15 CHANNEL UNIT CASSETTE RECORDERS AND SOP

LIST OF ILLUSTRATIONS

15.1 CHCR-IDENTIFICATIONS

Type-number: PTS 6833

Test-program: CASTST (only PTS 6810/12) AND PERTST

Channel: Programmed (PC) (Hardware (MX) Channel never used)

Devices DCR1 - PTS 6861 - 001
DCR3 - PTS 6865

Power-consumption +5V 3.8A

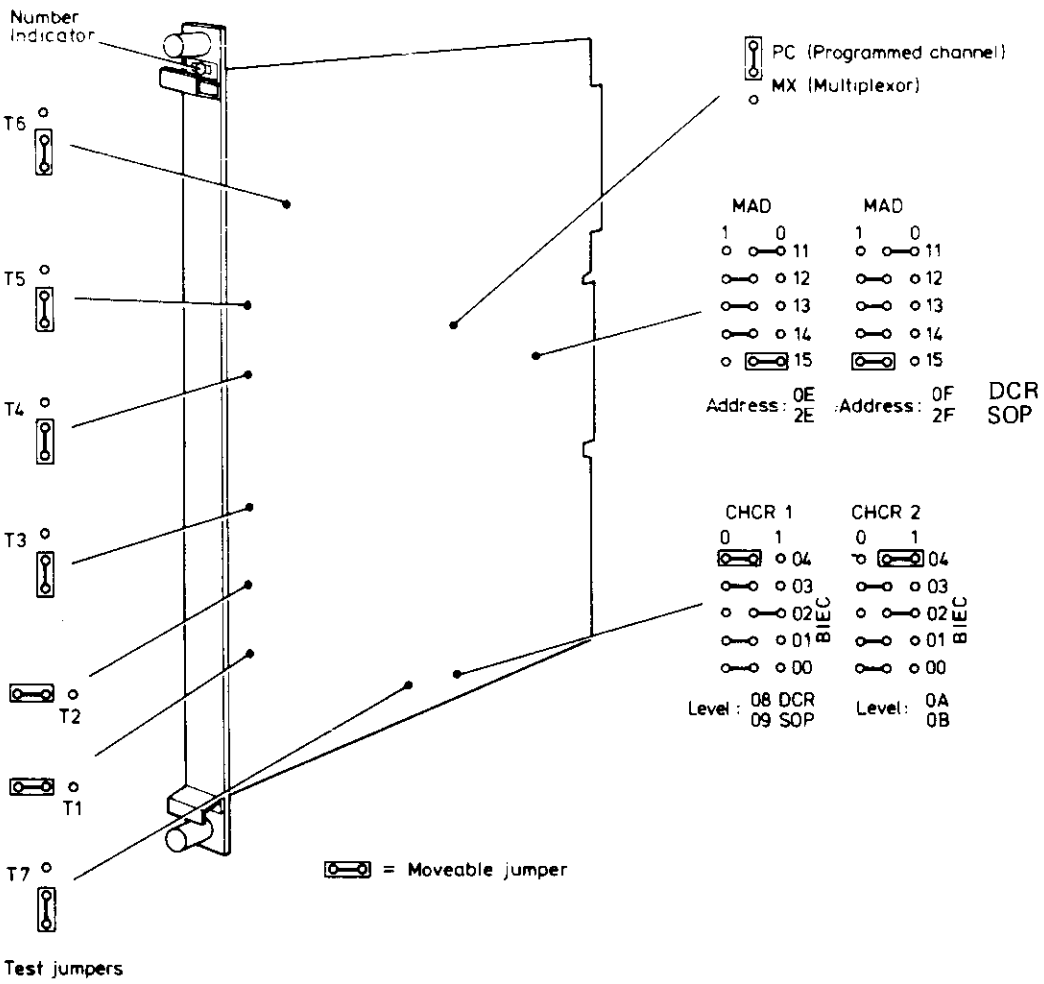


Figure 15.1 ADDRESS AND INTERRUPT STRAPS

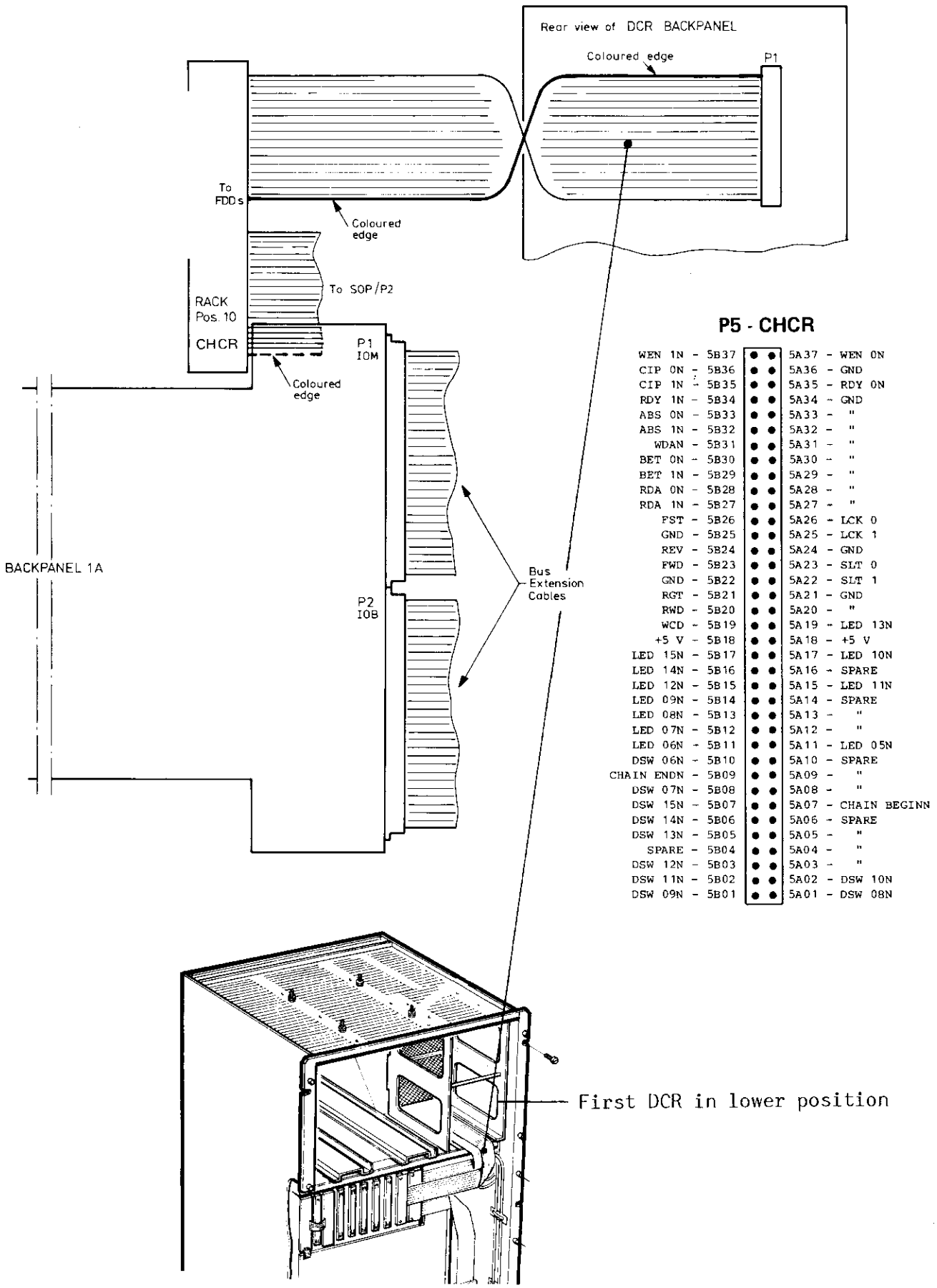


Figure 15.2 DCR INTERFACE 6812/13

