LIST OF ILLUSTRATIONS

LIST OF TABLES

22.1 CHDU-IDENTIFICATIONS

Type-Number:	PTS6845, P825-040
Testprogram:	BCDC2 for both disc-drives 0,7 usec memory obliged
Channel:	DMA OKI 3B16, OKO 3A16
Devices	2x 80Mb drives, (CDC 9762) PTS 6877 Cartridge 80Mb, (CDC 9877) PTS
Power consumption:	+5V, 8.0 A -5V, 0.4 A

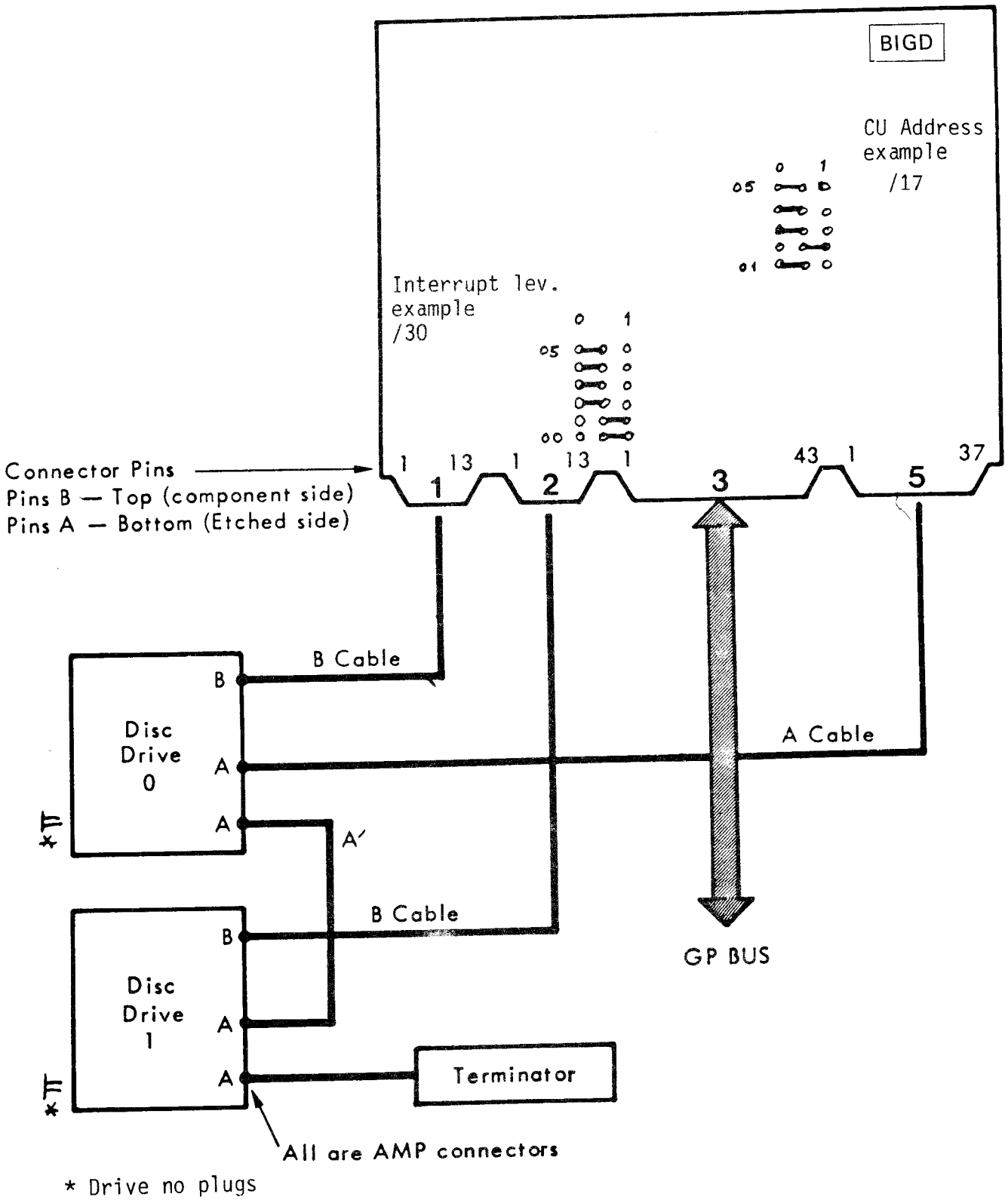


Figure 22.1 STRAPSETTING AND INTERFACE

Signal	Con. 5	AMP Con.	Device Name, Remarks
A Cable Output Signals			
SEL, N	A37, B37	25, 22	UNIT SELECT, Disc Selection
TAG1, N	A12, B12	49, 46	Cylinder Selection
TAG2, N	A13, B13	51, 48	Head Selection
TAG3, N	A25, B25	55, 52	Control Selection
BUS0, N	A8, B8	26, 23	
BUS1, N	A9, B9	27, 24	
BUS2, N	A10, B10	31, 28	
BUS3, N	A11, B11	32, 29	
BUS4, N	A31, B31	33, 30	Bit 0-9, Data Lines
BUS5, N	A32, B32	37, 34	
BUS6, N	A33, B33	38, 35	
BUS7, N	A34, B34	39, 36	
BUS8, N	A35, B35	43, 40	
BUS9, N	A36, B36	44, 41	
AD0, N	A7, B7	4, 1	
AD1, N	A28, B28	5, 2	UNIT SELECT 0-3, Disc Address
AD2, N	A29, B29	7, 3	
AD3, N	A30, B30	12, 8	
OCD, N	A6, B6	20, 16	Open Cable Detector
A Cable Input Signals			
IND, N	A3, B3	13, 10	INDEX Pulse
SEC, N	A27, B27	77, 74	Not Used (grounded)
SER, N	A5, B5	78, 75	SEEK ERROR
ONCIL, N	A1, B1	18, 15	ON CYLINDER
RDY, N	A4, B4	21, 17	UNIT READY
AMF, N	A2, B2	45, 42	ADDRESS MARK FOUND
FAULT, N	A26, B26	14, 11	Not Used (grounded)
INHA	A14 B14		Strap
B Cable Output Signals (1 set for each disc) disc0 = con.1 disc1 = con.2			
WDL, N	B1, B2	B, A	Write Data Line (bit serial)
Ground	B5	D	
WRC, N	A11, A12	J, H	Write Clock
Ground	B11	E	
B Cable Input Signals (1 set for each disc)			
RCP, N	A1, A2	X, W	Read Clock Pulse
Ground	B3	Y	
RD, N	A3, A4	V, U	Read Data (bit serial from disc)
Ground	B4	T	
WCP, N	A9, A10	N, M	SERVO CLOCK, Write Clock Pulse
Ground	B10	K	
SKEND,	A5, A6	CC, AA	Seek End
USL,	A7, A8	BB, DD	Unit Selected
INHB	B6 B7		Strap

