INSTRUCTION MANUAL

DISC TRAK DC-10
DIGITAL CARTRIDGE MACHINE
VERSION 1.3

August, 1992

IM No. 597-1010

BROADCAST ELECTRONICS, INC.

IMPORTANT INFORMATION

EQUIPMENT LOST OR DAMAGED IN TRANSIT

When delivering the equipment to you, the truck driver or carrier's agent will present a receipt for your signature. Do not sign it until you have (a) inspected the containers for visible signs of damage and (b) counted the containers and compared with the amount shown on the shipping papers. If a shortage or evidence of damage is noted, insist that notation to that effect be made on the shipping papers before you sign them.

Further, after receiving the equipment, unpack it and inspect thoroughly for concealed damage. If concealed damage is discovered, immediately notify the carrier, confirming the notification in writing, and secure an inspection report. This item should be unpacked and inspected for damage WITHIN 15 DAYS after receipt. Claims for loss or damage will not be honored without proper notification of inspection by the carrier.

TECHNICAL ASSISTANCE AND REPAIR SERVICE

Technical assistance is available from Broadcast Electronics by letter or prepaid telephone or telegram. Equipment requiring repair or overhaul should be sent by common carrier, prepaid, insured and well protected. Do not mail equipment. We can assume no liability for inbound damage, and necessary repairs become the obligation of the shipper. Prior arrangement is necessary. Contact Customer Service Department for a Return Authorization.

FOR TECHNICAL ASSISTANCE

Phone (217) 224-9617 Customer Service

WARRANTY ADJUSTMENT

Broadcast Electronics, Inc. warranty is included in the Terms and Conditions of Sale. In the event of a warranty claim, replacement or repair parts will be supplied F.O.B. factory. At the discretion of Broadcast Electronics, the customer may be required to return the defective part or equipment to Broadcast Electronics, Inc. F.O.B. Quincy, Illinois. Warranty replacements of defective merchandise will be billed to your account. This billing will be cleared by a credit issued upon return of the defective item.

RETURN, REPAIR AND EXCHANGES

Do not return any merchandise without our written approval and Return Authorization. We will provide special shipping instructions and a code number that will assure proper handling and prompt issuance of credit. Please furnish complete details as to circumstances and reasons when requesting return of merchandise. All returned merchandise must be sent freight prepaid and properly insured by the customer.

REPLACEMENT PARTS

Replacement and Warranty Parts may be ordered from the address below. Be sure to include equipment model and serial number and part description and part number.

Broadcast Electronics, Inc.
4100 N. 24th St., P.O. Box 3606
Quincy, Illinois 62305
Tel: (217) 224-9600
Telex: 25-0142
Fax: (217) 224-9607

PROPRIETARY NOTICE

MODIFICATIONS

Broadcast Electronics, Inc. reserves the right to modify the design and specifications of the equipment in this manual without notice. Any modifications shall not adversely affect performance of the equipment so modified.

BROADCAST ELECTRONICS, INC.

PUBLICATION ADDENDUM NOTICE

EQUIPMENT DIGITAL CARTRIDGE MACHINES

MODEL(S) DC–300 AND DC–10 **SERIAL NUMBER** N/A

PUBLICATION NUMBER 597–1300 AND 597–1010

BASIC ISSUE/REVISION AUGUST, 1992

PURPOSE:

INSTRUCTIONS: **Place this addendum notice in the front of the publication.**
Perform the required changes as listed below.
Replacement pages will be attached to this addendum notice as required.

