

2. Operating procedure

2.1 FDU TEST (MASTER)...F1 TEST procedure

- (1) connect each components with specified cables according to Fig. 1
- (2) insert ROM PACK and turn the power of PC on. Then the message (Fig. 3) appears on the CRT screen.
- (3) turn the power of F1 on.
- (4) hit **[1]**-KEY located on the PC board.
- (5) The message illustrated in Fig. 4 appears within 60 seconds. Then insert DISKETTE-1 into F1 and hit **[Y]**-KEY.
The FDU FRONT LEVER still remains at open position.
- (6) After a few seconds when the message Fig. 5 is displayed, turn the LEVER to the close position and hit **[RETURN]**-KEY.
- (7) F1 executes READ operation for about 10 seconds (LED-Lamp of the FDD lights on), then the message (fig. 6) is displayed.
- (8) change the DISKETTE from -1 to -2 and hit **[RETURN]**-KEY.
- (9) F1 execute WRITE operation for about 20 seconds. Then the message (Fig. 7) is displayed.

2.2 FDU TEST (SLAVE)...Two DISKs (F1 and F2) SYSTEM TEST procedure

- (1) connect each components according to Fig. 2
- (2) same procedure as above items 2.1 (2) -2.1 (3).
- (3) hit **[2]**-KEY located on the PC board.
- (4) After the message (Fig. 4) appears, insert DISKETTE-1 into F2, hit **[Y]**-Key.
do not turn the FRONT LEVER.
- (5) same procedure as above items 2.1 (6) - 2.1 (9)

2.3 FDU TEST-2 (MASTER)...SHORT TEST of F1 procedure

- (1) same procedure as above items 2.1 (1) - 2.1 (3).
- (2) hit **[3]**-KEY located on the PC keyboard.
- (3) After the message (Fig. 4) appears, insert DISKETTE-1 into F1, hit **[Y]**-KEY.
do not turn the FRONT LEVER.
- (4) same procedure as above items 2.1 (6) -2.1 (9).

Note 1 If an error occurs during the above execution, the program displays the Error No. and ends. Any keyis hitted at this stage, the program returns to the step of Job Selection. Concerning Error No., reference is made to the Table-1.

2 Do not apply FDU TEST-2 to the FDUs, which had never been tested by the method of 2.1 FDU TEST.

2.4 How to make copy of DISKETTE-1 data

The procedure how to write the DISKETTE-1 data to a new empty diskette and/or to the diskette, of which data has been distroyed.

- (1) execute the DISK-FORMATING according to the procedure 2.5
- (2) hit any one of keys on the PC keyboard. When the JOB SELECT MENU appears on the screen, hit [8]-KEY.
- (3) When the message (Fig. 8) appears, hit [Y]-KEY.
- (4) pull out the diskette from the FDD and put the label of WRITE PROTECT.

2.5 The procedure of DISK-FORMATING (DISKETTE -2)

- (1) connect each components according to Fig. 1, turn the power of PC and F1 on.
- (2) insert the diskette, hit [9]-KEY.
- (3) when the message (Fig.9) appears, hit [Y]-KEY.
- (4) when the message (Fig. 10) appears on the screen, the execution of DISK-FORMATING is completed.

2.6 SINGLE FUNCTION TEST

For easier finding of defective part, the diagnose program is prepared. In condition of displaying of the MENU (Fig.1), hit [4]-KEY, then appears the message (Fig 11) on the screen.

Explanation of each function is as follows:-

(1) RESET

By pressing [A]-Key, the TEST routine "DTEST 2" (listed in program list) starts the execution. The wave form is illustlated in Timing Chart No. 1.

Refer to Schematic Diagram concerning each point.

To stop the execution, push RESET-Switch of PC.

(2) RELEASE RESET

By pressing [B]-Key, the TEST routine "DTEST 3" starts the execution. The wave form is illustlated in Timing Chart No. 2. To stop the execution, push RESET-Switch of PC.

(3) WRITE REGISTER

By pressing [C]-Key, the TEST routine "DTEST 4" starts the execution. The wave form is illustlated in Timing Chart No. 3. To stop the execution, push RESET-Switch of PC.

