2. Diskette Subsystem

2.1. DISKETTE CONTROLLER

The diskette subsystem controller is a microprogrammed controller connected directly to the I/O data D-bus of the system. It is a buffered controller and has label checking in the data set mode. The autoload diskette drive has a feed capability that can sequentially process up to 20 diskettes without operator intervention.

The basic diskette subsystem is actually a physical part of the system processor cabinet. The basic subsystem consists of a controller and an integrated cabinet containing one manually loaded drive mechanism or one autoload drive mechanism.

An expansion autoload cabinet is also available. This permits manually loaded or autoloaded drives in the integrated cabinet and an autoloaded drive in the expansion cabinet. The autoload drive can be expanded with one manually loaded drive. However, all of the drives in either the integrated or the expansion cabinets are under control of one controller, with four drives the total number permitted. The diskette controller is capable of supporting the following disk drive combinations:

- One manual disk drive
- One manual disk drive and one autoload disk drive
- Two manual disk drives
- Two manual disk drives and one autoload disk drive
- Four manual disk drives
- One autoload disk drive
- Two autoload disk drives
- Three manual disk drives and one autoload disk drive

The possible system configurations for the diskette subsystem are shown in Figure 2-1. Since the controller is actually a microprogrammed microprocessor, it uses 256 bytes of the random access memory (RAM) for a working area and the remaining 768 bytes as record buffers. This provides six 128-byte record buffers when the record length format is 128 bytes per sector, three 256-byte buffers per sector when the record length format is 256 bytes per sector, and one 512-byte record buffer when the record length is 512 bytes per sector.

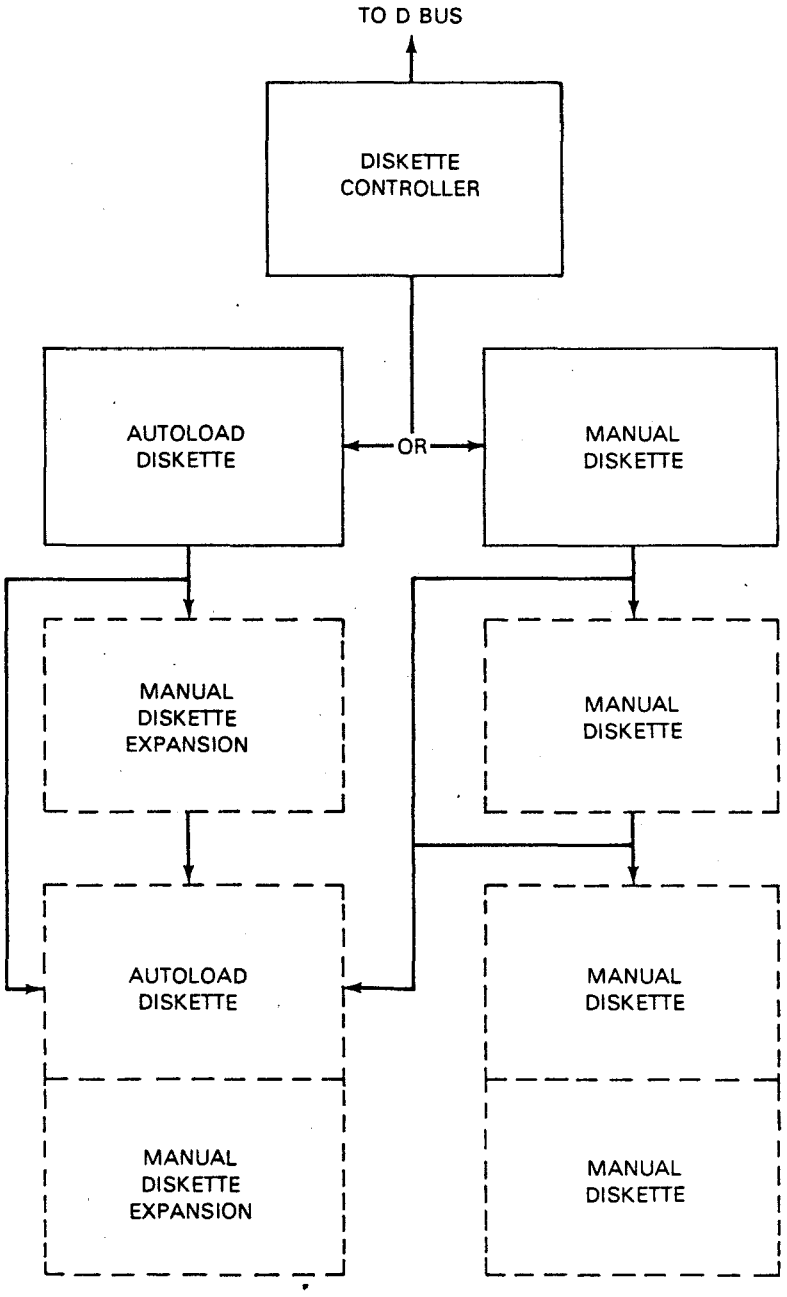


Figure 2—1. Diskette Subsystem Configuration

2.1.1. Device Addressing

The diskette controller resides on IOMP channel number 3, responds to an address of 5, and has four diskette drives numbered 0 through 3. Table 2-1 specifies the addressing scheme for the diskette subsystem.