DATE: 11/23/92

DIGITAL RECORDING USING THE DISC–TRAK AES–EBU PORTS

The Disc–Trak digital cartridge machine models are equipped with AES–EBU digital record ports. The ports are used to record audio from or output audio to a digital source such as an RDAT machine or a Disc–Trak machine. If audio is to be recorded from or output to a digital source, the audio on the disk/tape must be previewed to configure the AES–EBU ports to the appropriate sampling rate. This prevents the Disc–Trak machine from recording/outputting audio using an incorrect sampling rate. To record or output audio to a digital source using the AES–EBU ports, proceed as follows:

RECORDING AUDIO FROM A DIGITAL SOURCE

1. Connect the DC–300 AES–EBU ports to the digital source.
2. Insert a disk into the DC–300 record deck and insert the disk/tape containing the audio to be recorded into the digital source.
3. Operate the digital source to preview the audio. This configures the AES–EBU ports to the appropriate sampling rate.
4. Perform the record procedures presented in the DC–300 instruction manual.

OUTPUTTING AUDIO TO A DIGITAL SOURCE

1. Connect the Disc–Trak AES–EBU ports to the digital source.
2. Insert the disk containing the audio to be output to the digital source into a Disc–Trak deck and insert the disk/tape into the digital source.
3. Operate the Disc–Trak machine to preview the audio. This configures the AES–EBU ports to the appropriate sampling rate.
4. Perform the record procedures contained in the digital source instruction manual.

4100 N. 24TH STREET – P.O.BOX 3606 – QUINCY, ILLINOIS 62305 – TELEX 250142 – CABLE "BCST ELECT QUI" – FAX (217) 224–9607– PHONE (217) 224–9600

TECHNICAL MANUAL

BROADCAST ELECTRONICS

DISC TRAK DC–10

DIGITAL CARTRIDGE MACHINE

597–1010

Broadcast Electronics is licensed to manufacture the DC–10 By Sonifex LTD.
apt-X Compression System

TECHNICAL MANUAL
BROADCAST ELECTRONICS, INC.
DISC TRAK DC–10
DIGITAL CART MACHINE

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SECTION I
INSTALLATION

1–1. The following connections apply to the Broadcast Electronics DISC TRAK DC–10 digital cart machine.

1–2. **AUDIO OUTPUTS (LEFT & RIGHT).**

Pin 1: Shield
Pin 2: +
Pin 3: –

1–3. **REMOTES (15–PIN D–TYPE).**

Pin 1:	0V	Common.
Pin 2:	PLAY 1 SWITCH	Momentary contact to common to actuate.
Pin 3:	PLAY 1 LAMP	+15V during play operation. Common return.
Pin 4:	Not used	
Pin 5:	Not used	
Pin 6:	Not used	
Pin 7:	Not used	
Pin 8:	RECUE SWITCH	Momentary contact to common to actuate.
Pin 9:	RECUE LAMP	+15V during recue operation. Common return.
Pin 10:	Not used	
Pin 11:	STUDIO ON LINE	See note below.
Pin 12:	SELECT SWITCH	Momentary contact to common to actuate.
Pin 13:	Secondary Cue	Open collector sinking 40mA@35V.
Pin 14:	Tertiary Cue A	Closing contact to Pin 15.
Pin 15:	Tertiary Cue B	Closing contact to Pin 14.
Shell:	0V	Common.

NOTE ***THE STUDIO ON LINE IS AN ACTIVE LOW WHICH ENABLES DATA TRANSMISSION FROM THE DISC TRAK DURING ON–AIR PLAY. BILLING DATA WILL BE OUTPUT TO THE RS232 PORT WHEN PIN 11 IS LOW.***

NOTE

1–4. **RS232 (9–PIN D–TYPE).**

Pin 1: DCD
Pin 2: RXD
Pin 3: TXD
Pin 4: DTR
Pin 5: SG
Pin 6: DSR
Pin 7: RTS
Pin 8: CTS
Pin 9: Not Connected
Shell: 0V

1–5. AES/EBU DIGITAL (9–PIN D–TYPE).

Pin 1: RESERVED FOR SYNC. INPUT
Pin 2: RESERVED FOR SYNC. INPUT
Pin 3: NOT USED
Pin 4: AES/EBU TRX +
Pin 5: 0V TRX SHIELD
Pin 6: RESERVED FOR SYNC. INPUT
Pin 7: NOT USED
Pin 8: 0V RX SHIELD
Pin 9: AES/EBU TRX –
Shell: 0V

1–6. FAST COMMUNICATIONS PORT (BNC SOCKET).

