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**IBM IBM**

**CE Handbook CE Handbook CE**

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**8809 Tape Unit 8809**

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0188  
Model 22

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Prepared by:  
IBM SAZ  
DP CFTO 0.0000  
Apartado 43  
LRIIA /Valencia  
Spain  
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## Documentation

### ■ PHYSICAL PLANNING

4300 – GA24-3667  
8100 – GA27-2877  
8809 – GC22-7064  
8809 TSI

### ■ THEORY

8809 Magnetic Tape Unit Description  
GA26-1659

### ■ OTHER RELATED PUBLICATIONS

For 8100 System Attachment:

- Introduction to the IBM 8100 Information System, order no. GA27-2875.
- IBM 8100 Information System Configurator, order no. GA27-2876.
- System Manual DPPX, order no. SC27-0410.
- System Manual DPCX, order no. SC27-0492.

For 4331 System Attachment:

- IBM 4331 Computing System Summary, Input/Output and Data Communications Configurator, order no. GA33-1523.
- IBM Input/Output Device Summary, order no. GA32-0039.
- OS/VSE (EREP), order no. GC28-0772.

For 8100 and 4331 System Attachment:

- IBM 8809 Tape Unit Operator's Guide, order no. 232-0005.
- Tape specifications for IBM one-half inch tape unit at: 5556, 800, 1600 and 6250 BPI, order no. GA32-0006.

## Models and Attachment

### Attaching to an IBM 4331 System

Up to six 8809 tape units can be attached in a series to an IBM 4331 processor. The processor requires an IBM Magnetic Tape Unit Adapter Feature for attachment of an 8809.

Model 1A is the first unit in a series of 8809 tape units. It attaches to an IBM 4331 processor and contains power for itself and a Model 2.

Model 2 is the second, fourth, or sixth unit in a series; it connects to a model 1A, model 1B or a model 3 and derives its power from either unit.

Model 3 is the third or fifth unit in a series. It connects to a model 2 and contains power for itself and another model 2.

### Attaching to an IBM 8100 System

Up to four 8809 tape units can be attached to an IBM 8100 System; the 8809 Model 1A or 1B is always the first tape unit in the series. The series of 8809 tape units attaches to the 8100 System in two ways:

- The 8809 model 1A attaches to an 8100 System through an 8101 storage and I/O Unit that contains the Magnetic Tape Attachment Feature.
- The 8809 model 1B attaches directly to the 8100 Processor's System Control Facility (SCF) signal bus. The 8809 model 1B includes the Secondary System Control Facility (SSCF) usage 4 and the 8809 adapter that are required for this direct connection.

## Physical Planning

### Cables

4300 INTERFACE P/N 2281630 x 2 cable group 3900  
(connect shield ground at 4300 end).

EPO CABLE — NO EPO cable required between 4331 and 8809.

### 8100 INTERFACE

MODEL 1A — P/N 2281630 cable group 3900  
(connect shield to ground at 8101 end).

MODEL 1B — Cables supplied with 8809 old P/N  
2337908/09/10 new P/N 4469453/54/55  
EC 847327 no EPO cable used.

### Prerequisites

For a model 1A attached to an IBM 4331 processor, an 8809 Magnetic Tape Unit adapter (#4910) is required in the host system.

For a model 1A attached to an IBM 8100 information system a Magnetic Tape Attachment (#4521) is required on the 8101 storage and input/output unit (model A10, A11, A13).

If the 8809 attaches to an 8101 model A10, a diskette drive and magnetic tape attachment (#1507) is required in the 8101 in addition to the Magnetic Tape Attachment (#4521). The functions supplied by the Diskette Drive and Magnetic Tape Attachment are standard in the 8101 models A11 and A13.

For a model 1B attached directly to an IBM 8130 or 8140 processor, the Magnetic Tape Attachment electronics are located in the 8809 model 1B. An 8100 System Multi-Drive Feature (#4920, B/M 4297854), is required in the model 1B if additional 8809s (models 2 and 3) are attached.