Table 2—1. Diskette Subsystem Addressing Scheme

SDMA Channel No.	Diskette Subsystem Address	Device Address
3	5	0 Manual Drive 1 or Autoload Drive 1
3	5	1 Manual Drive 2 or Manual Drive 1
3	5	2 Manual Drive 3 or Manual Drive 2
3	5	3 Manual Drive 4 or Autoload Drive 2

2.1.2. Status Byte

The status byte bit definition is shown in Table 2-2.

Table 2—2. Bit Definitions for Status Byte

	Status Bit	Setting	Definition
MSB	0	1	Attention
	1	1	Status modifier
	2	1	Control unit end
	3	1	Busy
	4	1	Channel end
	5	1	Device end
	6	1	Unit check
LSB	7	1	Unit exception

This byte supplies information pertaining to the state of the controller and device, and is presented to the processor at the following times:

- During a transition from stop to run state
- At the initiation of a command
- At the completion of a command

The status byte is cleared when the processor responds to the status byte presentation. The various combinations of status bits presented by the diskette controller are as follows:

1. Attention (bit 0) specifies that the device whose address is given has made a transition from the stop to the run state. The run state is detected by the subsystem when a diskette has been properly installed (or manually fed by pressing the FEED switch on the drive) and two index pulses have been detected.

2. Attention (bit 0) and busy (bit 3) indicate the attention of item 1 merged with device-busy of item 5.

3. Attention (bit 0) and status modifier (bit 1) indicate the attention of item 1 merged with a successful automatic retry.

4. Attention (bit 0), busy (bit 3), and status modifier (bit 1) indicate that attention of item 1 merged with the device busy of item 5 and a succesful automatic retry resulted.

5. Busy (bit 3) indicates that a command has addressed a diskette drive that is currently executing a command.

6. Busy (bit 3) and status modifier (bit 1) indicate that a command was sent to the diskette controller while it was currently executing a nonfeed command for any other diskette drive (control unit busy).

7. Busy (bit 3), status modifier (bit 1), and control unit end (bit 2) indicate the control unit busy of item 6 merged with control unit end of item 8.

8. Control unit end (bit 2) indicates that the diskette controller has successfully completed a command chain and the controller had presented control-unit-busy status to the channel during the execution of this command chain. This control-unit-end status is sent in a separate status sequence following presentation of channel end and device end to which the channel indicated no command chaining. The device address presented with the status pertains to the drive that had just completed the associated command. Only one of these status presentations is made for all occurrences of control unit busy as command chains are successfully executed.

9. Control unit end (bit 2) and status modifier (bit 1) indicate the control unit end of item 8 merged with a successful automatic retry.

10. Unit check (bit 6) indicates that the diskette controller has encountered an error condition in response to or during a command sequence, that is, the command cannot be executed.

11. Unit check (bit 6) and status modifier (bit 1) indicate the error condition of item 10 merged with a successful automatic retry.

12. Channel end (bit 4) and device end (bit 5) indicate that the diskette controller has successfully executed an outstanding command that was not preceded by a control-unit-busy status presentation or that did not require any automatic retry.

13. Channel end (bit 4), device end (bit 5), and status modifier (bit 1) indicate that the diskette controller has successfully completed a command that required an automatic retry. Retry typically applies to a reread of a record or a repositioning of the head to locate a record.

14. Channel end (bit 4), device end (bit 5), and unit exception (bit 7) indicate that the diskette has encountered the EOD or EOE record during the execution of a read or write command.

15. Channel end (bit 4), device end (bit 5), unit exception (bit 7), and status modifier (bit 1) indicate that the diskette has encountered the EOD or EOE record during the execution of a read or write command and an automatic retry operation occurred.

16. Channel end (bit 4), device end (bit 5), and unit check (bit 6) indicate that the diskette controller has accepted a command, and it has encountered an error condition during command execution.

17. Channel end (bit 4), device end (bit 5), unit check (bit 6), and status modifier (bit 1) indicate that the diskette controller has accepted a command, an automatic retry operation occurred, and it has encountered an error condition during command execution.

18. Channel end (bit 4), device end (bit 5), unit check (bit 6), and unit exception (bit 7) indicate that the diskette controller has accepted a command, the EOD or EOE record was encountered, and it has encountered an error condition during command execution.