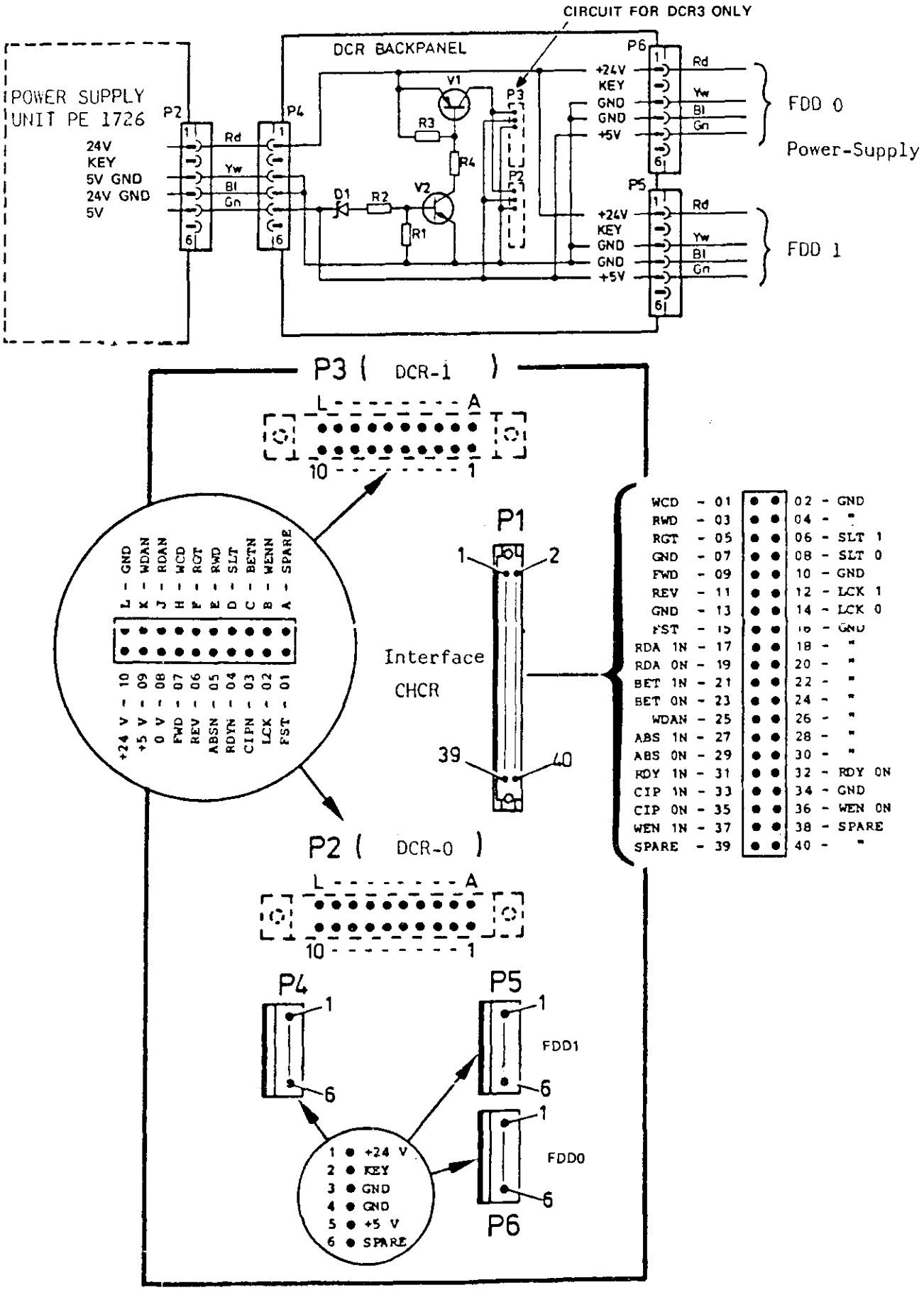


Figure 15.2a DCR INTERFACE PTS6812/13

CONNECTING DCR1 to 6810TC

Remove the panel in front of the recorder compartment by unscrewing four screws. Insert the DCR with precaution so the plug at the rear fits into the socket, flexibly mounted to a printed circuit board which is connected to the CPU rack via a flat cable. When only one DCR is fitted the DCR 2 socket must be equipped with a dummy board.