Table 22.1 CU - DEVICE INTERFACE

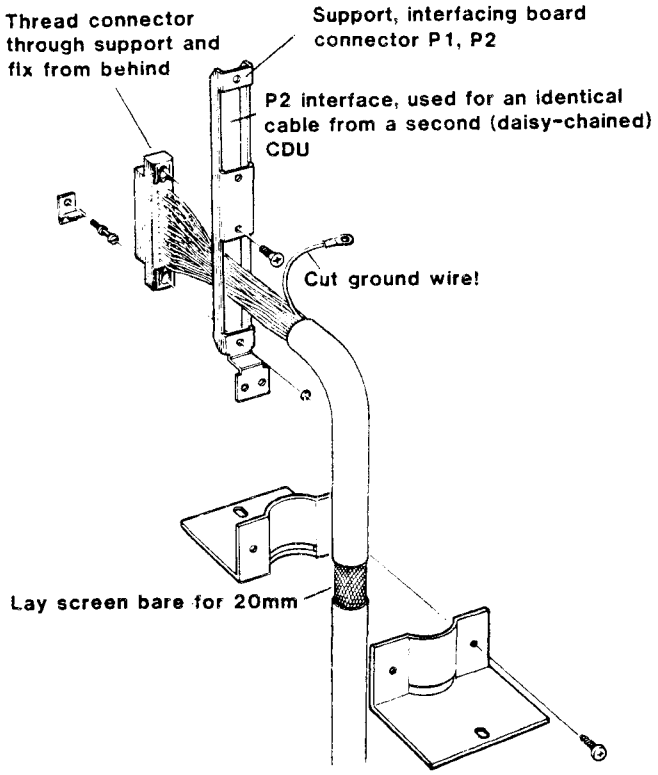


Figure 22.2 ENTRY KIT FOR B-CABLE FROM CDU 6877

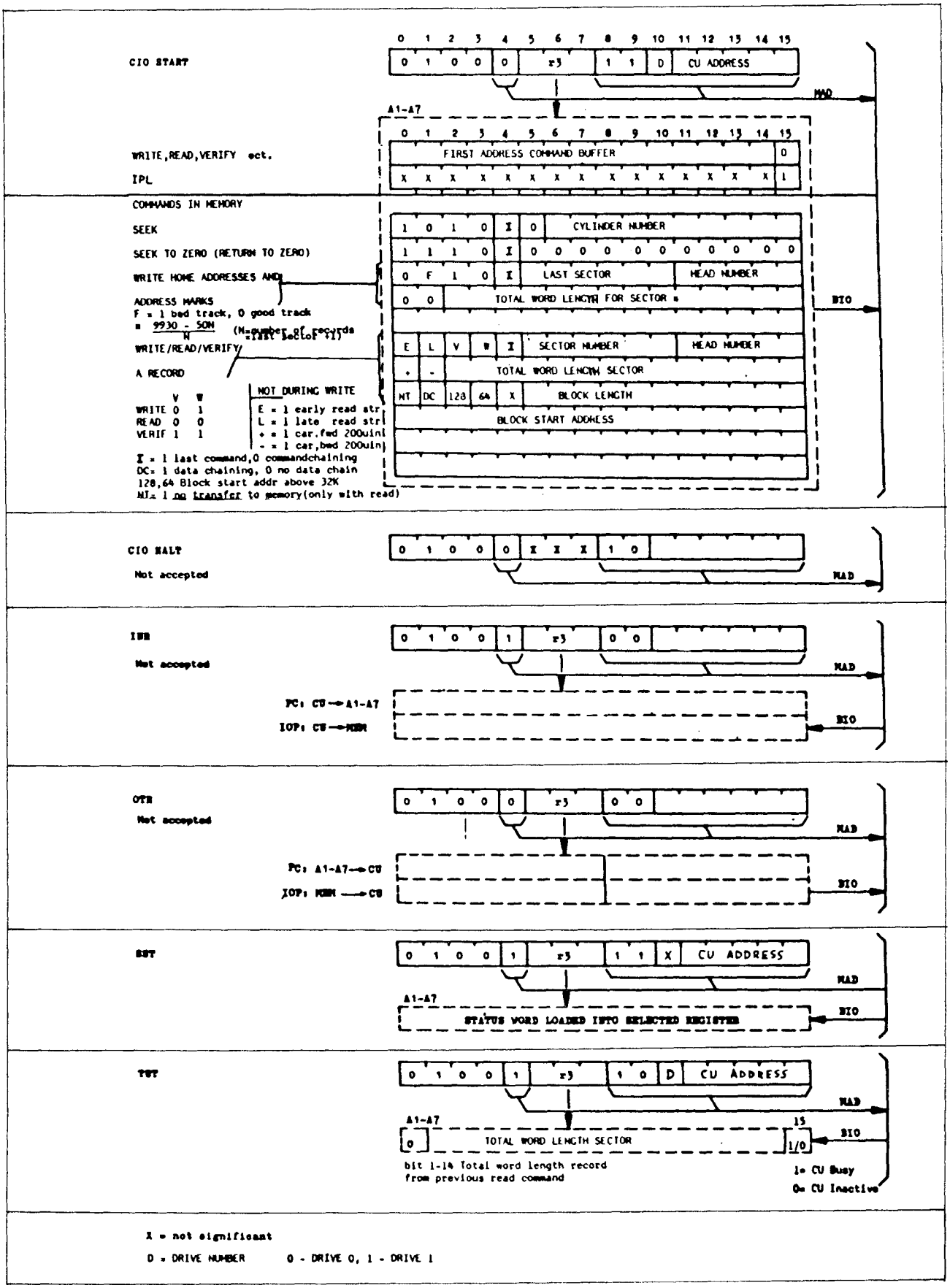
