16 CHANNEL UNIT FLEXIBLE DISC-0,25M

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16.1 CHFD-IDENTIFICATIONS

Type-Number: PTS6848

Test-Program: PERTST

Channel: PC or MX
Break-connection: 3A43

Devices: Flexible Disc-Drive CDC9404, with doorlock-PTS6867.
Stand alone Unit 2 drives FDU-PTS 6879

Power-consumption: +5 Volt, 4.7 Amp.

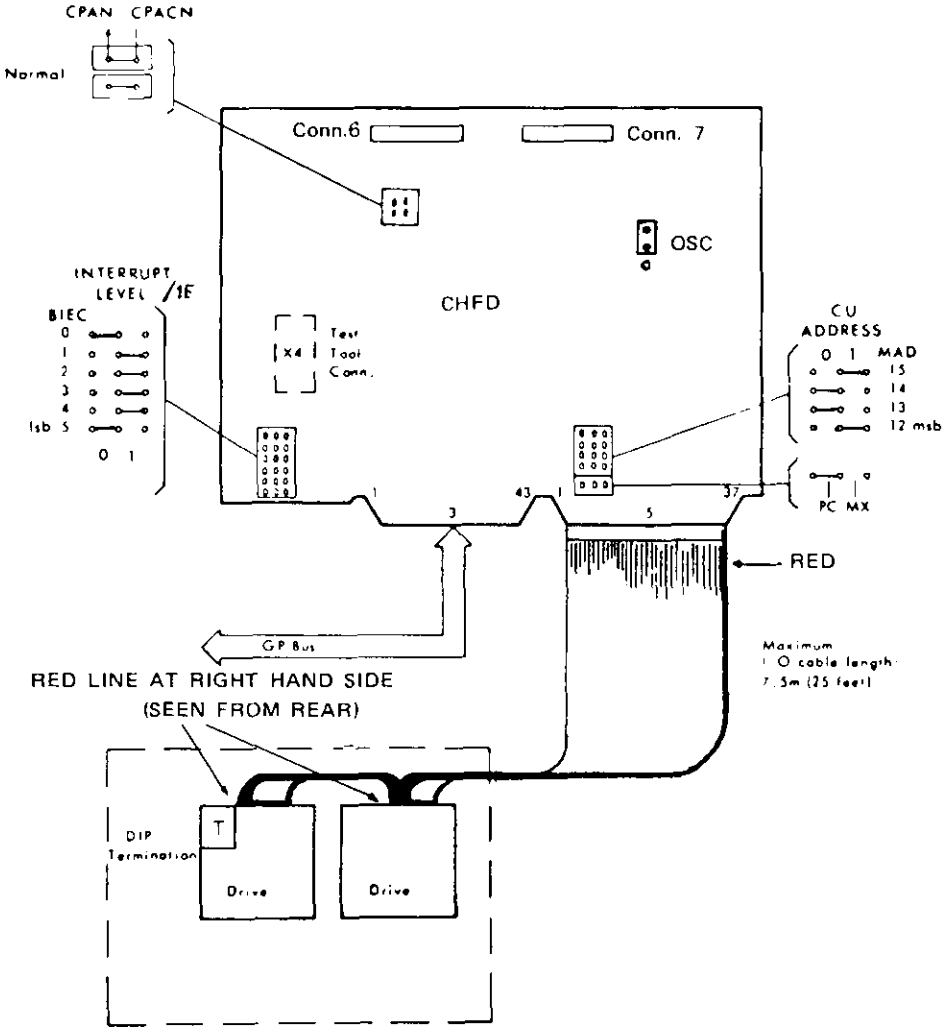


Figure 16.1a CONNECTORS, CABLES, U-LINKS (TC 6812/13)

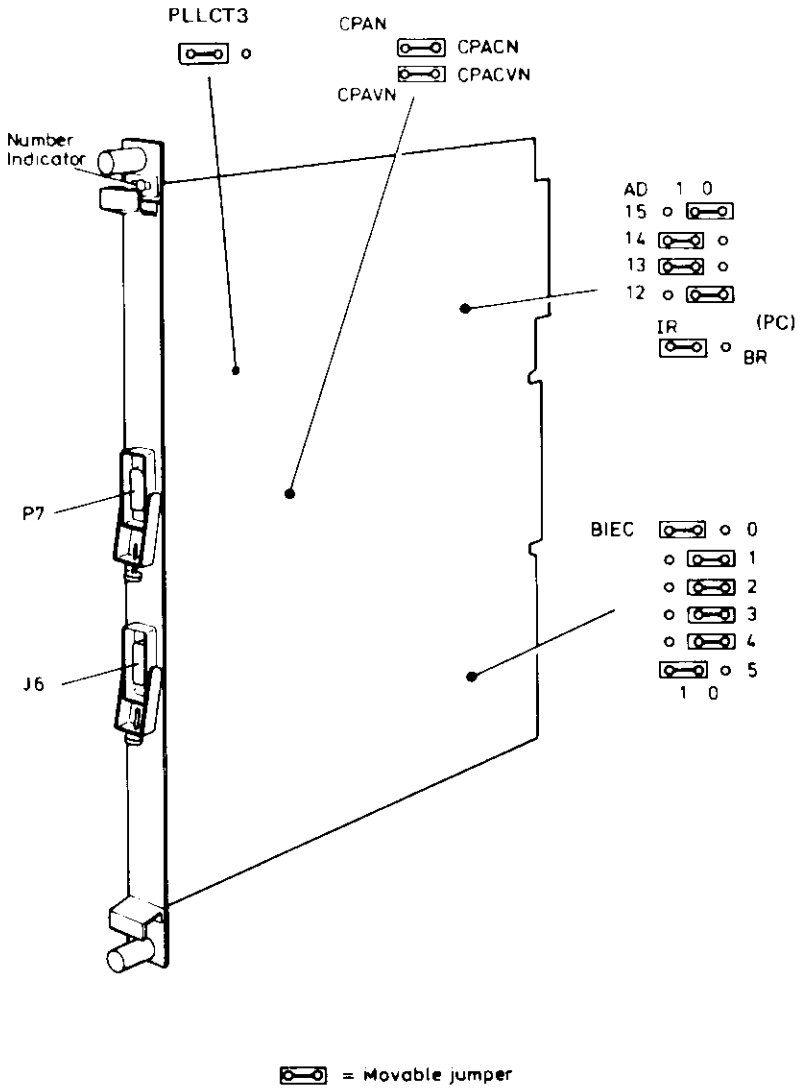
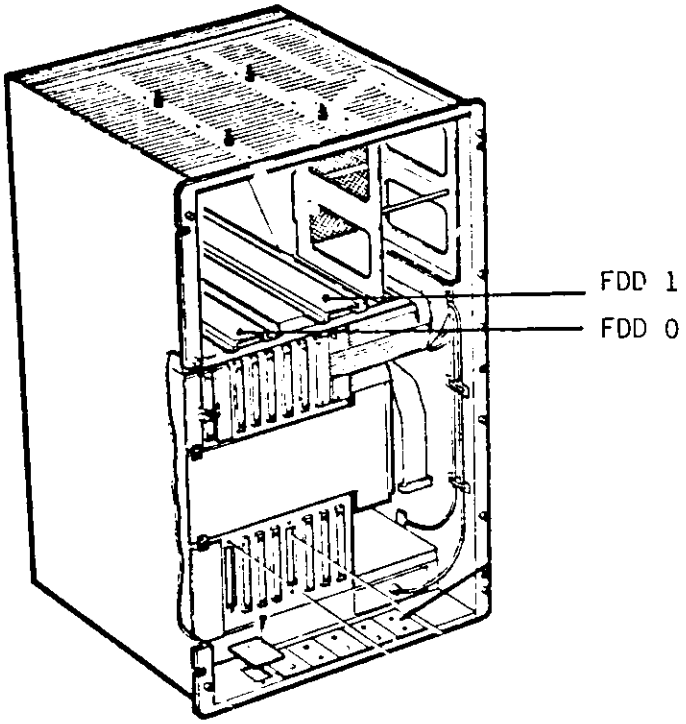
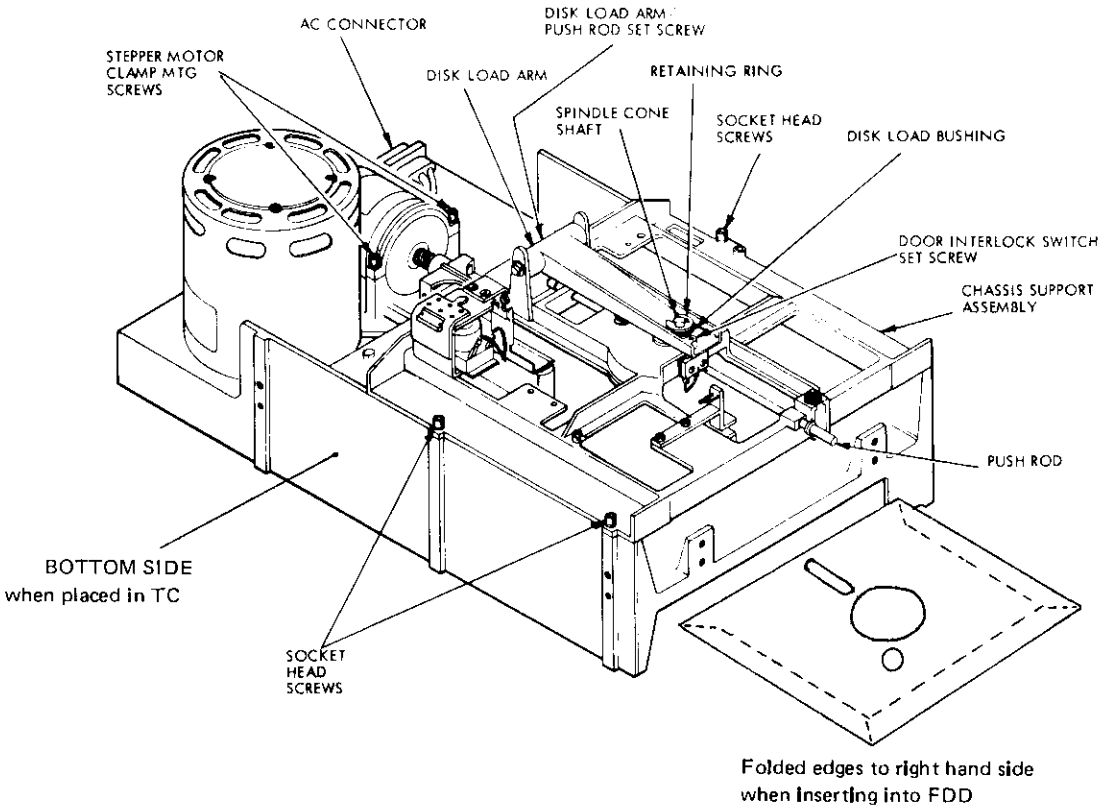
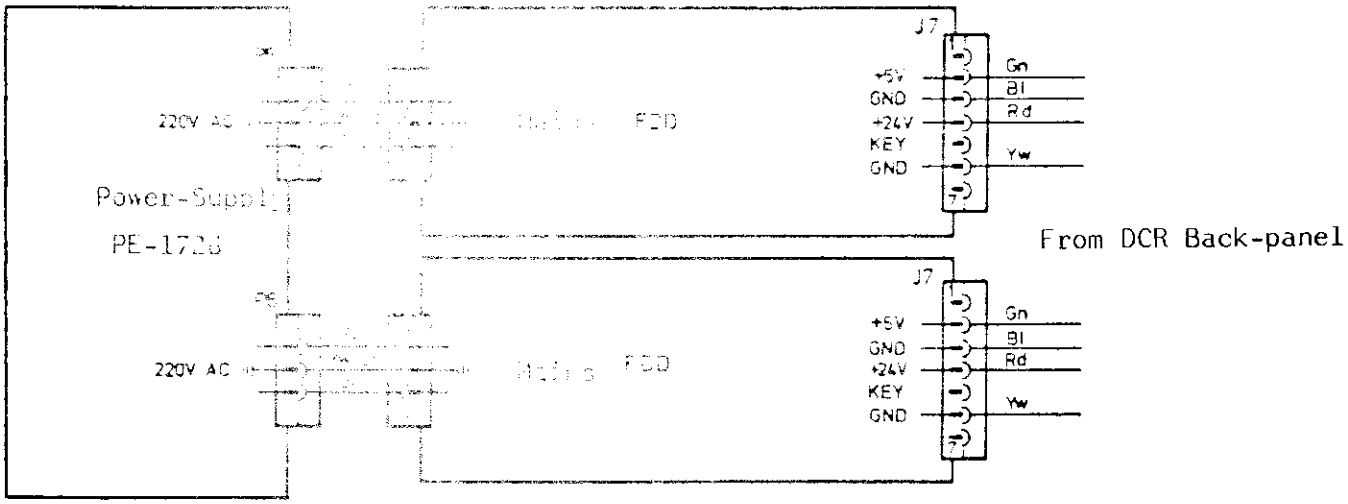


