CONTENTS

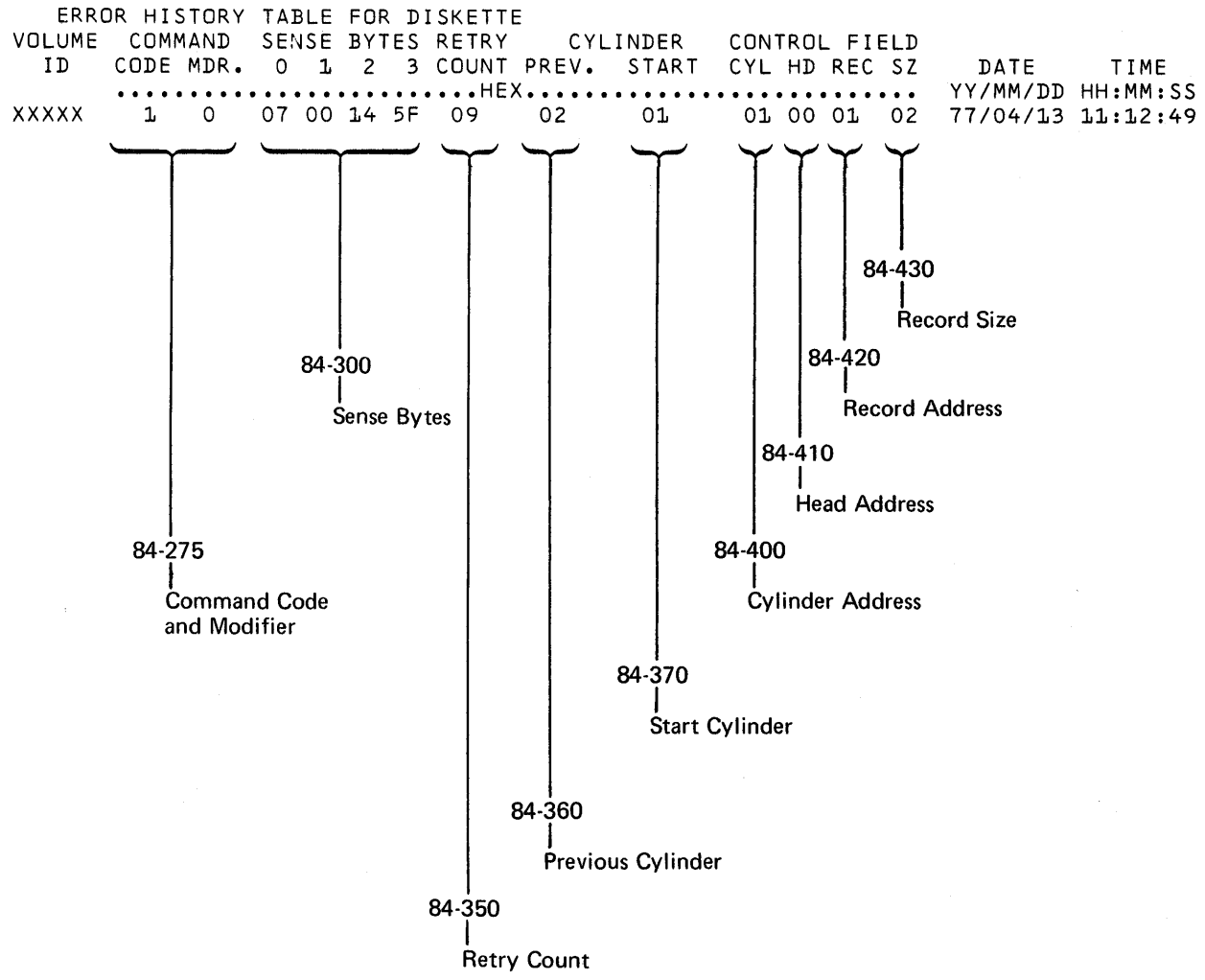
84-010 HOW TO USE DISKETTE ERROR INFORMATION

The System/34 uses two levels of diskette attachment cards (level 1 and level 2). The level 1 attachment card can be used for 33FD or 53FD diskette drives. The level 2 attachment card can be used for 33FD, 53FD, or 72MD diskette drives.

Paragraphs 84-200 through 84-430 contain attachment card information for level 1; paragraphs 84-700 through 84-930 contain attachment card information for level 2.

See the *Diskette Plug Chart* on FSL page AC300 to determine which level of attachment card is used.