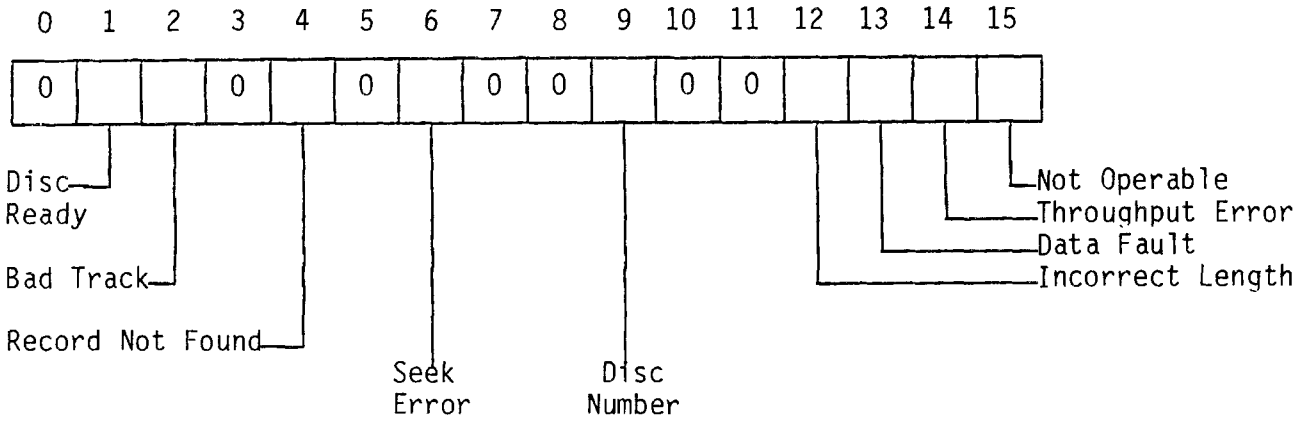


Figure 22.3 INSTRUCTION-/COMMAND-WORD FORMATS

22.4.1 STATUS WORD



Bit 15: Command attempted on a not operable disc drive.