Figure 16.1b JUMPERS ON THE CHFD TC (6810)


FDD 1
FDD 0


AC CONNECTOR
DISK LOAD ARM PUSH ROD SET SCREW
STEPPER MOTOR CLAMP MTG SCREWS
DISK LOAD ARM
RETAINING RING
SPINDLE CONE SHAFT
SOCKET HEAD SCREWS
DISK LOAD BUSHING
DOOR INTERLOCK SWITCH SET SCREW
CHASSIS SUPPORT ASSEMBLY
PUSH ROD
BOTTOM SIDE when placed in TC
SOCKET HEAD SCREWS
Folded edges to right hand side when inserting into FDD



FDD

FDDs slid into their positions are fixed with the screws on top of the rack (if just one FDD is fitted it must be placed to the left). Ensure that:

- The mains cables of the FDDs are connected to P5 and P6 on the PSU (P7 is a mains outlet for the DCR unit).
- The flat cable is connected to the FDDs with the end socket fitted to the left unit (seen from front).

Preparing FDDs

Before FDDs are installed the following preparations must be carried out:

- Ensure that the FDDs are converted into the mains frequency being at hand, 50Hz or 60Hz.
- The 12-gang address switches (1 - 12 on each FDD) must be set as follows:

FDD No.	Location (seen from front)	Switch pos. to be 'ON'
1	Lefthand in Computer Cabinet (1st)	1-5-09
2	Righthand in Computer Cabinet (2nd)	2-6-10
3	Lefthand in Flexible Disc Unit (3rd)	3-7-11
4	Righthand in Flexible Disc Unit (4th)	4-8-12

- FDDs to be placed in lefthand positions (1st and 3rd according to the table above), must be equipped with terminating resistors. The resistors, contained in an IC package (CDC 95 434 500-8), are fitted into a holder below the address switches.