CAUTION: The dummy board has to be inserted with the text and the resistor, R1, upwards.

When a second DCR is not mounted a plastic cover must be mounted over its slot in the DCR-panel. The cover is fastened by means of double-adhesive tape.

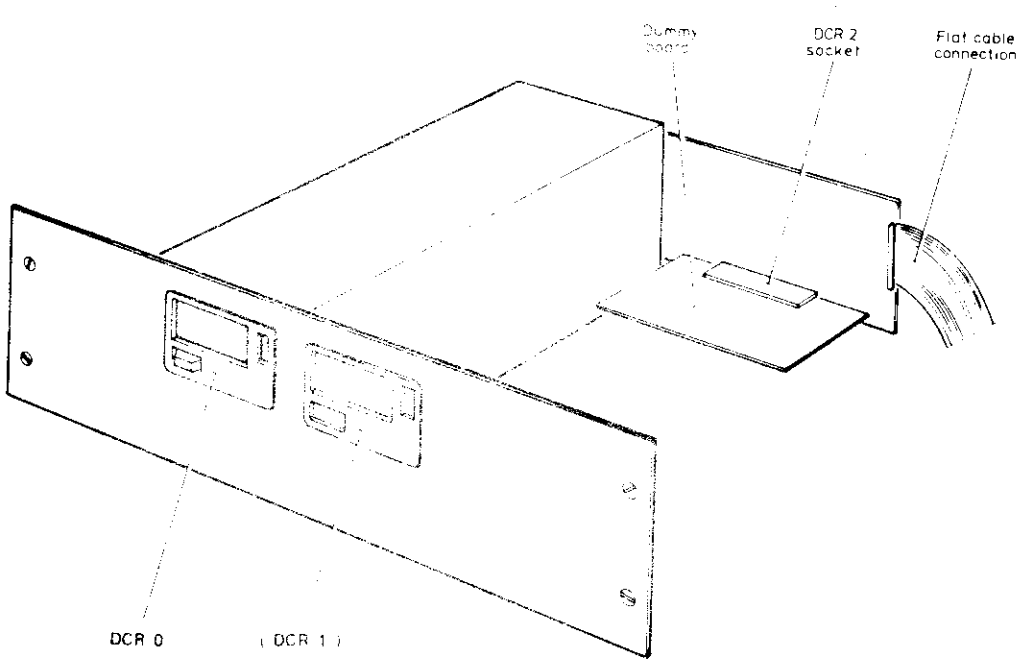


Figure 15.3 FITTING DCR (s) AND DUMMY BOARD (6810)