Bit 14: Throughput error; the CU could not access the memory within 100 usec., during WRITE/READ or VERIFY Command.

Bit 13: Data fault; CRC check incorrect or during a VERIFY command a word does not compare.

Bit 12: Incorrect length; specified record length differs from the actual length or READ/WRITE not finished before end of track (next index-pulse).

Bit 9 : Disc drive number 0 = drive 0, 1 = drive 1.

Bit 6 : Seek error: The drive cannot reach the addressed cylinder or a cylinder number read from the Home Address does not compare at the end of the seek command.

Bit 4 : Record not found, during a WRITE/READ or VERIFY-command.

Bit 2 : Bad track; bad track bit is set in the home address of the accessed track.

Bit 1 : Drive became ready after being not operable (ready interrupt).

22.5 SHORT DESCRIPTION TEST-PROGRAM

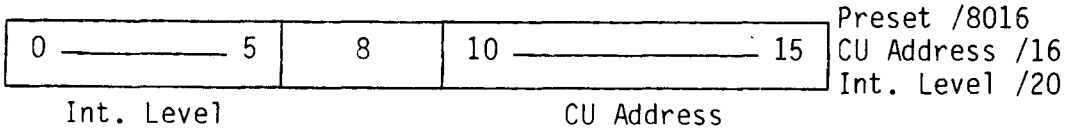
TESTPROGRAM BCDC2 32K 0.7 USEC.

1. IPL
   Program stops at /700 (= restart address and normal end).

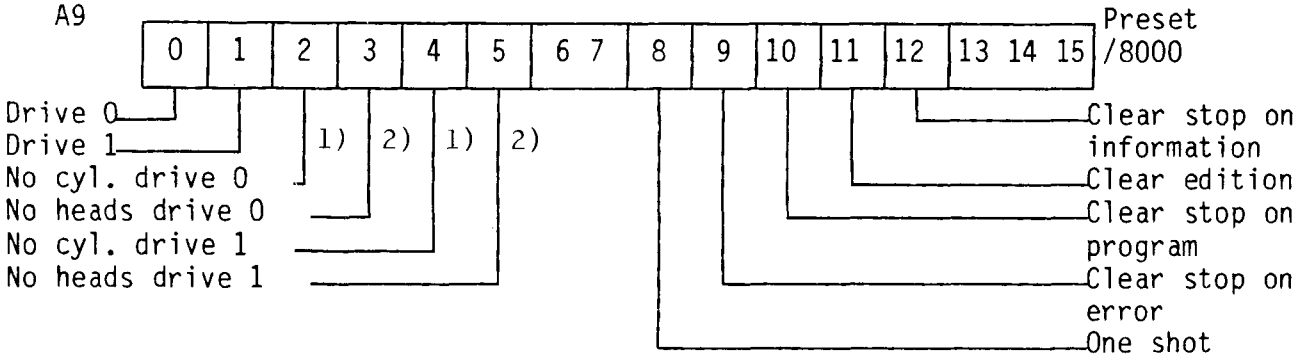
2. Switch on RTC (PF/AR also possible).
   Load a scratch dispack on the drive to be tested.

3.

A8



A9



Note 1): Bit 2,4: 0=411 cylinders, 40Mb/150Mb
1=823 cylinders, 80Mb/300Mb
Note 2): Bit 3,5: 0=5 heads, 40Mb/80Mb
1=19 heads, 150Mb/300Mb

A10

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
o	S	S	S	S	S	S	S	o	o	o	o	o	S	S	o	Preset /7F06 Checks to be executed

S = Standard setting
o = Optional

4. Depress MC, RUN

   Error stop at /5F0
   Restart after power/off :/6EE
   Interrupts return: /700
   Information stop: /5E0