19. Channel end (bit 4), device end (bit 5), unit check (bit 6), unit exception (bit 7), and status modifier (bit 1) indicate that the diskette controller has accepted a command, the EOD or EOE record was encountered, an automatic retry operation occurred, and it encountered an error condition during command execution.

20. Busy (bit 3) with items 12 through 19 indicates that the device whose address is included with items 12 through 19 was attempting to present status when addressed by the system. These conditions indicate the failure of the device-handling software to wait for an interrupt. These conditions are included to prevent illogical conditions in the diskette controller firmware.

Note that items 12 through 19 can be merged with device-busy condition of item 5.

2.1.3. Sense Bytes

Sense bytes are transmitted from the diskette controller to the IOMP in response to a sense command or immediately following an abnormal status byte. These eight bytes contain both error and operational information of the last non-sense command issued to the diskette controller. Error information is cleared upon acceptance of the next non-sense command.

At power-up time, sense bytes are cleared to zeros except for certain bits that reflect hardware conditions in the diskette controller and device. These bits are then set accordingly.

Table 2-3 lists the sense bytes in table form for quick reference followed by detailed definition of each bit of each sense byte. Figure 2-2 shows a summary of the sense bits for the sense bytes.

Table 2—3. Bit Definitions for Sense Bytes (Part 1 of 6)

Bit	Definition
	Sense Byte 0
0 (SB0,0)	Command reject 1. An invalid command code issued 2. A valid command code to a feature not installed 3. An invalid sequence of commands was received.
1 (SB0,1)	Intervention required 1. Invalid device address presented 2. Addressed drive not installed 3. Addressed drive is in stop state. 4. A manual feed is in progress. 5. Interlock condition exists. 6. Autoloader not at 'home' position 7. A stacker full or hopper empty 8. Malfunction during the unload or feed cycles 9. No index pulses during execution 10. Drive became not ready during command execution.
2 (SB0,2)	Bus out check 1. A parity retry or error detected on transfer of a byte of data to the diskette controller
3 (SB0,3)	Equipment check 1. A PROM parity retry occurred. 2. A diskette controller parity error occurred. 3. No index pulses during execution 4. No track 0 during a recalibrate 5. No disk sense signal during command execution 6. Autoload time-out/hang occurred.
4	Data check 1. Read check error 2. No data separator lock error 3. ID CRC error 4. Track mismatch error 5. Side mismatch error 6. Sector mismatch error 7. Record length mismatch error 8. Data CRC error 9. Control record 10. End-of-volume record 11. Illegal media
5 (SB0,5)	Not used – set to 0.
6 (SB0,6)	Bus in check 1. A parity retry or error detected on the transfer of a byte of data from the subsystem.

Table 2—3. Bit Definitions for Sense Bytes (Part 2 of 6)

Bit	Definition
	Sense Byte 0 (cont)
7 (SB0,7)	Program alert 1. Media (disk) is write protected. 2. Data set label not found or invalid 3. Device is in wrong operating mode. 4. Not enough parameter bytes transmitted 5. Illegal parameter byte transmitted 6. Side 2 specified, 1-sided diskette installed 7. A RAM parity error exists. 8. Hexadecimal FF specified in first parameter byte 9. Read past EOD record 10. Invalid device address
	Sense Byte 1
0 (SB1,0)	Illegal media 1. ID feed track-byte is not 00 through 4C or FF. 2. ID field side byte not 00 or 01 3. ID field sector byte not 01 through 1A 4. ID field length byte not 00 through 02 5. The data AM was not detected or was invalid.
1 (SB1,1)	Invalid mode 1. Device is in wrong operating mode.
2 (SB1,2)	Invalid sequence 1. Diagnostic write command not enabled 2. Not enough parameter bytes transmitted, 3. Hexadecimal FF specified in first parameter byte 4. Read past EOD record
3 (SB1,3)	Invalid parameter 1. Illegal parameter byte transmitted 2. Invalid device address presented 3. Side 2 specified, 1-sided diskette installed 4. Hexadecimal FF specified in first parameter byte 5. Invalid command code
4 (SB1,4)	Not installed 1. Invalid device address presented 2. Addressed drive not installed 3. Feature not installed
5 (SB1,5)	Parity error 1. Bus-in parity retry or error 2. Bus-out parity retry or error 3. PROM parity retry 4. Subsystem parity error

Table 2—3. Bit Definitions for Sense Bytes (Part 3 of 6)