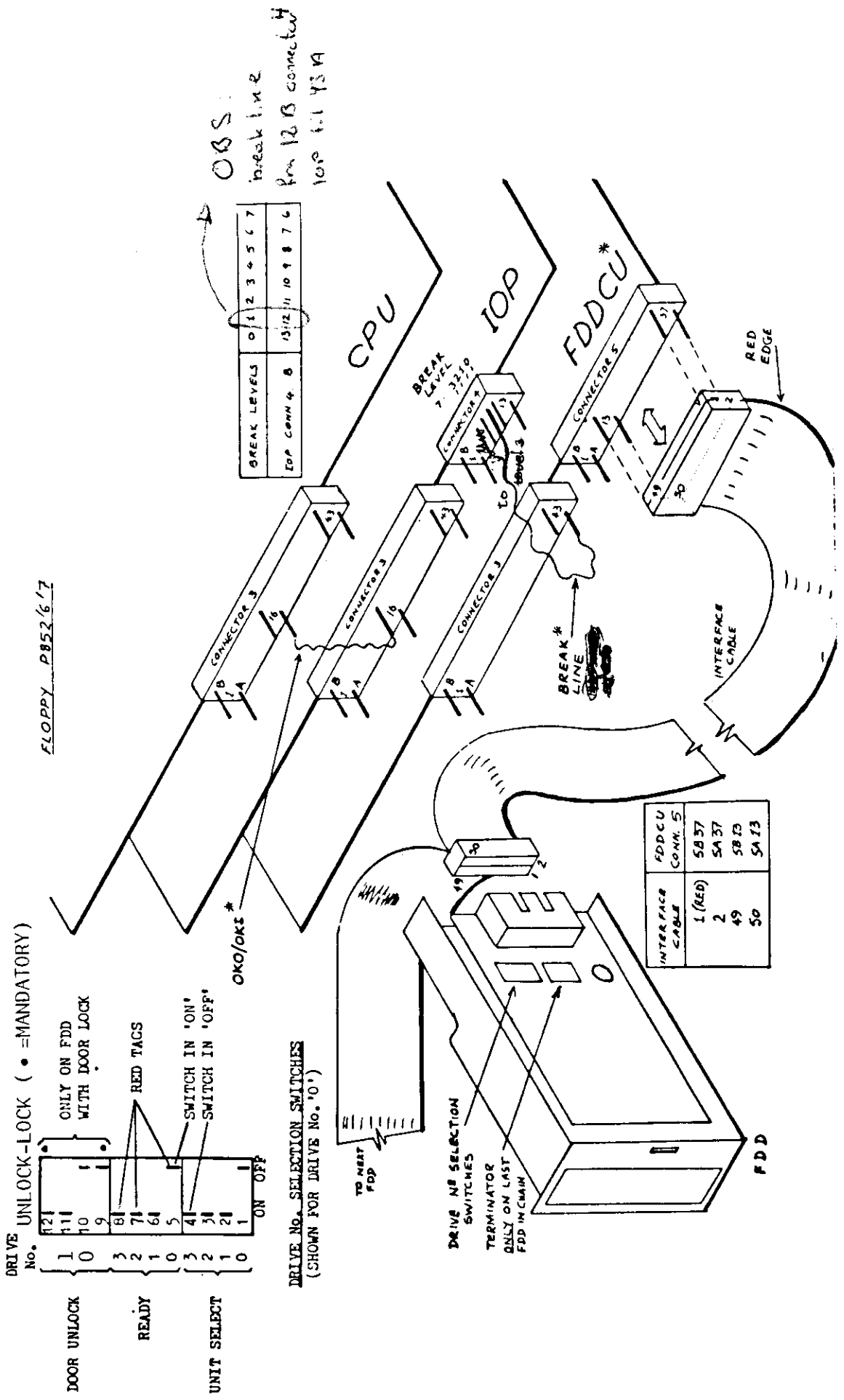


Figure 16.2 INSTALLATION DETAILS

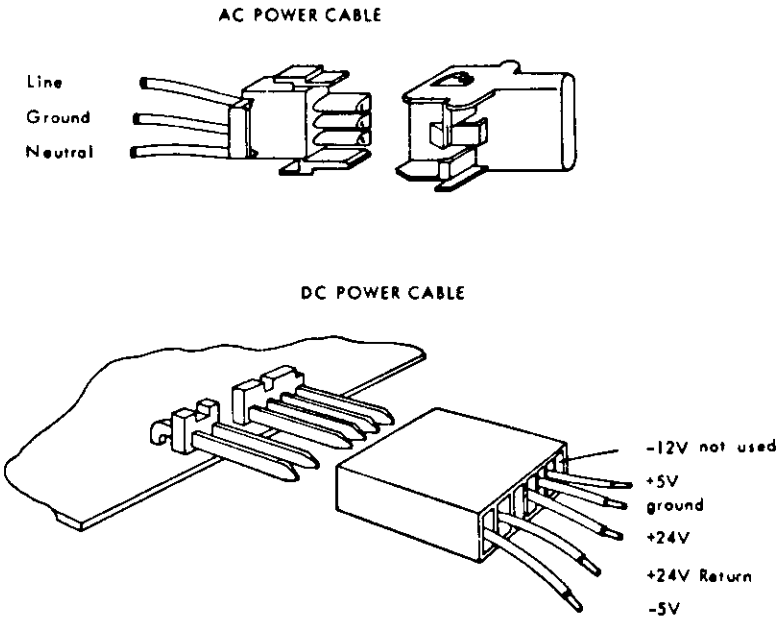


Figure 16.3 FLOPPY DISC DRIVE POWER CONNECTORS

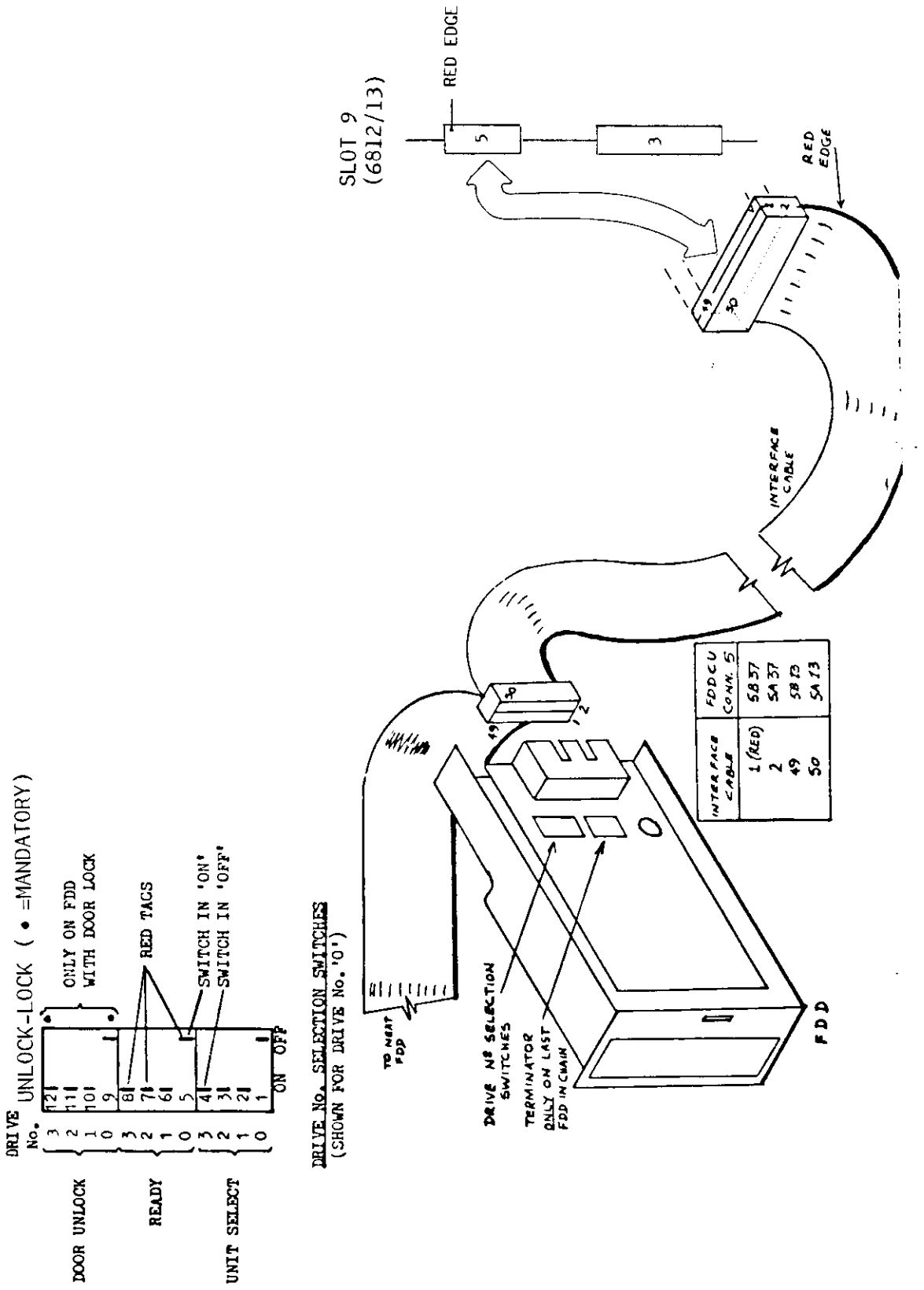


Figure 16.2 INSTALLATION DETAILS

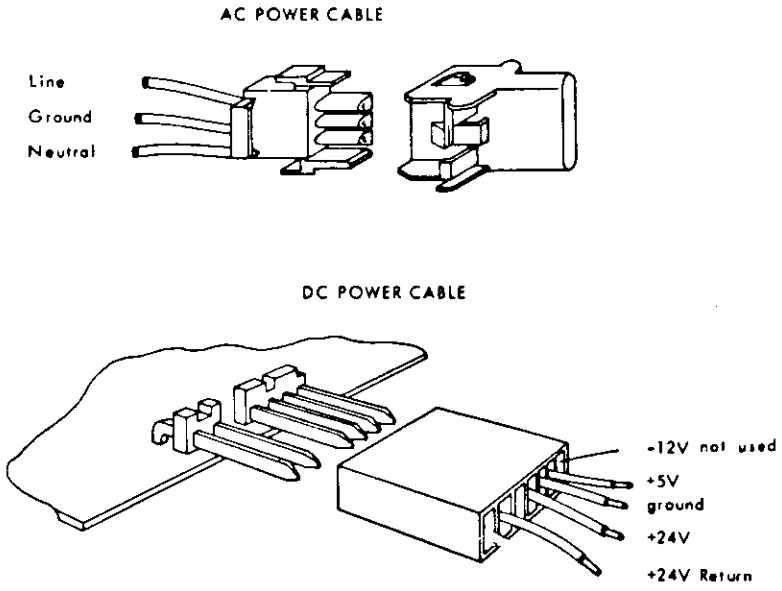
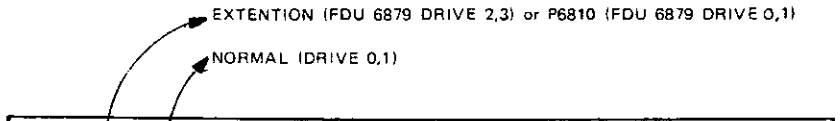


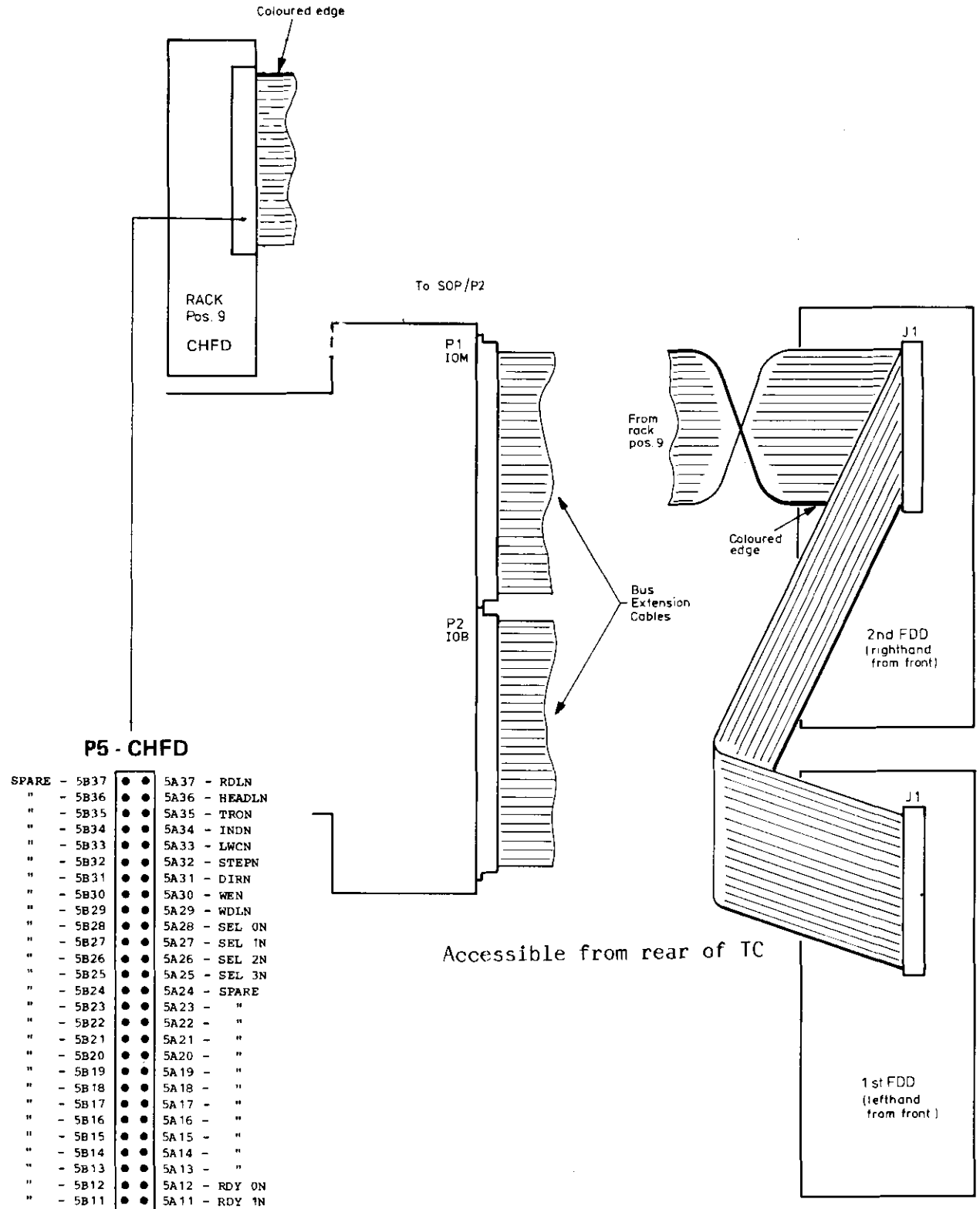
Figure 16.3 FLOPPY DISC DRIVE POWER CONNECTORS