(4) READ REGISTER

By pressing [D]-Key, the TEST routine "DTEST 5" starts the execution. The wave form is illustlated in Timing Chart No. 4. To stop the execution, push RESET-Switch of PC.

(5) READ REGISTER

By pressing **E**-Key, the TEST routine "DTEST 6" starts the execution. The wave form is illustlated in Timing Chart No. 5. To stop the execution, push RESET -Switch of PC.

(6) RECALIBRATE and SEEK

By pressing **F**-Key, the HEAD moves from TRACK-00 to TRACK 39 repeatedly. To stop the execution, push RESET-Switch of PC.

(7) READ TRACK-00

By pressing **G**-Key, read out continuously all data from all sector of TRACK-00 after approx. 2 sec.. If an error occurs, reset FDC automatically and then after approx. 2 sec. read out the data from TRACK-00 again. To stop the execution, push RESET-Switch of PC.

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;I/O PORT ADDRESS
;
FDCNTL EQU 0F0H ;FDC CONTROL REG.
FDCDT EQU 0FBH ;FDC DATA REG.
FDCST EQU 0F9H ;FDC STATUS REG.
;

A041 AF DTEST2: XOR A
A042 D3 F0 OUT (FDCNTL),A
A044 18 FC JR DTEST2+1
A046 3E 80 DTEST3: LD A,080H
A048 18 FB JR DTEST2+1
A04A 3E FE DTEST4: LD A,0FEH
A04C D3 FB OUT (FDCDT),A
A04E 07 RLCA
A04F 18 FB JR DTEST4+2
A051 DB F0 DTEST5: IN A,(FDCNTL)
A053 18 FC JR DTEST5
A055 DB FB DTEST6: IN A,(FDCDT)
A057 18 FC JR DTEST6

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***** FDU TEST PROGRAM *****
VER. 1.3

1: FDU TEST (MASTER)
2: FDU TEST (SLAVE)
3: FDU TEST-2 (MASTER)
4: SINGLE FUNCTION TEST
8: MAKE DISKETTE-1
9: FORMAT

ENTER JOB NUMBER ?

Fig. 3

INSERT DISKETTE-1 AND FRONT LEVER IS
IN OPEN POSITION
THEN HIT (Y)-KEY

Fig. 4

CLOSE THE FRONT LEVER
THEN HIT (RETURN)-KEY

Fig. 5

CHANGE DISKETTE
THEN HIT (RETURN)-KEY

Fig. 6

ALL TEST OK!!

Fig. 7

MAKE DISKETTE-1
OK? (Y/N)

Fig. 8

FORMAT OK ? (Y/N)

Fig. 9

END

Fig. 10

SINGLE FUNCTION TEST

Fig. 11

<A>RESET
 ("00H" => [0F0H])
..... RELEASE RESET
 ("080H" => [0F0H])
<C>..... WRITE REGISTER
 (DATA => [0F8H])
<D>..... READ REGISTER
 (DATA <= [0F0H])
<E>..... READ REGISTER
 (DATA <= [0F8H])
<F>..... RECALIBRATE AND SEEK
<G>..... READ TRACK-00

Table-1 Error table

Pin 1 indicates the pin number of LSI μ PD765A.
Others are same as above.

Error No.	Cause
1	FDC(μ PD765A) does not work correctly. Pin 1(RESET) is always low level. Clock does not be supplied.
2	FDC does not work correctly. Pin 1(RESET) is always high level.
3	The motor of the FDD does not stop. The motor keep rotating over approx. 40 sec..
4	The motor of the FDD does not rotate.
5	The motor of the FDD has stopped within approx. 15 sec..
6	Pin 35(READY) is always high level.
7	Pin 34(WRITE PROTECT) is always low level. WRITE PROTECT NOTCH does not be attached at the notch of the diskette.
8	Pin 35(READY) does not become low level(not-ready state).
9	The execution of RECALIBRATE or SEEK does not complete within a certain time.
10	During the execution of RECALIBRATE or SEEK, an error occured.
11	FDC cannot detect the TRACK 0 Signal within a certain time.
12	The data cannot be read out correctly. The diskette data is destroyed.
13	Pin 34(WRITE PROTECT) is always high level.
14	READ ERROR(*1)
15	WRITE ERROR(*1)