Bit	Definition
	Sense Byte 1 (cont)
6 (SB1,6)	Stop state error 1. Addressed drive is in the stop state. 2. Drive became not ready during command execution. 3. Drive never became ready during feed command.
7 (SB1,7)	Interlock error 1. Interlock switch tripped on addressed drive
	Sense Byte 2
0 (SB2,0)	No data separator lock error 1. Disk read circuits could not lock onto data from the diskette. 2. No disk service, --- signal after once having locked on.
1 (SB2,1)	Side error 1. A side mismatch occurred in ID field read. 2. Side 2 specified, 1-sided diskette installed
2 (SB2,2)	Track error 1. A track mismatch occurred in ID field read. 2. No track 0 detected during recalibrate
3 (SB2,3)	Record length error 1. A record length mismatch occurred in ID field read.
4 (SB2,4)	Sector error 1. A sector mismatch occurred in ID field read. 2. Sector specified is greater than number of sectors on cylinder.
5 (SB2,5)	ID CRC 1. An ID field CRC error occurred.
6 (SB2,6)	Data CRC 1. A data field CRC error occurred.
7	Retry 1. A repositioning of the R/W head occurred. 2. A reread of the ID or data field occurred. 3. A retry of a parity error occurred.

Table 2—3. Bit Definitions for Sense Bytes (Part 4 of 6)

Bit	Definition
	Sense Byte 3
0 (SB3,0)	DSL not found 1. The data set label was not found.
1 (SB3,1)	DSL invalid 1. The data set label was invalid.
2 (SB3,2)	Control AM 1. A record that was read was preceded by a control address mark.
3 (SB3,3)	DSL WP error 1. The data set label has a write protect indication.
4 (SB3,4)	Disk parity error 1. Indicates a parity error within the disk logic during writes to the disk
5 (SB3,5)	EOV 1. The last record of a continued data set was encountered while reading in the data set mode. 2. The end of volume was encountered while reading or writing in the direct access mode.
6 (SB3,6)	Read check 1. A CRC error occurred while read checking a data field after a write command.
7 (SB3,7)	HWP 1. The diskette is hardware write protected.
	Sense Byte 4
0 (SB4,0)	Autoloader unload fault 1. A malfunction occurred during the unload portion of the cycle.
1 (SB4,1)	Autoloader feed fault 1. A malfunction occurred during the feed portion of the cycle.
2 (SB4,2)	Autoloader stacker full 1. Output stacker full
3 (SB4,3)	Autoloader hopper empty 1. Input hopper empty
4 (SB4,4)	Autoloader hang 1. Mechanism malfunction - time-out occurred during operation.

Table 2—3. Bit Definitions for Sense Bytes (Part 5 of 6)

<table>
<tr><th>Bit</th><th>Definition</th></tr>
<tr><td colspan="2">Sense Byte 4 (cont)</td></tr>
<tr><td>5

(SB4,5)</td><td>Autoloader busy

1. A manual feed switch operation in progress</td></tr>
<tr><td>6

(SB4,6)</td><td>Autoloader jam

1. A diskette is jammed in the feed path.</td></tr>
<tr><td>7

(SB4,7)</td><td>Data late

1. A byte of data was lost due to subsytem failure to respond in time.</td></tr>
<tr><td colspan="2">Sense Byte 5</td></tr>
<tr><td>0,1,2

(SB5,0,1,2)</td><td>Mode bits

1. Indicates the current operation mode of the addressed device as follows:

Mode Bits
0 | 1 | 2 | Mode
0 | 0 | 0 | DAM
1 | 0 | 0 | DSM - R at BOE
1 | 0 | 1 | DSM - R/W at BOE
1 | 1 | 0 | DSM - R/W at EOD</td></tr>
<tr><td>3

(SB5,3)</td><td>H Autoloader installed

1. When 1, indicates an autoloader mechanism is installed on the addressed drive</td></tr>
<tr><td>4

(SB5,4)</td><td>Two-sided

1. Indicates type of diskette installed
When set to 0 = 1-sided diskette installed
When set to 1 = 2-sided diskette installed</td></tr>
<tr><td>5*
(SB5,4)</td><td>H M2FM density
1. Recording density on the diskette
When set to 0 = M2FM
When set to 1 = M2FM</td></tr>
<tr><td>6*

(SB5,6)</td><td>FM density

1. Recording density on the diskette
When set to 0 = FM
When set to 1 = FM</td></tr>
<tr><td>7

(SB5,7)</td><td>HWP

1. Installed diskette contains hardware write protect notch.</td></tr>
</table>

*Bits 5 and 6 of sense byte 5 are not valid until after the first media-related command has been executed on the addressed drive. If bits 5 and 6 are both 0, the recording density is not known.