For more information see detailed description of testprogram.

```
         DATE  82-05-05        IDENT    BIGD1


0000                           IDENT    BIGD1
0001                     *DATE: 820505 FOR PTS
0002
0003                     *     SMALL PROGRAM FOR WRITE,SEEK,WRITE HOME ADDR. AND VERIFY
0004
0005                     *     A1       START ADDRESS COMMAND BUFFER, PRESET FOR SEEK
0006                     *     DATA BUFFER START ADDRESS IS /0100
0007
0008                           AORG     /80
0009 0080 FFFF                 DATA     /FFFF
0010 0082 0000                 DATA     0
0011 0084 0194                 LDK      A1,/94                COMMAND BUFFER FOR SEEK
0012 0086 207F           START HLT                            AFTER RUN CHECK STATUS IN REG A4
0013 0088 20BF                 INH
0014 008A 41D7                 CIO      A1,1,/17              START CONTROLLER
0015 008C 5C04                 RB(4)    *-2
0016 008E 4CD7                 SST      A4,/17                GET STATUS
0017 0090 5C04                 RB(4)    *-2
0018 0092 5F0E                 RB       START
0019
0020                     * COMMAND BUFFER
0021
0022 0094 A000           SEEK  DATA      /A000                 SEEK TO CYLINDER 0
0023 0096 AB50                 DATA     /AB50                 SEEK TO CYLINDER 80
0024 0098 A000           WHAWVER DATA    /A000                 SEEK CYL. 0
0025 009A 27E0                 DATA     /27E0                 WRITE HOME ADDRESSES 64 SECTORS
0026 009C 0040                 DATA     /0040
0027 009E 1000                 DATA     /1000                 WRITE A SECTOR
0028 00A0 0040 0040            DATA     /0040,/0040
0029 00A4 0100                 DATA     /0100                 MEMORY BUFFER
0030 00A6 3800                 DATA     /3800                 VERIFY WRITTEN SECTOR
0031 00A8 0040 0040            DATA     /0040,/0040,/0100
     00AC 0100
0032
0033                           END      START


              SYMBOL TABLE

      SEEK    0094  A   START   0086  A   WHAWVE  0098  A

              ASS.ERR.    0000
    :EOF
    PROG ELAPSED TIME:  00H-00M-09S-240MS-
```

```
         DATE  82-05-05        IDENT    BIGD2


0000                           IDENT    BIGD2
0001                     *DATE: 820505 FOR PTS
0002
0003                     * SMALL PROGRAM TO PREMARK SURFACE 0
0004                     * WITH 64 SECTORS PER TRACK
0005                           AORG     /80
0006 0080 FFFF 0000            DATA     /FFFF,0
0007 0084 207F                 HLT
0008 0086 20BF           START INH
0009 0088 8120 00AC            LDKL     A1,COBUF              COMMAND BUFFER ADDRESS
0010 008C 41D7           CIO   CIO      A1,1,/17
0011 008E 4CD7                 SST      A4,/17                GET STATUS
0012 0090 5C04                 RB(4)    *-2
0013 0092 9041 00AC            IM       COBUF                 NEXT CYL.
0014 0096 8340 00AC            LD       A3,COBUF
0015 009A EB20 A336            CWK      A3,/A336              IS IT THE LAST CYL.
0016 009E 5D14                 RB(5)    CIO                   NO,THEN THE NEXT
0017 00A0 207F                 HLT                            YES,CHECK STATUS IN A4
0018 00A2 8320 A000      AGAIN LDKL     A3,/A000
0019 00A6 8341 00AC            ST       A3,COBUF              REPAIR COMMAND
0020 00AA 5F26                 RB       START
0021
0022                     * COMMAND BUFFER
0023
0024 00AC A000 2FE0      COBUF DATA     /A000,/2FE0,/0040     SEEK,WHA FOR 64 SECTORS
     00B0 0040
0025
0026                           END      START


            SYMBOL TABLE

   AGAIN   00A2  A   CIO     008C  A   COBUF   00AC  A   START   0086  A

            ASS.ERR.    0000
  :EOF
  PROG ELAPSED TIME:  00H-00M-08S-460MS-
```

```
         DATE  82-05-05        IDENT    BIGD3

0000                           IDENT    BIGD3
0001                  *DATE: 820505 FOR PTS
0002                  *PROGRAM FOR ADJUSTING THE HEADS
0003
0004
0005                           AORG     /80
0006 0080 FFFF                 DATA     /FFFF
0007 0082 0000                 DATA     0
0008 0084 207F         START   HLT
0009 0086 20BF                 INH
0010 0088 01AC                 LDK      A1,SK230
0011 008A 41D7                 CIO      A1,1,/17              SEEK TO CYL 230
0012 008C 4CD7                 SST      A4,/17
0013 008E 5C04                 RB(4)    *-2
0014 0090 01AE                 LDK      A1,HSEL
0015 0092 41D7                 CIO      A1,1,/17