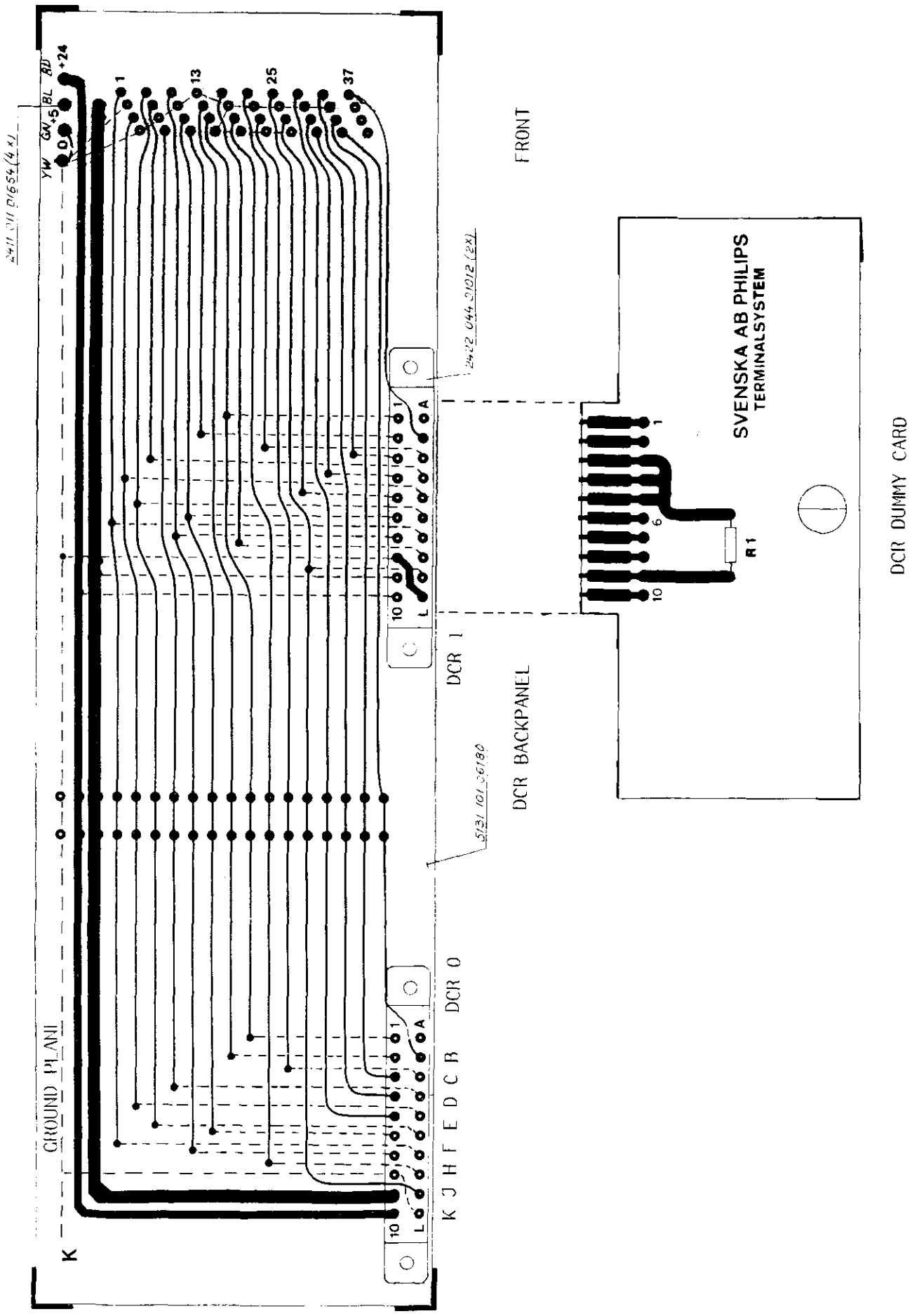


Figure 15.4 DCR BACKPANEL 6810