## Programming

The 8809, when attached to an IBM 4331 processor, is supported by two operating systems: Disk Operating System/Virtual Storage Extended (DOS/VSE) and Virtual Machine/Base System Extension (VM/BSE) Release 2.

The 8809, when attached to the 8100 Information System, is supported by two programming systems: Distributed Processing Control Executive (DPCX) and Distributed Processing Programming Executive (DPPX).

Utility programs are available for volume dumps in streaming mode.

8809 diagnostic diskettes are shipped to the host system.

## Tools and Test Equipment

Master Skew Tape	P/N. 432641
Test Pattern Tape	P/N. 4297736
Skew Adjustment Card	P/N. 8492415
Logic Card Extractor	P/N. 2360375
Logic Card Extractor Extender	P/N. 2337369
5/16 inch Socket	P/N. 153704
8 mm Socket	
Jumper Wire 12.7 cm (0.5 inch)	P/N. 452655
Pin Extractor Tool (if required for voltage conversion)	P/N. 2108398
A full 10.5 inch reel of IBM Multi-System Scratch Tape or equivalent (no tape removed)	Scratch
Metric Tool Kit	P/N. 1749235
IBM Tape Cleaner-Kit	P/N. 352465



## Sense (T) Idler and Power Amp. Interchangeability

X = compatible;

■ = not compatible

T — Idler

P/N. 2337890

PWR AMP  
5/16" Bendix  
RTV white or  
neo black

P/N. Indication

NONE

8492662 (4469630)

X

8492677 (4469643)

X

4452014

■

4469624

■

4469623

■

4469636

■

Note: use slip TD997771.

P/N. 8492621

5/16" Bendix  
neo black

P/N. on bottom

■ ■ ■ ■ ■

P/N. 8492614

1/2" IBM  
neo black

P/N. on bottom

■ ■ ■ ■ ■

P/N. 4452145

1/2" IBM  
neo black  
photo sensor

■ ■ ■ ■ ■ X

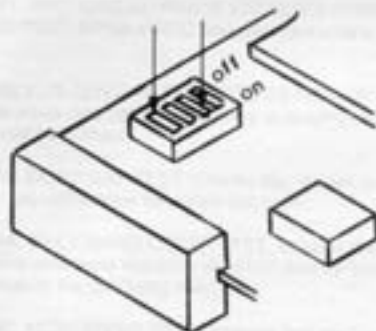
## Address SW Setting (Ref-Inst Page 70)

All Models

SET THE ADDRESS FOR THE TAPE UNIT BY SETTING THE SWITCHES AS SHOWN BELOW.

Address	Bus out	Switch Position				
	01234567	1	2	3	4	
0	000XXXXX	ON	ON	ON		N O T
1	001XXXXX	ON	ON	OFF		
2	010XXXXX	ON	OFF	ON		U S E D
3	011XXXXX	ON	OFF	OFF		
4	100XXXXX	OFF	ON	ON		
5	101XXXXX	OFF	ON	OFF		
6	110XXXXX	OFF	OFF	ON		
7	111XXXXX	OFF	OFF	OFF		

Note: push in on "on" side for on and on "off" side for off.



## Mod 1B

8809 MODEL 1B, THE ADDRESS OF THE SSCF CARD MUST BE ENTERED. THE SWITCH POSITIONS FOR THE SSCF CARD IN THE 8809 ARE SET AS FOLLOWS:

Module 1 Switches	1	2	3	4	5	6	7	8	9	10
Set to	off	on	on	on	on	off	on	on	off	off

Module 2 switches 1-8 are always all set to off (all zeros) in the 8809 model 1B.

## Diagnostic linked Series

The diag section of the 8809 Maintenance Manual contains a detailed description of the tape drive tests. The following briefly describes each routine:

**ROUTINE 40, CONTROL LINE TEST.** Exercises the control lines into the tape unit. It first executes an adapter reset and checks status to verify that no inbound lines to the status register are active. It then selects a drive and checks status to verify that correct selection occurred and that the drive responded with the correct address on bus in.