84-200 ERROR HISTORY INFORMATION SAMPLE FOR LEVEL 1



84-250 ERROR COUNTER TABLE SAMPLE FOR LEVEL 1

ERROR COUNTER TABLE FOR DISKETTE — DATE LAST RESET 08/31/77

	TEMPORARY	PERMANENT	DESCRIPTION	MAP
MISSING DATA ADDRESS MARKS	0	0	84-310	8402
ID CYCLIC REDUNDANCY CHECKS	0	0	84-310	8402
DATA CYCLIC REDUNDANCY CHECKS ..	5	9	84-310	8402
HEAD MISMATCHES	0	0	84-310	8402
RECORD MISMATCHES	0	20	84-310	8402
RECORD LENGTH MISMATCHES	0	20	84-310	8402
NO OP CONDITIONS	0	0	84-320	
INVALID CONTROL RECORD CHECKS ..	0	0	84-320	8403
WRITE VERIFY MISMATCHES	5	9	84-320	8403
FAST CHECKS	0	0	84-330	8403
WRITE ERRORS	0	0	84-330	8403
ID NOT FOUND	0	25	84-330	8403
READ OVERRUN CHECKS	0	0	84-330	8403
UNEXPECTED ERASE CURRENT PRESENT	0	0	84-340	8403

84-260 I/O COUNTER TABLE SAMPLE FOR LEVEL 1

I/O COUNTER TABLE FOR DISKETTE

DATE LAST RESET 78/03/27

READS	2150
WRITES	7814
SEEKS	18799

84-275 COMMAND CODE AND MODIFIER FOR LEVEL 1

Command Code	Meaning
0000	Control Seek
0001	Read Data
0010	Read Data and Control Record
0011	Read ID
0100	Not Used
0101	Write Data and Verify
0110	Write Control Record and Verify
0111	Write ID and Verify

If modifier bit 0 is on, the operation is a MFM operation.

If modifier bit 3 is on, (read operations only) the data is read into control storage.

84-300 SENSE BYTES–GENERAL INFORMATION FOR LEVEL 1

The diskette status (RDSTATUS) transfers current diskette status to the assigned work registers.

Work Register (WR)	Sense Byte
WR1 (H)	Sense byte 0
WR1 (L)	Sense byte 1
WR3 (H)	Sense byte 2
WR3 (L)	Sense byte 3

84-310 Sense Byte 0

If the no operation bit (byte 1, bit 0) is on, bits 0-3 of byte 0 have the following meanings:

Byte	Bits 0 1 2 3	Meaning
0	0 0 0 0	Device address or port address not valid.
	0 0 0 1	Command not valid.
	0 0 1 0	Not ready–non-seek command.
	0 0 1 1	Not ready–seek command.
	0 1 0 0	Errors not reset.
	0 1 0 1	Reject head 1 operation.
	0 1 1 0	Reject MFM operation.
	0 1 1 1	Write gate or erase gate on.

If the no operation bit is off, byte 0 bits have the following meanings:

Byte	Bit	Name	Meaning
0	0	Missing data address mark	Data record not found after an ID field.
	1	ID cyclic redundancy check	Cyclic redundancy check character for the ID field did not compare.
	2	Data cyclic redundancy check	Cyclic redundancy check character for the data field did not compare.
	3	Cylinder mismatch	The cylinder address byte of the ID field and the desired cylinder byte during ID search did not match.
	4	Head mismatch	The head address byte of the ID field and the desired head byte during ID search did not match.
	5	Record mismatch	The record address byte of any ID field and the desired record number during ID search did not match.
	6	Record length mismatch	The record length byte of the ID field and the desired N-byte during ID search did not match.
	7	Seek reverse	The last seek was in a reverse direction.

84-320 Sense Byte 1

Byte	Bit	Name	Meaning
1	0	No op condition	Command could not be executed because of out-standing status.
	1	Invalid control record check	The leftmost byte of a control record contained other than F or D. F = damaged record; D = deleted record.
	2	Write verify mismatch	Data written does not match the main storage data field.
	3	Control address mark found	Control address marker was found when performing a read data operaton.
	4	Error correction invoked	An error correction routine was used because a data address marker was missing or a cyclic redundancy check occurred during a read operation.
	5	Write error	Indicates that either a write overrun, write parity check, missing erase current, or a data unsafe error was found during a write operation.
	6	End of track	Last record on the track has been written or read with some records still waiting.
	7	File busy	Data movement in process.