Table 2—3. Bit Definitions for Sense Bytes (Part 6 of 6)

Bit	Definition
Sense Byte 6	
0-7 (SB6,0-7)	Track address 1. The current track address in binary (bit 0 is MSB)
Sense Byte 7	
0 (SB7,0)	L Side 0 1. Current side address (0 = side 0, 1 = side 1)
1-7 (SB7,1-7)	Sector Address 1. Current sector address in binary (bit 1 is MSB)

BIT	SENSE BYTE							
	0	1	2	3	4	5	6	7
0 (MSB)	COMMAND REJECT	ILLEGAL MEDIA	NO DATA SEP. LOCK ERROR	DSL NOT FOUND	AUTOLOADER UNLOAD FAULT	MB0 (MSB)	TA0 ZERO	L SIDE
1	INTERVENTION REQUIRED	INVALID MODE	SIDE ERROR	DSL INVALID	AUTOLOADER FEED FAULT	MB1	TA1	SA0 (MSB)
2	BUS OUT CHECK	INVALID SEQUENCE	TRACK ERROR	CONTROL AM	AUTOLOADER STACK FULL	MB2	TA2	SA1
3	EQUIPMENT CHECK	INVALID PARAMETER	RECORD LENGTH ERROR	DSL WP ERROR	AUTOLOADER HOPPER EMPTY	H AUTOLOADER INSTALLED	TA3	SA2
4	DATA CHECK	NOT INSTALLED	SECTOR ERROR	DISK PARITY ERROR	AUTOLOADER FAULT	H TWO SIDED	TA4	SA3
5	NOT USED	PARITY ERROR	ID CRC	END OF VOLUME	AUTOLOADER ACTIVE	H M²FM DENSITY	TA5	SA4
6	BUS IN CHECK	STOP STATE ERROR	DATA CRC	READ CHECK			TA6	SA5
7 (LSB)	PROGRAM ALERT	INTERLOCK ERROR	RETRY	HWP ERROR		HWP	TA7	SA6

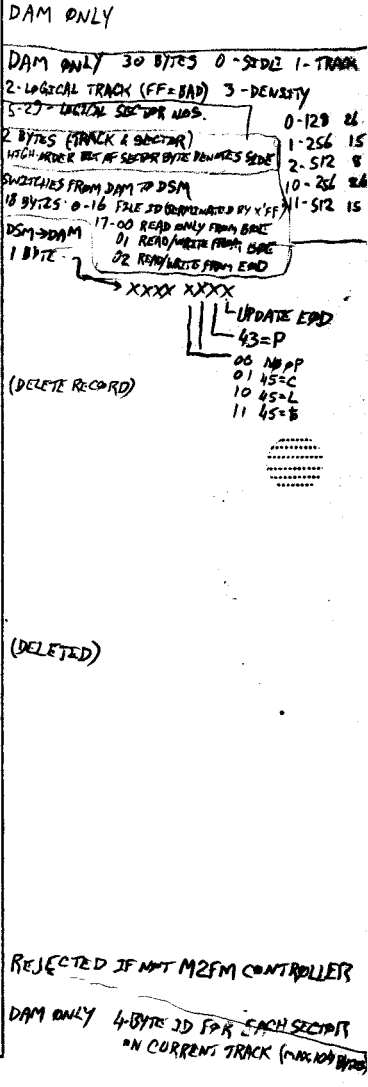
Figure 2—2. Bit Definition Summary for Sense Bytes

2.1.4. COMMAND REPERTOIRE

Legal commands for the diskette controller and devices including their respective mnemonics and hexadecimal codes are given in Table 2-4. Any other commands issued are rejected and return a unit check status error.

Table 2—4. Diskette Commands

Diskette Command	Mnemonic	Hex Code
Sense	SNS	04
Feed	FD	23
Format write	FW	11
Load-track/side/sector	LTSS	32
Data-set-open	DSO	21
Data-set-close	DSC	51
Read	R	06
Write	W	01
Write-control	WC	41
Diagnostic-read-subsystem-area	RSA	66
Diagnostic-read-subsystem-buffer	RSB	76
Read-volume-ID	RVID	56
Diagnostic-write-enable	DWE	63
Read-control	RC	46
Diagnostic-write-subsystem-buffer	WSB	71
Recover	RCVR	13
Initial-load	IL	02
Unload	UNLD	33
No-operation	NOP	03
No-operation	NOP	73
Format-read	FR	16



Ending status:

Channel end/device end is presented when the device has completed execution of the command.

Unit check is presented when:

- the device is in the wrong operating mode to execute the command;
- no index pulse was detected;
- ID field CRC error;
- subsystem RAM parity error occurred;
- bus-in parity error occurred;
- bus-out parity error occurred; or
- no track zero.

Status modifier is presented when:

- successful PROM parity retry occurred;
- successful bus-in parity retry occurred; or
- successful bus-out parity retry occurred.

