel)																				12.3.3
	Lifter solenoid	☆																			12.3.10
	Head guide assembly	*																			12.3.18
	Loader assembly	☆																			12.3.9
	Threader assembly	☆																			12.3.8
	Pump	☆																			12.3.12
	Motor assembly (file reel)	*																			
	Motor assembly (machine reel)	*																			
	Fan assembnly			○	○	○	○			○											12.3.13
	Air filter																				12.3.4
PSU	Power supply unit			△	△	△	△			△											
Tape	Cartridge tape																				
Others	Dirty of head and tape running surface																				12.5.2, 3
	Setting error																				
	Operation error																				
	Interface cable/terminator																				
	Host system (including SCSI cable)																				
ACL	Automatic cartridge loader																				12.3.14

Priority of possible causes

- ◉ High
- ○ Middle
- △ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		Defective suspected file reel tacho signal	Defective gap counter	Defective RRC counter	File reel forward detection error	File reel backward detection error	Defective suspected machine reel tacho signal	Machine reel forward detection error	Machine reel backward detection error								Reference
	DIAG. ERROR CODE		10:ERR41	10:ERR42	10:ERR43	10:ERR44	10:ERR45	10:ERR46	10:ERR47	10:ERR48								
Drive	PCA-FA (Formatter/Analog)																	12.3.2
	PCA-SCF (SCSI/Core function)																	12.3.1
	PCA-WA (Write)	☆																12.3.7
	PCA-DVC (Drive control)	☆	◉	◉	◉	◉	◉	◉	◉	◉								12.3.5
	PCA-SV (Servo)	☆																12.3.6
	ROM kit		○	○	○	○	○	○	○	○								
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*																12.3.18
	Loader assembly	☆																12.3.9
	Threader assembly	☆																12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*																
	Motor assembly (machine reel)	*																
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape																	
Others	Dirty of head and tape running surface																	12.5.2, 3
	Setting error																	
	Operation error																	
	Interface cable/terminator																	
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	Cartridge home sensor off	Cartridge sensor A on	Tape path sensor A off	Tape path sensor B off	Cartridge sensor B on	File protect sensor on	Cartridge present sensor on									Reference
		DIAG. ERROR CODE	12:ERR02	12:ERR03	12:ERR04	12:ERR05	12:ERR06	12:ERR07	12:ERR08									
Drive	PCA-FA (Formatter/Analog)																	12.3.2
	PCA-SCF (SCSI/Core function)																	12.3.1
	PCA-WA (Write)	☆																12.3.7
	PCA-DVC (Drive control)	☆		△	△	△	△	△	△	△								12.3.5
	PCA-SV (Servo)	☆		○	○	○	○	○	○	○								12.3.6
	ROM kit																	
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*																12.3.18
	Loader assembly	☆		◎	◎			◎	◎	◎								12.3.9
	Threader assembly	☆				◎	◎											12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*																
	Motor assembly (machine reel)	*																
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape																	
Others	Dirty of head and tape running surface																	12.5.2, 3
	Setting error																	
	Operation error																	
	Interface cable/terminator																	
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

Priority of possible causes

- ❍ High
- ○ Middle
- △ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	Forward loading is too slow.	Forward loading is too fast.	Backward loading is too slow	Backward loading is too fast.					Forward threading is too slow.	Forward threading is too fast	Backward threading is too slow.	Backward threading is too fast					Reference
		DIAG. ERROR CODE	13:ERR01	13:ERR02	13:ERR03	13:ERR04					14:ERR01	14:ERR02	14:ERR03	14:ERR04					
Drive	PCA-FA (Formatter/Analog)																		12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆	△	△	△	△					△	△	△	△					12.3.5
	PCA-SV (Servo)	☆	○	○	○	○					○	○	○	○					12.3.6
	ROM kit																		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3 18
	Loader assembly	☆	❍	❍	❍	❍													12.3.9
	Threader assembly	☆									❍	❍	❍	❍					12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator																		
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	Machine reel tacho A is always "1".	Machine reel tacho A is always "0".	Machine reel tacho B is always "1".	Machine reel tacho B is always "0".	Machine reel tacho A and B change at same time	Rotational speed of machine reel is too slow.		Phase error in forward rotating of file reel		Phase error in backward rotating of file reel			Rotational speed of file reel is too fast				Reference
		DIAG. ERROR CODE	15:ERR01	15:ERR02	15:ERR03	15:ERR04	15:ERR05	15:ERR06		15:ERR08		15:ERR0			15:ERR0D				
Drive	PCA-FA (Formatter/Analog)																		12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆	△	△	△	△	△	△		△		△			△				12.3.5
	PCA-SV (Servo)	☆	○	○	○	○	○	◎		○		○			◎				12.3.6
	ROM kit																		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*								◎		◎			○				
	Motor assembly (machine reel)	*	◎	◎	◎	◎	◎	○											
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator																		
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

- ⊙ High
- ○ Middle
- △ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	Loading time is too long.							Loading time is too long								Reference
		DIAG. ERROR CODE	20:ERR01							21:ERR01								
Drive	PCA-FA (Formatter/Analog)																	12.3.2
	PCA-SCF (SCSI/Core function)																	12.3.1
	PCA-WA (Write)	☆																12.3.7
	PCA-DVC (Drive control)	☆	△							△								12.3.5
	PCA-SV (Servo)	☆	⊙							⊙								12.3.6
	ROM kit																	
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*																12.3.18
	Loader assembly	☆	⊙							⊙								12.3.9
	Threader assembly	☆	⊙							⊙								12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*																
	Motor assembly (machine reel)	*																
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape																	
Others	Dirty of head and tape running surface		○							○								12.5.2, 3
	Setting error																	
	Operation error																	
	Interface cable/terminator																	
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	Cap-in position error 1	Cap-in position error 2	Cap-in position error 3	Cap-in position error 4	Cap-in position error 5	Cap-in position error 6									Reference
		DIAG. ERROR CODE	22:ERR01	22:ERR02	22:ERR03	22:ERR04	22:ERR05	22:ERR06									
Drive	PCA-FA (Formatter/Analog)																12.3.2
	PCA-SCF (SCSI/Core function)																12.3.1
	PCA-WA (Write)	☆															12.3.7
	PCA-DVC (Drive control)	☆	○	○	○	○	○	○									12.3.5
	PCA-SV (Servo)	☆															12.3.6
	ROM kit																
	PCA-OP (Operator panel)																12.3.3
	Lifter solenoid	☆															12.3.10
	Head guide assembly	*															12.3.18
	Loader assembly	☆															12.3.9
	Threader assembly	☆															12.3.8
	Pump	☆															12.3.12
	Motor assembly (file reel)	*															
	Motor assembly (machine reel)	*															
	Fan assembnly																12.3.13
	Air filter																12.3.4
PSU	Power supply unit																
Tape	Cartridge tape																
Others	Dirty of head and tape running surface																12.5.2, 3
	Setting error																
	Operation error																
	Interface cable/terminator																
	Host system (including SCSI cable)																
ACL	Automatic cartridge loader																12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*. Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	Access time is too fast (1).	Access time is too slow (1)	Access time is too fast (2)	Access time is too slow (2)	Access time is too fast (3)	Access time is too slow (3).				Positioning time is too fast (1).	Positioning time is too slow (1).	Positioning time is too fast (2)	Positioning time is too slow (2).	Positioning time is too fast (3)	Positioning time is too slow (3)		Reference
		DIAG. ERROR CODE	23:ERR01	23:ERR02	23:ERR03	23:ERR04	23:ERR05	23:ERR06				23:ERR10	23:ERR11	23:ERR12	23:ERR13	23:ERR14	23:ERR15		
Drive	PCA-FA (Formatter/Analog)																		12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆	△	△	△	△	△	△				△	△	△	△	△	△		12.3.5
	PCA-SV (Servo)	☆	◎	◎	◎	◎	◎	◎				◎	◎	◎	◎	◎	◎		12.3.6
	ROM kit																		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*	△	△	△	△	△	△				△	△	△	△	△	△		
	Motor assembly (machine reel)	*	△	△	△	△	△	△				△	△	△	△	△	△		
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator																		
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

			Mode changing time is too fast (1). 23:ERR20	Mode changing time is too slow (1). 23:ERR21	Mode changing time is too fast (2). 23:ERR22	Mode changing time is too slow (2) 23:ERR23	Mode changing time is too fast (3) 23:ERR24	Mode changing time is too slow (3) 23:ERR25	Mode changing time is too fast (4). 23:ERR26	Mode changing time is too slow (4) 23:ERR27	Mode changing time is too fast (5) 23:ERR28	Mode changing time is too slow (5). 23:ERR29						Reference
Drive	PCA-FA (Formatter/Analog)																	12.3.2
	PCA-SCF (SCSI/Core function)																	12.3.1
	PCA-WA (Write)	☆																12.3.7
	PCA-DVC (Drive control)	☆	△	△	△	△	△	△	△	△	△	△						12.3.5
	PCA-SV (Servo)	☆	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎						12.3.6
	ROM kit																	
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*																12.3.18
	Loader assembly	☆																12.3.9
	Threader assembly	☆																12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*	△	△	△	△	△	△	△	△	△	△						
	Motor assembly (machine reel)	*	△	△	△	△	△	△	△	△	△	△						
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape																	
Others	Dirty of head and tape running surface																	12.5.2, 3
	Setting error																	
	Operation error																	
	Interface cable/terminator																	
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