16.3 INTERFACE CONNECTIONS



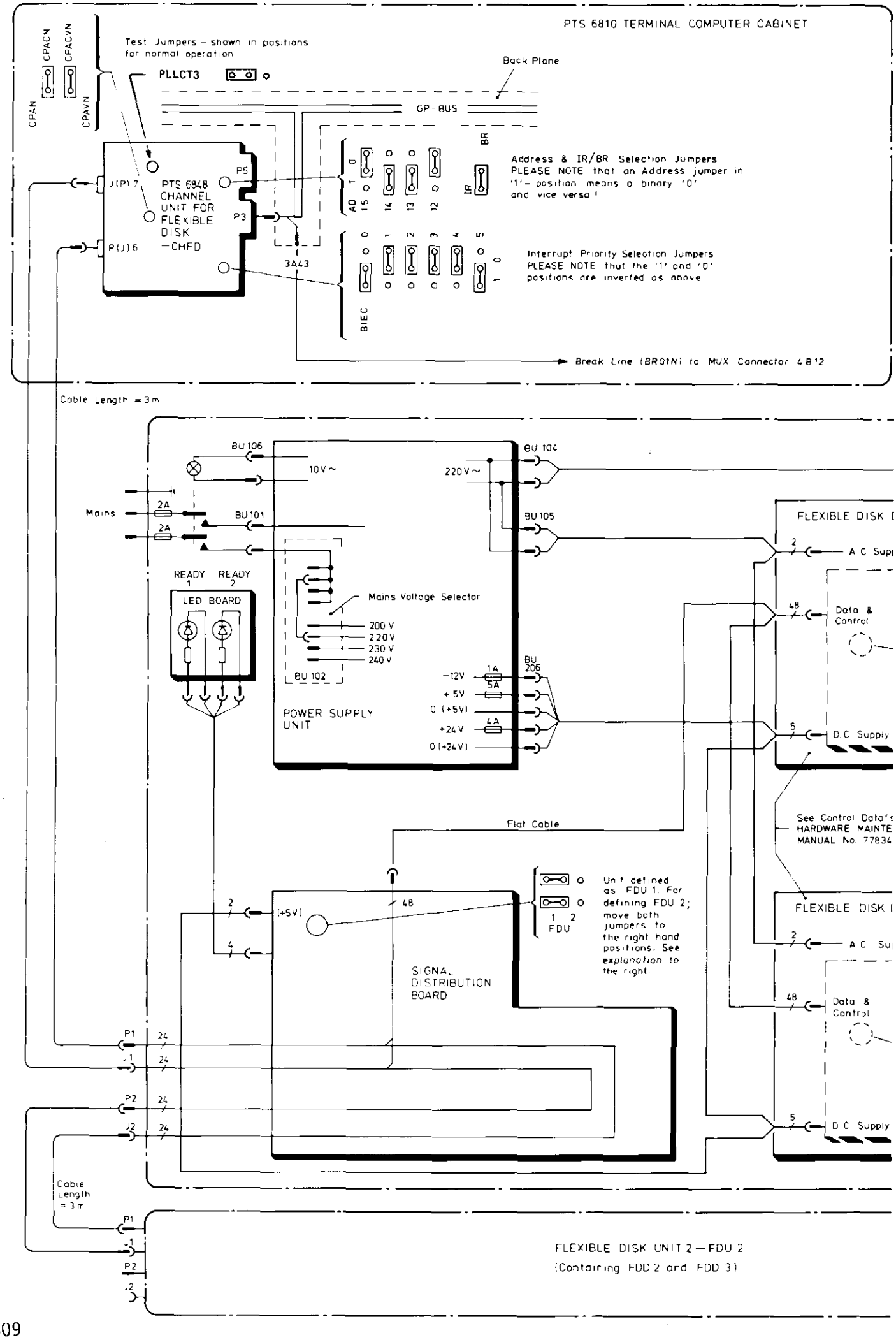
Control Unit				Disc Drive		
Logic Sheet	I/O Conn	I/O Conn	Signal Name		Drive Conn 3M	Drive Conn AMP
				ground	1	A
	7A02	5A37	←RDLN	READ DATA/CLOCK COMPOSITE	2	B
				ground	3	C
	7A03	5A36	HEADLN	HEAD LOAD →	4	D
				ground	5	E
	7A04	5A35	←TR0N	TRACK 00	6	F
				ground	7	H
	7A05	5A34	←INDN	INDEX	8	J
				ground	9	K
	7A06	5A33	LWCN	LOW WRITE CURRENT →	10	L
				ground	11	M
	7A07	5A32	STEPN	STEP →	12	N
				ground	13	P
	7A08	5A31	DIRN	DIRECTION →	14	R
				ground	15	S
	7A09	5A30	WEN	WRITE ENABLE →	16	T
				ground	17	U
	7A10	5A29	WDLN	WRITE DATA →	18	V
				ground	19	W
e	7A11	5A28	SEL0N	UNIT SELECT 1 →	20	X
				ground	21	Y
	7A12	5A27	SEL1N	UNIT SELECT 2 →	22	Z
				ground	23	AA
	7A13	5A26	SEL2N	UNIT SELECT 3 →	24	BB
				ground	25	CC
	6A02	5A25	SEL3N	UNIT SELECT 4 →	26	DD
				ground	27	EE
	6A03	5A12	←RDY0N	UNIT READY INTERRUPT 1	28	FF
				ground	29	HH
	6A04	5A11	←RDY1N	UNIT READY INTERRUPT 2	30	JJ
				ground	31	KK
	6A05	5A10	←RDY2N	UNIT READY INTERRUPT 3	32	LL
				ground	33	MM
	6A06	5A09	←RDY3N	UNIT READY INTERRUPT 4	34	NN
				ground	35	PP
	6A07	5A08	←WRPN	WRITE PROTECT	36	RR
				ground	37	SS
			NOT USED	READ DATA SEPARATED	38	TT
				ground	39	UU
	6A09	5A06	UNLOCK0N	DOOR UNLOCK 1 →	40	VV
				ground	41	WW
	6A10	5A05	UNLOCK1N	DOOR UNLOCK 2 →	42	XX
				ground	43	YY
d				WRITE FAULT	44	ZZ
			NOT USED	ground	45	AB
				WRITE FAULT RESET	46	AC
				ground	47	AD
	6A12	5A02	UNLOCK2N	DOOR UNLOCK 3 →	48	AE
				ground	49	AF
	6A13	5A01	UNLOCK3N	DOOR UNLOCK 4 →	50	AH