INNER CONDUCTOR : SIGNAL
OUTER CONDUCTOR : SHIELD (DO NOT CONNECT TO GROUND)

1–7. AC POWER CONNECTION.

FUSED IEC SOCKET

SECTION II
PRELIMINARY OPERATION

2–1. To initialize the machine, apply power while depressing the front panel SELECT switch. The machine performs a DIAGNOSTIC ROUTINE as described in SECTION III, OPERATION.

2–2. When the execution of the DIAGNOSTIC ROUTINE is complete, the machine will enter the SETUP ROUTINES.

2–3. During the Setup Routines, the RECUE switch can be used to increment and review the options. The SELECT switch confirms the option and enables the next setup menu. The single play mode cannot be disabled.

2–4. The display prompts for all the SETUPS are as follows:

2–5. LOOP MODE ENABLE.

Set Play Modes...
Loop Enable

2–6. TRACK MODE ENABLE.

Set Play Modes...
Next Enable

2–7. PLAY ALL ENABLE.

Set Play Modes...
Play All Enable

2–8. ROTATING TRACK.

Set Play Modes..
Rotating Trk <N>

2–9. POWER ON DEFAULT.

Power on Default
single PLAY

OPTIONS

single PLAY
single LOOP
cue NEXT track
play ALL tracks

2–10. HARD DISK CONNECTED.

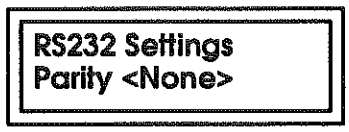
Device Connected
Hard Disk <N>

2–11. **RS232 BAUD RATE.**

OPTIONS

Recue for 9600
4800
2400
1200

2–12. **RS232 PARITY.**



OPTIONS

Recue for None
Even
Odd

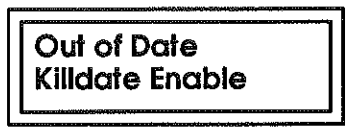
2–13. **SEND BILLING DATA.**

2–14. **BILLING DESTINATION.**

OPTIONS

Recue for RS232
HDLC

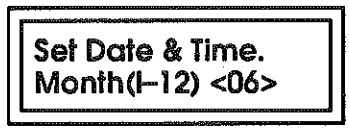
2–15. **KILLDATE ENABLE.**



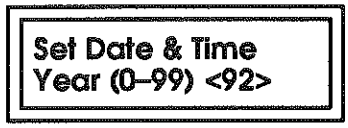
2–16. **OUT OF DATE PLAY ENABLE.**

2–17. **DAY OF THE WEEK.**

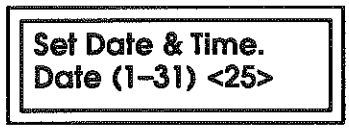
2–18. **MONTH.**



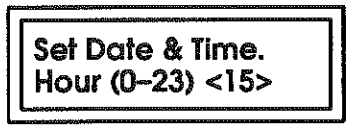
2–19. **YEAR.**



2–20. **DATE.**



2–21. **HOUR.**



2–22. **MINUTE.**

2–23. After depressing the SELECT switch to confirm the minutes, the machine will re–enter the DIAGNOSTIC ROUTINE. This initializing is only required to: 1) set the internal clock to local time, 2) reset with seasonal changes, or 3) set various default play modes. The diagnostic routine will appear during normal turn–on operation.

2–24. **SETTING THE LCD CONTRAST.**

2–25. The LCD contrast is factory set for a half over head view. The contrast may be adjusted at RV1 on the main decoder PCB. Later versions of the DC–10 contain a front panel LCD contrast control. The machine cover is a sleeve which is retained by the front panel and two bottom–panel screws. Remove the four front panel and the two bottom–panel retaining screws and carefully slide the cover from the machine.