			Contents	Acceleration time is too fast (1)	Acceleration time is too fast (1)	Acceleration time is too fast (1)	Acceleration time is too fast (1)	Acceleration time is too fast (2)	Acceleration time is too fast (2)	Acceleration time is too fast (2)	Acceleration time is too fast (2)	Acceleration time is too fast (3)	Acceleration time is too fast (3)	Acceleration time is too fast (3)	Acceleration time is too fast (3)				Reference
			DIAG. ERROR CODE	24:ERR01	24:ERR02	24:ERR03	24:ERR04	24:ERR05	24:ERR06	24 ERR07	24:ERR08	24:ERR09	24:ERR0A	24:ERR0B	24:ERR0C				
Drive	PCA-FA (Formatter/Analog)																		12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆	△	△	△	△	△	△	△	△	△	△	△	△					12.3.5
	PCA-SV (Servo)	☆	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎					12.3.6
	ROM kit																		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆																	12 3 9
	Threader assembly	☆																	12.3 3
	Pump	☆																	12.3 12
	Motor assembly (file reel)	*	△	△	△	△	△	△	△	△	△	△	△	△					
	Motor assembly (machine reel)	*	△	△	△	△	△	△	△	△	△	△	△	△					
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5 2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator																		
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	Illegal maximum tape speed	Illegal average tape speed	Illegal maximum and average tape speed	Illegal minimum tape speed	Illegal maximum and minimum tape speed	Illegal average and minimum tape speed	Illegal maximum, average and minimum tape speed	(Error occurred by MF command around BOT)	(Error occurred by MB command around BOT)	(Error occurred by WT command around BOT)	(Error occurred by MF command around MOT)	(Error occurred by MB command around MOT)	(Error occurred by WT command around MOT)	(Error occurred by MF command around EOT)	(Error occurred by MB command around EOT)	(Error occurred by WT command around EOT)	Reference
		DIAG. ERROR CODE	25:ERRx1	25:ERRx2	25:ERRx3	25:ERRx4	25:ERRx5	25:ERRx6	25:ERRx7	25:ERR0x	25:ERR1x	25:ERR2x	25:ERR3x	25:ERR4x	25:ERR5x	25:ERR6x	25:ERR7x	25:ERR8x	
Drive	PCA-FA (Formatter/Analog)																		12.3.2
	PCA-SCF (SCSI/Core function)																		12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	12.3.5
	PCA-SV (Servo)	☆	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	12.3.6
	ROM kit																		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*																	12.3.18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*	△	△	△	△	△	△		△	△	△	△	△	△	△	△	△	
	Motor assembly (machine reel)	*	△	△	△	△	△	△		△	△	△	△	△	△	△	△	△	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape																		
Others	Dirty of head and tape running surface																		12.5.2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator																		
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

			Contents	Illegal position from MP to MP command	Illegal position from MP to MB command	Illegal position from MF to WT command	Illegal position from MB to WT command	Illegal position from MB to MB command	Illegal position from MB to WT command	Illegal position from WT to MB command	Illegal position from WT to WT command	Illegal position from MB to WT command			(Error occurred around BOT)	(Error occurred around BOT)				Reference
			DIAG. ERROR CODE	26:ERRx1	26:ERRx2	26:ERRx3	26:ERRx4	26:ERRx5	26:ERRx6	26:ERRx7	26:ERRx8	26:ERRx1			26:ERR0x	26:ERR1x				
Drive	PCA-FA (Formatter/Analog)																			12.3.2
	PCA-SCF (SCSI/Core function)																			12.3.1
	PCA-WA (Write)	☆																		12.3.7
	PCA-DVC (Drive control)	☆		◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎				12.3.5
	PCA-SV (Servo)	☆																		12.3.6
	ROM kit																			
	PCA-OP (Operator panel)																			12.3.3
	Lifter solenoid	☆																		12.3.10
	Head guide assembly	*																		12.3.18
	Loader assembly	☆																		12.3.9
	Threader assembly	☆																		12.3 8
	Pump	☆																		12.3.12
	Motor assembly (file reel)	*																		
	Motor assembly (machine reel)	*																		
	Fan assembnly																			12.3.13
	Air filter																			12.3.4
PSU	Power supply unit																			
Tape	Cartridge tape																			
Others	Dirty of head and tape running surface																			12.5.2, 3
	Setting error																			
	Operation error																			
	Interface cable/terminator																			
	Host system (including SCSI cable)																			
ACL	Automatic cartridge loader																			12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		Execution of Search command is too late			Execution of DSE command is too late.				Distance between EOT and PEOT at write is too short	Distance between EOT and PEOT at write is too long.	Distance between EOT and PEOT at read is too short.	Distance between EOT and PEOT at read is too long				Reference
	DIAG. ERROR CODE		27.ERR01			28.ERR01				29.ERR01	29.ERR02	29.ERR03	29.ERR04				
Drive	PCA-FA (Formatter/Analog)																12.3.2
	PCA-SCF (SCSI/Core function)																12.3.1
	PCA-WA (Write)	☆															12.3.7
	PCA-DVC (Drive control)	☆	△			△				△	△	△	△				12.3.5
	PCA-SV (Servo)	☆	◎			◎				○	○	○	○				12.3.6
	ROM kit																
	PCA-OP (Operator panel)																12.3.3
	Lifter solenoid	☆															12.3.10
	Head guide assembly	*															12.3.18
	Loader assembly	☆															12.3.9
	Threader assembly	☆															12.3.8
	Pump	☆															12.3.12
	Motor assembly (file reel)	*	△			△				△	△	△	△				
	Motor assembly (machine reel)	*	△			△				△	△	△	△				
	Fan assembnly																12.3.13
	Air filter																12.3.4
PSU	Power supply unit																
Tape	Cartridge tape		◎			◎				◎	◎	◎	◎				
Others	Dirty of head and tape running surface																12.5.2, 3
	Setting error																
	Operation error																
	Interface cable/terminator																
	Host system (including SCSI cable)																
ACL	Automatic cartridge loader																12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*. Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	Execution time of Rewind command is too late.						Execution time of Unload command is too late								Reference
		DIAG. ERROR CODE	30:ERR01						31:ERR01								
Drive	PCA-FA (Formatter/Analog)																12.3.2
	PCA-SCF (SCSI/Core function)																12.3.1
	PCA-WA (Write) ☆																12.3.7
	PCA-DVC (Drive control) ☆		△						△								12.3.5
	PCA-SV (Servo) ☆		○						○								12.3.6
	ROM kit																
	PCA-OP (Operator panel)																12.3.3
	Lifter solenoid ☆																12.3.10
	Head guide assembly *																12.3.18
	Loader assembly ☆								◎								12.3.9
	Threader assembly ☆								◎								12 3.8
	Pump ☆																12.3.12
	Motor assembly (file reel) *		△						△								
	Motor assembly (machine reel) *		△						△								
	Fan assembnly																12.3.13
	Air filter																12.3.4
PSU	Power supply unit																
Tape	Cartridge tape		◎						△								
Others	Dirty of head and tape running surface																12.5.2, 3
	Setting error																
	Operation error																
	Interface cable/terminator																
	Host system (including SCSI cable)																
ACL	Automatic cartridge loader																12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	MOUNT ARM HOME SENSOR ALWAYS ON	MOUNT ARM BACKWARD TOO SLOW (OR NOT MOVED)	MAGAZINE UNJUST INSERT	CARTRIDGE INVERSE CHECK	PUSHED INTERLOCK CHECK	CARTRIDGE UNJUST INSERT			UNMATCH CARIDGE DATA IN MAGAZINE					Reference
		DIAG. ERROR CODE	40:ERR30	40:ERR31	40:ERR40	40:ERR50	40 ERR60	40:ERR70			41.ERR01					
Drive	PCA-FA (Formatter/Analog)															12.3.2
	PCA-SCF (SCSI/Core function)															12.3.1
	PCA-WA (Write)	☆														12.3.7
	PCA-DVC (Drive control)	☆	○	○							○					12.3.5
	PCA-SV (Servo)	☆														12.3.6
	ROM kit															
	PCA-OP (Operator panel)															12.3.3
	Lifter solenoid	☆														12.3.10
	Head guide assembly	*														12.3.18
	Loader assembly	☆														12.3.9
	Threader assembly	☆														12.3.8
	Pump	☆														12.3.12
	Motor assembly (file reel)	*														
	Motor assembly (machine reel)	*														
	Fan assembnly															12.3.13
	Air filter															12.3.4
PSU	Power supply unit															
Tape	Cartridge tape															
Others	Dirty of head and tape running surface															12.5.2, 3
	Setting error															
	Operation error				◎	◎	◎	◎								
	Interface cable/terminator															
	Host system (including SCSI cable)															
ACL	Automatic cartridge loader		◎	◎	○	○	○	○			◎					12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

		Contents	BOTTOM STOPPER UP & DOWN SENSOR BOTH ON	BOTTOM STOPPER MOTOR UP TOO FAST	BOTTOM STOPPER MOTOR UP TOO SLOW (OR NOT MOVED)	BOTTOM STOPPER MOTOR DOWN TOO FAST	BOTTOM STOPPER MOTOR DOWN TOO SLOW (OR NOT MOVED)	PINION PHASE SENSOR ALWAYS ON	MAGAZINE MOTOR UP TOO FAST	MAGAZINE MOTOR UP TOO SLOW (OR NOT MOVED)	MAGAZINE MOTOR DOWN TOO FAST	MAGAZINE MOTOR DOWN TOO SLOW (OR NOT MOVED)	FEEDER ARM OPEN & CLOSE SENSOR BOTH ON	CATCHER MOTOR OPEN TOO FAST	CATCHER MOTOR OPEN TOO SLOW (OR NOT MOVED)	CATCHER MOTOR CLOSE TOO FAST	CATCHER MOTOR CLOSE TOO SLOW (OR NOT MOVED)	Reference
		DIAG. ERROR CODE	40:ERR01	40:ERR02	40.ERR03	40:ERR04	40.ERR05	40:ERR10	40:ERR11	40:ERR12	40.ERR13	40:ERR14	40:ERR20	40:ERR21	40:ERR22	40:ERR23	40:ERR24	
Drive	PCA-FA (Formatter/Analog)																	12.3.2
	PCA-SCF (SCSI/Core function)																	12.3.1
	PCA-WA (Write)	☆																12.3.7
	PCA-DVC (Drive control)	☆																12.3.5
	PCA-SV (Servo)	☆																12.3.6
	ROM kit																	
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*																12.3.18
	Loader assembly	☆																12.3.9
	Threader assembly	☆																12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*																
	Motor assembly (machine reel)	*																
	Fan assembnly																	12.3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape																	
Others	Dirty of head and tape running surface																	12.5.2, 3
	Setting error																	
	Operation error		○										○					
	Interface cable/terminator																	
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader		◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		Time out	LWR2 (external mode) error	LWR1 (internal mode) error	LWR1 (normal mode) error	Media error	Write (100Bytes) error	Write (1KB) error	Write (32KB) error	Write (64KB) error	Read (100KBytes) error	Read (1KB) error	Read (32KB) error	Read (64KB) error	Read backward (000Byrtes) error	Read backward (1KB) error		Reference
	DIAG. ERROR CODE		5X:ERR01	5X:ERR02	5X:ERR03	5X:ERR04	5X:ERR05	5X:ERR06	5X:ERR07	5X:ERR08	5X:ERR09	5X:ERR0A	5X:ERR0B	5X:ERR0C	5X:ERR0D	5X:ERR0E	5X:ERR0F		
Drive	PCA-FA (Formatter/Analog)		○	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	12.3.2
	PCA-SCF (SCSI/Core function)		◎		◎	◎	○	○	○	○	○	○	○	○	○	○	○	○	12.3.1
	PCA-WA (Write)	☆																	12.3.7
	PCA-DVC (Drive control)	☆	△	○			○	○	○	○	○	○	○	○	○	○	○		12.3.5
	PCA-SV (Servo)	☆		○			○	○	○	○	○	○	○	○	○	○	○		12.3.6
	ROM kit																		
	PCA-OP (Operator panel)																		12.3.3
	Lifter solenoid	☆																	12.3.10
	Head guide assembly	*					△	○	○	○	○	○	○	○	○	○	○		12.3.18
	Loader assembly	☆																	12.3.9
	Threader assembly	☆																	12.3.8
	Pump	☆																	12.3.12
	Motor assembly (file reel)	*																	
	Motor assembly (machine reel)	*																	
	Fan assembnly																		12.3.13
	Air filter																		12.3.4
PSU	Power supply unit																		
Tape	Cartridge tape						◎	○	○	○	○	○	○	○	○	○	○		
Others	Dirty of head and tape running surface						◎	○	○	○	○	○	○	○	○	○	○		12.5.2, 3
	Setting error																		
	Operation error																		
	Interface cable/terminator		◎	△															
	Host system (including SCSI cable)																		
ACL	Automatic cartridge loader																		12.3. . .