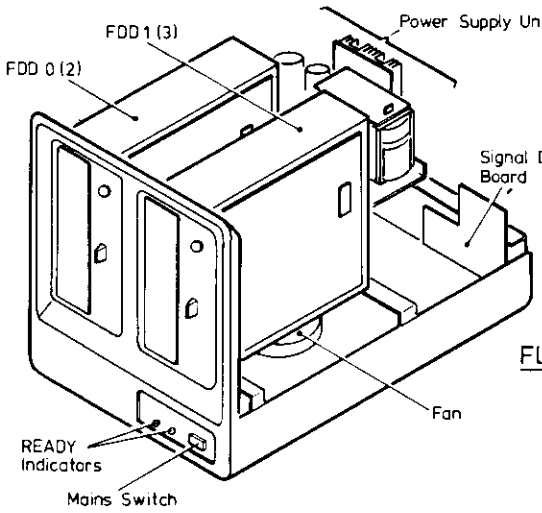
Table 16.1 CU DEVICE INTERFACE



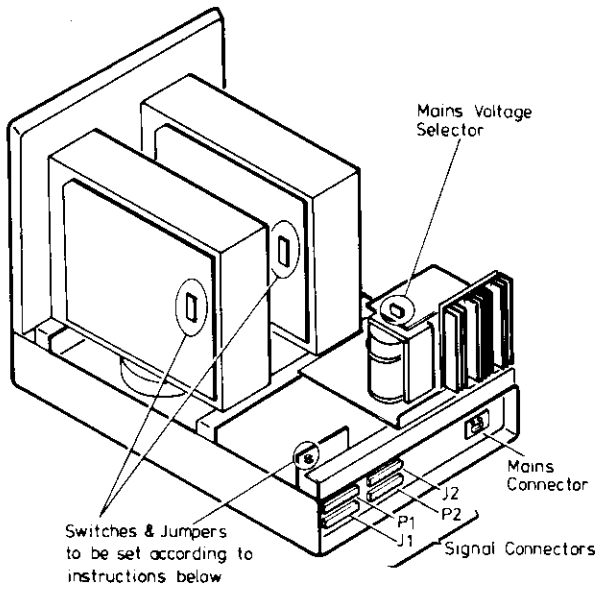
P5 - CHFD

SPARE - 5B37	● ●	5A37 - RDLN
" - 5B36	● ●	5A36 - HEADLN
" - 5B35	● ●	5A35 - TRON
" - 5B34	● ●	5A34 - INDN
" - 5B33	● ●	5A33 - LWCN
" - 5B32	● ●	5A32 - STEPN
" - 5B31	● ●	5A31 - DIRN
" - 5B30	● ●	5A30 - WEN
" - 5B29	● ●	5A29 - WDLN
" - 5B28	● ●	5A28 - SEL 0N
" - 5B27	● ●	5A27 - SEL 1N
" - 5B26	● ●	5A26 - SEL 2N
" - 5B25	● ●	5A25 - SEL 3N
" - 5B24	● ●	5A24 - SPARE
" - 5B23	● ●	5A23 - "
" - 5B22	● ●	5A22 - "
" - 5B21	● ●	5A21 - "
" - 5B20	● ●	5A20 - "
" - 5B19	● ●	5A19 - "
" - 5B18	● ●	5A18 - "
" - 5B17	● ●	5A17 - "
" - 5B16	● ●	5A16 - "
" - 5B15	● ●	5A15 - "
" - 5B14	● ●	5A14 - "
" - 5B13	● ●	5A13 - "
" - 5B12	● ●	5A12 - RDY 0N
" - 5B11	● ●	5A11 - RDY 1N
" - 5B10	● ●	5A10 - RDY 2N
" - 5B09	● ●	5A09 - RDY 3N
" - 5B08	● ●	5A08 - WRPN
" - 5B07	● ●	5A07 - SPARE
" - 5B06	● ●	5A06 - UNLOCK 0N
" - 5B05	● ●	5A05 - UNLOCK 1N
" - 5B04	● ●	5A04 - SPARE
" - 5B03	● ●	5A03 - "
" - 5B02	● ●	5A02 - UNLOCK 2N
" - 5Bo1	● ●	5A01 - UNLOCK 3N


PTS 6810 TERMINAL COMPUTER CABINET
Test Jumpers – shown in positions for normal operation
CPACN
CPACVN
CPAN
CPAVN
PLLCT3
Back Plane
GP-BUS
PTS 6848 CHANNEL UNIT FOR FLEXIBLE DISK –CHFD
J(P)7
P(J)6
P5
P3
3A43
AD
IR
BR
BIEC
Address & IR/BR Selection Jumpers
PLEASE NOTE that an Address jumper in '1' – position means a binary '0' and vice versa !
Interrupt Priority Selection Jumpers
PLEASE NOTE that the '1' and '0' positions are inverted as above
Break Line (BR01N) to MUX Connector 4 B 12
Cable Length = 3 m
BU 106
10 V ~
220 V ~
BU 104
Mains
2A
BU 101
BU 105
READY 1
READY 2
LED BOARD
Mains Voltage Selector
200 V
220 V
230 V
240 V
BU 102
POWER SUPPLY UNIT
BU 206
–12V
+ 5V
0 (+5V)
+24 V
0 (+24V)
1A
5A
4A
FLEXIBLE DISK
A C Supp
Data & Control
D.C Supply
See Control Data's HARDWARE MAINTE MANUAL No. 77834
Flat Cable
(+5V)
SIGNAL DISTRIBUTION BOARD
Unit defined as FDU 1. For defining FDU 2; move both jumpers to the right hand positions. See explanation to the right.
1 2
FDU
P1
J1
P2
J2
24
48
Cable Length = 3 m
FLEXIBLE DISK UNIT 2 – FDU 2
(Containing FDD 2 and FDD 3)