**ROUTINE 41, SELECT ACTIVE TEST.** Tests the ability of the adapter to get a control line sequence error when selecting a tape unit that was previously selected. The routine first selects the drive, which should operate correctly. It then reselects the drive, which should cause a control line sequence error because select active was still on.

**ROUTINE 42, SENSE BYTE TEST.** Verifies: (1) the operation of the sense command and (2) that certain sense bytes contain the proper information after a check reset command.

**ROUTINE 43, LOOP WRITE-TO-READ TEST.** Test the data transfer circuits by transferring data patterns. Which vary in length and content, through the write and read path. This routine is the first one to check the data tic function of the adapter.

**ROUTINE 44, POLL TEST.** Tests that the tape unit can both suppress response and correctly respond to a poll tag.

**ROUTINE 46, LOW-SPEED TEST.** Ensures that various functions can be performed in low speed mode.

**ROUTINE 47, WRITE/READ PHASE ENCODED IDENTIFICATION (PEID) TEST.** Writes a PEID and then performs a read back check.

**ROUTINE 48, 31.75-CENTIMETER/SEC (12.5 IPS) WRITE/READ TEST.** Writes stress data patterns that vary in length, and then performs a read back check.

**ROUTINE 49, DUAL GAP TEST.** Checks that the set long gap and set short gap commands functions correctly.

**ROUTINE 4A, BACKWARD CREEP TEST.** Ensures that a back-space and write command sequence does not destroy data in the record previous to the one being rewritten.

**ROUTINE 4C, HIGH-SPEED TEST.** Ensures that various functions can be performed in high-speed mode.

**ROUTINE 4D, REPOSITIONING TEST.** Ensures that the hardware repositions the tape to the proper location when the re-instruct command occurs too late. Only the 254 centimeter/second (100 IPS) tape mode uses this routine.

**ROUTINE 4E, WRITE TAPE MARK TEST.** Writes a Tape Mark (TM) and then performs a read back check. The tape is backspaced and then spaced forward over the TM to determine that the TM can be written and read correctly.

**ROUTINE 4F, BASIC WRITE/READ HIGH SPEED TEST.** Writes variable-length stress data pattern records, and then performs a read-back check with the tape unit in the 254 centimeter/second (100 IPS) mode of operation.

**ROUTINE 50, INCORRECT LENGTH DETECTION AND SUPPRESSION TEST.** Tests that the adapter can recognize an incorrect length record by reading both long and short. It also tests the suppress length indicator bit by reading long and short. No length error should occur with the suppress length indicator bit on.

**ROUTINE 52, ERASE GAP (ERG) TEST.** Writes several 4K byte records, rewinds the tape, and executes erase gap operations to erase the records. It then reads the records to ensure that they were erased.

**ROUTINE 53, WRITE HIGH-SPEED, READ LOW-SPEED TEST.** Writes stress data patterns at 254 centimeters/second (100 IPS) and then reads them at 31.75 centimeters/second (12.5 IPS).

**ROUTINE 54, READ HIGH-SPEED TEST.** Uses high speed mode to read the tape that was written by routine 53. Status and data compare operations are used to verify correct operation.

**ROUTINE 55, MAGNETIZED HEAD TEST.** Writes a 2K byte record, moves the record over the head assembly 10 times, and then reads the record. This sequence is repeated twice. If the last read operation is successful, the write head is considered to be properly demagnetized.

**ROUTINE 56, DATA SECURITY ERASE TEST.** Tests the data security erase command.

### Special Requirement Diagnostics

**ROUTINE 5A, READ TEST PATTERN TAPE (PART 1).** Reads a previously written test tape to check read functions and error-checking circuits, and runs in approximately two minutes.

**ROUTINE 5B, READ TEST PATTERN TAPE (PART 2).** Reads a previously written test tape and compares the expected data with the data read. It also tests the write command on a file-protected tape, and runs in approximately 5 minutes.

**ROUTINE 60, WRITE RELIABILITY-INTERCHANGE TEST.** Tests the write operation by writing interchange test tapes, and runs in 35 seconds.