0016 0094 4CD7                 SST      A4,/17
0017 0096 5C04                 RB(4)    *-2
0018 0098 01B6                 LDK      A1,SK245
0019 009A 41D7                 CIO      A1,1,/17              SEEK TO CYL 245
0020 009C 4CD7                 SST      A4,/17
0021 009E 5C04                 RB(4)    *-2
0022 00A0 207F                 HLT                            PUSH RUN FOR RTN TO ZERO
0023 00A2 01B8                 LDK      A1,SK0
0024 00A4 41D7                 CIO      A1,1,/17              RETURN TO CYL 000
0025 00A6 4CD7                 SST      A4,/17
0026 00A8 5C04                 RB(4)    *-2
0027 00AA 5F28                 RB       START
0028                  *        COMMAND BUFFERS
0029 00AC A8E6         SK230   DATA     /A8E6                 SEEK TO CYL 230
0030 00AE 0800         HSEL    DATA     /0800                 READ WITH HEAD 0
0031 00B0 0040 0040            DATA     /0040,/0040,/0100
     00B4 0100
0032 00B6 A8F5         SK245   DATA     /A8F5                 SEEK TO CYL. 245
0033 00B8 E800         SK0     DATA     /E800                 RETURN TO CYL 000
0034
0035
0036                  *AFTER THE PROGRAM HAVE RUNNED ONCE
0037                  *AND YOU WANT TO SELECT AN OTHER HEAD;
0038                  *OPERATE SW 2 ON A05(REMOTE/LOCAL) TO LOCAL
0039                  *AND BACK TO REMOTE. THE PROGRAM THEN STOPS IN
0040                  *ADDRESS /00A0, PUSH THE RUN BUTTON TO PERFORM
0041                  *A RETURN TO CYL 0, AND THE PROGRAM STOPS AT
0042                  *ADDRESS /0086
0043                  *CHANGE THE CONTENS OF ADDR. /00A4:
0044                  *        /0800    HEAD 0
0045                  *        /0801    HEAD 1
0046                  *        /0802    HEAD 2
0047                  *        /0803    HEAD 3
0048                  *        /0804    HEAD 4
0049                           END      START

            SYMBOL TABLE

    HSEL    00AE  A   SK0     00B8  A   SK230   00AC  A   SK245   00B6  A
    START   0084  A

            ASS.ERR.    0000
  :EOF
  PROG ELAPSED TIME:  00H-00M-13S-440MS-
```

```
        DATE  82-06-23        IDENT    BIGD4N


0000                          IDENT    BIGD4N
0001                    *DATE: 820618 FOR PTS
0002                    *       PROGRAM FOR HEAD ADJUSTMENT FOR 80M DISC
0003                    *       CONNECTED TO BIGD1 CU OR BIGD2 CU
0004
0005
0006                                    - OPERATING BIGD4N ADJUSTMENT PROGRAM
0007                                    - LOAD PROGRAM FROM CASSETTE,DISC OR FLEXIBLE DISC
0008                                    OR WITH EFP OR CFP
0009
0010                    *       A       AFTER LOADING SOP DISPLAY /7FF (ALL LAMPS LIT
0011                    *               -DEPRESS A SOP-SWITCH
0012                    *                DISPLAY ON SOP /FF AND SEEKING FROM CYL 230-
0013                    *                235 FOR ABOUT 30 SEC.
0014                    *               -SOP DISPLAYS /004
0015                    *                HEADS AT CYL 4 FOR SERVO MEASUREMENT
0016                    *               -AFTER MEASURING OPERATE LOCAL/REMOTE
0017                    *                SWITCH ON CARD A05 IN DISC DRIVE(SW2)
0018                    *               -SOP DISPLAYS /005
0019                    *                HEADS ON CYL 5 FOR SERVO MEASURING
0020                    *               -AFTER MEASURING OPERATE SW2 ON A05
0021                    *       B       -SOP DISPLAYS /03E
0022                    *               -BY DEPRESSING OF A SOP SWITCH WITH LED LIT ABOVE
0023                    *                A HEAD IS SELECTED FOR ADJUSTMENT OR CHECKING
0024                    *                SOP SW 6,7,8,9,0 IS HEAD 4,3,2,1,0
0025                    *                DEPRESSING AN OTHER SOP SWITCH RESULTS IN A STEP
0026                    *                TO PROGRAM PART C
0027                    *                EXAMPLE:
0028                    *               -DEPRESS SOP SW 8
0029                    *                SOP DISPLAYS /A2 (ADJUST,CHECK AND FIX HEAD 2)HEADS ARE AT
0030                    *                CYL 4
0031                    *               -OPERATE SW2 ON A05
0032                    *               - SOP DISPLAYS /03E GO BACK TO A FOR SELECTING
0033                    *                OTHER HEAD OR PART C
0034
0035                    *       C       -SOP DISPLAYS /2FF
0036                    *                CONTINUES SEEK IS DONE AS IN A