2–26. When the cover is replaced, ensure the ribbon cables do not become trapped.

2–27. **CLEANING THE DISK DRIVES.**

2–28. It is recommended that a drive cleaning disk be used every 2000 hours of operation. The cummulative running time of the machine is indicated at turn–on during the DIAGNOSTIC ROUTING. Drive cleaning disks are available from a local computer store.

SECTION III
OPERATION

3–1. **INTRODUCTION.**

WARNING ***ENSURE THE DISC TRAK IS CONNECTED TO THE APPROPRIATE AC LINE VOLTAGE AND EARTH GROUND.***

WARNING

CAUTION ***THE DISC TRAK CONTAINS STATIC SENSITIVE DEVICES. STATIC PRECAUTIONS MUST BE PERFORMED TO PREVENT DAMAGE DURING ANY CIRCUIT BOARD PROCEDURES.***

CAUTION

3–2. It is important the unit be connected to the appropriate ac line voltage. Ensure the ac line voltage appearing on the rear–panel identification plate is identical to the station power supply voltage. In addition, ensure the fuse is rated for the ac power supply voltage.

3–3. **CHECKS.**

WARNING ***ENSURE THE DISC TRAK MACHINE IS CONNECTED TO A GROUNDED AC OUTLET.***

WARNING

3–4. The serial number and operating voltage for the machine is located on a rear–panel identification plate. Ensure the machine is configured for the correct operating voltage. Ensure the DISC TRAK ac line cord is connected to a grounded ac outlet.

3–5. **POWER CONNECTION.**

3–6. The ac input receptable is designed for an ac line cord configured as follows:

Green – Earth
White – Neutral
Black – Voltage

3–7. If a different ac line cord configuration is required, connect the wires to an appropriate line cord connector using the wiring information presented in the preceding text.

3–8. **FACILITIES CONNECTIONS.**

The DISC TRAK is equipped with the following connectors:

AUDIO OUTPUTS L & R	XLR–3, MALE
AES EBU OUTPUTS	D–TYPE 9–PIN, MALE
FAST COMMUNICATION PORT	BNC SOCKET
RS232 PORT	D –TYPE 9–PIN, FEMALE
REMOTES	D–TYPE 15–PIN, FEMALE

3–9. Refer to SECTION I, INSTALLATION for specific information on the connectors.

3–10. **POWER UP.**

3–11. During initial operation of the DISC TRAK machine, the Real Time clock must be set. Refer to SECTION II, PRELIMINARY OPERATION.

3–12. During initial operation, the machine initiates a DIAGNOSTIC ROUTINE. The DIAGNOSTIC ROUTINE provides the operator with information on machine conditions and a self check.

3–13. The LCD display indicates total elapsed running time. The LCD display provides the following information:

3–14. At the end of the diagnostic routine, the machine LCD display will present:

The first display line presents the condition of the drive. The 2nd display line indicates the status of the machine. The normal factory set default mode is STEREO, 32KHz sample rate, and SINGLE play.

3–15. **INSERTING A DISK.**

3–16. Insert a pre–recorded disk into the drive. The display will read TRACK NUMBER, TITLE, and RUNNING TIME for a correctly recorded disk.

3–17. **MODE SELECTION.**

3–18. Depress the mode SELECT button and use the RECUE button to review SINGLE PLAY, SINGLE LOOP, CUE NEXT TRACK, and PLAY ALL modes.

3–19. Single PLAY mode will provide for 1 TRACK on the disk.

3–20. Single LOOP will continuously loop and repeat a single track.

3–21. CUE NEXT TRACK will cue the track following the current on–air track. Depressing the PLAY button will start the next cued track. With the drive not operating, depressing the RECUE button twice will cue the disk to track 1.