*1. Refer to table-2, -3, -4

STATUS REGISTER 0

Table-2

NO.	NAME	BIT	SYMBOL	DESCRIPTION
D7	Interrupt Code		IC	D7=0 and D6=0 Normal Termination of Command, (NT). Command was completed and properly executed.
D6				D7=0 and D6=1 Abnormal Termination of Command, (AT). Execution of Command was started, but was not successfully completed.
				D7=1 and D6=0 Invalid Command issue, (IC). Command which was issued was never started.
				D7=1 and D6=1 Abnormal Termination because during command execution the ready signal from FDD changed state.
D5	Seek End		SE	When the FDD completes the SEEK Command, this flag is set to 1 (high).
D4	Equipment Check		EC	If a fault Signal is received from the FDD, or if the Track 0 Signal fails to occur after 77 Step Pulses (Recalibrate Command) then this flag is set.
D3	Not Ready		NR	When the FDD is in the not-ready state and a read or write command is issued, this flag is set. If a read or write command is issued to Side 1 of a single sided drive, then this flag is set.
D2	Head Address		HD	This flag is used to indicate the state of the head at Interrupt.
D1	Unit Select 1		US 1	These flags are used to indicate a Drive Unit Number at Interrupt.
D0	Unit Select 0		US 0	

STATUS REGISTER 1

Table - 3

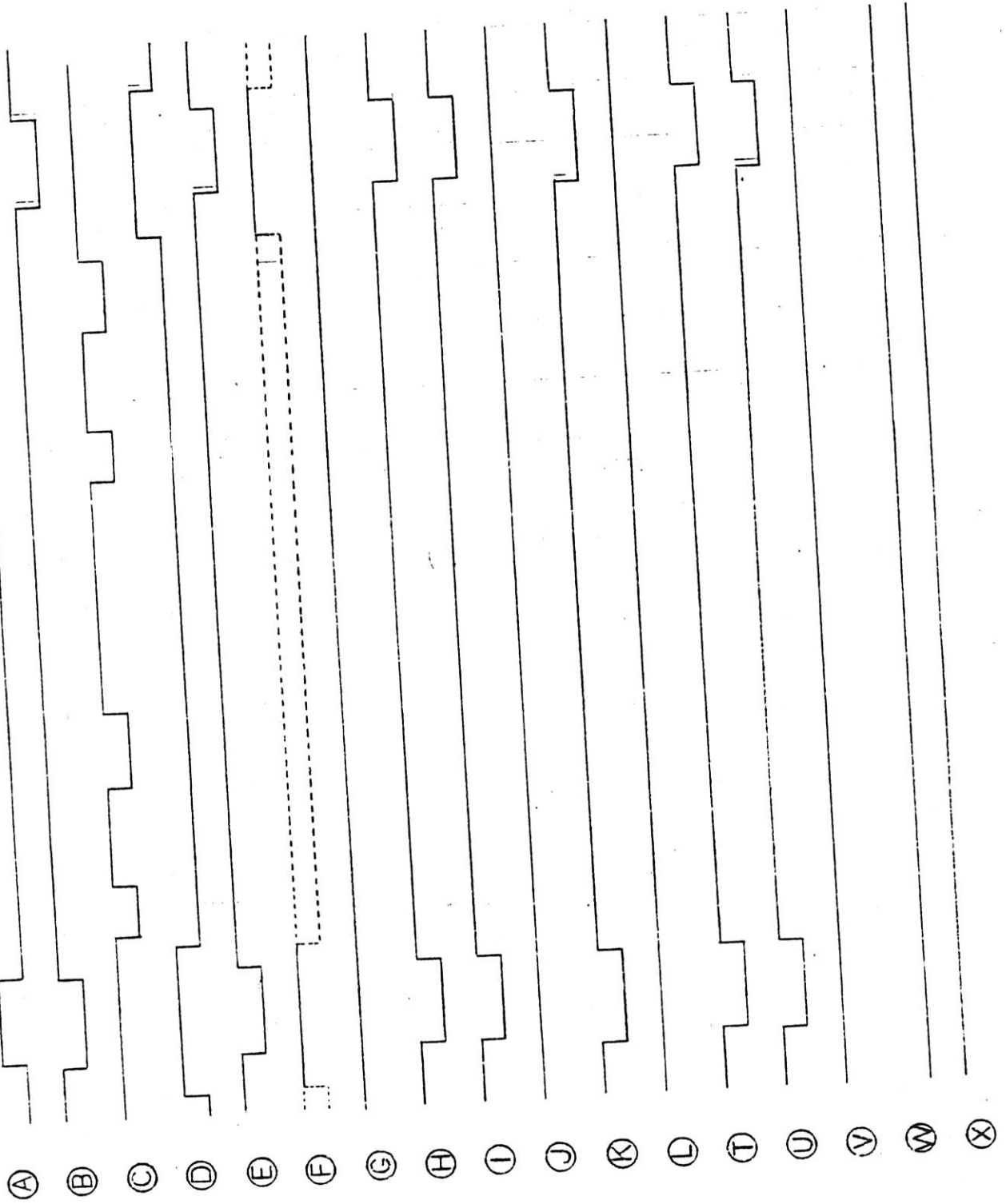
NO.	NAME	BIT SYMBOL	DESCRIPTION