Priority of possible causes

◎ High
○ Middle
△ Low

*: Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents	Read backward (32KB) error	Read backward (64KB) error	Locate error	Rewind error	Backspace file error	Forward space file error	Erase error	Write tape mark error	Lifter error							Reference
	DIAG. ERROR CODE	5X:ERR10	5X:ERR11	5X:ERR12	5X:ERR13	5X:ERR14	5X:ERR15	5X:ERR16	5X:ERR17	5X:ERR18							
Drive	PCA-FA (Formatter/Analog)	◎	◎	◎	◎	◎	◎	◎	◎								12.3.2
	PCA-SCF (SCSI/Core function)	○	○					○	○								12.3.1
	PCA-WA (Write) ☆																12.3.7
	PCA-DVC (Drive control) ☆	○	○	○	○	○	○	○	○	○							12.3.5
	PCA-SV (Servo) ☆	○	○	○	○	○	○	○	○	○							12.3.6
	ROM kit																
	PCA-OP (Operator panel)																12.3.3
	Lifter solenoid ☆									◎							12.3.10
	Head guide assembly *	○	○			○	○	○	○	○							12.3.18
	Loader assembly ☆																12.3.9
	Threader assembly ☆																12.3.8
	Pump ☆									△							12.3.12
	Motor assembly (file reel) *																
	Motor assembly (machine reel) *																
	Fan assembnly																12.3.13
	Air filter																12.3.4
PSU	Power supply unit																
Tape	Cartridge tape	○	○														
Others	Dirty of head and tape running surface	○	○														12.5.2, 3
	Setting error																
	Operation error																
	Interface cable/terminator																
	Host system (including SCSI cable)																
ACL	Automatic cartridge ioader																12.3.14

Priority of possible causes

◎ High
○ Middle
△ Low

*. Exchange whole drive.

☆: It is recommend to exchange whole drive.
Or specified assembly.

	Contents		UNPROTECTED CARTRIDGE IS DETECTED		CLEANING CARTRIDGE CANNOT BE DETECTED	TOO SHORT CLEANING TIME	TOO LONG CLEANING TIME		METAL SENSOR DOES NOT DETECTED									Reference
	DIAG. ERROR CODE		60:ERR01		61:ERR01	61:ERR02	61:ERR03		62:ERR01									
Drive	PCA-FA (Formatter/Analog)																	12.3.2
	PCA-SCF (SCSI/Core function)																	12.3.1
	PCA-WA (Write)	☆																12.3.7
	PCA-DVC (Drive control)	☆	○		○	○	○		○									12.3.5
	PCA-SV (Servo)	☆				◎	◎											12.3.6
	ROM kit																	
	PCA-OP (Operator panel)																	12.3.3
	Lifter solenoid	☆																12.3.10
	Head guide assembly	*																12.3.18
	Loader assembly	☆	◎		◎				◎									12.3.9
	Threader assembly	☆																12.3.8
	Pump	☆																12.3.12
	Motor assembly (file reel)	*				△	△											
	Motor assembly (machine reel)	*				△	△											
	Fan assembnly																	12 3.13
	Air filter																	12.3.4
PSU	Power supply unit																	
Tape	Cartridge tape																	
Others	Dirty of head and tape running surface																	12.5.2, 3
	Setting error																	
	Operation error		○		○				○									
	Interface cable/terminator																	
	Host system (including SCSI cable)																	
ACL	Automatic cartridge loader																	12.3.14

12.3 Parts Replacement

This section explains the replacement procedure of the spare parts.
Table 12.1 lists the spare parts.

Table 12.1 Spare parts

Item	Parts name	Part number	Reference
1	M2483BM MTU (2 m/s, 3 MB/S, Differencial SCSI)	B03B-5530-B112A	12.3.2
5	M2481X11 ACL	B03B-5405-H111A	12.3.3
6	Power Supply Unit	B14L-5105-0326A#A1	12.3.1

12.3.1 Inner cover replacement

(1) Drawing-out the inner cover

① Remove the SCSI cable and terminator.

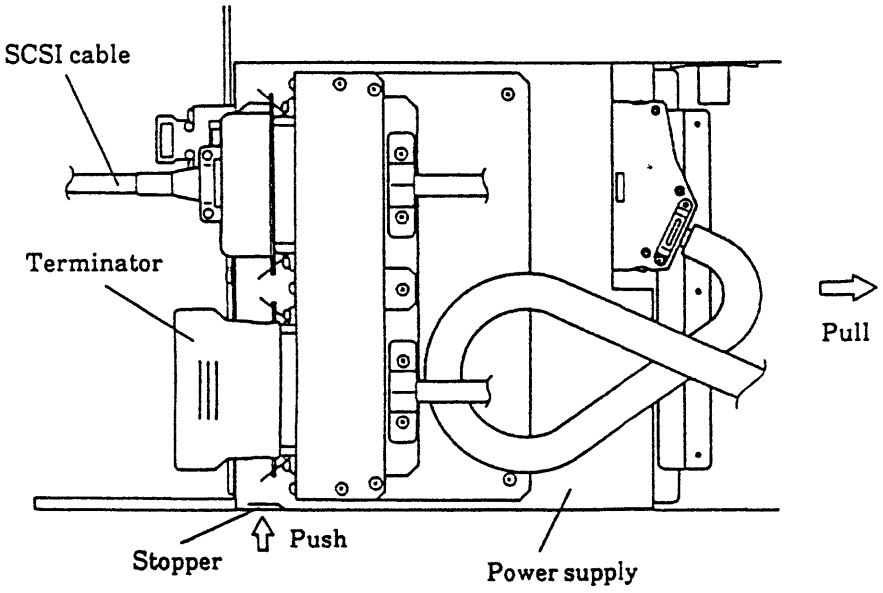
② Remove 2 screw (o) and then remove the front panel.

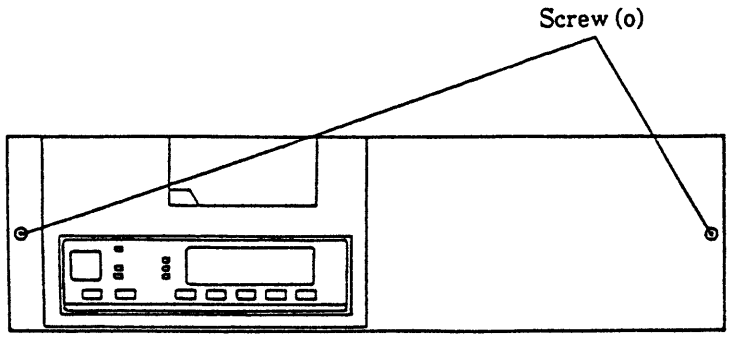
③ Drawing-out the inner cover with pushing the stopper.

(2) Pushing inner cover into mounting tray

① Pushing the inner cover into the mounting tray till the stopper is locked.

② Fix the front panel with 2 screws (o).





12.3.2 Power supply replacement

(1) Removal

① Remove the DC power cable to the right connector at the rear of MTU.

② Remove the 2 screws (m).

③ Pull out the power supply to the inner cover.

(2) Mounting

① Mount the power supply in the reverse order of the removal procedure.

12.3.3 MTU replacement

(1) Removal

① Remove the power supply.

② Remove the SCSI cable and terminator cable at the rear of MTU.

③ Remove 1 screw (r).

④ Remove 4 screws (P) and remove the MTU.

(2) Mounting

① Mount the MTU in the reverse order of the removal procedure.

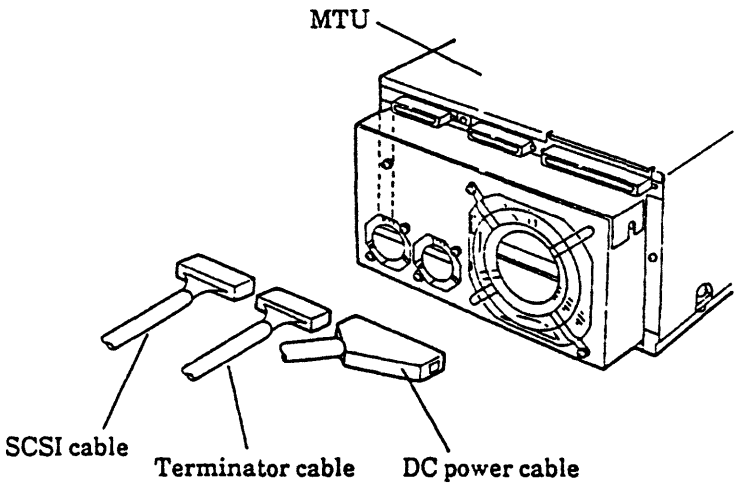


Figure 12.1 Remount 19-inch rack (with drive and Power Supply) (1/2)