**ROUTINE 61, READ RELIABILITY-INTERCHANGE TEST.** Reads tape written by routine 60 and runs in 50 seconds.

**ROUTINE 62, TAPE CONTROL LINE EXERCISER.** Exercises the control lines, and runs in 10 seconds.

**ROUTINE 63, LOAD/REWIND/READY PROBLEM ANALYSIS.** Performs an analysis of load, rewind, and ready problems, and runs in 10 seconds.

**ROUTINE 64, REINSTRUCT TIMING TEST—SHORT GAP.** Checks reinstruct command timing in short gap mode, and runs in approximately 5 minutes when using a 2400-foot reel.

**ROUTINE 65, REINSTRUCT TIMING TEST—LONG GAP.** Checks reinstruct command timing in long gap mode, and runs in approximately 5 minutes when using a 2400-foot reel.

**ROUTINE 66, READ CONTINUOUS HIGH-SPEED TEST.** Reads continuously in high-speed mode, and runs in approximately 5 minutes when using a 2400-foot reel.

**ROUTINE 67, INTER-BLOCK GAP (IBG) MEASUREMENT TEST.** Ensures that correct length gaps are written, and runs in 90 seconds.

**ROUTINE 6A, SKEW ADJUSTMENT EXERCISER.** Exercises the tape while you perform mechanical skew adjustment. The routine takes 5 minutes when using a 2400-foot reel, and cannot be looped. (8100 only).

**ROUTINE 6A (ON 4331 ONLY) TERMINATION ROUTINE.** This routine must be used before the tested 8909 is returned to customer.



**ROUTINE 6B, SENSE BYTE DISPLAY UTILITY.** Displays sense information from the most recent test error, and runs in 10 seconds.

**ROUTINE 6C, SYMPTOM CODE (SC) GENERATOR UTILITY.** Generates the symptom code for the most recent test error, and runs in 10 minutes.

**ROUTINE 6D, 'P' TRACK ONLY (PTO) EXERCISER.** Writes and reads a 4096-byte record of hex 00 by using a loop function to perform 40,000 operations.

Unit Status and Channel Status Bytes								
Byte	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
Unit Status	Attention	Status Modifier (Not Used)	Control Unit End (Not Used)	Busy	Channel End	Device End	Unit Check	Unit Exception
Channel Status	Program Controlled Interrupt	Incorrect Length	Program Check	Protection Check	Channel Data Check	Channel Control Check	Interface Control Check (Not Used)	Chaining Check (Not Used)
Sense Bytes								
0	Command Reject	Intervention Required	Not Used	Equipment Check	Data Check	Overrun	Not Used	Not Used
1	Noise	Tape Unit Status A*	Tape Unit Status B*	Not Used	Load Point	Write Status*	File Protected	Not Capable
2	Track in Error pointers.							
3	Two ERP hexadecimal characters that define error recovery procedures performed by the program.							
4	Not Used	Not Used	Tape Indicate*	Permanent Error	Host Detected Error	Loop Write-to-Read Error	Not Used	Not Used
5	Not Used	Not Used	Not Used	PEID Burst Check	Not Used	Not Used	Not Used	Not Used
6	This byte contains all zeros.							
7	Format Code				Data Security Erase	Not Used	Not Used	Not Used
Format 1: Sense Bytes								
8	Ready	Busy	Write Enable	Beginning of Tape	End of Tape	Operation Complete	Low Speed	Positioning
9	Check End Sense	Bus Out Parity Check	Tag Bus Parity Check	Formatter Failure	Control Lines Sequence Check	Command Register Parity Check	Drive Control Parity Check	Formatter Read Failure
10	Data Overrun	Data Check	Not Used	Beginning of Tape	End of Tape	Tape Mark Detected	Not Capable	Not Used
11	Write Bus Parity Check	Bus Out Register Parity Check	Gap Control Check	Sync Out Check	Drive Response Check	Not Capable Space File	Track In Error P	Write Enable Error
12	Write Bus Parity Check	Read Bus Parity Check	Gap Control Check	Sync Out Check	Not Used	Not Used	Track In Error P	Write Enable Error
13	Track in Error 0	Track in Error 1	Track in Error 2	Track in Error 3	Track in Error 4	Track in Error 5	Track in Error 6	Track in Error 7