D7	End of Cylinder	EN	When the FDC tries to access a Sector beyond the final Sector of a Cylinder, this flag is set.
D6			Not used. This bit is always 0(low).
D5	Data Error	DE	When the FDC detects a CRC error in either the ID field or the data field, this flag is set.
D4	Over Run	OR	If the FDC is not serviced by the main-systems during data transfers, within a certain time interval, this flag is set.
D3			Not used. This bit ^{is} always 0(low).
D2	No Data	ND	During execution of READ DATA, WRITE DELETED DATA or SCAN Command, if the FDC cannot find the Sector specified in the IDR Register, this flag is set. During executing the READ ID Command, if the FDC cannot read the ID field without an error, then this flag is set. During execution of the READ A Cylinder Command, if the starting sector cannot be found, then this flag is set.
D1	Not Writable	NW	During execution of WRITE DATA, WRITE DELETED DATA or Format A Cylinder Command, if the FDC detects a write protect signal from the FDD, then this flag is set.
D0	Missing Address Mark	MA	If the FDC cannot detect the ID Address Mark after encountering the index hole twice, then this flag is set. If the FDC cannot detect the Data Address Mark or Deleted Data Address Mark, this flag is set. Also at the same time, the MD(Missing Address Mark in Data Field) of Status Register 2 is set.