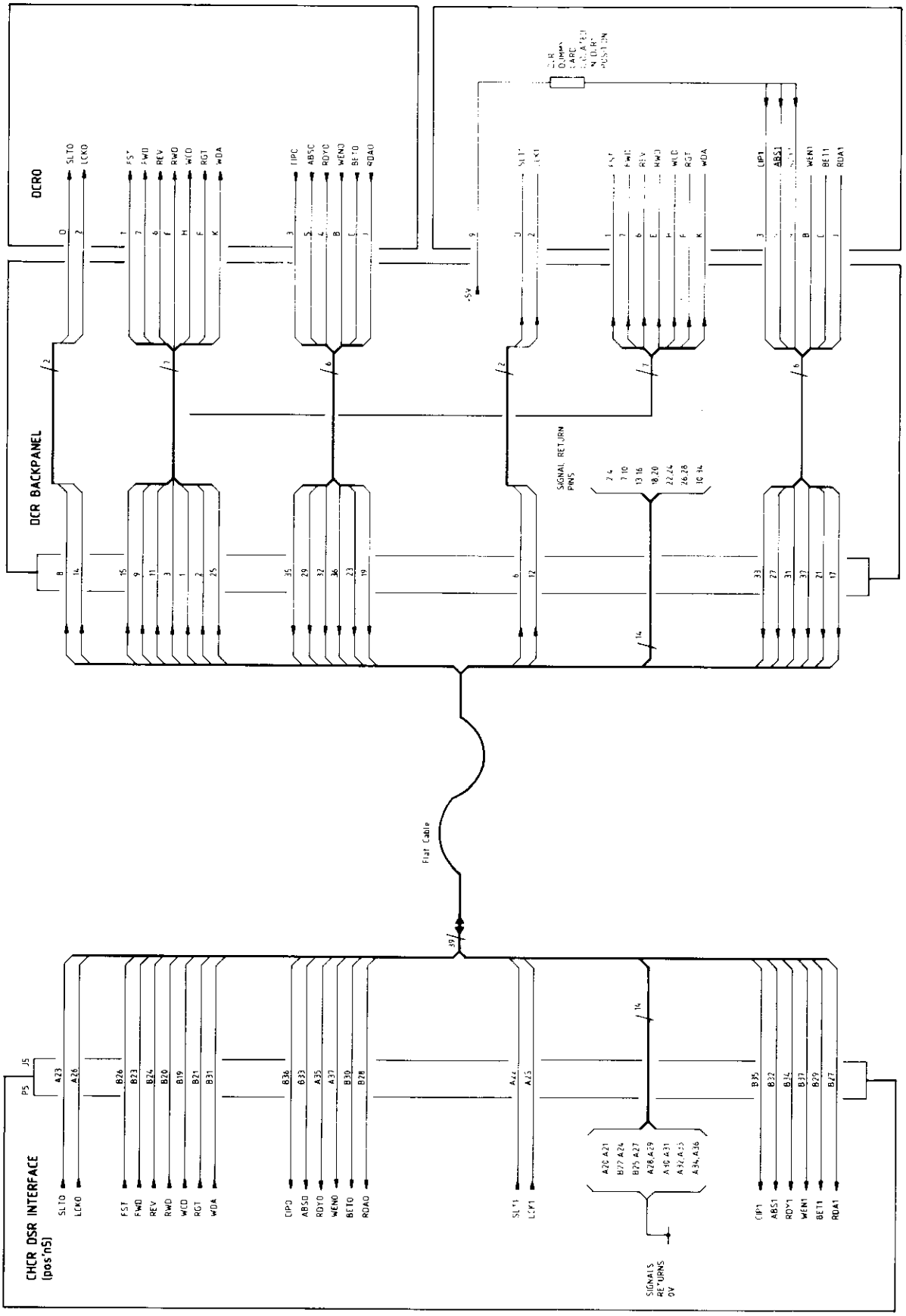
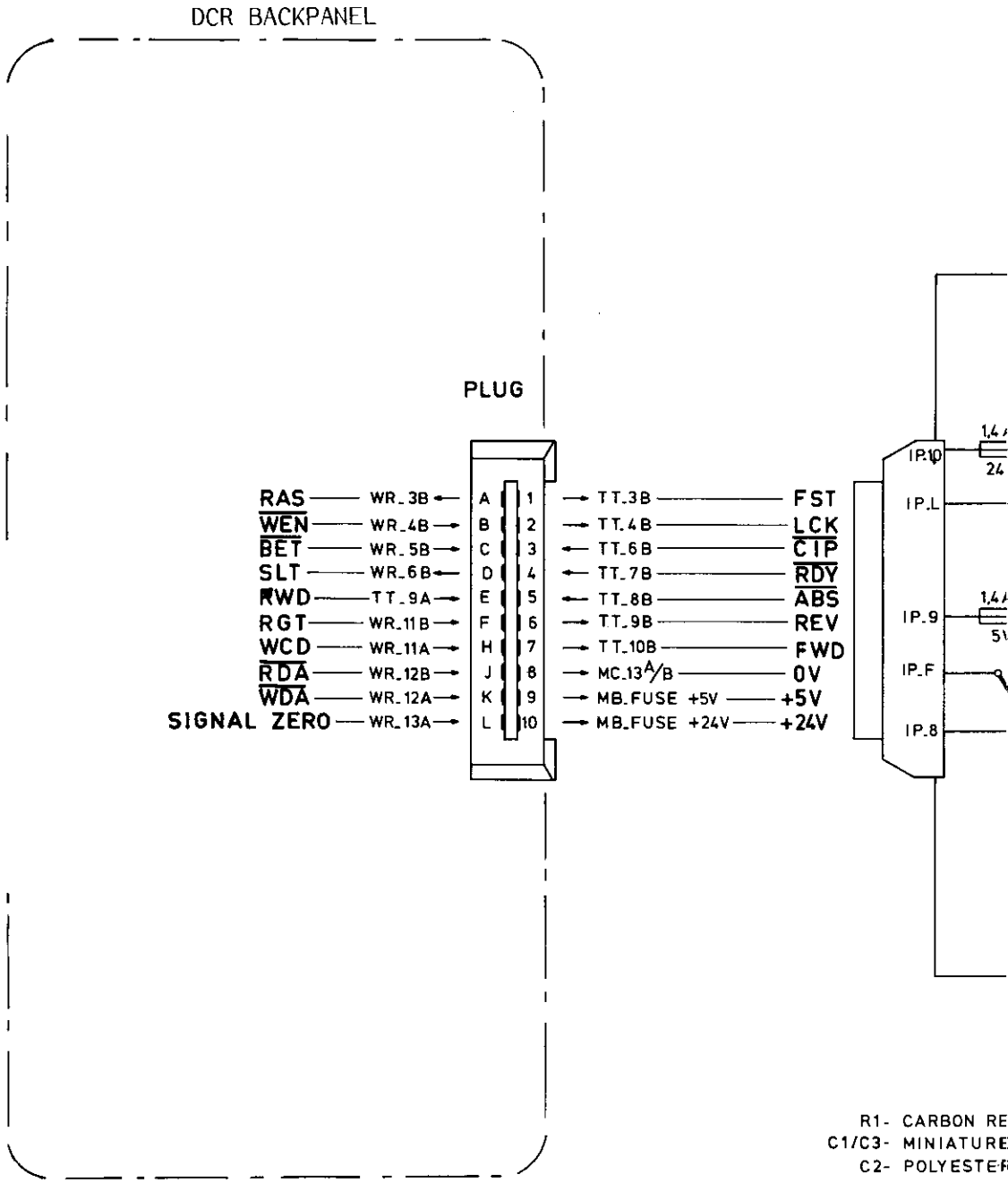