0037                    *               -SOP DISPLAYS /3E
0038                    *                HEAD SELECTION IS DONE AS IN B BUT ONLY
0039                    *                FOR CHECKING ADJUSTMENT
0040                    *                EXAMPLE:
0041                    *               -DEPRESS SOP SW 8 FOR HEAD 2
0042                    *               - SOP DISPLAYS /2C2
0043                    *                HEAD AT CYL 245 AND HEAD 2 CAN BE CHECKED
0044                    *               -OPERATE SW2 ON A05
0045                    *               -SOP DISPLAYS /03E FOR SELECTION OF AN OTHER
0046                    *                HEAD
0047                    *               -IF AN OTHER SOP SWITCH(WITH NO LED LIT ABOVE)
0048                    *                IS DEPRESSED PROGRAM RESTARTS AND
0049                    *                SOP DISPLAYS /7FF GOTO A
0050
0051
0052 0000                               RES      /40
0053                                    EJECT
0054 0080 FFFF 0000                     DATA     /FFFF,0
0055 0084 208F                  START   INH                              NO INTERRUPTS
0056 0086 86A0 A804                     LDKL     A14,/A804               SEEK TO CYL 4
0057 008A 86C1 0168 R                   ST       A14,SEK245              CHANGE TO SEEK CYL 4
0058 008E 0500                          LDK      A5,0                    CLEAR RETRY FLAG
0059 0090 41EE                          CIO      A1,1,/2E                START SOP
0060 0092 8320 07FF                     LDKL     A3,/7FF                 /7FF ON SOP
0061 0096 432E                          OTR      A3,0,/2E
0062 0098 4A2E                          INR      A2,0,/2E                READ SOP SW
0063 009A 5C04                          RB(NA)   *-2
0064 009C 03FF                          LDK      A3,/FF                  DISP FIRST SEEKING
0065 009E 86A0 0154 R                   LDKL     A14,EOS                 STACKPOINTER
0066 00A2 0700                          LDK      A7,0                    FLAG FIRST TIME
0067      00A4                  SECOND  EQU      *
0068 00A4 80A0 03FF                     LDKL     A8,/3FF                 FOR 30 SECONDS SEEK
0069 00A8 85A0 0130 R                   LDKL     A13,CIOSST              SUBROUTINE ADDRESS
0070                            *       CONTINUOUS SEEK FROM 230 TO 235
0071
0072
0073 00AC 8120 0156 R           SEEK    LDKL     A1,CSEEK                COMMAND BUFFER ADDRESS
0074 00B0 F697                  CONT    CFR      A14,A13                 SEEK FROM 230 TO 235
0075 00B2 1102                          ADK      A1,2                    COMMAND BUFFER ADDRESS
0076 00B4 F697                          CFR      A14,A13                 SEEK TO 235
0077 00B6 98A0 0001                     SUKL     A8,1                    TIME OVER?
0078 00BA 5910                          RB(P)    SEEK
0079 00BC 871C                          LDR      A7,A7                   IS IT THE FIRST TIME?
0080 00BE 5120                          RF(P)    SK245
0081                            *       SEEK TO CYLINDER 4
0082 00C0 8120 015A R                   LDKL     A1,SEEK4                COMMAND BUFFER ADDRESS
0083 00C4 0304                          LDK      A3,4                    DISPLAY CIL 4
0084 00C6 F697                          CFR      A14,A13                 SEEK TO CYL 4
0085 00C8 0300                          LDK      A3,0                    SOP DISPL
```

```
0086 00CA 8120 016A R          LDKL     A1,SEEK0
0087 00CE F697                 CFR      A14,A13                PERFORM SEEK TO ZERO
0088                                                          STOP FOR MEASURING TO CONTINUE PUSH RUN
0089                    *      SEEK TO CYLINDER 5
0090 00D0 0305                 LDK      A3,5                   CYL 5
0091 00D2 8120 015C R          LDKL     A1,SEEK5               COMMAND BUFFER ADDRESS
0092 00D6 F697                 CFR      A14,A13                SEEK TO CYL 5
0093 00D8 0300                 LDK      A3,0                   SOP DISPL
0094 00DA 8120 016A R          LDKL     A1,SEEK0
0095 00DE F697                 CFR      A14,A13                PERFORM SEEK TO ZERO
0096                                                          STOP FOR MEASURING TO CONTINUE PUSH SW A
0097                    *      SEEK TO CYLINDER 4 OR 245 FOR THE SEVERAL HEADS
0098
0099 00E0 033E          SK245  LDK      A3,/3E
0100 00E2 432E                 OTR      A3,0,/2E               DISPLAY HEAD SEL