Format 1: Sense Bytes								
Byte	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
14	Nonwrite-type Command	No Track Pointer	Multitrack Error	End Data Check	Start Read Check	Crease	Not Used	Skew Error
	Write Command	FEID Check				Read Back Failure	Envelope Check	Write Tape Mark Error
15	This byte contains all zeros.							
16	Transport State					Sequence Error	Sense Bus Parity Check	Not Used
17	Start Velocity Check	End Velocity Check	FEID Velocity Check	Clock Parity Error	Servo State		Sense Bus Parity Check	Not Used
18	Load Check	Tension Check	Cover/Reel Latch Intermitt	Tension Status	Not Ready Due to Reset	Long Gap Mode	Sense Bus Parity Check	Not Used
19	Present Transport State					Cover/Reel Latch Status	Sense Bus Parity Check	Not Used
20	Servo Logic Failure	Servo Analog Failure	Write Current Failure	Erase Current Failure	Present Servo State		Sense Bus Parity Check	Not Used
21	Idler Tachometer Failure	Machine Tachometer Failure	File Tachometer Failure	Idler Tachometer Rotation Check	Not Used	Not Used	Sense Bus Parity Check	Not Used
22	BOI/EOT LED Failure	Tape Present LED Failure	Reel Size LED Failure	Driver Control Failure	Not Used	Not Used	Sense Bus Parity Check	Not Used
23	File Amplifier Saturation	Machine Amplifier Saturation	Write Status	Power Amplifier Cable Unrated	Not Used	Not Used	Sense Bus Parity Check	Not Used
24	This byte contains zeros.							
25	This byte contains zeros.							
26	Device Address							
	Address 4	Address 2	Address 1	Not Used	Not Used	Not Address 4	Not Address 2	Not Address 1
27	This byte contains zeros.							
28	Contains contents of control line-tag bus at time of error.							
29	Contains contents of control line-bus out at time of error.							
30	Contains the high-order fault symptom code.							
31	Contains the low-order fault symptom code.							
Format 6: Sense Bytes								
Sense bytes 0, 1, 2, 4, 5, and 6 are set to zeros; sense byte 3 contains the fixed ERP number 'X'01'; and sense byte 7 contains the format 'X'60'. Sense bytes 8 through 31 contain the counters.								

BYTE	BIT								
	0	1	2	3	4	5	6	7	
0	Ready	Busy	Write Enable	Beginning of Tape	End of Tape	Operation Complete	Low Speed	Positioning	
1	Check End Sense	Bus Out Parity Check	Tag Bus Parity Check	Formatter Failure	Control Lines Sequence Check	Command Register Parity Check	Drive Control Parity Check	Formatter Read Failure	
2	Data Overrun	Data Check	0	Beginning of Tape	End of Tape	Tape Mark Detected	Not Capable	0	
3	Write Bus Parity Check	Bus Out Register Parity Check	Gap Control Check	Sync Out Check	Drive Response Check	Not Capable Space File	Track in Error P	Write Enable Error	
4	Write Bus Parity Check	Read Bus Parity Check	Gap Control Check	Sync Out Check	0	0	Track in Error P	Write Enable Error	
5	Track in Error 0	Track in Error 1	Track in Error 2	Track in Error 3	Track in Error 4	Track in Error 5	Track in Error 6	Track in Error 7	
6	(Bit 0=0) Nonwrite Type Operation	No Track Pointer	Multitrack Error	End Data Check	Start Read Check	Crease	0	Skew Error	
	(Bit 0=1) Write Type Operation	PEID Check	Multitrack Error	End Data Check	Start Read Check	Read Back Failure	Envelope Check	Write Tape Mark Error	
7	This byte contains all zeros								
8	Transport State - Bits 0 through 4							Sense Bus Parity Check	0
9	Start Velocity Check	End Velocity Check	PEID Velocity Check	Clock Parity Error	Servo State		Sense Bus Parity Check	0	
10	Load Check	Tension Check	Cover/Reel Latch Interrupt	Tension Status	Not Ready Due to Reset	Long Gap Mode	Sense Bus Parity Check	0	
11	Present Transport State - Bits 0 through 4							Sense Bus Parity Check	0