3–22. PLAY ALL will play all tracks on the disk in ascending order. Depressing the PLAY button will start this function. With the drive not operating, depressing the RECUE button will cue the disk to track 1.

3–23. **TRACK SELECTION.**

3–24. A recorded 4 MB ED disk may have up to 8 tracks and a total 112 seconds of STEREO material at a sampling rate of 32K recorded on the disk. When a disk is inserted into the drive, the display shows TRACK 1, TITLE, and RUNNING TIME. Depress the SELECT switch and use the PLAY switch to review the contents of a disk. When a disk with multiple tracks is inserted, track 1 is selected except when the rotating track mode is enabled.

3–25. **RUNNING TIME.**

3–26. The maximum run time of a DISC TRAK disk is dependent on the SAMPLE RATE and MONO or STEREO mode of operation.

3–27. The sample rates currently available within the equipment are: 1) 22.05KHz, 2) 32KHz, 3) 44.1KHz, and 4) 48KHz. 22.05KHz is used for 11KHz bandwidth mono recordings. 32KHz is used for 16KHz bandwidth stereo recordings and is the default sample rate for use in radio broadcast. 44.1KHz is used as Compact Disk sample rate. 48KHz is used as the professional audio recording rate.

3–28. Run times are as follows:

TABLE 1. RUNNING TIMES FOR 2MB AND 4MB DISKS

DISK SIZE	MODE	SAMPLE RATE (KHz)				UNITS
		22.05	32	44.1	48	
2MB	MONO	147	102	73	68	SECONDS
	STEREO	73	51	36	34	SECONDS
4MB	MONO	325	224	162	149	SECONDS
	STEREO	162	112	81	74	SECONDS

3–29. **PLAYING.**

3–30. To play a selected disk and track, depress the PLAY button. If the disk has just been inserted, the play instruction is retained until the machine is ready to play. The PLAY indicator will illuminate.

3–31. The RUNNING TIME display during PLAY is configured as a countdown timer indicating TIME REMAINING. This may be used to anticipate other program events. When a disk is playing, a cursor highlights the corresponding track number.

3–32. **PAUSE.**

3–33. Depress PLAY again to place the machine in PAUSE. Both PLAY and RECUE indicators are illuminated in the PAUSE mode. Depressing PLAY again restarts the machine from PAUSE. Depressing RECUE in the PAUSE mode RECUES the disk.

3–34. **STOP/RECUE.**

3–35. To stop the program or recue, depress RECUE. The disk is immediately ready to PLAY and the program is muted. Tracks are recued to the start of the selected track.

3–36. **KILL DATE FEATURES.**

3–37. Recordings can be made with a KILLDATE entered into the disk header. The machine can use this data for several operations. An indicaiton of KILLDATE operation is 1) the track is OUTDATED or 2) the play of the drive may be inhibited. The selection of FIRST and LAST dates may be used for preventing the play of recordings before or after desired dates and for indicating the expiration of promotions. The kill date functions are available in the SETUP routines at power on.

In the SETUP mode, KILLDATE ENABLE <Y> or <N> may be selected. <N> disables this feature and the killdate is ignored during play. The <Y> function will allow the killdate feature to be active. Disks recorded with a killdate will play normally until the expiration date is encountered. At 12 AM, the killdate function will become active.

3–38. This feature can be configured by SETUP for two operations. The choice is ALLOW PLAY <Y> or <N>. The <N> selection prevents the track from being played. The display screen prompts with TRACK 1 OUTDATED and prevents the PLAY button, remote, or RS232 command from starting play. All other tracks are not affected. The <Y> selection will produce TRACK 1 OUTDATED. However, by depressing PLAY, the normal disk title track number and duration are displayed and the track validated. In this mode the track may be played by depressing the PLAY switch again. When the track is finished, the screen will show TRACK 1 OUTDATED unless the SINGLE LOOP mode is selected or if the autoloop feature has been recorded on the disk header. Killdate data may be edited, removed, or changed using the DC–300 recorder and the ALT F6 edit mode.