NOTES:

1. *The track/side/sector values in sense bytes 6 and 7 are not altered.*
2. *No media retries occur.*
3. *An LTSS command can be issued prior to this FR command to condition the subsystem to any track and side.*
4. *The command positions only to logical track values — it skips over bad tracks.*

2.2. DISKETTE DEVICES

The diskette subsystem supports both a manual load device and an autoload device. The diskette drive mechanism used in both types of the diskette devices is a direct access storage device. This mechanism utilizes a standard 8-inch removable and interchangeable storage media and accepts only one diskette at a time. Each have two heads that come into contact simultaneously with the diskette, thereby permitting reading and writing on both sides of a diskette.

2.2.1. Manual Load Diskette Drive

Manually loaded drives require an operator to either install or remove the diskette media. The diskette media is placed in the slot with the label positioned away from the latch release bar and the edge with the strain relief notches inserted first, pushing the diskette down until it is latched, then closing the door. Removing the diskette requires only a push on the latch release bar, which causes the door to slide open and the diskette to be released.

2.2.2. Autoload Diskette Drive

The autoload diskette drive requires an operator to properly install the diskette media into the input hopper with the label facing the front and the edge with the strain relief notches inserted first. The input hopper has a maximum capacity of 20 diskettes with an empty hopper detection sensor.

An operator is required to remove the diskettes from the output stacker and clear any jams that might occur in the diskette feed path.

Diskettes are fed one at a time, upon command, starting with the diskette nearest the fed mechanism. An autoload cycle consists of unloading a diskette from the drive to the output hopper and then loading a diskette from the input hopper to the drive.

The output hopper has a capacity of 20 diskettes being stacked in the same sequence they are fed. A stacker-full indication is provided for the output stacker.

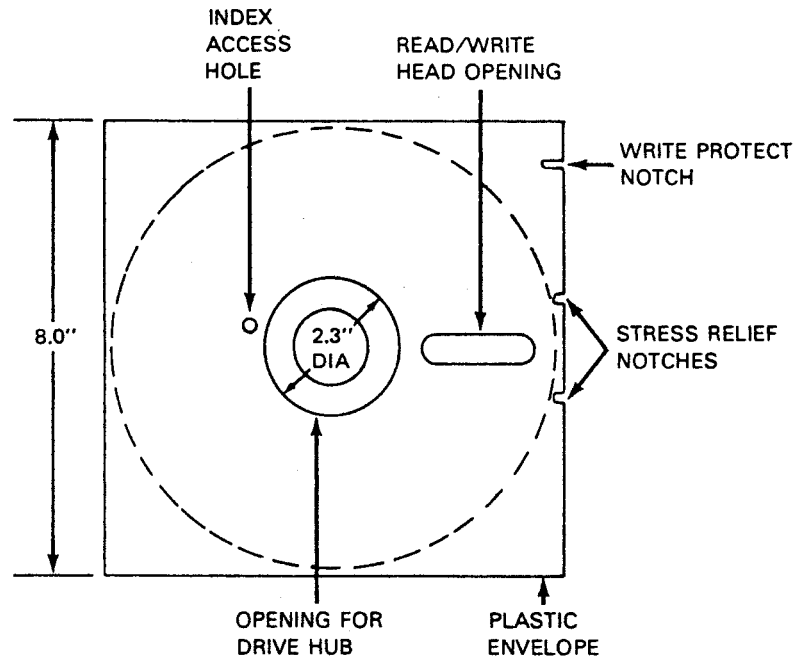
2.2.3. Diskette Media

The diskette media is shown in Figure 2-3. It is a removable and interchangeable magnetic storage media that consists of a single flexible disk enclosed in a jacket. One version of the media permits recording only on one side of the disk, while a second version allows recording on both sides of the disk.

Each side of each disk has 77 recording tracks, each track being divided into 26, 15, and 8 sectors. Tracks are numbered from 00 to 76, with track 00 being designated as the outermost track. Typically, track 0 is reserved for labels, and tracks 1 through 74 are used to store data. Tracks 75 and 76 are used as alternate data tracks to compensate for any possible defective tracks in the data area.

The diskette has a fixed format with electronic sectoring. Information that is recorded on the tracks consists of: gap bytes, sync bytes, track/sector addresses, data, and cyclic redundancy check (CRC) bytes. The track formats are single density (FM) and double density (M2 FM). These formats are shown in Figures 2-4 and 2-5. The diskette drive characteristics are:

- 360 rpm (166.7 ms) rotational speed
- 77 tracks/side
- 48 tracks/inch
- 3400/6800 bpi density
- 3 ms track-to-track seek time
- 15 ms seek settle time
- 35 ms head load time