BYTE	BIT						
	0	1	2	3	4	5	6
12	Servo Logic Failure	Servo Analog Failure	Write Current Failure	Erase Current Failure	Present Servo State		Sense Bus Parity Check
13	Idler Tachometer Failure	Machine Tachometer Failure	File Tachometer Failure	Idler Tachometer Rotation Check	0	0	Sense Bus Parity Check
14	ROT/EOT LED Failure	Tape Present LED Failure	Reel Size LED Failure	Drive Control Failure	0	0	Sense Bus Parity Check
15	File Amplifier Saturation	Machine Amplifier Saturation	Write Status	Power Amplifier Cable Unseated	Loop Write-to-Read Error	Attachment PIO Command	Sense Bus Parity Check Attachment Log Data Only
16	Control Channel Pumper (ICMP) Update Halted	Invalid Command FCB Error	Parity Check Detected	8809 Sequence Check	Poll Response / CHID Check	Length Error	8809 Disconnect Operation Overrun/Underrun
17	Normal End of Operation	8809 Ending Status Not Equal to Zero	Time Out	8809 End Error	Program Requested Interrupt (PRLI)	Tape Equipment Check	Tape Interrupt Request
18	Address Bit 4	Address Bit 2	Address Bit 1	Not used	Not used	Not Address Bit 4	Not Address Bit 2 Not Address Bit 1
19	Magnetic Tape Attachment command operation - contains either the last PIO command received, or the first byte of the CHID control operation or data transfer operation received before failure						
20	Control Lines Tag Bus - con:--and Tag value before failure						
21	Control Lines Bus Out - command Bus Out value before failure						
22	Symptom Code (high order) - not generated at time of failure but created from sense bytes by a system utility program.						
23	Symptom Code (low order) - not generated at time of failure but created from sense bytes by a system utility program.						

## Command Set for an 8809 Tape Unit Attached to an IBM 4331 Processor

A start I/O instruction from the IBM 4331 processor initiates a tape operation. The processor also sends one of the following commands to designate the operation the tape unit is to execute.

Commands	Hex
Write	01
Read	02
Forward Space Block	37
Backspace Block	27
Erase Gap	17
Write Tape Mark	1F
Data Security Erase	97
Rewind	07
Rewind Unload	0F
Forward Space File	3F
Backspace File	2F
Set High Speed	E3
Set Low Speed	83
Set Long Gap	13
Set Normal Gap	23
Set High Speed and Long Gap	93
Set High Speed and Normal Gap	33
Set Low Speed and Long Gap	53
Set Low Speed and Normal Gap	63
Loop Write-to-Read	8B
Control no OP	03
Sense	04
Sense I/O	E4
Read and Reset Buffered Log	A4

Commands for 8809 attached to B100 Information System.  
See 8809 Magnetic Tape Unit Description GA26-1659.

## Error Logging

### Symptom Code

The 8809 sends sense information to host. The host system program generates the Symptom Code (SC) and places it in sense bytes 30 and 31. Under certain conditions the SC may not be in these sense bytes, in that case go to MIM SCGEN section to generate the SC.

System codes are grouped into six error categories, as shown in figure 1.

Figure 1.

### Symptom

Code	Error Condition
AXXX	System Adapter Detected Errors.
BXXX	8809 Detected Control Line and Basic Control Logic Errors.
CXXX	8809 Detected Motion Errors.
DXXX	8809 Detected Read/Write Errors.
EXXX	8809 Detected Data Checks.
FFFX	SCX that may be generated from incorrect Error Data.

## EREP

The OS/VS, DOS/VS, VM /370 Environmental Recording Editing and Printing (EREP) program provides six types of reports for the 8809 Magnetic Tape Unit.

They are:

- CUA Statistics
- Permanent Error Summary
- Subsystem Temporary Error Summary
- Volume Statistics
- Detailed Error Reports
- Detailed Statistical Reports.