0101 00E4 4A2E                 INR      A2,0,/2E               READ HEAD NUMBER
0102 00E6 5C04                 RB(NA)   *-2
0103 00E8 3AAC                 SRN      A2,A3                  FIND HEAD NUMBER
0104 00EA EB20 0004            CWK      A3,4                   MUST  IT GO TO CHECK
0105 00EE 512A                 RF(G)    CHECK
0106 00F0 E341 015F R          SC       A3,HSEL+1              TO START WITH SELECTED HEAD
0107 00F4 B320 02C0            XRKL     A3,/2C0                FOR DISPLAY 2CX IN 2ND CHECK
0108 00F8 871C          NEXTH  LDR      A7,A7                  IS IT THE FIRST TIME
0109 00FA 5404                 RF(NZ)   NEXT                   NO
0110 00FC B320 0260            XRKL     A3,/260                FOR DISPLAY AX ADJUST HEAD
0111 0100 8120 016A R  NEXT    LDKL     A1,SEEK0               COMMAND BUFFER ADDRESS
0112 0104 860C                 LDR      A6,A3                  SAVE SOP DISPLAY
0113 0106 0300                 LDK      A3,0                   FOR DISPLAY 0
0114 0108 F697                 CFR      A14,A13                SEEK TO 0
0115 010A 8120 015E R          LDKL     A1,HSEL                SEL HEAD
0116 010E F697                 CFR      A14,A13                DO HEAD SEL
0117 0110 8318                 LDR      A3,A6                  LOAD SOP DISPLAY
0118 0112 8120 0168 R          LDKL     A1,SEK245              COMMAND BUFFER ADDRESS
0119 0116 F697                 CFR      A14,A13                SEEK 4 OR 245
0120                    *      AFTER ADJUSTING THE HEAD
0121
0122 0118 5F3A                 RB       SK245                  ASK NEXT HEAD
0123      011A          CHECK  EQU      *
0124 011A 1701                 ADK      A7,1                   SET FLAG 2 ND TIME
0125 011C EF20 0002            CWK      A7,2                   IS TI THE SECOND TIME?
0126 0120 589E                 RB(E)    START
0127 0122 84A0 A8F5            LDKL     A12,/A8F5              SEEK TO 245
0128 0126 84C1 0168 R          ST       A12,SEK245             CHANGE TO SEEK 245
0129 012A 8320 02FF            LDKL     A3,/2FF                DISPLAY SEEK
0130 012E 5F8C                 RB       SECOND
0131                    *                                      FOR CONTUNUOUS SEEK AGAIN
0132                    *      SUBROUTINE
0133
0134 0130 41D7          CIOSST CIO      A1,1,/17               START OPERATION
0135 0132 432E                 OTR      A3,0,/2E               DISPLAY FUNCT ON SOP
0136 0134 4CD7                 SST      A4,/17                 ASK FOR STATUS
0137 0136 5C04                 RB(NA)   *-2
0138 0138 2401                 ANK      A4,1                   CHECK IF NOT OPERABLE
0139 013A 5104                 RF(P)    CHRETRY                CHECK IF RETRY
0140 013C 0500                 LDK      A5,0                   CLEAR RETRY FLAG
0141 013E F03A                 RTN      A14
0142 0140 8514          CHRETRY LDR      A5,A5                  RETRY OR NOT
0143 0142 5C14                 RB(NZ)   CIOSST                 DO RETRY
0144 0144 0501          NORETRY LDK      A5,1                   SET RETRY FLAG FOR NEXT COMMAND
0145                    *      STACK AREA
0146
0147 0146                      RES      7
0148 0154               EOS    RES      1
0149                    *      COMMAND BUFFERS
0150
0151 0156 A8E6          CSEEK  DATA     /A8E6                  SEEK TO 230
0152 0158 A8EB                 DATA     /A8EB                  SEEK TO 235
0153
0154 015A A804          SEEK4  DATA     /A804                  SEEK TO 4
0155
0156 015C A805          SEEK5  DATA     /A805                  SEEK TO 5
0157
0158      015E          HSEL   EQU      *
0159 015E 0800                 DATA     /0800                  READ WITH HEAD X
0160 0160 0040 0040            DATA     /0040,/0040
0161 0164 0000 0000     BUFL   DATA     0,0
0162 0168 A8F5          SEK245 DATA     /A8F5                  SEEK TO CYL 245
0163
0164 016A E800          SEEK0  DATA     /E800                  RETURN TO CYL 0
0165
0166                           END      START

            SYMBOL TABLE

   BUFL    0164  R   CHECK   011A  R   CHRETR  0140  R   CIOSST  0130  R
   CONT    00B0  R   CSEEK   0156  R   EOS     0154  R   HSEL    015E  R
   NEXT    0100  R   NEXTH   00F8  R   NORETR  0144  R   SECOND  00A4  R
   SEEK    00AC  R   SEEK0   016A  R   SEEK4   015A  R   SEEK5   015C  R
   SEK245  0168  R   SK245   00E0  R   START   0084  R

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