84-330 Sense Byte 2

Byte	Bit	Name	Meaning
2	0	Fast check	The diskette speed is quicker than the maximum speed of 376 RPM.
	1	Not ready	
	2	Missing erase current	Erase current failed to turn on during a write operation.
	3	ID not found	CHRN address could not be found.
	4	Read overrun check	Minimum data movement rate was not maintained during a data movement.
	5	Data mode	On = FM; off = MFM. This bit will be off only during data movement time of an MFM operation (should never log as *off*).
	6	Write overrun check	Minimum data movement rate was not maintained during a data movement.
	7	Write parity check	The DBO parity and the generated serial write data parity during a write operation did not match.

84-340 Sense Byte 3

Byte	Bit	Name	Meaning
3	0	Unexpected erase current present	Erase current was on while not in write operation.
	1	BPC line off	Diagnostic use only.
	2	Drive type	On = 33FD, off = 53FD
	3	Erase current off	Diagnostic use only.
	4	Head 0 selected	Diagnostic use only.
	5	Diskette type	On = diskette 1, off = diskette 2D.
	6	I/O working off	No device is busy.
	7	Diskette working off	Diskette is not busy.

84-350 RETRY COUNT FOR LEVEL 1

This field records the number of times for this retry.

84-360 PREVIOUS CYLINDER (PREV) FOR LEVEL 1

This field contains the hexadecimal address of the cylinder that was used before the start cylinder.

84-370 START CYLINDER FOR LEVEL 1

Hexadecimal address of the cylinder that the diskette operation started on. Diskette I/O operations can cause more than 1 cylinder of data to be moved. If the operation is one that moves 1 cylinder or less, this value will be the same as the CYL byte in the control field.

84-400 CYLINDER ADDRESS (CYL) FOR LEVEL 1

One byte logical binary address. Valid CC addresses are 00-4C. This cylinder is the one that was in use when the error occurred that caused the log entry.

84-410 HEAD ADDRESS (HD) FOR LEVEL 1

One byte binary address needed by all SIO commands to address the desired head. Valid head addresses are 00 and 01.

84-420 RECORD ADDRESS (REC) FOR LEVEL 1

One byte record address. Valid addresses are 01 through 1A or 01 through 08.

84-430 RECORD SIZE (SZ) FOR LEVEL 1

One hexadecimal byte record length indicator used for the record length.

00 = 128 byte records
01 = 256 byte records
02 = 512 byte records
03 = 1024 byte records

84-700 ERROR HISTORY INFORMATION SAMPLE FOR LEVEL 2

```
ERROR HISTORY TABLE FOR DISKETTE
VOL   SLOT COMMAND    SENSE BYTES     RETRY  CYLINDER  COUNTROL FIELD   DATE      TIME
ID    NBR CODE MDR 0  1  2  3  4  5  COUNT PREV START CYL  HD REC SZ YY/MM/DD HH:MM:SS
      ..........................HEX.....................................79/09/13 11:14:06
$INIT  01   1   0  01 00 14 19 90 04  09     00   FF    00 00  07 00 79/09/13 00:00:09
IPLIPL 00   8   0  01 00 44 19 D4 64  03     00   00    00 00  00 00
IPLIPL 00   1   0  00 00 14 1D 90 04  09     00   01    01 00  01 02
IPLIPL 00   1   0  00 00 14 1D 90 04  09     00   01    01 00  01 02
IPLIPL 00   1   0  00 00 14 1D 90 04  09     00   01    01 00  01 02
IPLIPL 00   8   0  00 00 44 19 D4 64  03     00   00    00 00  00 00
```