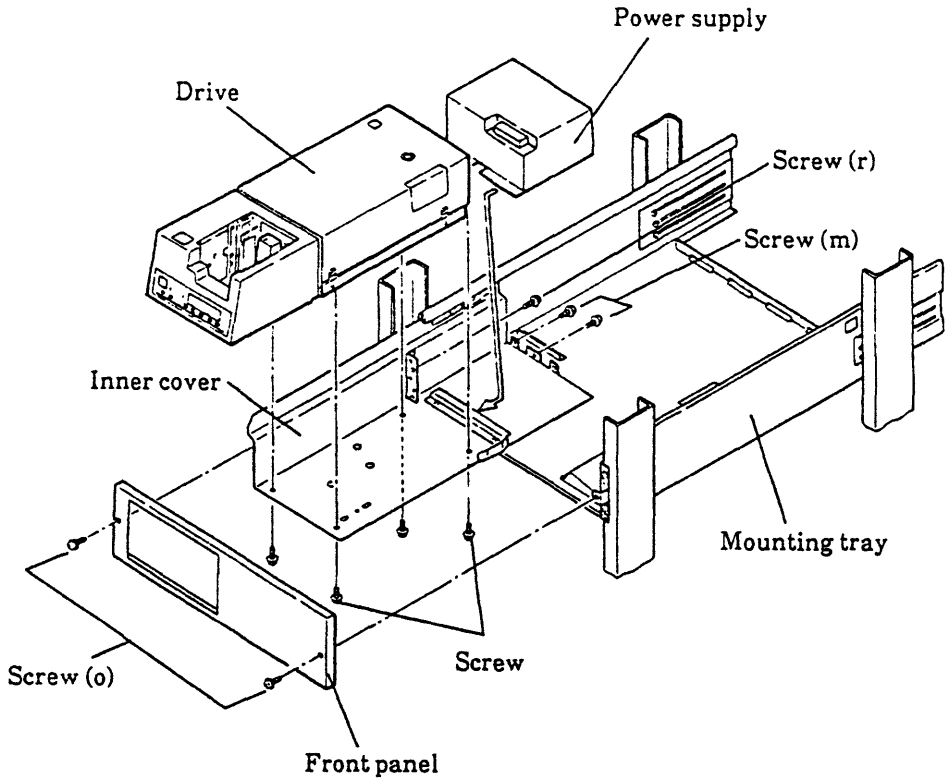


Figure 12.1 Remount 19-inch rack (with drive and Power Supply) (2/2)

12.3.4 Automatic cartridge loader replacement

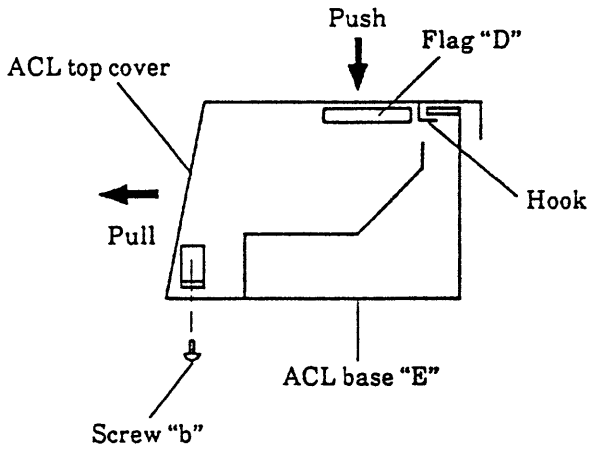
Refer to Subsection

(1) ACL mechanism replacement

a. Removal

① Remove two screws (b) securing the ACL top cover.

② Pull the ACL top cover to the front side while pressing the flag (D) with your finger. When the hook is released, lift up the ACL top cover.



③ Remove four screws (c) from the ACL base (E).

④ Lift up the ACL mechanixm slowly and remove the interface cable (I) and operator panel cable (H). Then, remove the ACL mechanism.

b. Mounting

① Mount the ACL mechanism in the reverse order of the removal procedure.

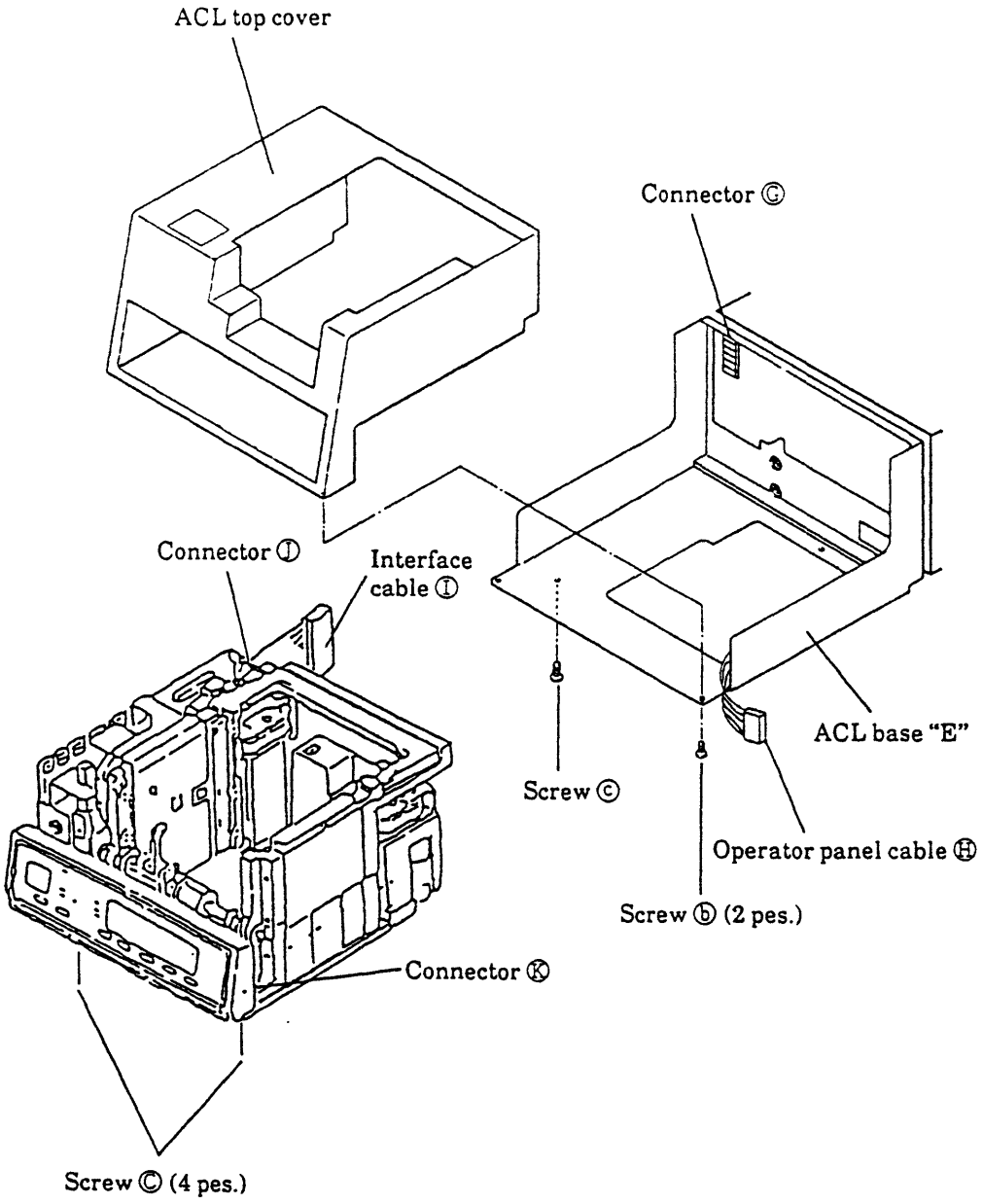


Figure 12.2 ACL mechanism replacement

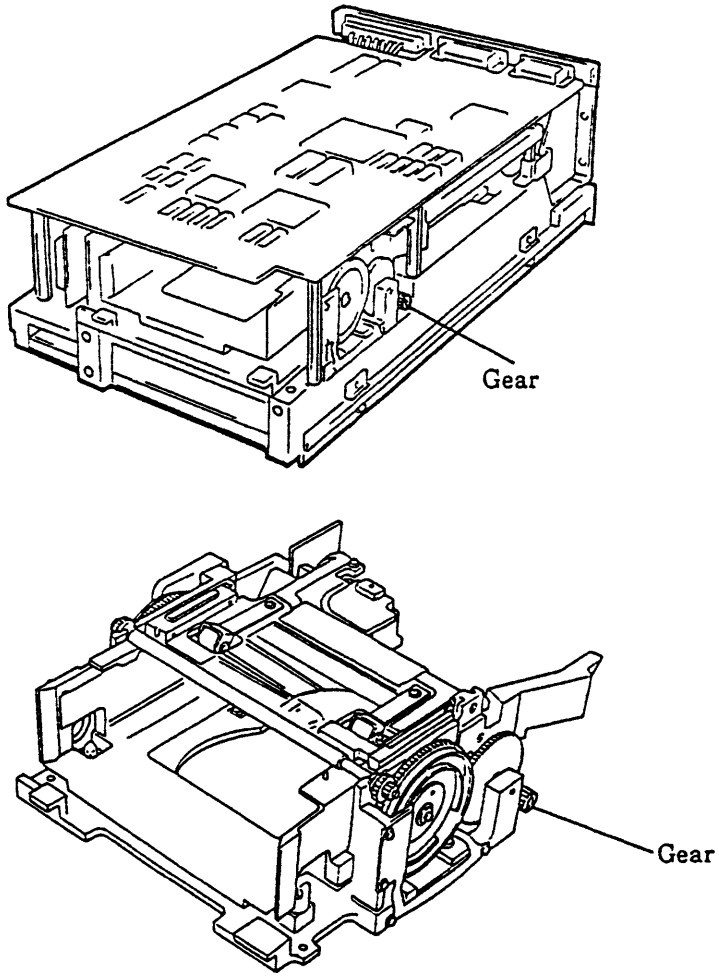
12.3.5 Cartridge tape removal

(1) Stopped during loading

① Remove the top cover.

② Confirm that the tape is wound up completely into the cartridge.

③ Turn the gear shown in Figure 12.3 conter clockwise by the phillips screwdriver and remove the cartridge.



Note:

This removal work can be done in the state that the loader assembly is mounted.

Figure 12.3 Cartridge tape removal (stopped during loading)

(2) Stopped during threading

① Remove the PCA-SCF.

② Confirm that the tape is not wound into the mechine reel.

③ Remove the threader assembly.

④ Remove the leader block from the threader pin.

⑤ Place the drive unit left side down.

⑥ Store the leader block into the cartridge by turning the file reel motor from the bottom side with a phillips screwdriver.