Figure 15.5 DCR DUMMY CARD (LOCATED IN DCR1 POSITION) (P6810)


DCR BACKPANEL
PLUG
RAS
WEN
BET
SLT
RWD
RGT
WCD
RDA
WDA
SIGNAL ZERO
WR_3B
WR_4B
WR_5B
WR_6B
TT_9A
WR_11B
WR_11A
WR_12B
WR_12A
WR_13A
A
B
C
D
E
F
H
J
K
L
1
2
3
4
5
6
7
8
9
10
TT_3B
TT_4B
TT_6B
TT_7B
TT_8B
TT_9B
TT_10B
MC_13A/B
MB_FUSE +5V
MB_FUSE +24V
FST
LCK
CTP
RDY
ABS
REV
FWD
0V
+5V
+24V
IP.10
IP.L
IP.9
IP.F
IP.8
1,4A
24
1,4A
5V
R1- CARBON RE
C1/C3- MINIATURE
C2- POLYESTER

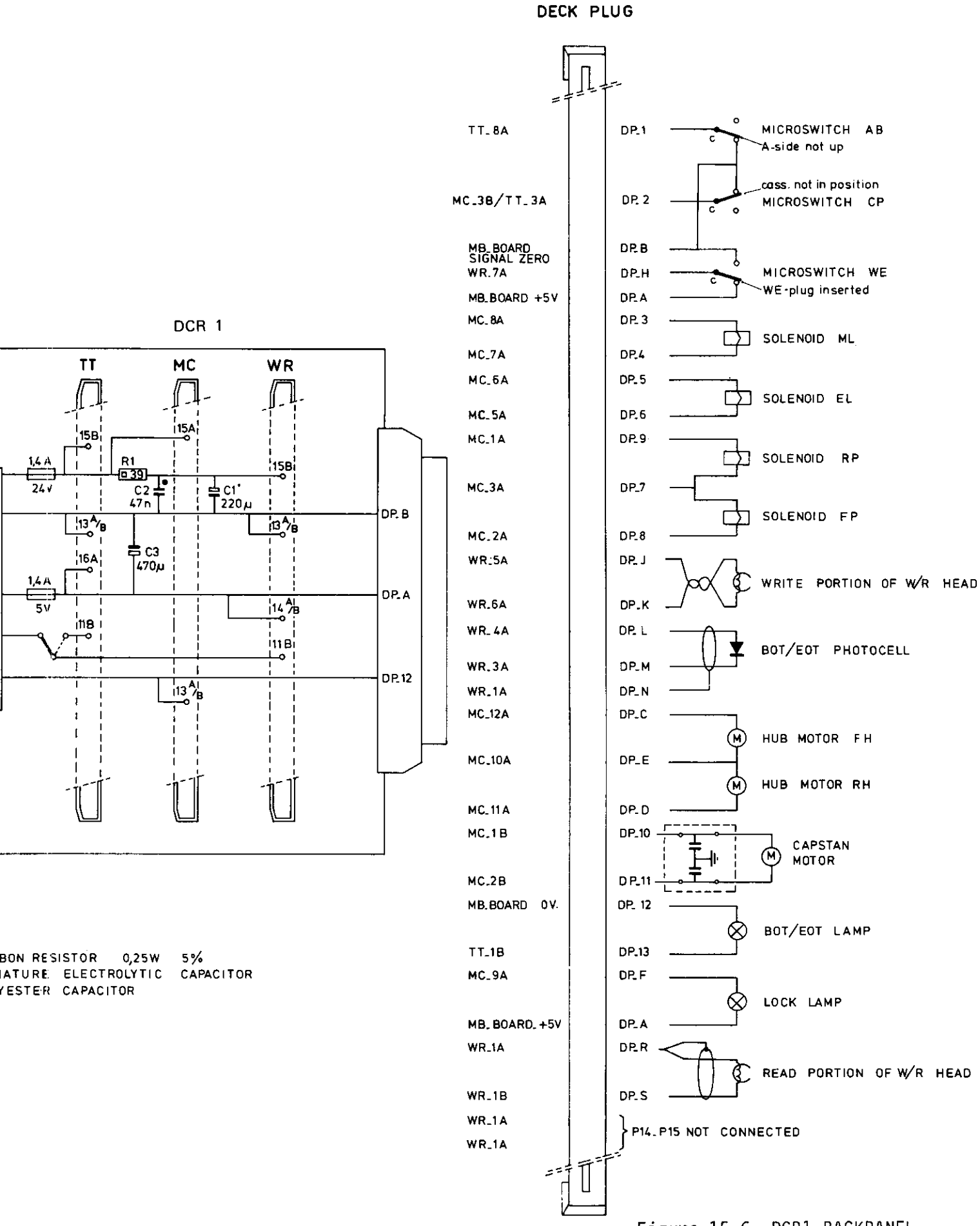


Figure 15.6 DCR1 BACKPANEL

15.4.1 STATUS WORD

Bit	Function	Meaning
15	Not Operable	Set if cassette not locked or at Rewind error.
14	Through-put error	Set if OTR, INR, CIO Halt or EOR is delayed more than 1.2 ms after each data interrupt.
13	CRC error	Set if CRC fails when reading data from the tape. (Applicable both at writing and reading).
12	Incorrect length	Set if numbers of INR's are less than numbers of characters in a read block (because of CIO Halt or EOR).
11	0	-
10	0	-
09	Rewind	Set if leader is not detected within 45 s during an "Sbot" command.
08	0	-
07	B-side	Set if B-side of the cassette is up.
06	Write protected	Set if chosen side (A/B) is write protected.
05	Bot or EOT	Set if BOT or EOT hole is passed.
04	No Data or Erased	Set if no data is detected within 2 s from Read Command (= 400mm) or if the tape is properly erased during an Erase command.
03	Tape Mark	Set if the last read, written or reversed block was a Tape Mark.
02	BOT missing	Set if the BOT hole is not found within 8 s after detection of leader during an "Sbot" command.
01	Leader	Set if the tape leader or BOT/EOT hole is positioned in front of the BOT detector.
00	0	-

For 6813: and 6810
Codes 10 -19 see PERTST

CASTST - Test of Cassette Recorder (PTS 6810)

CASTST is power failure proof. In the event of a power failure the program is stored and restarts from the stopping point when power is resumed, so long as the Key switch is set to LOCK.

The SOP is dedicated in the following way:

Switch	Function	Indicator	Function
0	IPL	0	Power On
1	Select drive 0 (left or lower)	1	Test step
2	Select drive 1 (right or upper)	2	
3	Start preliminary test	3	
4	Start infinity test	4	
5	Start cassette status test	5	Status (Error Type)
		6	
		7	
		8	
		9	Error code
10	Unload	10	
		11	Ready

- Load the program as directed in the SOP description.
- Select left or right recorder and depress appropriate switch (1 or 2).
- Press the appropriate switch to start the required test (3, 4 or 5).

Preliminary test (switch 3) tests all basic functions of the cassette drive in 12 steps:

1. Lock cassette drive	2. Search BOT	3. Erase
4. Write tape mark	5. Write one block	6. Write tape mark
7. Backspace	8. Search tape mark backwards	9. Read tape mark
A. Read one block	B. Search tape mark forwards	C. Search BOT

Infinity test: (switch 4) the preliminary test is run repeatedly until stopped by pressing Unload (switch 10) twice.

Status test: (switch 5) determines the status of the cassette (i.e. side A or side B) and whether write-protected

Normal indication

After a successful programrun, lamp 11 lights and the program waits for another command.