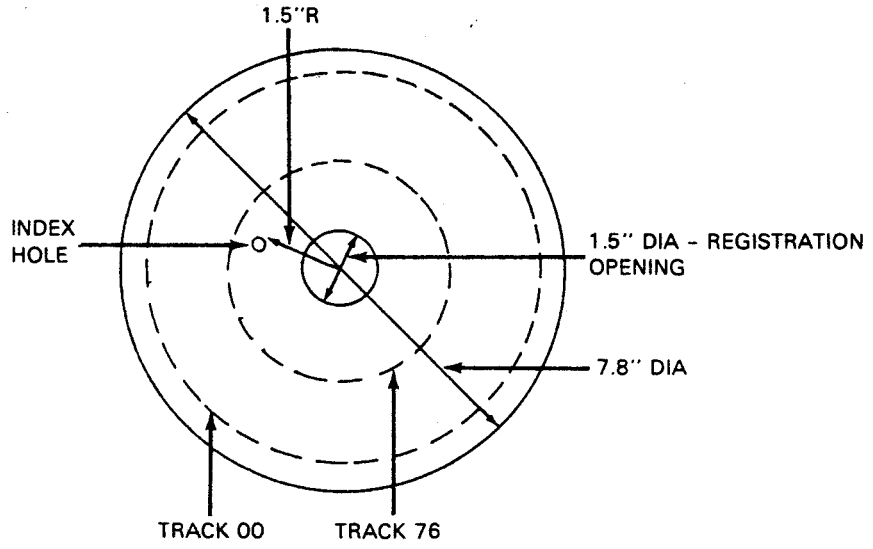
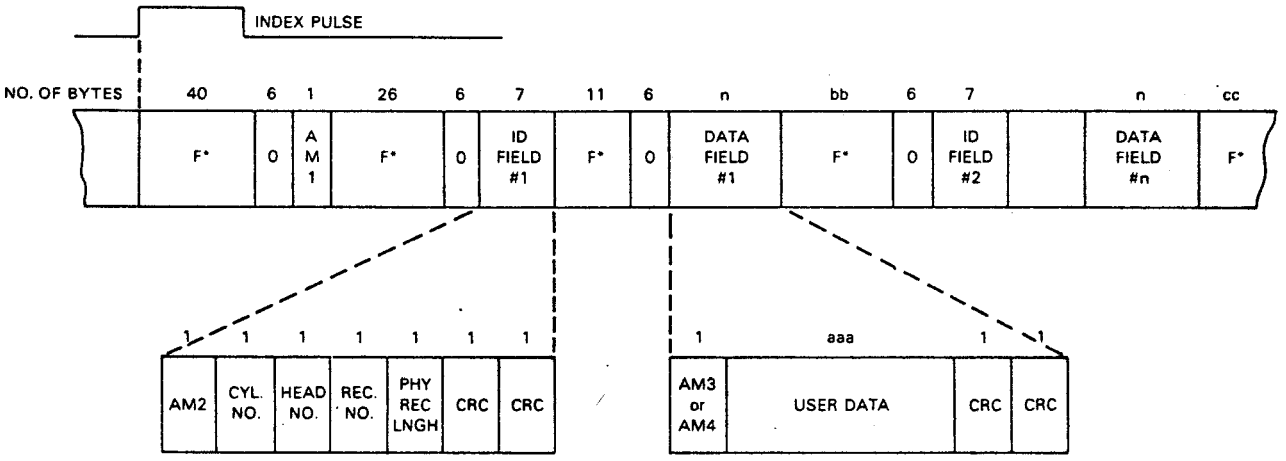


Figure 2—3. Diskette Media

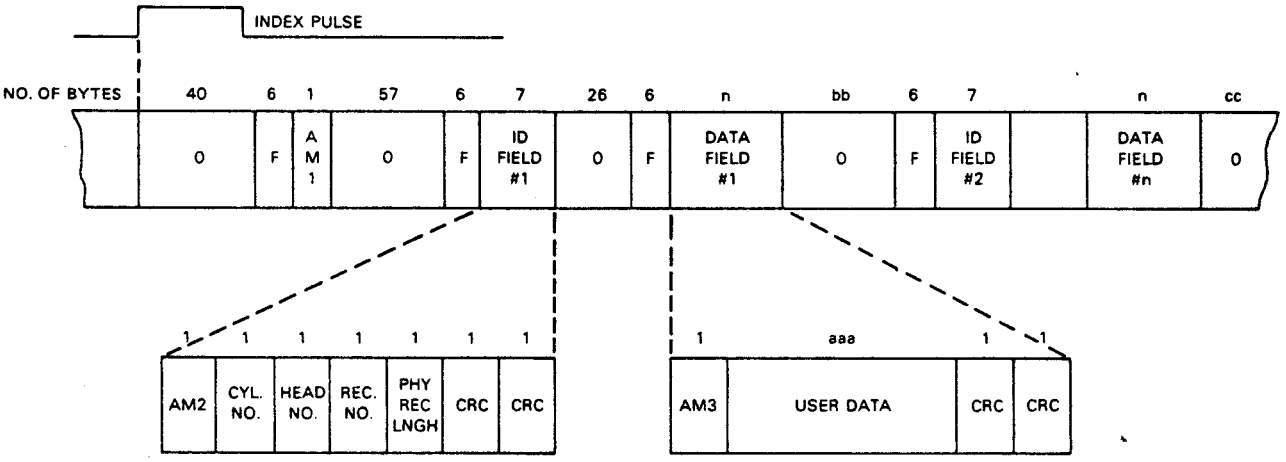


	Type	Clock	Data
AM1	Index	Hex "D7"	Hex "FC"
AM2	ID	Hex "C7"	Hex "FE"
AM3	Data	Hex "C7"	Hex "FB"
AM4	Control	Hex "C7"	Hex "F8"