FLEXIBLE DISC UNIT



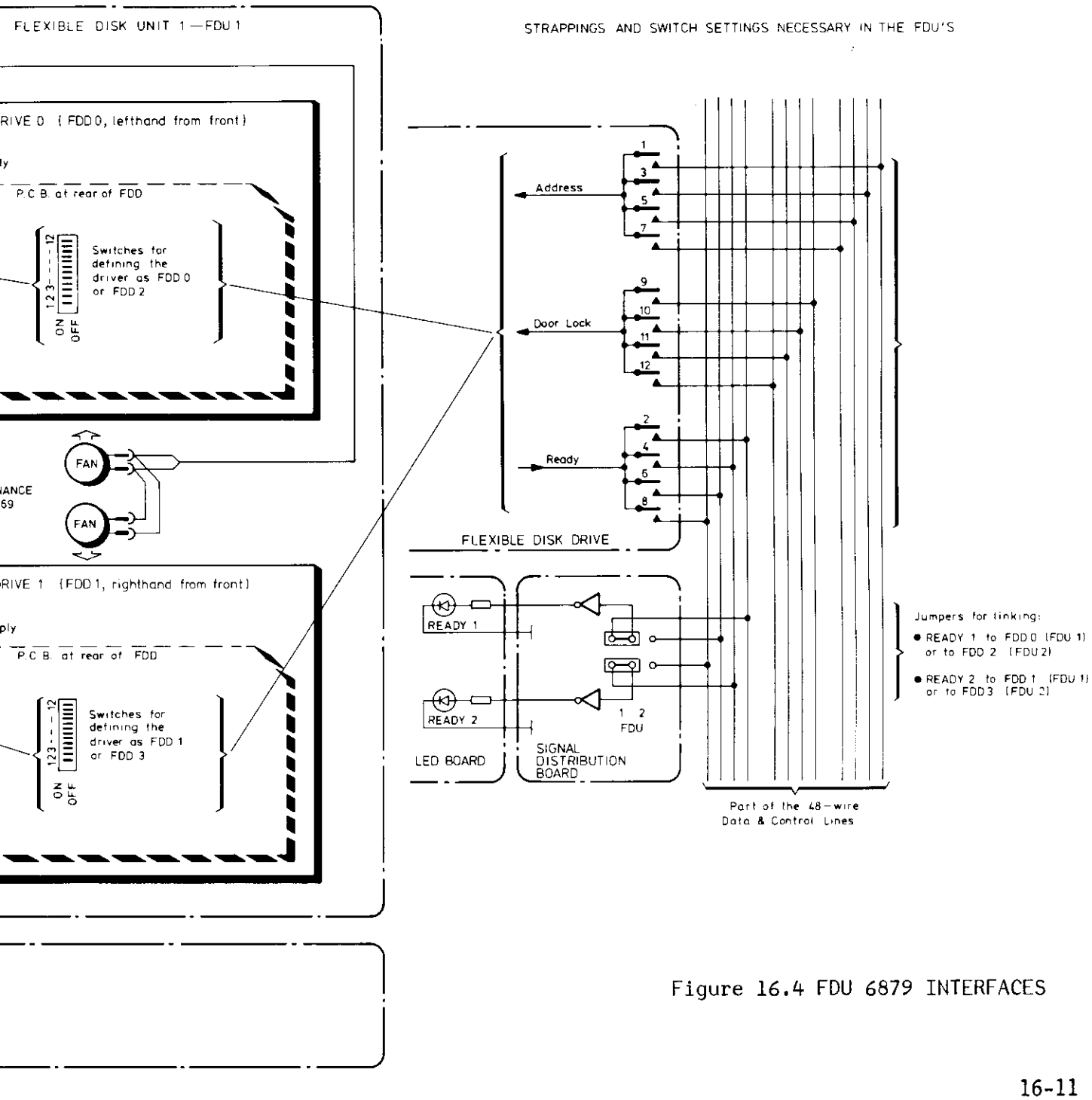


Figure 16.4 FDU 6879 INTERFACES

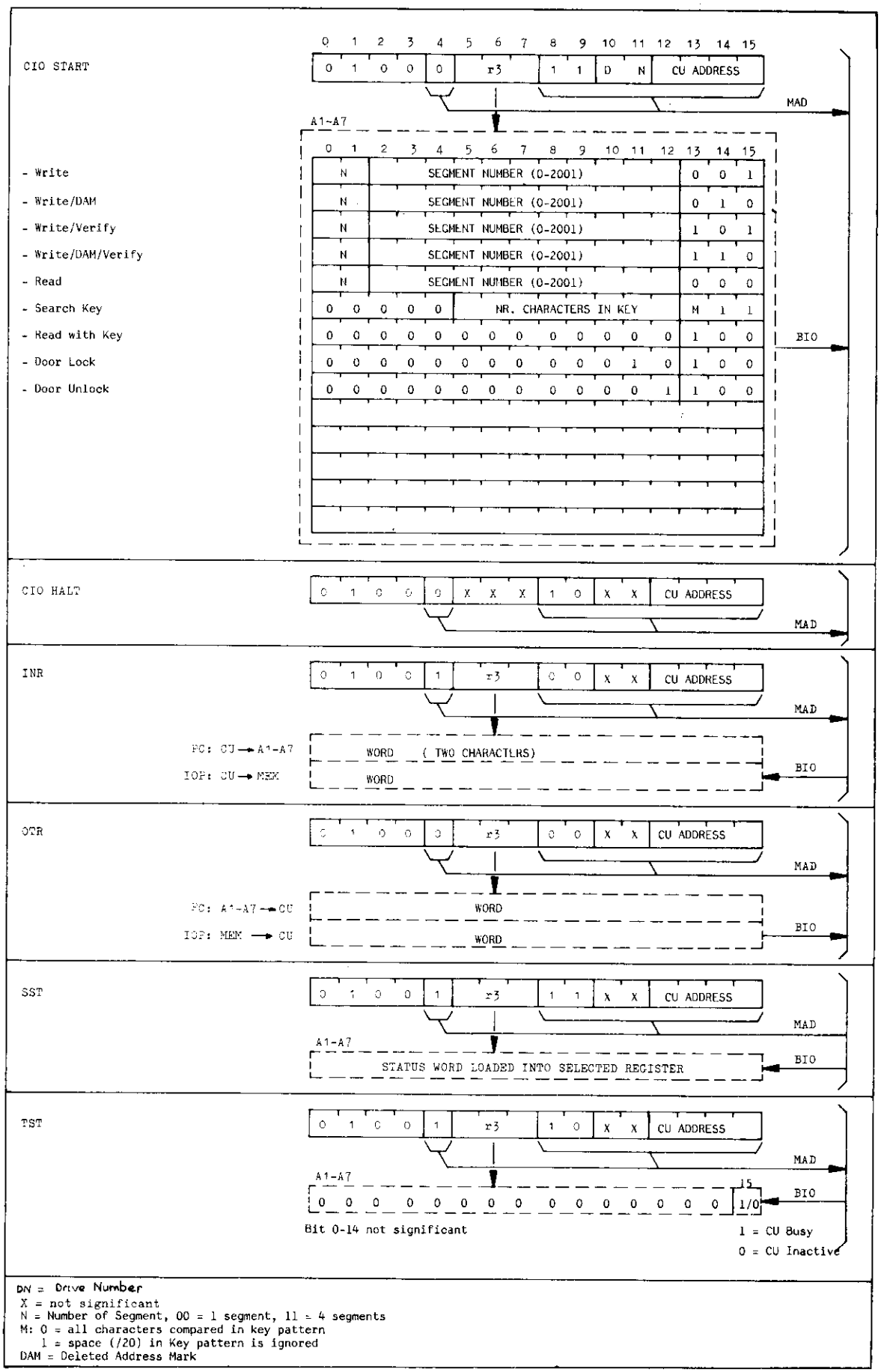


Figure 16.5 INSTRUCTION-/COMMAND-WORD FORMATS

16.4.1 STATUS-WORD

BIO	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Possible Configurations:
	0	0	0	0	0	0	0	0	Drive Number		Y	0	0	0	0	0	Write, Write/DAM performed correctly
	0	0	0	0	Y	0	0	0			Y	0	0	0	0	0	Read, Search Key performed correctly
	0	0	0	0	0	0	0	0			0	0	Y	0	0	0	Read Key Segment performed correctly
	0	0	0	0	0	0	0	0			0	0	0	0	0	0	Door command performed correctly
	0	0	0	0	0	x	x	0			Y	x	x	0	0	x	Write, Write/DAM incorrect
	0	0	0	0	0	x	x	0			Y	x	x	x	0	x	Write/Ver, Write/DAM/Verify incorrect
	0	0	0	0	Y	x	0	0			Y	x	x	x	0	x	Read incorrect
	0	0	x	0	Y	x	0	0			Y	x	x	x	0	x	Search Key incorrect
	0	0	0	0	0	0	0	0			0	x	x	0	0	x	Read Key Segment incorrect
	0	1	0	0	0	0	0	0			0	0	0	0	0	0	Device just became operable
	0	0	0	0	0	0	0	0			0	0	0	0	0	1	Door command not performed

Drive Ready after Not Ready
Key Not Found
Deleted Data Adr. Mark
Record Not Found
Write Protect
Drive (msb) (lsb)
Retry
Program Error
Incorrect Length
Data Fault
Drive Not Operable

Y = bit can be 1 or 0
x = at least one of these bits must be set to 1.

The status bits have the following meanings:

- 15 means command attempted on a Non-Operable Drive or the selected drive goes non-operable. (A non-selected drive going inoperable does not set CU status.) Note: a diskette inserted upside-down will cause the non-operable condition.
- 13 means Data Fault: In the Write/Verify or Write/DAM/Verify mode a CRC error has been detected during the verify reading. In the Read mode there is data-field CRC error non-recoverable with read retries (bit 10 also set). In the Search Key mode there is a non-recoverable data-field CRC error in any segment and the key is not found in any other segment (bits 2, 10 also set).
- 12 means Incorrect Length: Block length specified by channe does not correspond to number of segments to be transferred or required block length. Allowed lengths are:

  Any Write command $\leq (N+1) \times 64$ words

  Read $(N+1) \times 64$ words

  Search Key $\frac{n}{2} + 2$ words, or $\frac{n+1}{2} + 2$ words
  (n = even or odd number of characters)

  Read Key Segment 65 words

- 11 means Program Error:

  — Channel sends INR instead or OTR during any Write or Sea ch Key, or Key command.

  — Segment number command is greater than 2001 or converts to a track number greater than 76.

  — The first segment number is greater than the second segment number for Search Key.

  — Unknown command.

Track	Sector	Segment		Hexadecimal
00	1-26	0- 25	Software Limit	/000-/019
01	1-26	26- 51		/01A-/033
02	1-26	52- 77		/034-/04D
---	---	---		---
73	1-26	1898-1923		/76A-/783
74	1-26	1924-1949		/784-/79D
75	1-26	1950-1975		/79E-/787
76	1-26	1976-2001		/788-/7D1

- 10 means Retry: ID-field or data-field CRC error caused a read-retry procedure, whether or not the error was recovered.
- 9,8 mean Drive Number:

8	9	Drive
0	0	0
0	1	1
1	0	2
1	1	3

- 6 means Write Protect: Set if any Write command is attempted on a drive with a write-protected diskette loaded.
- 5 means Record Not Found:
  - Unrecoverable ID-Field CRC error during any Write command or Read command.
  - Unrecoverable ID- or data-field error and key is not found, during Search Key.
- 4 means Deleted Data Address Mark: Detected in a segment read during Read command or in the located key segment during a Search Key command.
- 2 means Key Not Found: The key segment not found within the search area of a Search Key command. There may also be a Record Not Found error.
- 1 means Drive Ready After Not Ready: Detected when the CU is in inactive state — the CU sends an interrupt request and goes to Wait Status state.