## DPPX - ELDA

The Error Log Data Analysis (ELDA) program is an applications program that is called and executed as a Distributed Processing Programming Executive (DPPX) command. ELDA uses DPPX/Base as the 8100 information system manual DDPX/Base diagnostic techniques, SC27-0410, for ELDA operating procedures and available options.

## DPCX - SYSLEERR

Permanent errors are displayed or printed by the utility program SYSLEERR (System List Error Log) when the Distributed Processing Control Executive (DPCX) operating system is being used. See the 8100 Information System MIM, chapter 2, for SYSLEERR operating procedures and available options.

## DPCX - SYSLTSD

The statistical data is displayed or printed by the functional program SYSLTSD (System List Tape Statistical Data) when the DPCX Operating System is being used. See the 8100 Information System Manual DPCX operations, SC27-0492, for SYSLTSD operating procedures and available options.

## How To:

### USE CE BUTTON

Install jumper from A1H2D11 to A1J1C11, while holding the CE button pressed select the alternate function as follows:

- Reset: Starts or stops the motion.
- Load rewind: Changes the tape motion.
- Unload rewind: Changes tape speed.

### DETERMINE IF TAPE IS AT LOAD POINT

If at 12 IPS (Start/Stop) mode the LP sticker should be between EOT/BOT sensor and R/W head.

If at 100 IPS (Streaming) mode the LP sticker should be between file reel and tension idler.

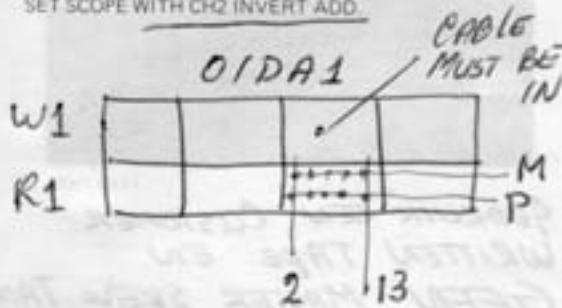
### REPLACE A R/W FRU

Closely follow instructions on carr 70 and 71 at EC level B46481 or higher.

### READ A TAPE OFFLINE

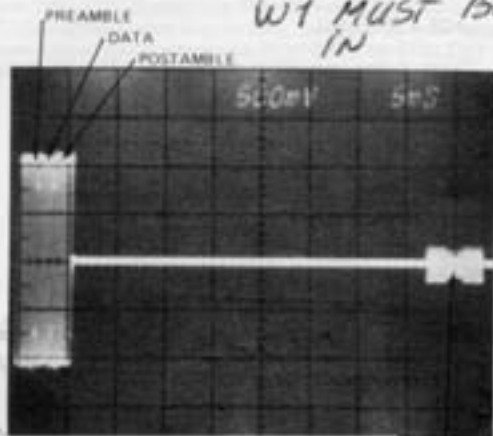
Use the CE button function to move tape forward and scope read bus at R/W fru 01D-A1-R1.

### SET SCOPE WITH CH2 INVERT ADD



CH1	CH2	TRACK	
M02	P02	1	Amplitude should be 1.5 to 3 VPP. Feed through amplitude should be less than 27% of data (500 MV or less).
M03	P03	6	
M04	P04	4	
M06	P06	0	
M07	P07	2	
M10	P10	P	
M11	P11	3	
M12	P12	7	
M13	P13	5	<i>Note: Look head to card connector could cause intermittent read failures.</i>