3–39. **DISK STATUS.**

3–40. The LCD display line 2 presents the disk status. Recordings in MONO or alternative sample rates are recognized by the DISC TRAK and the output and digital filtering are automatically configured to the disk type.

3–41. DISC TRAK FORMAT is used to generate the digital recordings on this equipment. Disks that are incorrectly recorded, damaged, or of the wrong type will result in the presentation of a prompt on the screen display.

NOTE ***DISC TRAK WILL NOT ACCEPT 1MB DISKS.***

NOTE

3–42. The standard disk for the DISC TRAK machine is a 4MB ED disk. However, 2MB HD disks will provide recordings of half the duration. DISC TRAK will recognize 4MB or 2MB disks.

3–43. **DISK INFORMATION.**

3–44. Disks which are inappropriate for DISC TRAK will produce disk messages on the appropriate display line as presented in the following text.

3–45. **INVALID FORMAT.**

3–46. Either the disk has no format or has an incorrect format for DISC TRAK operation. Re–format to use with DISC TRAK.

3–47. **DAMAGED DISK.**

3–48. When formatting a disk, damaged disks will be rejected and produce DAMAGED DISK on the display.

3–49. **BAD COMPRESSION.**

3–50. Compression errors which occur during formatting will produce BAD COMPRESSION on the display. Re–format the disk.

3–51. **1MB INVALID DISK.**

3–52. Incorrect storage size. Acceptable disks are 4MB ED and 2MB HD.

3–53. **DISK ERROR.**

3–54. This may occur when playing to indicate an accumulation of read errors.

3–55. **DISK MESSAGES.**

3–56. The DISC TRAK is equipped with 18 disk messages and 11 status messages. A complete message inventory is presented in the appendix.

SECTION IV
SPECIFICATIONS

4–1. **MEDIUM.**

TYPE – Optimally formatted low cost 3.5 inch ED or HD type floppy disks.

RUNNING TIME – 112 seconds stereo, 224 seconds mono per disk at a 32 kHz sampling rate using an ED diskette.

4–2. **EQUIPMENT.**

FORMAT – 16–bit linear, compressed digitial stereo.

COMPRESSION – APT–X 100. 4:1 compression.

4–3. **AUDIO.**

FREQUENCY RESPONSE	± 0.5 dB, 40Hz –15KHz.
DISTORTION	Less than 0.1% at 1KHz, +10 dBU output.
SIGNAL TO NOISE RATIO	80 dB.
WOW AND FLUTTER	Unmeasurable.
PHASE ERROR @10KHz	Unmeasurable.
OUTPUT IMPEDANCE	Less than 50 Ohms balance/floating.
MAX. OUTPUT LEVEL	+16 dBu.

4–4. **DIGITAL OUTPUTS.**

AES–EBU professional mode IEC 958.

4–5. **H.D.L.C.**

High level data link control.
Bi–Directional data link.

4–6. **FACILITIES.**
DATA LABEL – 40 characters routed to RS232 when playing.
SAMPLING RATE – 22.05KHz, 32KHz, 44.1KHz, 48KHz by selection.

4–7. **AC POWER REQUIREMENTS.**

115V 60Hz fused 500mA.
220V 50Hz fused 250mA.
240V 50Hz fused 250mA.
40 VA nominal.

4–8. **CONNECTOR.**

Fused IEC.

4–9. **DIMENSIONS.**

3.25 inches high x 5.5 inches wide x 13 inches deep.
8.25cm high x 13.9cm wide x 33.0cm deep.

4–10. **WEIGHT.**

3.3 kg unpacked.
7.3 pounds unpacked.

4–11. RACK MOUNTING.

3 DC–10 UNITS require 2 rack units of a standard 19 inch EIA rack (BE P/N 954–1010).

SECTION V
APPENDIX A
DISC TRAK FORMAT (C) 1991

5–1. The following text provides information for the DISC TRAK digital cart machine format coding. The information presented is copyrighted by SONIFEX LTD and is released subject to formal acknowledgement when used in commercial applications.