Error indication

The error indication is in two parts, the Error code, which is a 2 digit hexadecimal code, and the Status, which is a 4 digit hexadecimal code, using these two, the error can be deduced as follows:

Error Code BITS 9, 10	Status Code 5 - 8	Error
0	5	Side B, not write protected
	6	Side A, not write protected
	9	Side B, write protected
	A	Side A, write protected
1	3	Tape mark not found/written
	4	Not erased
	5	BOT not found
	6	Not write protected
	7	A-side
	F	Unlock unsuccessful
2	2	BOT missing
	3	Illegal tape mark
	4	No data
	6	Write protected
	9	Rewind time-out
	C	Incorrect length
	D	CRC error
	E	Throughput error
	F	Lock unsuccessful
3	0	Time too short
	1	Time too long

```
         DATE  82-05-05        IDENT    TESTK7    FOR PTS


0000                           IDENT    TESTK7                FOR PTS
0001                  *DATE: 820505 FOR PTS
0002                  *
0003                  *============PUT STRAP TO PROGRAMMED CHANNEL==============
0004                  *
0005                  *THIS PROGRAM TESTS THE MOST IMPORTANT CASSETTE COMMANDS
0006                  *PER BLOCK
0007                  *
0008                  * A1 COMMAND
0009                  * A7 DATA WRITE
0010                  * A3 STATUS
0011                  * A4 LENGTH (4-256 CHAR)
0012                  * A5 GEN USE
0013                  * A2 DATA READ
0014                  *
0015                  *HLT CAN BE REPLACED BY RB FOR LOOP ON COMMAND
0016                  *
0017       000E       DA         EQU      /0E
0018                  ,          AORG     /80
0019 0080 FFFF                   DATA     /FFFF
0020 0082 0000                   DATA     0
0021 0084 207F        START      HLT
0022 0086 20BF                   INH
0023 0088 04FF                   LDK      A4,/FF                PRESET LENGTH (MAX)
0024 008A 0755                   LDK      A7,/55                PRESET DATA ('U')
0025 008C 207F                   HLT
0026                  *
0027 008E 0100                   LDK      A1,0                  SELECT DRIVE
0028 0090 41CE                   CIO      A1,1,DA
0029 0092 4BCE                   SST      A3,DA
0030 0094 5C04                   RB(4)    *-2
0031 0096 207F                   HLT
0032                  *
0033 0098 0102                   LDK      A1,2                  LOCK CASSETTE
0034 009A 41CE                   CIO      A1,1,DA
0035 009C 4BCE                   SST      A3,DA
0036 009E 5C04                   RB(4)    *-2
0037 00A0 207F                   HLT
0038                  *
0039 00A2 0108                   LDK      A1,8                  SEARCH BEGIN OF TAPE
0040 00A4 41CE                   CIO      A1,1,DA
0041 00A6 4BCE                   SST      A3,DA
0042 00A8 5C04                   RB(NZ)   *-2
0043 00AA 207F                   HLT
0044                  *
0045 00AC 010B                   LDK      A1,/B
0046 00AE 41CE                   CIO      A1,1,DA
0047 00B0 418E                   CIO      A1,0,DA               WRITE TAPE MARK
0048 00B2 4BCE                   SST      A3,DA
0049 00B4 5C04                   RB(4)    *-2
0050 00B6 207F                   HLT
0051                  *
0052 00B8 0109                   LDK      A1,9                  ERASE FWD
0053 00BA 41CE                   CIO      A1,1,DA
0054 00BC 4BCE                   SST      A3,DA
0055 00BE 5C04                   RB(4)    *-2
0056 00C0 207F                   HLT
0057                  *
0058 00C2 8510                   LDR      A5,A4
0059 00C4 010B                   LDK      A1,/B                 WRITE ONE BLOCK FWD
0060 00C6 41CE                   CIO      A1,1,DA
0061 00C8 470E                   OTR      A7,0,DA
0062 00CA 5C04                   RB(4)    *-2
0063 00CC 1D01                   SUK      A5,1
0064 00CE 5C08                   RB(4)    *-6
0065 00D0 418E                   CIO      A1,0,DA
0066 00D2 4BCE                   SST      A3,DA
0067 00D4 5C04                   RB(4)    *-2
0068 00D6 207F                   HLT
0069                  *
0070 00D8 010E                   LDK      A1,/E                 BACKSPACE
0071 00DA 41CE                   CIO      A1,1,DA
0072 00DC 4BCE                   SST      A3,DA
0073 00DE 5C04                   RB(4)    *-2
0074 00E0 207F                   HLT
0075                  *
0076 00E2 8510                   LDR      A5,A4
0077 00E4 010A                   LDK      A1,/A                 READ BLOCK FWD
0078 00E6 41CE                   CIO      A1,1,DA
0079 00E8 4A0E                   INR      A2,0,DA
0080 00EA 5C04                   RB(4)    *-2
0081 00EC A220 00FF              ANKL     A2,/FF
0082 00F0 EA1C                   CHR      A2,A7
0083 00F2 5002                   RF(0)    *+4
0084 00F4 207F                   HLT                            DATA FAULT
0085 00F6 1D01                   SUK      A5,1
```

```
0086 00F8 5C12                    RB(4)     *-/10
0087 00FA 418E                    CIO       A1,0,DA
0088 00FC 4BCE                    SST       A3,DA
0089 00FE 5C04                    RB(4)     *-2
0090 0100 207F                    HLT
0091                        *
0092 0102 010D                    LDK       A1,/D                 SEARCH TAPE MARK BWD
0093 0104 41CE                    CIO       A1,1,DA
0094 0106 4BCE                    SST       A3,DA
0095 0108 5C04                    RB(4)     *-2
0096 010A 207F                    HLT
0097                        *
0098 010C 010F                    LDK       A1,/F
0099 010E 41CE                    CIO       A1,1,DA               REWIND AND UNLOCK CASSETTE
0100 0110 4BCE                    SST       A3,DA
0101 0112 5C04                    RB(4)     *-2
0102 0114 207F                    HLT
0103 0116 5F8A                    RB        START+10
0104                              END       START


           SYMBOL TABLE

   DA      000E  A   START   0084  A

           ASS.ERR.    0000
:EOF
PROG ELAPSED TIME:  00H-00M-24S-720MS-
```

The Memcas program is for making a cassette with more short routines. The program SELPROG must be the first one on the cassette (see tape layout on next page).