*CABLE IN  
W1 MUST BE  
IN*



FEED THRU

#### DETECT (ISOLATE) MEDIA PROBLEMS

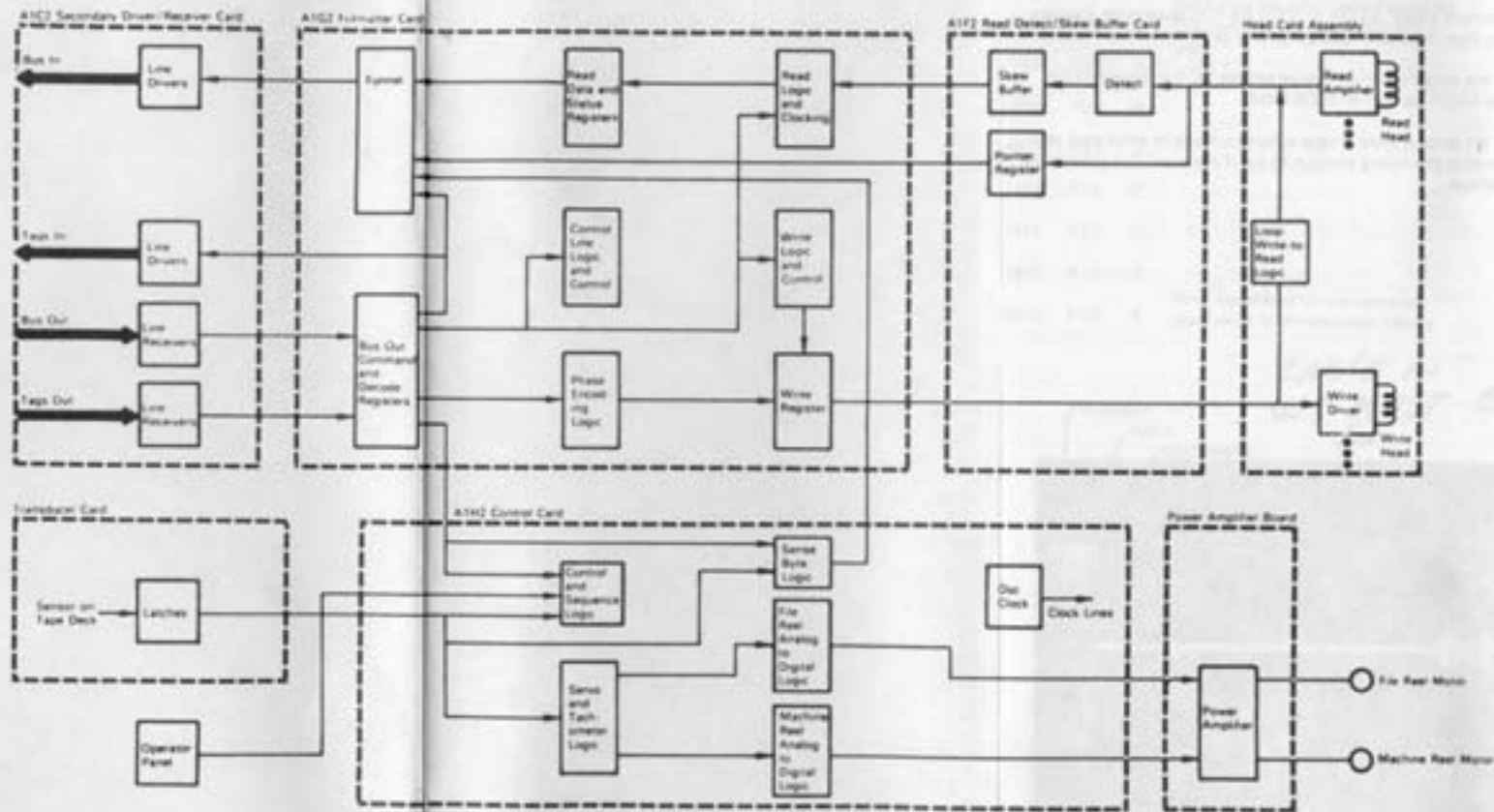
Analyze EREP, ELDA or SYSLEERR to determine if errors are from a specific tape volume or drive.

If the errors are from a drive get the SC for those failures, see ESDR section on 8800 MIM.

If the error is from a tape volume run job in error stop and develop the failing portion to see if there exists a permanent damage.



# TAPE UNIT — FUNCTIONAL OVERVIEW



8809			
AX0600	2898345	040427	040481
Rev. 2 of 2	Part Number	25 May 75	15 Dec 74

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**8809 Tape Unit 8809**

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