5–2. **FORMAT OF DISKS FOR DISC TRAK.**

1. ED 4MB DISKS – 80 Tracks per side, 11 Sectors per Track, 2048 Bytes per Sector. (Track 0 Side 0, 36 Sectors per Track, 512 Bytes per Sector).
2. HD 2MB DISKS – 80 Tracks per side, 5 Sectors per Track, 2048 Bytes per Sector. (Track 0 Side 0,18 Sectors per Track, 512 Bytes per Sector).
3. Gap3 SIZE – 83 Bytes for 4MB & 2MB disks.
4. HEADER TRACK – Track 0, Side 0. The header is contained in the first two sectors, and audio data starts in track 0, side 1.
5. HEADER FORMAT – Header information uses 1024 Bytes arranged as follows :

Byte(s)	Definition
0	Compression System 01=APT 4:1
1	Number of Plays on disk (0–8)
2	Number of Bad Tracks (0–1+ bad tracks)
3–15	Reserved
16–141	Play 1 Information
142–267	Play 2 Information
268–393	Play 3 Information
394–519	Play 4 Information
520–645	Play 5 Information
646–771	Play 6 Information
772–897	Play 7 Information
898–1023	Play 8 Information

6. PLAY INFORMATION – Each play uses 126 Bytes arranged as follows:

Byte(s)	Definition
0	Start Track (1–159)
1	Start Sector (2MB 1–5,4MB 1–11)
2	End Track
3	End Sector (2MB 1–5,4MB 1–11)
4–16	Title
17	Reserved
18–21	Duration in 0.01 seconds
22	Mono/Stereo Flag (0=mono,255=stereo)
23	Frequency Flag (0=22KHz,1=32KHz,2=44KHz, and 3=48kHz)
24–63	Billing Information (ASCII nul character to end)
64–65	Reserved

Byte(s)	Definition
66–68	Record Date dd/mm/yy
69	Reserved
70–72	Kill Date dd/mm/yy (last play date)
73	Reserved
74–77	Cue 1 Start in 0.01 seconds
78–81	Cue 1 Finish in 0.01 seconds
82–85	Cue 2 Start in 0.01 seconds
86–89	Cue 2 Finish in 0.01 seconds
90–93	Cue 3 Start in 0.01 seconds
94–97	Cue 3 Finish in 0.01 seconds
98–101	Cue 4 Start in 0.01 seconds
102–105	Cue 4 Finish in 0.01 seconds
106–109	Cue 5 Start in 0.01 seconds
110–113	Cue 5 Finish in 0.01 seconds
114–117	Sec Cue Length
118–125	Reserved

SECTION V
APPENDIX B
SCREEN MESSAGES

5–3. DISK MESSAGES.

" DISK NOT READY "
"* BLANK DISK *"
"* DAMAGED DISK *"
"BAD COMPRESSION "
"TRACK 0 READ ERR"
"DISK READ ERROR "
"* FDC GET DATA *"
"INTERRUPT TIMER "
"* FDC TIMEOUT * "
"** SEEK ERROR **"
"** CRC ERROR ** "
"** DATA ERROR **"
" INVALID FORMAT "
"FDC COMMAND ERR "
"BUFFER OVERFLOW "
"** IDMA ERROR **"
"** DISK ERROR **"
"1Mb INVALID DISK"

5–4. TEMPORARY ERROR MESSAGES.

"TRACK OUTDATED"

5–5. STATUS LINE MESSAGES.

"Ste "
"Mon "
"32"
"22"
"44"
"48"
"Play "
"Loop "
" Next "
" All "
" HDX "
"MoTuWeThFrSaSu"

5–6. SETUP MESSAGES.

" Setup Mode"
"Eng Messages <Y>"
"Set Date & Time."
"Device Connected"
"Hard Disk <N>"
"Hard Disk <Y>"

SETUP MESSAGES (CON'T).