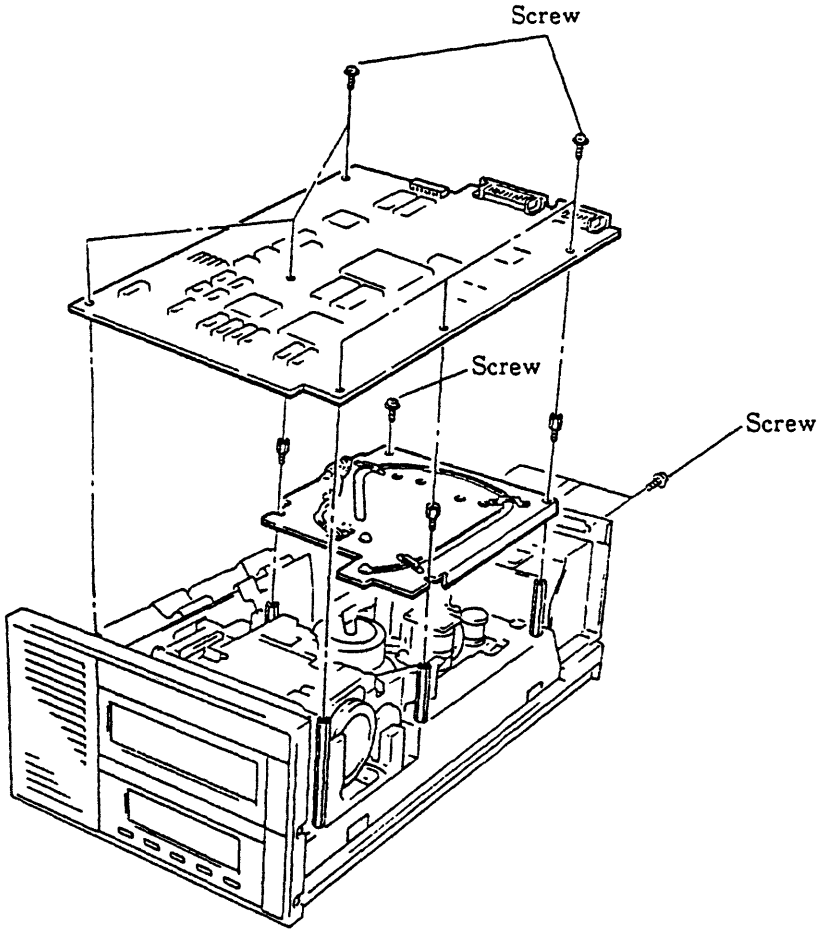


Figure 12.4 Cartridge tape removal (stopped during threading) (1/2)

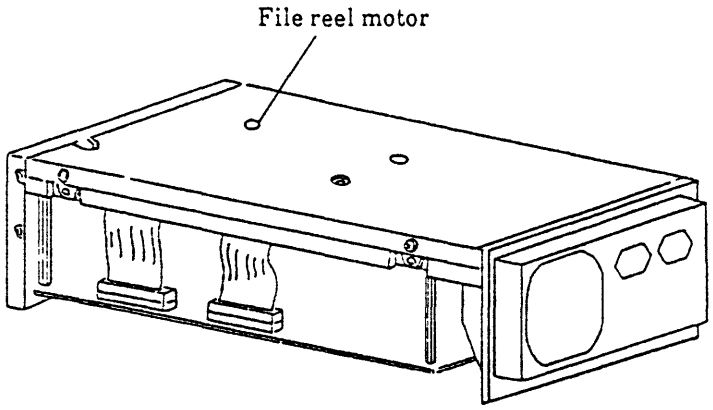


Figure 12.4 Cartridge tape removal (stopped during threading) (2/2)

(3) Tape is wounding into machine reel

① Remove the PCA-SCF.

② Place the drive unit left side down.

③ Store the tape into the cartridge by turning the file reel motor with a phillips screwdriver.

Note:

Wind up the tape with taking a balance (not add a load to the tape, and not wind a loose tape).

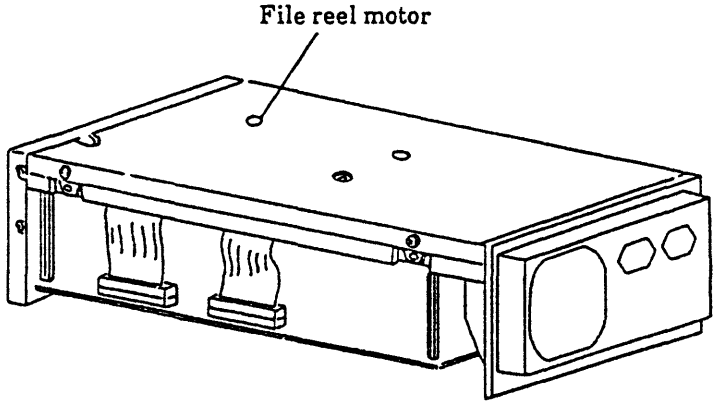


Figure 12.5 Cartridge tape removal (tape is wounding into machine reel)

12.4 Confirmation Test Procedure

The confirmation test procedure can be done from the operator panel at maintenance.

This section explains the confirmation test contents and its procedure.

12.4.1 MTC maintenance function

The basic MTC maintenance capabilities available to the CE include;

- FUNC0 configuration (00:CNFG)

  Sets and indicates the MTC and subsystem configuration.

- FUNC1 offline test (01:OFLN)

  Executes the MTC self-diagnostics.

- FUNC2 IMPL (02:IMPL)

  Reloads the MPU microcode of the MTC.

(1) FUNC0; Configuration

Refer to

(2) FUNC1; Offline test

① Press the RESET switch to set the drive offline, press the UNLOAD switch to eject the cartridge, and remove it from the drive. If the magazine is in the ACL, press the EJECT switch to remove the cartridge.

② Press the UNLOAD switch while pressing the TEST switch to enter the test mode. At this time, the tester function is selected and "DIAGMODE" is displayed.

③ Press the START switch to enter the setting mode. "SETTING" is displayed.

④ Press the START switch again to select the setting mode. "SEL MTC" is displayed.

⑤ Press the TEST switch. "CTLR OFL" is displayed and then "PUSH STR" is displayed.

⑥ Press the START switch to enter the MTC setting mode. "00:CNFG" is displayed.

⑦ Press the START switch to enter the offline test mode. "01:OFLN" is displayed.

⑧ Press the TEST switch. "0:RUNOFL" is displayed. At this stage, test routine selection and test option setting can be made. If you need to select the test routine, proceed to step ⑨. If you need the test option setting, proceed to step ⑩. When you finish the test routine selection and/or test option setting or if you do not need to select the test routine and test option setting, press the TEST switch to execute the offline test.

⑨ Press the START switch. "1:SELRTN" is displayed. Select the test routine by pressing the TEST switch (increment) and SHIFT + TEST switches (decrement). Selectable routines are as follows.

Routine 70: SIC Function Tests

Diagnose the SIC micro-controller, RAM, registers, and basic operation of other hardware.

Routine 71: SIC Data Buffer Tests

Perform the function test and read/write test of the automatic data transfer (ADT) buffer.

Routine 72: SIC SCSI Interface Tests

Diagnose the basic operation of the SCSI interface control logic.

Routine 73: SCSI Compression and ROR Tests

Performs the compression and decompression circuit test.

Routine 74: Loop Write to Read Tests

Performs the write/read test of the FMT loop.

⑩ Press the START switch. "2:RUNOPT" is displayed. Setable options as follows.

"0:LP ALL" Execute all test routines repeatedly.

"1:LP ONE" Execute one test routine repeatedly.

"2:ERRCNT" Continue the executing test routine even if error occurs.

"3:RSTOPT" Reset all options.

⑪ When the offline test is completed sucessfully, "0:END" is displayed. At this time, press the START switch to select the test routine and test option, or press the RESET switch to return to the previous state.

⑫ If the error occurs during the offline test execution, "FRU:Exxx" is displayed. Troubleshoot according to the displayed FRU code. When the START switch is pressed at this stage, the offline test is continued.

(3) FUNC2; IMPL

① Press the START switch twice when "00:CNFG" is displayed. "02:IML" is displayed.

② Press the TEST switch to start the IMPL.

12.4.2 MTU maintenance function

(1) Confirmation test contents

① "01:AUTO1" — All diagnoses provided by the drive are performed. (Because all tests (2) to (4) are performed by this diagnosis, other tests are not required.)

② "02:NOCTG" — The diagnoses not using the cartridge are performed. Sensor, circuit, and motor systems are diagnosed.

③ "03:INCTG" — The diagnoses using the cartridge are performed. Operation system diagnoses for checking tape speed and access time are performed.

④ "04:INLNE" — An inline diagnosis is performed to check the read and write systems.

⑤ "05:CTGCK" — The cartridge motor sensor is diagnosed.

⑥ "06:ACLCK" — The automatic cartridge loader option is diagnosed.

(2) Execution procedure

The switches on the operator panel are used in this operation.

Before a confirmation test is executed, the cartridge must be removed from the unit. When testing a unit with an ACL attached, the magazine must be removed before you can enter the test mode. For tests using the cartridge, a work cartridge must be used. The cartridge used for normal processing must not be used. (Recorded data is not guaranteed.)

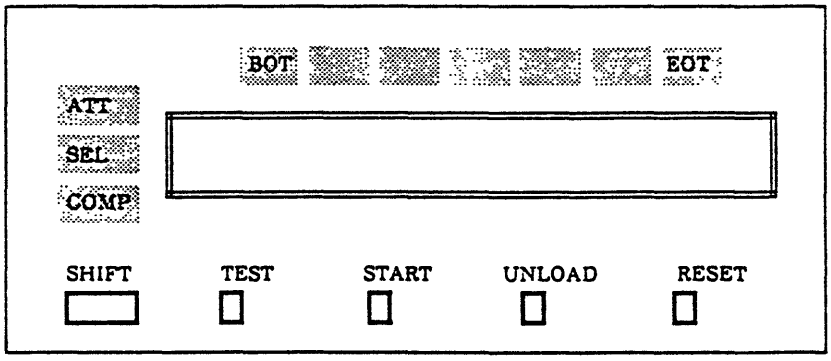


Figure 12.6 Operator panel

① Press the RESET switch to set the unit offline, press the UNLOAD switch to eject the cartridge and remove it from the unit. If the magazine is in the ACL, remove the magazine.

② While pressing the TEST switch, press the UNLOAD switch for about two seconds to enter the test mode. At this time, the tester function is selected and "DIAGMODE" is displayed.

③ Press the TEST switch to select the diagnostic mode.

④ Press the START switch and select a diagnosis.

⑤ Press the TEST switch to execute the selected diagnosis. If "04:INLNE" is selected, select also one inline diagnosis from "50:LWR 1" to "55:LFTCK" by using the START switch and press the TEST switch again. If "05:CTGCK" is selected, select also one diagnosis from "60:FPCTG" to "62:MTCTG" by using the START switch and press the TEST switch again. If "06:ACLCK" is selected, select also either "40:ACL01" or "41:ACL02" by using the START switch and press the TEST switch again. "##:START" (##: a diagnostic routine No. expressed as a decimal number) is displayed on the operator panel while the diagnosis is executing. For the diagnoses requiring operator inter action, messages are displayed on the operator panel. (Example: When the cartridge must be loaded, "MOUNT WORK CTG" is displayed.) When the action by the operator is completed, "##:START" is displayed on the operator panel and the diagnosis continues.