84-770 Slot Number

84-775 Command Code and Modifier

84-800 Sense Bytes

84-850 Retry Count

84-860 Previous Cylinder

84-870 Start Cylinder

84-900 Cylinder Address

84-910 Head Address

84-920 Record Address

84-930 Record Size

84-750 ERROR COUNTER TABLE SAMPLE FOR LEVEL 2

```
ERROR COUNTER TABLE FOR DISKETTE                    DATE LAST RESET  00/00/00
                                                TEMPORARY  PERMANENT  DESCRIPTION
                MISSING DATA ADDRESS MARKS .....    0          0       84-810
                DATA CYCLIC REDUNDANCY CHECKS ..    0          0       84-810
                NO OP CONDITIONS ...............    0          0       84-820
                INVALID CONTROL RECORD CHECKS ..    0          0       84-820
                WRITE VERIFY MISMATCHES ........    0          0       84-820
                FAST CHECKS ....................    0          0       84-830
                WRITE ERRORS ...................    0          0       84-820
                ID NOT FOUND ...................    0          4       84-830
                BUFFER OVERRUN CHECKS ..........    0          0       84-830
                UNEXPECTED ERASE CURRENT PRESENT    0          0       84-840
                PARITY CHECKS ..................    0          0       84-842
                INVALID COMMAND CHECKS .........    0          0       84-842
                TIMEOUT CHECKS .................    0          0       84-842
                CARRIAGE BED FAILURES ..........    0          0       84-844
1               PICKER FAILURES ................    0          0       84-844
                FAILURE TO EJECT CHECKS[2] .....    0          0       84-844
                FAILURE TO PICK CHECKS .........    0          2       84-844
                WINDOW MAGNET FAILURES[2] ......    0          0       84-844
                OPERATION OUT OF SEQUENCE ERRORS    0          0       84-844
                WRITE/ERASE CURRENT PRESENT.....    0          0       84-844
```

[1]Autoloader errors, only valid for 72MD.
[2]Applies only to machines with old style picker.

84-760 I/O COUNTER TABLE SAMPLE FOR LEVEL 2

```
 I/O COUNTER TABLE FOR DISKETTE

DATE LAST RESET              78/09/27

READS ..............          703
WRITES ..............          51
SEEKS ..............          383
AUTOLOADER OPERATIONS         5549
```

84-770 SLOT NUMBER (SLOT NBR) FOR LEVEL 2

One-byte data control field to describe the autoloader slot number of the failing diskette. Valid slot numbers are hexadecimal 01 through 17.

84-775 COMMAND CODE AND MODIFIER FOR LEVEL 2

Drive Command

Command Code	Meaning
0000	Control Seek
0001	Read Data
0010	Read Data and Control Record
0011	Read ID
0100	Verify
0101	Write Data and Verify
0110	Write Control Record and Verify
0111	Write ID and Verify

Autoloader Command (72MD only)

Command Code	Meaning
1000	Select Diskette
1001	Eject Diskette
1010	Orient Autoloader
1011	Abort Autoloader

If modifier bit 0 is on:

Command Code	Meaning
0000	FM mode using main storage
0010	FM mode using control storage
1000	MFM mode using main storage
1010	MFM mode using control storage

84-800 SENSE BYTES–GENERAL INFORMATION FOR LEVEL 2

The diskette status (RDSTATUS) transmits current diskette status to the assigned work registers.

Work Register (WR)	Sense Byte
WR0 (H)	Sense byte 4
WR0 (L)	Sense byte 5
WR1 (H)	Sense byte 0
WR1 (L)	Sense byte 1
WR3 (H)	Sense byte 2
WR3 (L)	Sense byte 3

84-810 Sense Byte 0

If the no operation bit (byte 1, bit 0) is on, bits 0-3 of byte 0 have the following meanings:

Byte	Bits 0 1 2 3	Meaning
0	0 0 0 0	Device address or port address not valid.
	0 0 0 1	Command not valid.
	0 0 1 0	Not ready–non-seek command.
	0 0 1 1	Not ready–seek command.
	0 1 0 0	Hardware errors did not reset.
	0 1 0 1	Head 1 selected on a one-sided diskette.
	0 1 1 0	MFM command on a one-sided diskette.
	0 1 1 1	Write gate or during read operation
	1 0 0 0	Autoloader command with a not-valid slot number.
	1 0 0 1	IOB error.
	1 0 1 0	Time-out on data mode operation.

If the no-operation bit is off, byte 0 bits have the following meanings:

Byte	Bit	Name	Meaning
0	0	Missing data address mark	Data record not found after an ID field.
	1	Not used	
	2	Data cyclic redundancy check	Cyclic redundancy check character for the data field did not compare.
	3	Cylinder mismatch	The cylinder address byte of the ID field and the desired cylinder byte during ID search did not match.
	4-6	Not used	
	7	Seek reverse	The last seek was in a reverse direction.