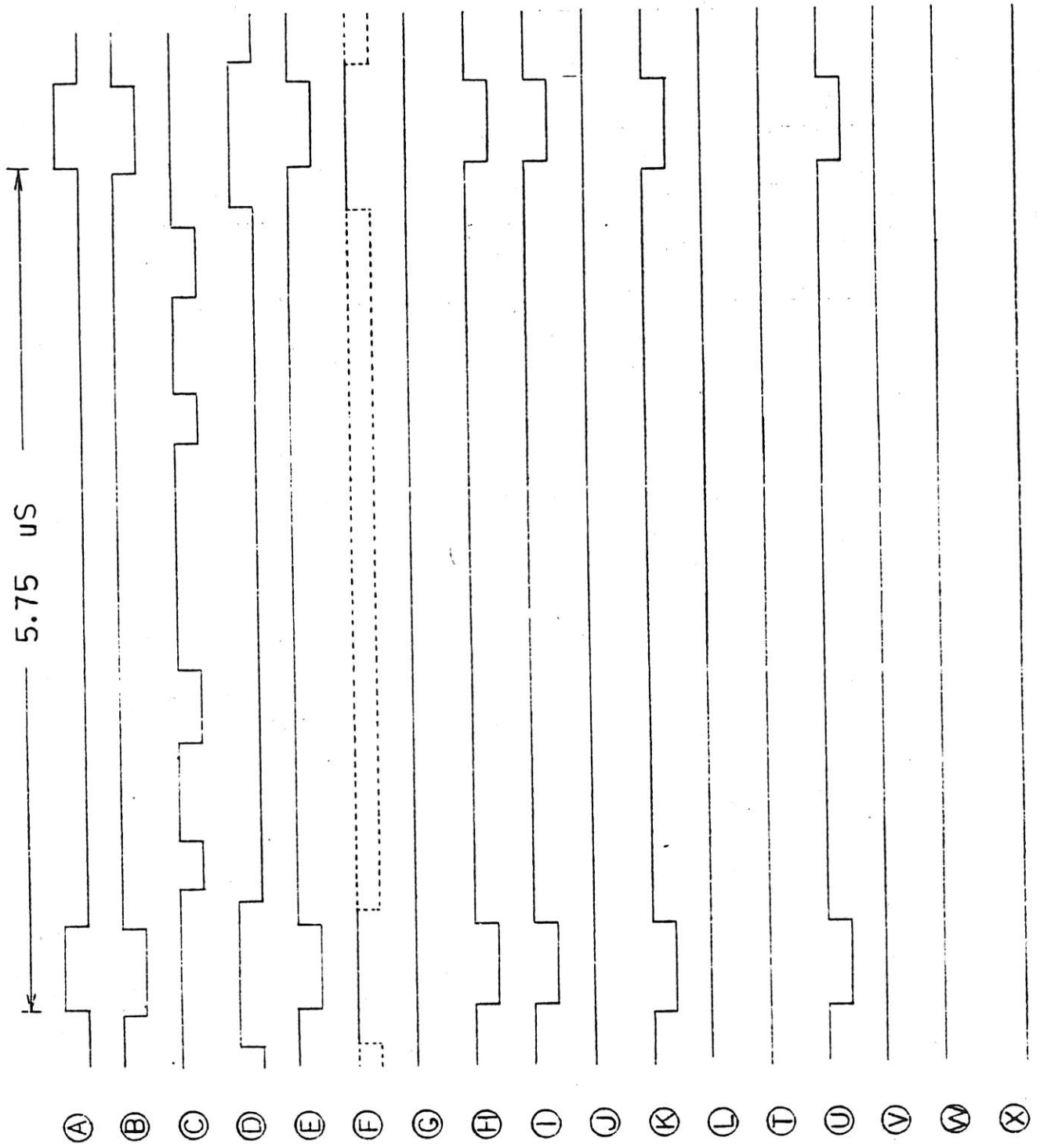
STATUS REGISTER 2

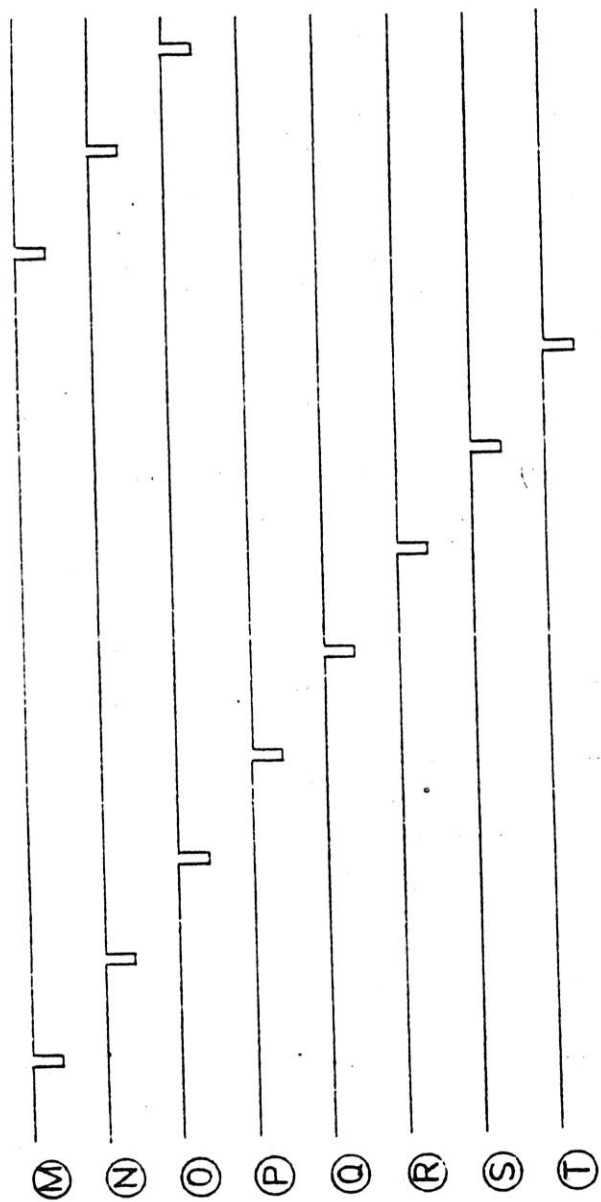
Table -4

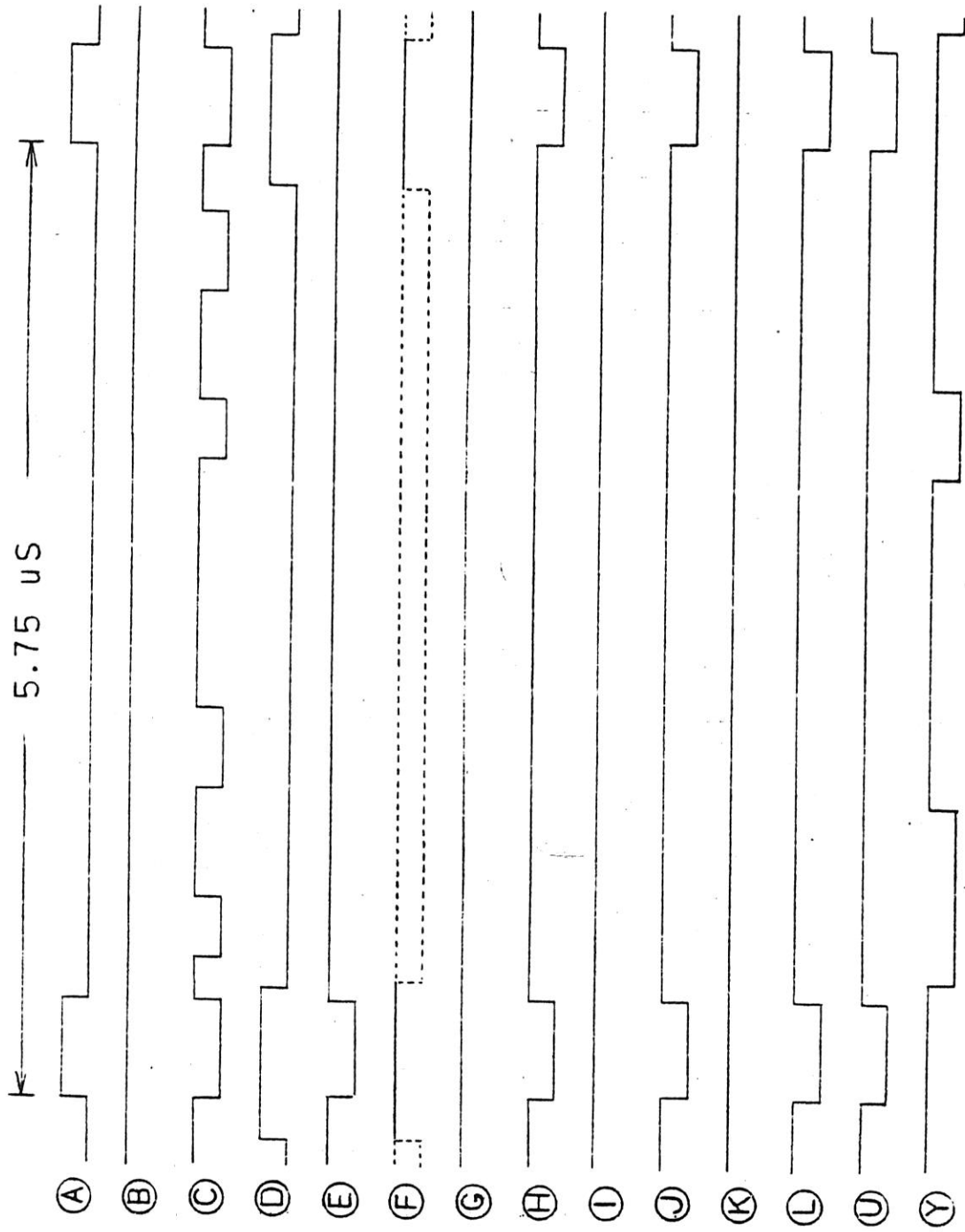
NO.	NAME	BIT	SYMBOL	DESCRIPTION
D7				Not used. This bit ^{is} always 0(low).
D6	Control Mark		CM	During executing the READ DATA or SCAN Command, if the FDC encounters a Sector which contains a Deleted Data Address Mark, this flag is set.
D5	Data Error in Data Field		DD	If the FDC detects a CRC error in the data field then this flag is set.
D4	Wrong Cylinder		WC	This bit is related with the ND bit, and when the contents of C on the medium is different from that stored in the IDR, this flag is set.
D3	Scan Equal Hit		SH	During execution, the SCAN Command, if the condition of "equal" is satisfied, this flag is set.
D2	Scan Not Satisfied.		SN	During executing the SCAN Command, if the FDC cannot find a Sector on the cylinder which meets the condition, then this flag is set.
D1	Bad Cylinder		BC	This bit is related with the ND bit, and when the content of C on the medium is different from that stored in the IDR and the content of C is FF, then this flag is set.
D0	Missing Address Mark in Data Field		MD	When data is read from the medium, if the FDC cannot find a Data Address Mark or Deleted Data Address Mark, then this flag is set.