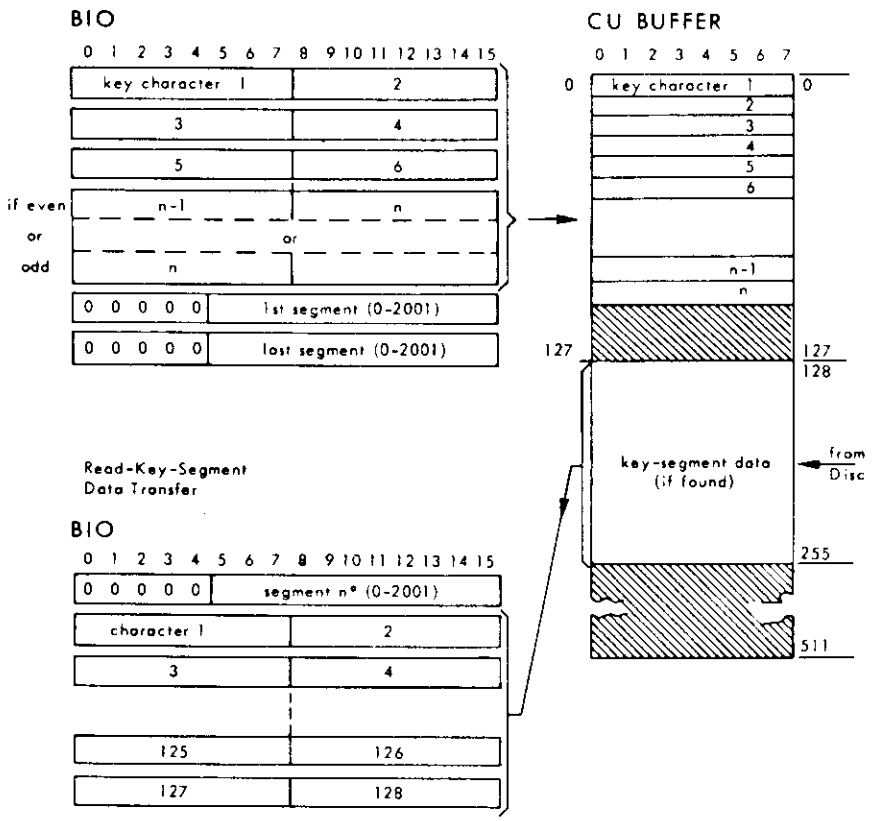


Figure 16.6 SEARCH-KEY, READ-KEY PATTERN/DATA LOADING

16.5 SHORT DESCRIPTIOON TESTPROGRAM

Pertst

Codes: 70-79

see detailed description

```
         DATE  82-05-05        IDENT    FDDWRT    ON PROGRAMMED CHANNEL


0000                           IDENT    FDDWRT                ON PROGRAMMED CHANNEL
0001                    *DATE: 820505 FOR PTS
0002                    *PROGRAM FOR WRITE OR WRITE KEY COMMANDS
0003                    *       REG. A3  COMMAND                        ***
0004                    *       REG. A1  NUMBER OF WORDS TO EXCHANGE    ***  <- SEE NOTE
0005                    *       REG. A2  BUFFER ADDRESS IN MEMORY       ***
0006
0007                    *AFTER EXECUTION THE PROGRAM STOPS AT ADDR. /86
0008                    *       REG. A7  STATUS WORD
0009
0010                           AORG     /80
0011 0080 FFFF                 DATA     /FFFF
0012 0082 0000                 DATA     0
0013 0084 207F          START  HLT                           STATUS IN A7
0014 0086 20BF                 INH
0015 0088 8508                 LDR      A5,A2                SAVE A2
0016 008A 8604                 LDR      A6,A1                SAVE A1
0017 008C 43C9                 CIO      A3,1,9               START CONTROLLER
0018 008E 5C04                 RB(4)    *-2
0019 0090 8434          OUT    LDR*     A4,A5                LOAD WORD
0020 0092 4409          OTR    OTR      A4,0,9               OUTPUT WORD
0021 0094 5408                 RF(4)    SST
0022 0096 1502                 ADK      A5,2                 UPDATE BUFFER ADDRESS
0023 0098 1E01                 SUK      A6,1                 DECREMENT NO OF EXCHANGES
0024 009A 5C0C                 RB(4)    OUT
0025 009C 4489                 CIO      A4,0,9               STOP CONTROLLER
0026 009E 4FC9          SST    SST      A7,9                 GET STATUS
0027 00A0 5C10                 RB(4)    OTR
0028 00A2 5F20                 RB       START
0029                           END      START


            SYMBOL TABLE

   OTR     0092  A   OUT     0090  A   SST     009E  A   START   0084  A

            ASS.ERR.    0000
:EOF
PROG ELAPSED TIME:  00H-00M-08S-920MS-
```

```
         DATE  82-05-05        IDENT    FDDRD     ON PROGRAMMED CHANNEL


0000                           IDENT    FDDRD                 ON PROGRAMMED CHANNEL
0001                    *DATE: 820505 FOR PTS
0002                    *PROGRAM FOR READ OR READ KEY COMMANDS
0003                    *       REG. A3  COMMAND                        ***
0004                    *       REG. A1  NUMBER OF WORDS TO EXCHANGE    ***  <- SEE NOTE
0005                    *       REG. A2  BUFFER ADDRESS IN MEMORY       ***
0006
0007                    *AFTER EXECUTION THE PROGRAM STOPS AT ADDR. /86
0008                    *       REG. A7  STATUS WORD
0009
0010                           AORG     /80
0011 0080 FFFF                 DATA     /FFFF
0012 0082 0000                 DATA     0
0013 0084 207F          START  HLT                           STATUS IN A7
0014 0086 20BF                 INH
0015 0088 8508                 LDR      A5,A2                SAVE A2
0016 008A 8604                 LDR      A6,A1                SAVE A1
0017 008C 43C9                 CIO      A3,1,9               START CONTROLLER
0018 008E 5C04                 RB(4)    *-2
0019 0090 4C09          INR    INR      A4,0,9               READ WORD
0020 0092 540A                 RF(4)    SST
0021 0094 8435                 STR      A4,A5                WORD TO BUFFER
0022 0096 1502                 ADK      A5,2                 UPDATE BUFFER ADDRESS
0023 0098 1E01                 SUK      A6,1                 DECREMENT NO OF EXCHANGES
0024 009A 5C0C                 RB(4)    INR
0025 009C 4489                 CIO      A4,0,9               STOP CONTROLLER
0026 009E 4FC9          SST    SST      A7,9                 GET STATUS
0027 00A0 5C12                 RB(4)    INR
0028 00A2 5F20                 RB       START
0029                           END      START


            SYMBOL TABLE

    INR     0090  A   SST     009E  A   START   0084  A

            ASS.ERR.    0000
:EOF
PROG ELAPSED TIME:  00H-00M-08S-760MS-
```

NOTE: *** See page 18. Take care that bit 0,1 in A1 are now zero.

```
       DATE  82-05-05          IDENT    FDDRWD     ON IOP CHANNEL

                          IDENT     FDDRWD                    ON IOP CHANNEL
                    *DATE: 820505 FOR RTS
                    *PROGRAM FOR WRITE AND READ COMMANDS
                    *         REG. A1  FIRST CONTROL WORD
                    *         REG. A2  SECOND CONTROL WORD (BUFFER ADDRESS)
                    *         REG. A3  COMMAND

                    *AFTER EXECUTION PROGRAM STOPS AT ADDRESS /86
                    *         REG. A7  STATUS WORD

                              ADRG      /80
     0080 FFFF                DATA      /FFFF
     0082 0000                DATA      0
     0084 207F      START     HLT                                 STATUS IN A7
     0086 20BF                INH
                    *         PREPARE IOP
     0088 7112                WER       A1,/12                    FIRST CONTROL WORD
     008A 7213                          A2,/12                    SECOND CONTROL WORD
     008C 43C9                          A3,1,9                    START CONTROLLER
     008E 5C04                RBI       4
     0090 4FC9                SST       A7,9                      GET STATUS
     0092 5C04                RBI       4
     0094 5F12                RB        START
                              END       START


             SYMBOL TABLE

   START   0084  A

             ASS.ERR.     0000
 :EOF
 PROG ELAPSED TIME:  00H-00M 075-450MS
```

0 1 2 [illegible] 12 13 14 15

WRITE (WRITE VERIFY)

A1 | 1 1 0 0 | [illegible] to exchange n/2 | /C040 max. for 1 segment
A2 | Start addr. [illegible] BUFFER |
A3 | N | Segm[illegible] | [illegible] 0 1 | /0001-/3C19 (/0005-/3C1D)

SEARCH

A1 | 1 1 0 0 | No.of words to exch. n/2-2 |
A2 | Start address KEY BUFFER |
A3 | 0 0 0 0 0 | Characters in KEY | 0 1 1 |

READ KEY

A1 | 1 0 0 0 | n/2 [illegible] |
A2 | Start addr. of [illegible] KEY BUFFER |
A3 | 0 0 0 0 0 0 0 0 0 0 0 0 0 | 1 0 0 |

READ

A1 | 1 0 0 0 | n/2 | /8040 max. for 1 segment
A2 | Start address READ BUFFER |
A3 | N | Segment no. (0-1923) | 0 0 0 | /0000-/3C18