84-820 Sense Byte 1

Byte	Bit	Name	Meaning
1	0	No-op condition	Command could not be executed because of outstanding status.
	1	Not valid control record	The leftmost byte of a control record contained other than F or D. (F = damaged record; D = deleted record.)
	2	Write verify mismatch	Data written does not match the main storage data field.
	3	Control address mark found	Control address marker was found when performing a read data operaton.
	4	Error correction invoked	An error correction routine was used because a data address marker was missing or a cyclic redundancy check occurred during a read operation.
	5	Write error	Indicates that an error occurred during a write operation.
	6	End of track	Last record on the track was written or read with some records still waiting.
	7	Channel busy	Data movement in process.

84-830 Sense Byte 2

Byte	Bit	Name	Meaning
2	0	Fast check	The diskette speed is quicker than the maximum speed of 376 RPM (33FD or 53FD) or 738 RPM (72MD).
	1	Not ready	
	2	Missing erase current	Erase current failed to turn on during a write operation.
	3	ID not found	CHRN address could not be found.
	4	Buffer overrun	Minimum data rate was not maintained.
	5	Data mode	On = FM; off = MFM. This bit is off only during data movement time of an MFM operation (should never log as off).
	6	Buffer overrun	Minimum data rate out of the buffer was not maintained.
	7	Not used	

84-840 Sense Byte 3

Byte	Bit	Name	Meaning
3	0	Unexpected erase current present	Erase current was on while not in write operation.
	1	Not used	
	2	Drive type	On = 33FD; off = 53FD or 72MD.
	3	Not used	
	4	Head 0 selected	
	5	Diskette type	On = diskette 1; off = diskette 2D.
	6	Not used	
	7	Diskette not busy	Diskette is not busy.

84-842 Sense Byte 4

Byte	Bit	Name	Meaning
4	0	Autoloader op end	Acceptable end of autoloader operation if bits 1 and 2 are off.
	1	Autoloader error	Error occurred during an autoloader operation.
	2	Autoloader parity check	Even parity on the autoloader command lines.
	3	Autoloader attached	Diskette drive is a 72MD.
	4	Autoloader command reject	The autoloader command can not be executed.
	5	Autoloader motion check	Error was sensed when a command that causes autoloader to move was executed.
	6	Autoloader invalid command	The autoloader command is not valid.
	7	Autoloader time-out	Op end was not received in the time permitted for an autoloader operation.

84-844 Sense Byte 5

Byte	Bit	Meaning
5	0	Check modifier hex 8
	1	Check modifier hex 4
	2	Check modifier hex 2
	3	Check modifier hex 1
	4	Not used
	5	Oriented latch is set
	6	Cover open switch is activated
	7	Not used

Bits 0 through 3 of sense byte 5 are used to describe bits 1, 4, and 5 of sense byte 4.

Check Modifer Code in Hexadecimal	Description
1	Carriage bed failure (jammed at home).
2	Carriage bed failure (jammed off home).
3	Picker failure (jammed in magazine).
4	Picker failure (jammed in drive).
5	Failure to eject[1].
6	Failure to pick.
7	Window magnet failure[1]. (window jammed open).
8	Window magnet failure[1]. (window jammed closed).
9	Cover open (carriage bed movement not permitted).
A	Not used
B	Operation out of sequence (command rejected).
C	Not oriented (command rejected).
D	Write or erase current present (command rejected).

84-850 RETRY COUNT FOR LEVEL 2

This field records the number of times for this retry.

84-860 PREVIOUS CYLINDER (PREV) FOR LEVEL 2

This field contains the hexadecimal address of the cylinder that was used before the start cylinder.

84-870 START CYLINDER FOR LEVEL 2

Hexadecimal address of the cylinder that the diskette operation started on. Diskette I/O operations can cause more than 1 cylinder of data to be moved. If the operation is one that moves 1 cylinder or less, this value will be the same as the CYL byte in the control field.

84-900 CYLINDER ADDRESS (CYL) FOR LEVEL 2

One byte logical binary address. Valid CC addresses are 00-4C. This cylinder is the one that was in use when the error occurred that caused the log entry.

84-910 HEAD ADDRESS (HD) FOR LEVEL 2

One byte binary address needed by all SIO commands to address the desired head. Valid head addresses are 00 and 01.

84-920 RECORD ADDRESS (REC) FOR LEVEL 2

One byte record address. Valid addresses are 01 through A1 or 01 through 08.

84-930 RECORD SIZE (SZ) FOR LEVEL 2

One hexadecimal byte record length indicator used for the record length.

00 = 128 byte records
01 = 256 byte records
02 = 512 byte records
03 = 1024 byte records

[1] Only for machines with old style picker.