⑥ If the RESET switch is pressed in the diagnosis selection status, "DIAGMODE" is terminated and the internal tester function is selected.

⑦ If the RESET switch is pressed while the diagnosis is executed, the diagnosis is stopped. At this time, "##:STOP " is displayed and the selection status of "DIAGMODE" is set. (##: stopped diagnostic routine No. expressed as a decimal number)

⑧ When the diagnosis terminates normally, "##:END " is displayed on the operator panel and the selection state of "DIAGMODE" is set. (##: routine No. expressed as a decimal number)

⑨ If an error occurs while the diagnosis is executing, "□CHK XX□" or "##: ERRXX" is displayed on the display panel.

① "□CHK XX□"

This error was detected by the standard error detection routine.

At this time, "□CHK XX□" is displayed and the diagnosis is stopped. In this state, only the unload operation can be accepted.

When the unload operation terminates, "DIAGMODE" is terminated and the unit enters the power-on status.

② "##:ERRXX"

This error was detected by the diagnostic routine. At that time, "##:ERRXX" was displayed on the operator panel, the diagnosis stopped and the selection status of "DIAGMODE" was set.

Table 12.2 Error code list

ERROR CODE	Abbreviation	Contents
##:ERR01	E@TOUT	TIME OUT
##:ERR02	E@LWR2	LWR2 (external-mode) error
##:ERR03	E@;WR1	LWR1 (internal-mode) error
##:ERR04	E@LSW1	LWR1 (normal-mode) error
##:ERR05	E@MEDIUM	Medium error
##:ERR06	E@WR100	Write (100-byte) error
##:ERR07	E@WR1K	Write (1-KB) error
##:ERR08	E@WR32K	Write (32-KB) error
##:ERR09	E@WR64K	Write (64-KB) error
##:ERR0A	E@RD100	Read (100-byte) error
##:ERR0B	E@RD1K	Read (1-KB) error
##:ERR0C	E@RD32K	Read (32-KB) error
##:ERR0D	E@RD64K	Read (64-KB) error
##:ERR0E	E@RB100	Read backward (100-byte) error
##:ERR0F	E@RB1K	Read backward (1-KB) error
##:ERR10	E@RB32K	Read backward (32-KB) error
##:ERR11	E@RB64K	Read backward (64-KB) error
##:ERR12	E@LOC	Locate error
##:ERR13	E@RWD	Rewind error
##:ERR14	E@BSPF	Back-space file error
##:ERR15	E@FSPF	Forward-space file error
##:ERR16	E@ERS	Erase error
##:ERR17	E@WTM	Write tape mark error
##:ERR18	E@LIFT	Lifter error