Number of Segments:	Number of Characters:
N = 00	n 128
01	256
10	384
11	512

```
        DATE  82-05-05        IDENT    FLTST     ON PTS      CHFD AT HARDWARE CHANNEL


0000                          IDENT    FLTST                 ON PTS
0001                    *DATE: 820505 FOR PTS
0002                    *         READ-WRITE TEST OF DISCETTE
0003                    *        PROGRAM PRESET:
0004                    *                 FOR DRIVE 0 , DA /09
0005                    *                 START SEGMENT NUMBER 0
0006                    *                 WRITTEN DATA /30 (ASCII FOR '0')
0007
0008                    *        PROGRAM STOP AT /8C:
0009                    *                 WRITTEN DATA CAN BE CHANGED IN A2
0010                    *                 START SEGMENT NUMBER CAN BE CHANGED IN A5
0011                    *                 AFTER EXECUTION DISCETTE IS CORRECT
0012
0013                    *        ERROR STOP ON /E2:
0014                    *                 STATUS IN A6
0015                    *                 SEGMENT NUMBER IN A5
0016
0017
0018                    *                 A5 BIT CONFIGURATION
0019                                                    0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
0020                                                    * *(     SEGMENT NUMBER     )*  *  *
0021                          ADRG     /80
0022 0080 FFFF                DATA     /FFFF
0023 0082 0000                DATA     0
0024 0084 8220 3030    START  LDKL     A2,/3030              PRESET CHARACTER 0
0025 0088 0500                LDK      A5,0                  PRESET SEGMENT 0
0026 008A 207F         BEGIN  HLT
0027 008C 20BF                INH
0028 008E 0100                LDK      A1,0                  RESET INDEX FOR BUFFER
0029 0090 8245 00EC           ST       A2,BUF,A1             FILL THE WRITE BUFFER
0030 0094 1102                ADK      A1,2
0031 0096 E920 0200           CWK      A1,/200
0032 009A 5D0C                RB(5)    *-/A
0033 009C 0100                LDK      A1,0                  RESET EXECUTE POINTER
0034 009E 8720 FC1D           LDKL     A7,/FC1D              END SEGMENT
0035 00A2 9520 C005           ADKL     A5,/C005              SELECT WRITE VERIFY WITH 4 SEGMENTS
0036                    *        PREPARE THE IOP
0037 00A6 8320 C100    RET    LDKL     A3,/C100
0038 00AA 8420 C040           LDKL     A4,/C040              FOR 1 SEGMENT MODE
0039 00AE F045 00E4           EX       WER,A1                EXECUTE WER A3 OR WER A4.
0040 00B2 8420 00EC           LDKL     A4,BUF
0041 00B6 7413                WER      A4,/13
0042 00B8 45C9                CIO      A5,1,9                START CONTROLLER
0043 00BA 5C04                RB(4)    *-2
0044 00BC 4EC9                SST      A6,9                  GET STATUS
0045 00BE 5C04                RB(4)    *-2
0046                    *        CHECK STATUS
0047 00C0 A620 641D           ANKL     A6,/641D
0048 00C4 5010                RF(0)    CONT                  STATUS OKE
0049 00C6 8104                LDR      A1,A1                 CHECK  4 SEGMENT OR 1 SEGMENT
0050 00C8 5116                RF(1)    STOP
0051                    *        STATUS IS WRONG CHANGE TO WRITE VERIFY SEGMENT BY SEGMENT
0052 00CA 9D20 C000           SUKL     A5,/C000
0053 00CE 1102                ADK      A1,2                  UPDATE EXECUTE POINTER FOR 1 SEGMENT MOD
0054 00D0 B720 C000           XRKL     A7,/C000              CHANGE    TO 1 SEGMENT MODE
0055 00D4 5F30                RB       RET                   DO THE LAST SEGM. AGAIN IN 1 SEGMENTMODE
0056 00D6 F045 00E8    CONT   EX       UPDSEG,A1             NEXT SEGMENTS TO DO
0057 00DA ED1C                CWR      A5,A7                 IS IT THE LAST ONE
0058 00DC 5D38                RB(5)    RET                   NO
0059 00DE 5F58                RB       BEGIN-2               YES
0060 00E0 207F         STOP   HLT                           STATUS ERROR
0061 00E2 5F5C                RB       BEGIN-2               RESTART
0062 00E4 7312         WER    WER      A3,/12
0063 00E6 7412                WER      A4,/12
0064 00E8 1520         UPDSEG ADK      A5,/20
0065 00EA 1508                ADK      A5,8
0066 00EC              BUF    RES      /100
0067                          END      START


           SYMBOL TABLE

  BEGIN   008A  A   BUF     00EC  A   CONT    00D6  A   RET     00A6  A
  START   0084  A   STOP    00E0  A   UPDSEG  00E8  A   WER     00E4  A


           ASS.ERR.    0000
:EOF
PROG ELAPSED TIME:  00H-00M-16S-760MS-
```

```
        DATE  82-05-12        IDENT    FLIPLS

0000                          IDENT    FLIPLS
0001                    *DATE: 820505 FOR PTS
0002                    * FLIPLS IS A PROGRAM THAT ENABLES TO LOAD 99
0003                    *PROGRAMS FROM 0.25M FLEXIBLE DISC
0004                    *WITHOUT EXTENDED OR FULL CONTROLPANEL (EFP/CFP)
0005
0006                    *THE PROGRAMS AS WELL FLIPLS CAN BE WRITTEN ON FLOPPY BY
0007                    *THE PROGRAMS :FDDWRT OR FDDRWD
0008
0009                    *IN THE PROGRAMS TO BELOADED WITHOUT EFP/CFP HLT INSTR IS NOT ALLOWED
0010                    *THE PROG FLIPLS SHOULD BE WRITTEN ON FLOPPY IN SEGMENT 4
0011                    *OTHER PROGRAMS MAY NOT BE LONGER THEN 4 SEGMENTS(=512 BYTES)
0012                    * PROG 1 WRITTEN IN SEGMENT 8 TO 11
0013                    *PROG 2                    12 TO 15
0014                    *PROG 3                    16 TO 19 AND SO ON
0015                    *WRITE ON THE LABEL WHAT PROGRAMS ARE ON AND WHAT IS
0016                    *THE FIRST FREE SEGMENT IN CASE YOU WANT TO ADD PROGRAMS
0017
0018                    *NOW THE PROGRAM FLIPLS :
0019                          AORG     /80
0020 0080 FFFF 0000           DATA     /FFFF,0
0021 0084 20BF                INH                          NO INTERRUPTS
0022 0086 8720 0780           LDKL     A7,/0780            FOR LIGHTING THE SOP LAMPS
0023 008A 472E                OTR      A7,0,/2E
0024 008C 41EE                CIO      A1,1,/2E            START SOP
0025 008E 4B2E                INR      A3,0,/2E            READ 1E SOP SWITCH
0026 0090 5C04                RB(NA)   *-2                  )
0027 0092 4D2E                INR      A5,0,/2E            READ SECOND SOP SWITCH
0028 0094 5C04                RB(NA)   *-2
0029                    *TRANSLATE FIRST SOP SWITCH VALUE RESULT IN A4
0030 0096 3B46                SLL      A3,6
0031 0098 3B62                SRL      A3,2
0032 009A 3B90                SLN      A3,A4
0033                    *IF A4 IS /A THEN SOP SW 10 IS DEPRESSED AND A4 IS MADE 0
0034 009C EC20 000A           CWK      A4,/A
0035 00A0 5402                RF(NE)   *+4
0036 00A2 0400                LDK      A4,0
0037                    *TRANSLATE SECOND SOP SWITCH RESULT IN A6
0038 00A4 3D46                SLL      A5,6
0039 00A6 3D62                SRL      A5,2
0040 00A8 3D98                SLN      A5,A6
0041                    *IF NOW A6 IS /A THEN ALSO MAKE A6 0
0042 00AA EE20 000A           CWK      A6,/A
0043 00AE 5402                RF(NE)   *+4
0044 00B0 0600                LDK      A6,0
0045                    *TRANSLATE THE DECIMAL NUMBER INTO HEXADECIMAL
0046 00B2 8410                LDR      A4,A4               CHECK IF FIRST WAS 0
0047 00B4 500C                RF(0)    CONT
0048                    *CONVERT THE FIRST VALUE
0049 00B6 030A                LDK      A3,/A
0050 00B8 0700                LDK      A7,0
0051 00BA 970C                ADR      A7,A3
0052 00BC 1C01                SUK      A4,1
0053 00BE 5C06                RB(4)    *-4
0054 00C0 841C                LDR      A4,A7               LOAD RESULT IN A4
0055 00C2 9418          CONT  ADR      A4,A6               ADD THE FIRST AND THE SECOND VALUE
0056                    *CALCULATE THE SEGMENT NUMBER AND PREPARE FOR READING
0057 00C4 1401                ADK      A4,1
0058 00C6 3C45                SLL      A4,5
0059 00C8 9420 C000           ADKL     A4,/C000            4 SEGMENTS
0060 00CC 0680                LDK      A6,/80              BASE ADDRESS
0061 00CE 0F50                AB       /50                 GOTO BOOTSTRAP TO LOAD PROGRAM
0062
0063
0064
0065                    *OPERATING:
0066                    *IPL FROM FLOPPY NORMALLY
0067                    * IF YOU WANT PROGRAM NUMBER 3 TO BE LOADED THEN DEPRESS
0068                    *AFTER LAMPS 1 UNTIL 4 ARE LIT*
0069                    *FIRST SW 10 (=0)AND THEN SOP SW3(=3)
0070                    *NOW THE SELECTED PROGRAM WIL BE LOADED
0071
0072                          END

           SYMBOL TABLE

    CONT    00C2  A

           ASS.ERR.    0000
   :EOF
   PROG ELAPSED TIME:  00H-00M-00S-000MS-
```

PROGRAMS LOADED WITH FLIPLS
ARE STORED AT ADDRESS /80 AND ONWARDS
BUT STARTED FROM ADDRESS /84

16.8 OPERATING FREQUENCY CONVERSION

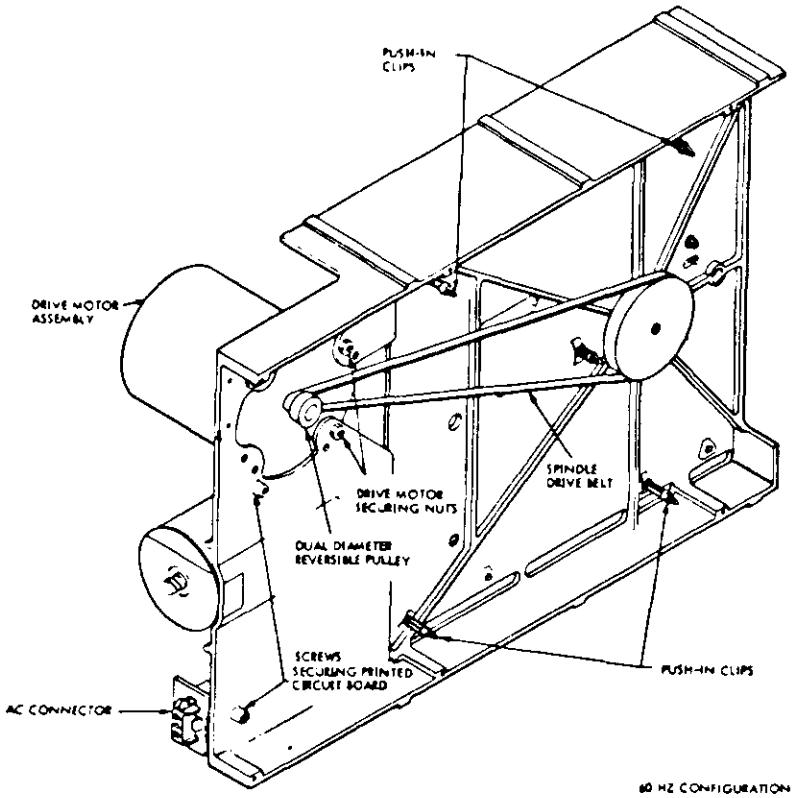
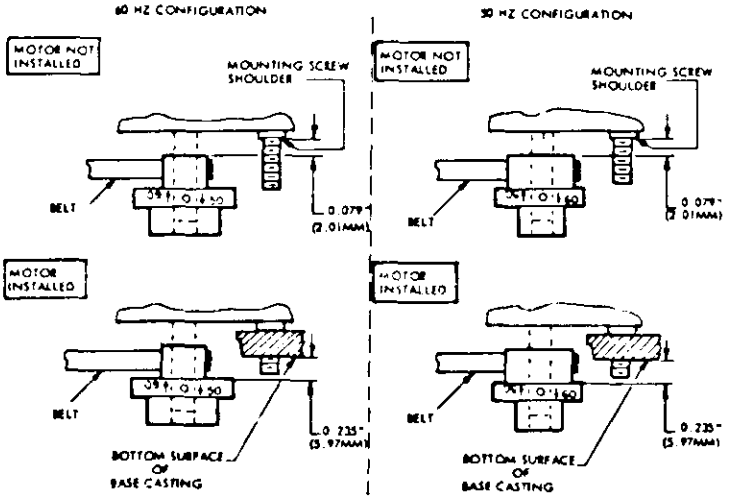


Figure A

Figure B



OPERATING FREQUENCIES CONVERSION PROCEDURE

This procedure should be used to convert the FDD unit from 50Hz operation to 60Hz operation or vice versa. This is accomplished by reversing the dual diameter reversible pulley on the spindle motor shaft using the following steps:

- Remove AC power
- Disconnect I/O cable from J1 on the printed circuit board
- Disconnect harnesses from J2, J3, J4, J5 and J6 on the board
- Remove two screws from board adjacent to connector J1 (Figure A)
- Remove board by detaching it from the four push-in clips shown in Figure A
- Remove the belt from the spindle motor pulley (accessible from the under side of unit)
- Loosen set-screw and remove pulley
- Reverse pulley and replace on motor shaft
- Position pulley allowing tolerance of 0.079" (2.01 mm) ± 0.010" (0.254 mm) between shoulder of motor mounting screws and pulley (Figure B)
- Tighten down set-screw
- Replace belt and printed circuit board

NOTE

IT IS IMPORTANT THAT THE NEW OPERATING FREQUENCY IS MARKED ON THE UNITS RATING NAMEPLATE!

Figure 16.7 FDD FREQUENCY CONVERSION INSTRUCTIONS