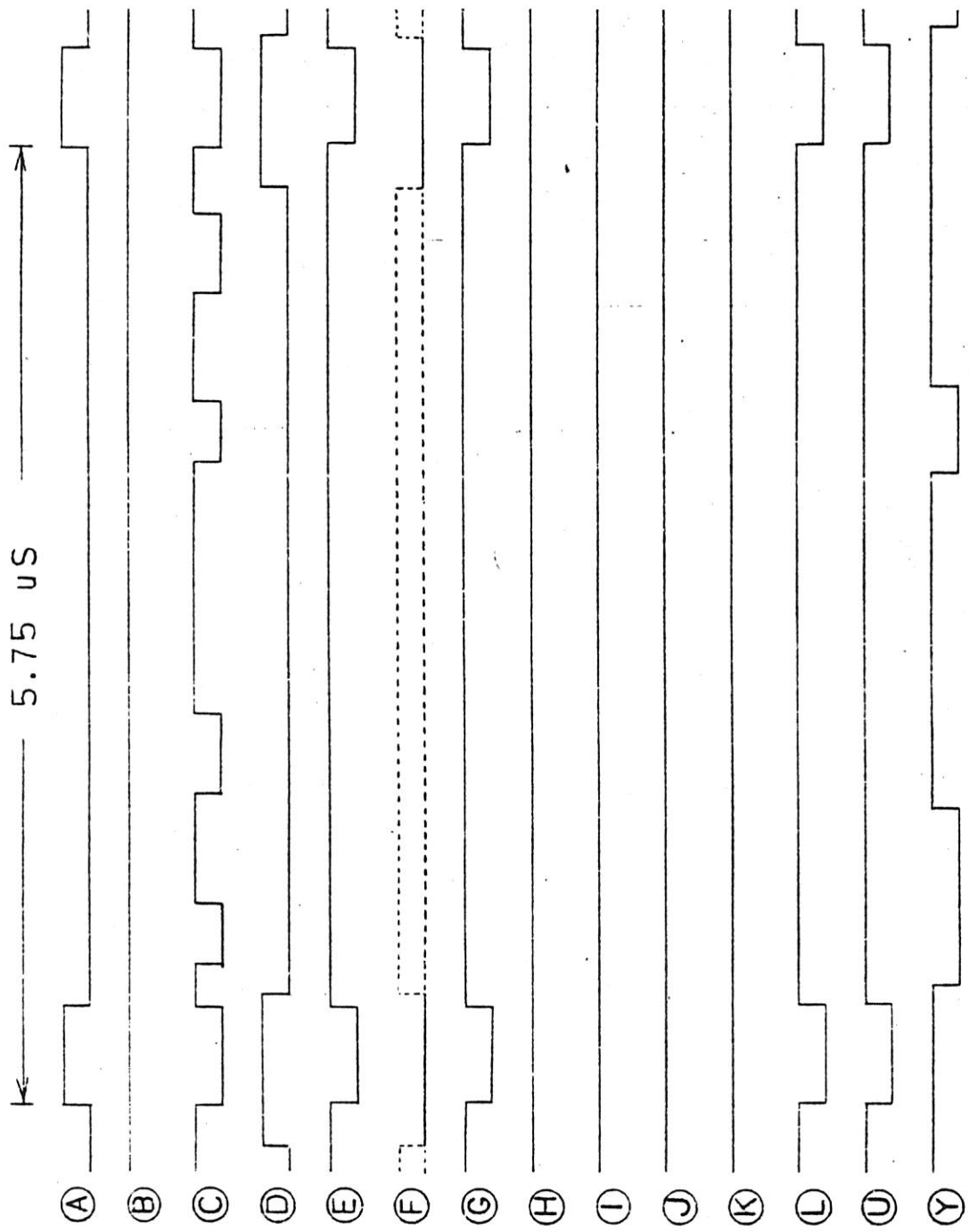
5.75 μ S











8 2

System

1	GND	GND	2
3	D0	D L	4
5	D2	D3	6
7	D4	D5	8
9	D6	D7	10
11	WALT	RESET	12
13			14
15	SLOW	STOR	16
17	WR	MREQ	18
19	IORQ	RD	20
21	CUTDV1	OUTDV2	22
23		EXINT1	24
25	EXINT2	AEN	26
27	GRPP	DR00	28
29	DR01	DR02	30
31	TC	DACK2	32
33	DACK0	DACK1	34
35	A15	A14	36
37	A13	A12	38
39	A11	A10	40
41	A9	A8	42
43	A7	A6	44
45	A5	A4	46
47	A3	A2	48
49	A1	A0	50

CON - 1

ROM Pack

1		GND	16
2	A0	CS1	17
3	A1	D0	18
4	A2	D1	19
5	A3	D2	20
6	A4	D3	21
7	A5	D4	22
8	Vcc	Vcc	23
9	A6	D5	24
10	A7	D6	25
11	A8	D7	26
12	A9	CS2	27
13	A10	OE	28
14	A11	A12	29
15	GND	GND	30

CON - 7

Audio cassette

1	REC
2	GND
3	MON
4	REC
5	MON
6	REM 1
7	REM 2
8	GND

CON - 4

RS - 232C

1			14
2	TXD	TxC	15
3	RxD		16
4	RTS	RxC	17
5	CTS		18
6	DSR		19
7	SGND		20
8	DCD	DTR	21
9			22
10			23
11			24
12			25
13			25

CON - 3

CRT

1	+12V
2	GND
3	BSTCLK
4	HSYNC
5	VSYNC
6	R
7	G
8	B

CON - 5

Parallel I/O

1	STB	GND	2
3	DT0		4
5	DT1		6
7	DT2		8
9	DT3		10
11	DT4		12
13	DT5		14
15	DT6		16
17	DT7		18
19	ACK		20
21	BSY		22
23		GND	24
25	SLCT	RESET	26
27	(S)GND		28
29		(S)GND	30
31	(S)GND		32
33			34

CON - 2

1	GND
2	VIDEO
3	

CON - 9

1	GND
2	+5V
3	+12V
4	-12V

CON - 8

Key Scan

1	RT0
2	RT1
3	RT2
4	RT3
5	RT4
6	RT5
7	RT6
8	RT7
9	SCO
10	SC1
11	SC2
12	SC3
13	SC4
14	SC5
15	SC6
16	SC7
17	SC8
18	SC9
19	SC10
20	SC11
21	SLED
22	BLED
23	GND
24	Vcc

CON 6

Each Connector Arrangement

A3 A4 A5 A4 A5 A4