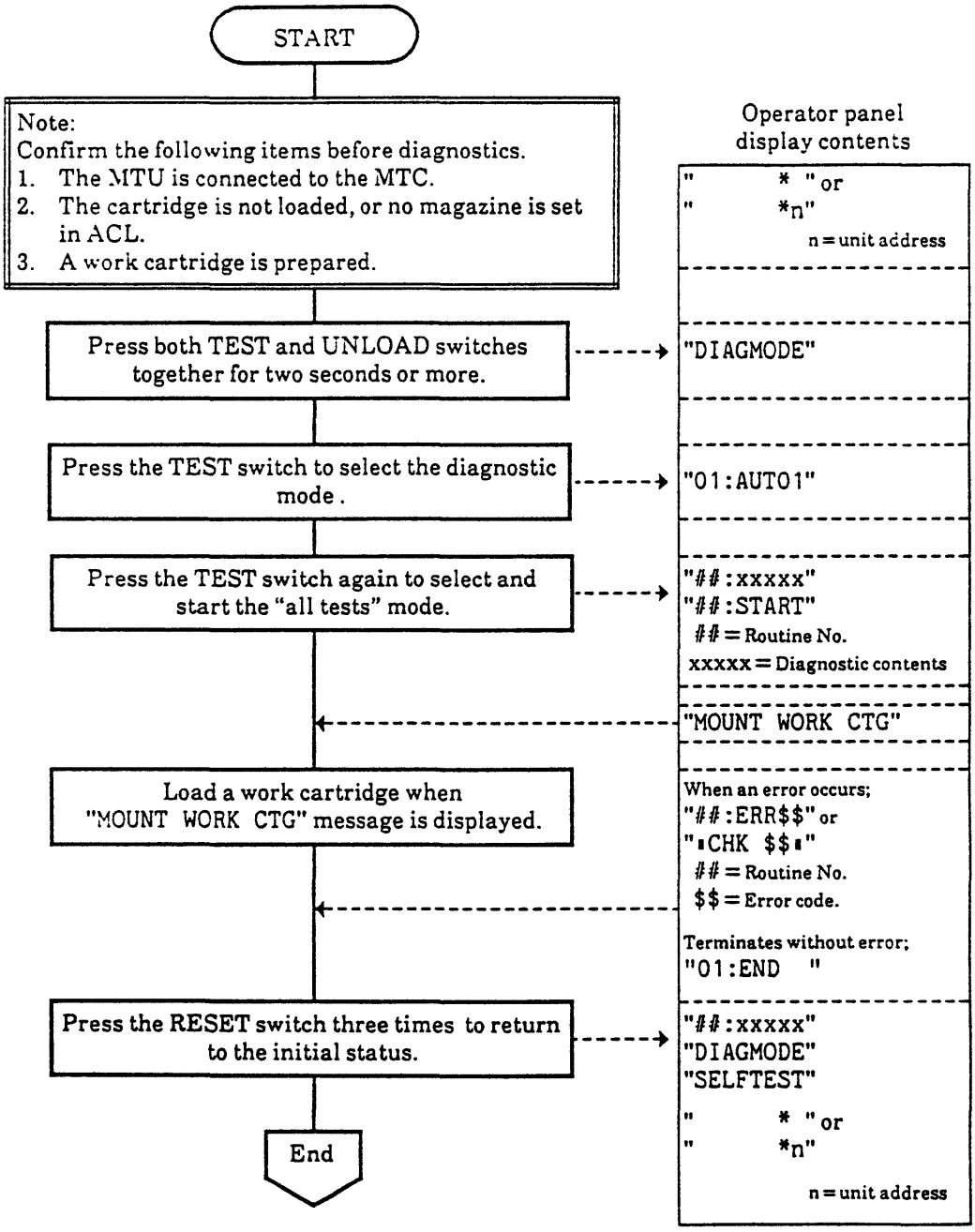


Figure 12.7 Flowchart of DIAG "01:AUTO1" operation

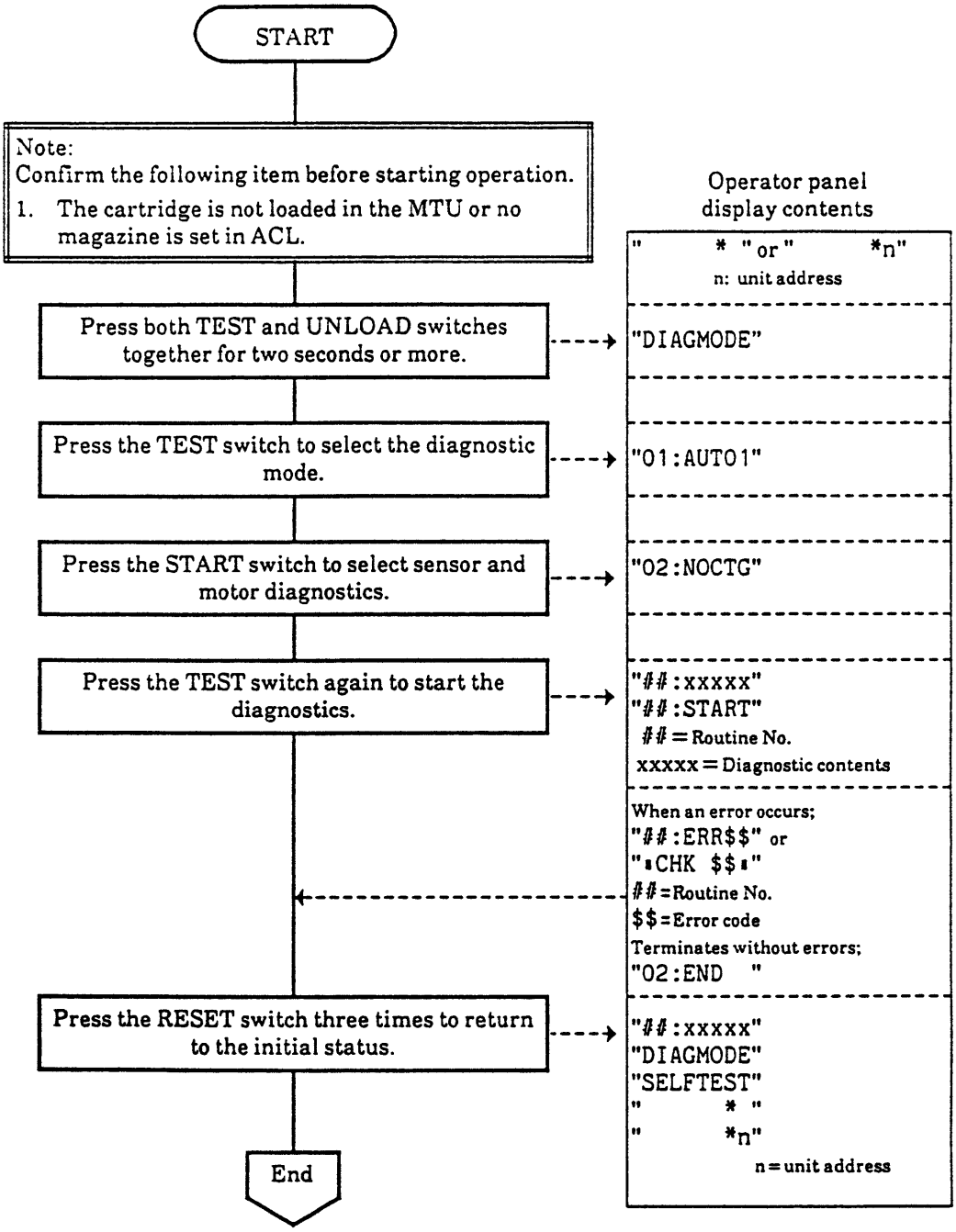


Figure 12.8 Flowchart of DIAG "02:NOCTG" operation

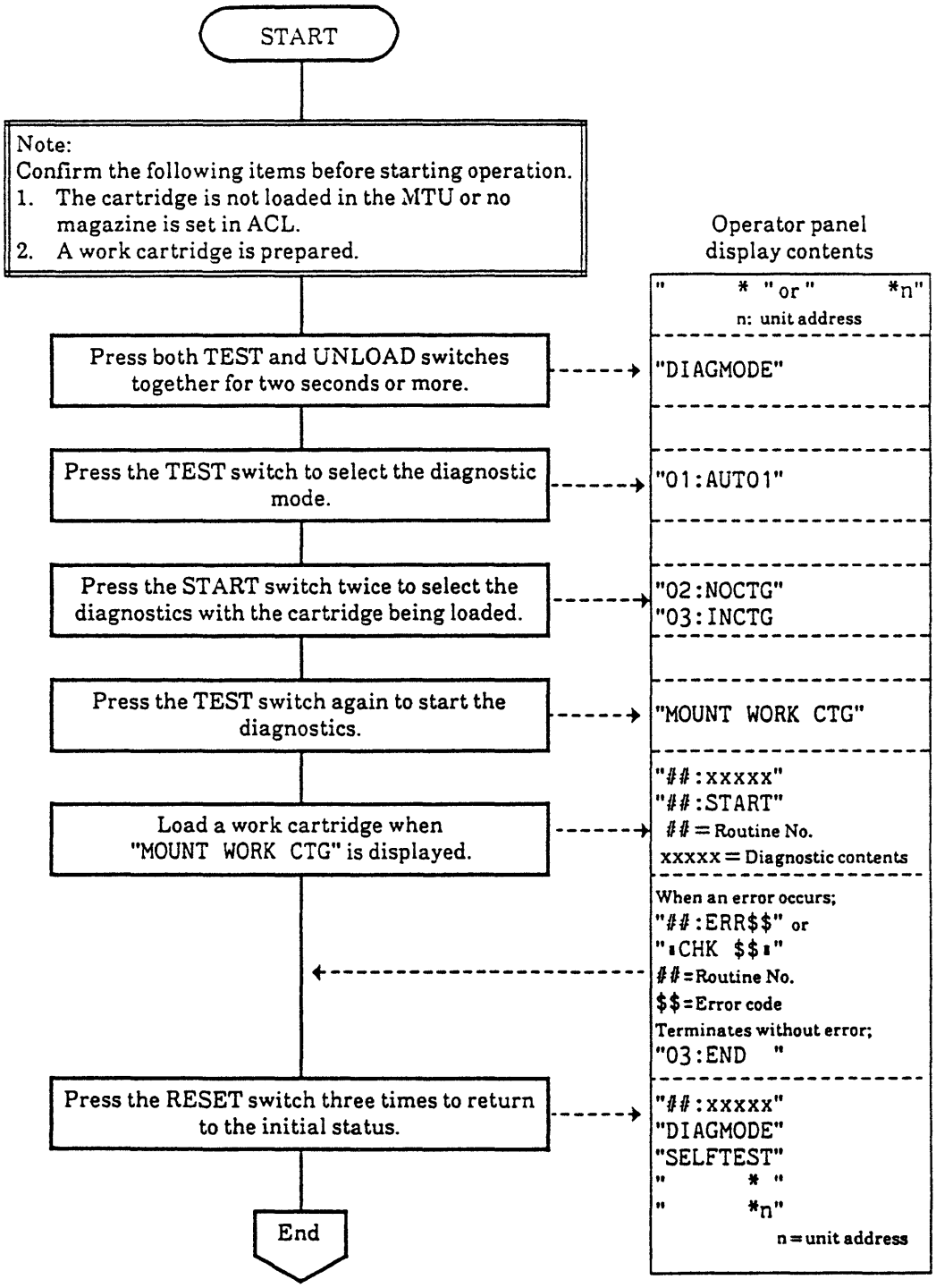


Figure 12.9 Flowchart of DIAG "03:INCTG" operation

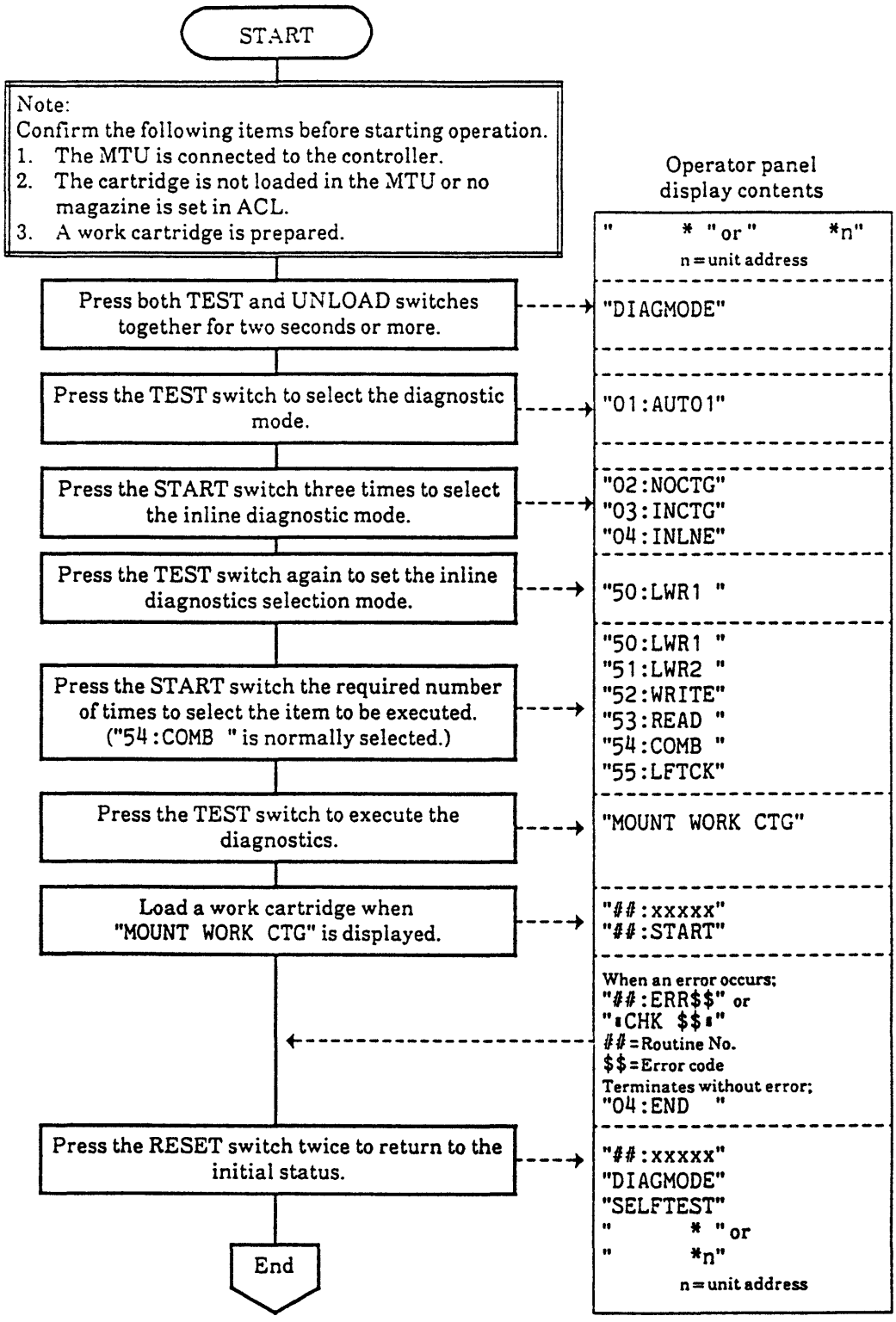


Figure 12.10 Flowchart of DIAG "04:INLNE" operation

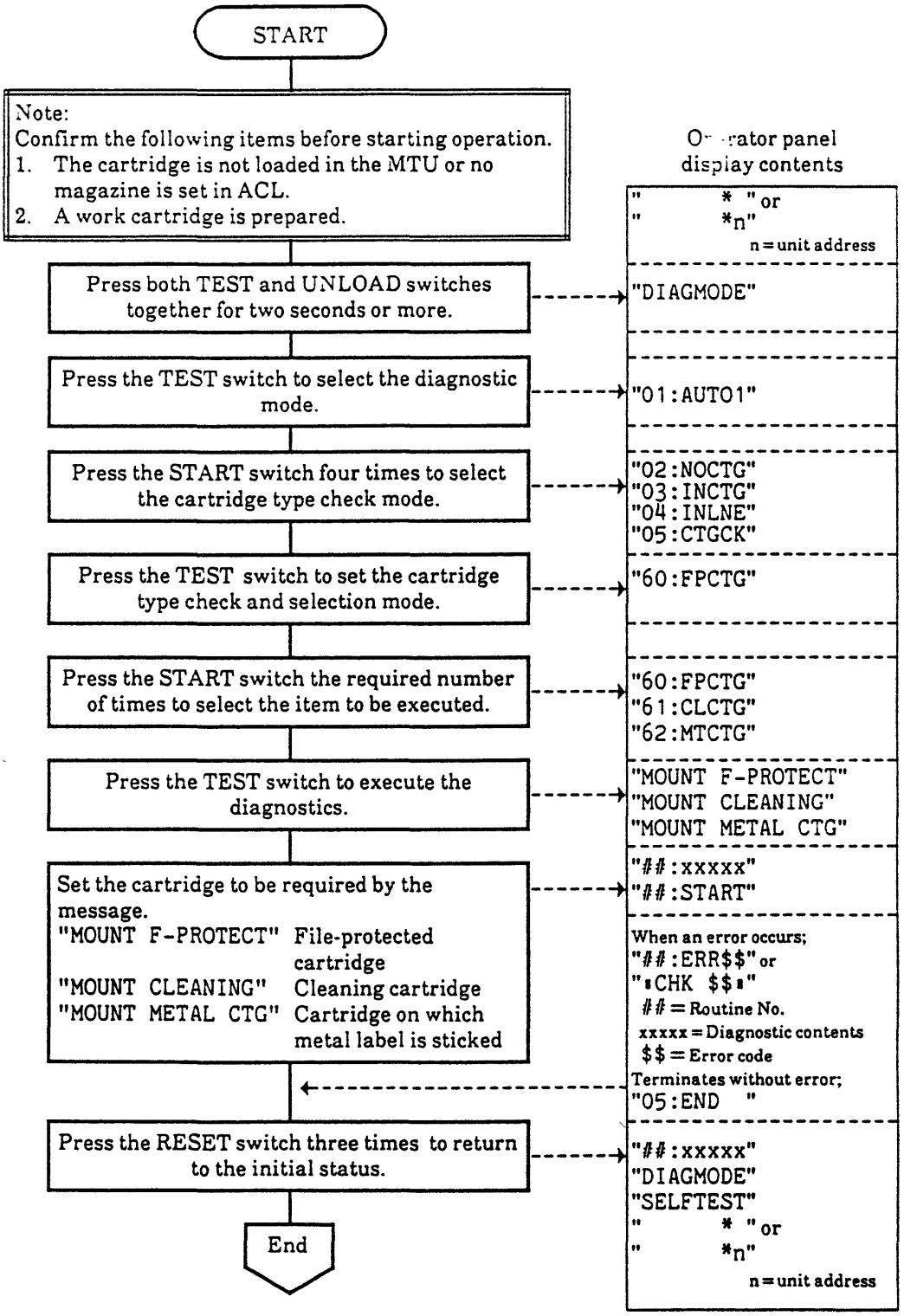


Figure 12.11 Flowchart of DIAG "05:CTGCK" operation

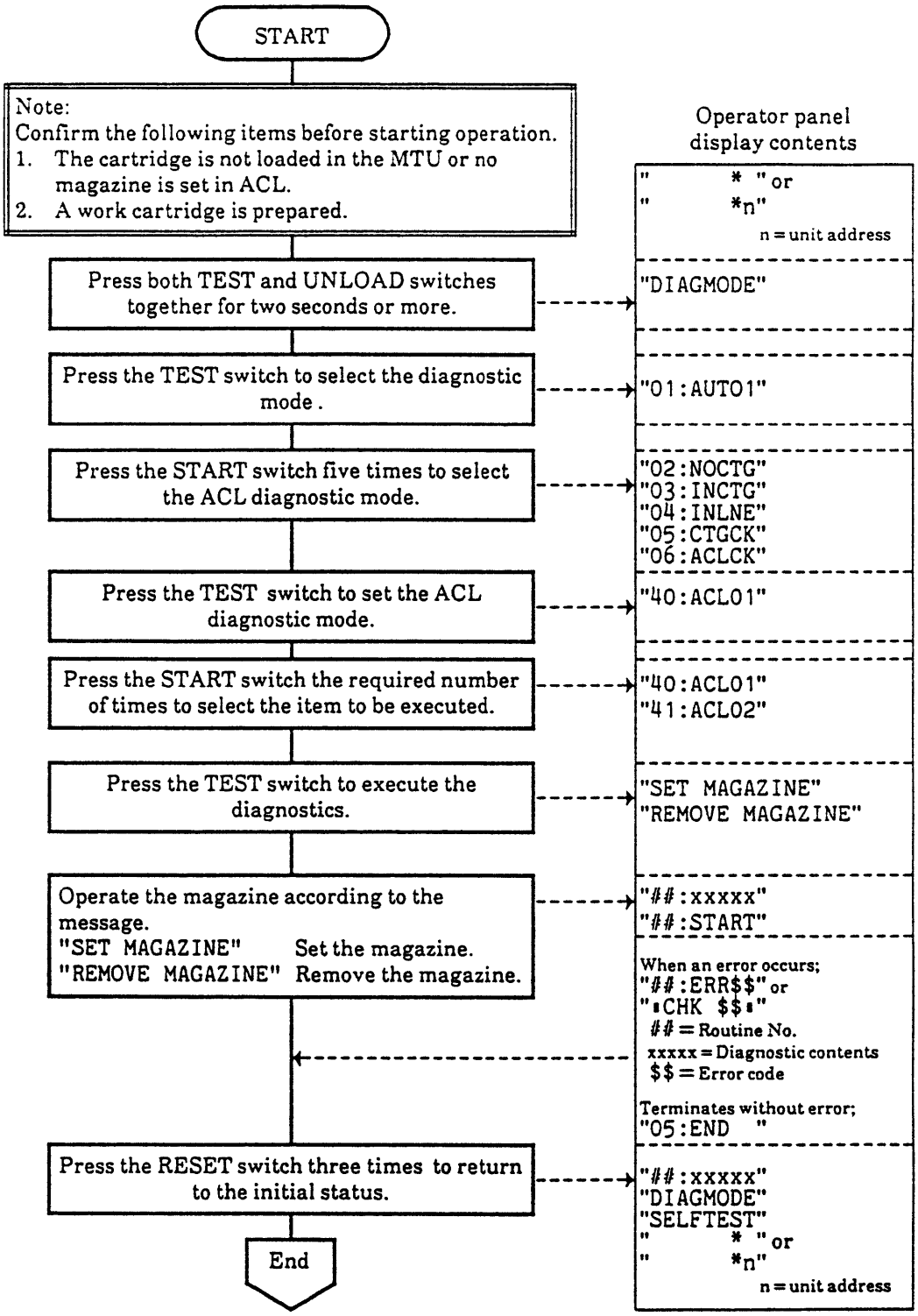


Figure 12.12 Flowchart of DIAG "06:ACLCK" operation

(3) Outline of diagnoses

This section explains the diagnostic routines.

a. "01 : AUTO1": execution of all diagnostics

All diagnostics as explained in the following items (2) to (4) are executed.

b. "02 : NOCTG": diagnostics of sensor, circuit, and motor systems

10 : LOGIC — Checks the logic circuit to control file and machine reels, GAP counter, and RRC counter.

12 : PHOTO — Checks photo sensors.

13 : LOADER — Checks cartridge loader operation.

14 : THRED — Checks threader operation.

15 : TACHO — Turns the machine and file reels and checks tachometer pulse intervals, tachometer pulse counter, and tachometer phase.

c. "03 : INCTG": diagnostics of the tape-feed system operation

20 : LDNRM — Performs normal cartridge loading operation and checks the operation.

22 : GAPIO — Outputs a dummy Gap-Out signal internally and checks the operation of Gap-Out and Gap-In logic circuits.

23 : ACCTM — Checks access time, positioning time, and mode change time.

24 : ACCTM — Checks access time, positioning time, and mode change time.

25 : TPSPD — Checks the speed of tape near BOT, middle of the tape, and EOT.

26 : TPMTN — Executes reading and writing, checks the operations, and perform the following operations near BOT and EOT.

Move Forward → Move Forward
Move Forward → Move Backward
Move Forward → Write
Move Backward → Move Forward
Move Backward → Move Backward
Move Backward → Write
Write → Move Backward
Write → Write

27 : LOCAT — Checks locate operation.

28 : D.S.E — Checks D.S.E. operation.

29:E.O.T — Checks the distance from EOT to PEOT.

30:REWND — Rewinds tape from PEOT and checks the operation.

31:UNLOD — Checks unloading operation.