When a CFP/EFP is fitted, and you IPL from this cassette the prog stops at /0086; then load A5 with the program number and push the RUN button, now the selected program will be loaded and started.

```
         DATE  82-05-05        IDENT    SELPROG   FOR PTS

0000                           IDENT    SELPROG               FOR PTS
0001                     *DATE 820505 FOR PTS
0002                     *PROG TO BE ABLE TO LOAD OTHER BLOCKS FROM CASSETTE THAN ONLY THE FIRST
0003                     *        WHEN THE PROGR STOPS PUT PROG NUMBER IN A5
0004
0005                           AORG     /80
0006 0080 FFFF 0000            DATA     /FFFF,0
0007 0084 207F           START HLT
0008 0086 8640 0000            LD       A6,0
0009 008A EE20 44EE            CWK      A6,/44EE              IS IT THE NEW BOOTSTRAP
0010 008E 500C                 RF(0)    NBOOT
0011 0090 010C           STMK  LDK      A1,/C                 SEARCH TAPE MARK
0012 0092 F409                 CFR      A4,A2
0013 0094 1D01                 SUK      A5,1
0014 0096 5C08                 RB(4)    STMK
0015 0098 0680                 LDK      A6,/80                LOAD ADDR
0016 009A 0F42                 AB       /42                   READ BLOCK
0017 009C 8420 0500      NBOOT LDKL     A4,/500
0018 00A0 B441 0090            XRS      A4,/90                CHANGE TO /040C
0019 00A4 B441 0092            XRS      A4,/92                CHANGE TO /F109
0020 00A8 5F1A                 RB       STMK
0021                           END      START


           SYMBOL TABLE

  NBOOT   009C  A   START   0084  A   STMK    0090  A

           ASS.ERR.    0000
:EOF
PROG ELAPSED TIME:  00H-00M-07S-480MS-
```

```
         DATE  82-05-05        IDENT    MEMCAS    FOR PTS

0000                           IDENT    MEMCAS                FOR PTS
0001                    *DATE: 820505 FOR PTS
0002                    *PROGRAM TO PUT SMAL ROUTINES ON CASSETTE
0003                    *        A1       START ADDR OF PROG IN MEM
0004                    *        A2       LAST ADDR OF PROG IN MEM
0005                    *        A3       FIRST PROG ON CASSETTE SIDE YES PUT 0001 IN
0006
0007                           AORG     /80
0008 0080 FFFF 0000            DATA     /FFFF,0
0009 0084 207F          START  HLT
0010 0086 20BF                 INH
0011 0088 8604                 LDR      A6,A1
0012 008A 8708                 LDR      A7,A2
0013 008C 820C                 LDR      A2,A3
0014 008E 80A0 00BA            LDKL     A8,SUBR
0015 0092 86A0 00DC            LDKL     A14,EOS
0016 0096 0400                 LDK      A4,0                  SELECT DRIVE 0
0017 0098 F683                 CFR      A14,A8                EXECUTE COMMAND
0018 009A 2301                 ANK      A3,1
0019 009C 5402                 RF(4)    *+4
0020 009E 207F                 HLT                            NO CASSETTE IN
0021 00A0 0402                 LDK      A4,2                  LOCK
0022 00A2 F683                 CFR      A14,A8                EXECUTE COMMAND
0023 00A4 1A01                 SUK      A2,1                  FIRST PROG ON SIDE?
0024 00A6 5408                 RF(4)    NOFIR
0025 00A8 0408                 LDK      A4,8                  SBOT
0026 00AA F683                 CFR      A14,A8                EXECUTE COMMAND
0027 00AC 0409                 LDK      A4,9                  ERASE
0028 00AE F683                 CFR      A14,A8                EXECUTE COMMAND
0029 00B0 041B          NOFIR  LDK      A4,/1B                WRITE TAPE MARK
0030 00B2 F683                 CFR      A14,A8                EXECUTE COMMAND
0031 00B4 040B                 LDK      A4,/B                 WRITE BLOCK
0032 00B6 F683                 CFR      A14,A8                EXECUTE COMMAND
0033 00B8 5F36                 RB       START
0034
0035 00BA 44CE          SUBR   CIO      A4,1,/0E              START
0036 00BC EC20 001B            CWK      A4,/1B                IS IT WRITE TAPEMARK?
0037 00C0 500C                 RF(0)    STOP
0038 00C2 E538          OUT    LCR      A5,A6
0039 00C4 450E                 OTR      A5,0,/0E              WRITE CHARACTER
0040 00C6 500A                 RF(0)    UPD
0041 00C8 4BCE                 SST      A3,/0E
0042 00CA 5C08                 RB(4)    OUT+2
0043 00CC F03A                 RTN      A14
0044 00CE 418E          STOP   CIO      A1,0,/0E
0045 00D0 5F10                 RB       OUT
0046 00D2 1601          UPD    ADK      A6,1                  NEXT CHARACTER
0047 00D4 EE1C                 CWR      A6,A7
0048 00D6 5C16                 RB(4)    OUT
0049 00D8 5F0C                 RB       STOP
0050 00DA                      RES      1
0051 00DC               EOS    RES      1
0052                           END      START


            SYMBOL TABLE

   EOS     00DC  A   NOFIR   00B0  A   OUT     00C2  A   START   0084  A
   STOP    00CE  A   SUBR    00BA  A   UPD     00D2  A

            ASS.ERR.    0000
  :EOF
  PROG ELAPSED TIME:  00H-00M-14S-600MS-
```

Tape layout prog. nr. 1 prog. nr. 2 etc

	TM	SELPROG	TM	Memcas	TM	Test K7	TM	etc