Sectors per Track	aaa	bb	cc
26	128	27	247
15	256	42	170
8	512	58	311

*This field may contain all zero bytes.

Figure 2—4. Single Density FM Track Format



	Type	Clock	Data
AM1	Index	Hex "71"	Hex "0C"
AM2	ID	Hex "70"	Hex "0E"
AM3	Data	Hex "70"	Hex "0B"
AM4	Control	Hex "72"	Hex "08"

Sectors per Track	aaa	bb	cc
26	256	59	874
15	512	88	592

Figure 2—5. Double Density M2FM Track Format

2.2.4. Data Set Mode

Data set mode (DSM) provides the capability of processing diskette data organized in a file structure. In this mode, less user software is necessary to process sequential files since the subsystem processes and checks most of the data set labels and maintains certain parameters (pointers) while processing records.

DSM is entered by using the data-set-open (DSO) command. Once a data set is opened, the diskette (volume) it resides on should not be removed until a data-set-close (DSC) command is issued, since this command may have to update the data-set-label (DSL) parameters to maintain file integrity.

The ordering of sectors in DSM is the same as in DAM. Data transfer commands begin with either the BOE or EOD record (depending on DSO options) and continue by updating the TAR, SR, and SAR registers after each logical record is transferred until the EOD or EOE record is encountered.

2.2.5. Direct Access Mode

Direct access mode (DAM) provides essentially unrestricted access and operation with the mounted diskette when it is not possible to operate within the file structure and operating constraints of the data set mode (DSM). When operating in this mode, it requires maintaining any existing file structure for integrity. Upon power-up, the controller places each device in DAM and sets each device track address register (TAR), side register (SR), and sector address register (SAR) to 01_{16}, 00_{16}, and 01_{16}, respectively. The only other way to enter DAM from DSM is to issue a data-set-close (DSC) command.

Data transfer commands in DAM continually update the TAR, SR, and SAR after each sector is processed until the end of the data transfer. Any partial sector remaining at a command termination is discarded and the TAR, SR, and SAR points to the next available sector.

In DAM, the sector at TAR, SR, and SAR, which is equal to 00_{16}, 00_{16}, and 01_{16}, respectively, is considered the first sector; and $4C_{16}$, 01_{16}, SS is the last sector (for 1-sided diskettes, 00_{16}, 00_{16}, 01_{16} is the first and $4C_{16}$, 00_{16}, SS is the last). See Table 2-5 for the definition of the SS code and the ordering of sectors for the diskette.

2.2.6. Data Set Label Checking

The controller checks certain fields of the diskettes data set label and declares an invalid label if any of the following exist:

- The BOE address is less than track 01, sector 01.
- The EOE address is greater than track 74, sector 26.
- The EOD address is greater than the EOE address plus 1 or is less than the BOE address.
- The BOE, EOE, or EOD sector address is equal to 00 or greater than 26.
- The EOE address is less than the BOE address.
- The block length is equal to zero.
- The block length is greater than the physical record length.
- The physical record length is not blank, 1, or 2.

- The DSO command parameter byte specifies open at EOD but the data set is full.
- The DSO command parameter byte specifies open at BOE for read only but the data set is open.

Table 2—5. Ordering of Sectors for Diskettes

Diskette Sectors	TAR	SR	SAR	Notes
First	00	00	01	For 1-sided diskettes, delete entries with SR = 01 to obtain sector ordering.
	00	00	02	
	.	.	.	
	.	.	.	
	.	.	.	SS = $1A_{16}$ for 26 sectors/track
	00	00	SS	
	00	01	01	SS = $0F_{16}$ for 15 sectors/track
	.	.	.	
	.	.	.	
	.	.	.	
	00	01	SS	
	01	00	01	
	.	.	.	SS = 08_{16} for 8 sectors/track
	.	.	.	
	.	.	.	TT = $4C_{16}$ for DAM
One-sided last	TT	00	SS	TT = $4A_{16}$ for DSM
	TT	01	01	
	.	.	.	
	.	.	.	
	.	.	.	
Two-sided last	TT	01	SS	