d. "04:INLNE": diagnostics of read and write systems

50:LWR1 — Checks the MTC data bus in both internal and normal modes.

51:LWR2 — Checks the data buses of MTC and MTU in the external mode.

52:WRITE — Performs medium and actual writing tests.

53:READ — Performs normal read and marginal tests.

54:COMB — Performs LWR and medium test and checks write operation.

55:LFTCK — Checks lifter operation by turning the lifter solenoid on or off and checking the read data.

e. "05:CTGCK": diagnostics of cartridge mode sensor

60:FPCTG — Checks the file protect sensor.

61:CLCTG — Checks the cleaning cartridge sensor.

62:MTCTG — Checks the data compression sensor.

f. "06:ACLCK": diagnostics of automatic cartridge loader (ACL)

40:ACL01 — Checks the mechanism of ACL.

41:ACL02 — Checks the operation of ACL by loading/unloading cartridges from the magazine.

12.5 Preventive Maintenance

To nip the trouble in the bud, following preventive maintenance should be done. This section explains the preventive maintenance procedure.

Table 12.3 lists the check items for preventive maintenance.

Table 12.3 Preventive maintenance items

Check item			Period	Reference
Cleaning	1	Cleaning by cleaning cartridge	(Note 1)	12.5.1
	2	Tape path cleaning	(Note 2)	12.5.2
Check	1	Each mechanism section	at maintenance	

Notes:

1. When a message "*CLEAN " is displayed, or when 50 cartridges are processed.
2. After a data check occurs, a data check occurs again even if the cleaning by a cleaning cartridge is performed.

12.5.1 Cleaning using cleaning cartridge

(1) Procedure

① When the cleaning is required, a messege is displyed on the operator panel.

② Set the cleaning cartridge into the cartridge entry as same as the data cartridge.

③ The drive unit starts the cleaning operation automatically. When the cleaning is completed, the drive unit unloads and ejects the cleaning cartridge.

12.5.2 Tape path cleaing

(1) Procedure

① Remove the small cover of the top cover.

② clean the tape path (head) using the cotton swab and cleaning solvent (isopropyl alcohol) from the window of the top cover (see Figure 12.13).

Note:

Do not use the freon solvent.

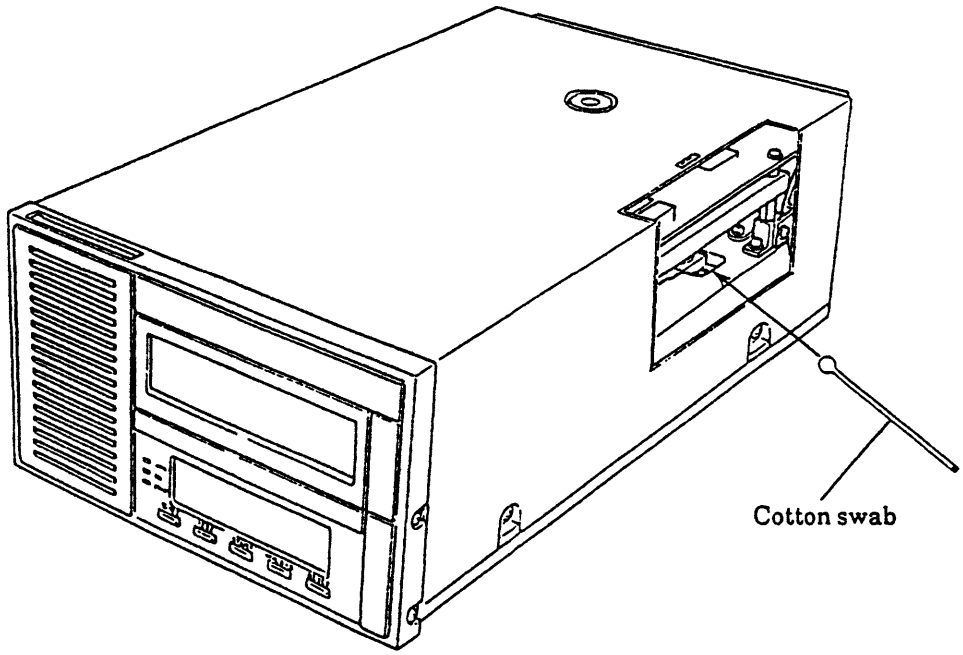


Figure 12.13 Tape path cleaning

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