"Set Play Modes.."
"Loop Enable"
"Loop Disable"
"Next Enable"
"Next Disable"
"Play All Enable "
"Play All Disable"
"Power on Default"
"single PLAY"
"single LOOP"
"cue NEXT track"
"play ALL tracks"
"Rotating TRK <N>"
"Rotating TRK <Y>"
"RS232 Settings"
"BAUD Rate <1200>"
"BAUD Rate <2400>"
"BAUD Rate <4800>"
"BAUD Rate <9600>"
"Parity <Odd>"
"Parity <None>"
"Parity <Even>"
"Billing Settings"
"Send Billing <N>"
"Send Billing <Y>"
"Send to RS232"
"Send to HDLC"
"Out of Date"
"Kill date Disable"
"KILLDATE Enable "
"Allow Play <Y>"
"Allow Play <N>"

5–7. POWER ON SETUP MESSAGES.

"V1.3 HRS"
"RAM Check"
"V1.3 hours"
" Setup Routines "
"Recue = Step"
" Select = Accept"
"Day of Week "
"<Mo>"
"Date (1–31) "
" <01> "
"Month(1–12)"
" <01> "
"Year (0–99)"

POWER ON SETUP MESSAGES (CON'T).

" <92> "
"Hour (0–23) "
" <00> "
"Min (0–59) "
" <00> "

SECTION V
APPENDIX C
RS–232 INTERFACE

5–8. RS232 commands have been implemented to allow a remote device to control a DISC TRAK.

5–9. The RS232 port must be set to 8 DATA bits and 1 STOP bit. The BAUD rate is selectable from 9600, 4800, 2400, and 1200. The PARITY can be set to EVEN, ODD, or NONE.

5–10. The commands: 1) contain 2 uppercase characters plus argument or data as applicable and 2) are terminated by a NUL character.

5–11. The billing information is output to an external device when the confirmation bit is routed to the remote port. The control features must be enabled by requesting the machine identification.

5–12. **COMMANDS TO DISC TRAK.**

GPn	REQUEST PLAY INFORMATION FROM DISK DESIGNATED BY n (Value 1– 7). SET BIT 0 = DRIVE 1 SET BIT 1 = DRIVE 2 SET BIT 2 = DRIVE 3
GS	REQUEST STATUS FROM DISC TRAK.
ID	REQUEST MACHINE IDENTIFICATION.
MA	SELECT PLAY ALL MODE.
ML	SELECT SINGLE LOOP MODE.
MN	SELECT CUE TO NEXT TRACK MODE.
MP	SELECT SINGLE PLAY MODE.
MQ	SELECT CUE ALL TRACKS MODE *.
MR	SELECT SEQUENCE LOOP (REPEAT) MODE *.
MS	SELECT SEQUENCE MODE *.
PLd	PLAY/PAUSE CUED TRACK DRIVE 1– 3. d = ASCII 1– 3 (Value 49, 50, 51)
ST	STOP PLAY
TRdt	SELECT TRACK t ON DISK DRIVE d. t = ASCII 1– 8 (Value 49 – 56) d = ASCII 1– 3 (Value 49 – 51) *NOT AVAILABLE ON DC 10

5–13. **DATA FROM DISC TRAK.**

DXabc	DISC TRAK IDENTIFICATION.	
	abc=	10 30 300
PIdt + data	PLAY INFORMATION REQUESTED BY "GP" COMMAND. d = DRIVE 1– 3 t = NUMBER OF TRACKS 0 – 8	
	data is	20 BYTES PER TRACK 13 BYTES FOR TITLE 7 BYTES FOR DURATION IN 1/100 SECONDS (9999999 MAX)

SB + data	BILLING INFORMATION. data is mm:hh DD/MM/YY BILLING INFORMATION = UP TO 40 CHARACTERS PROGRAMMED DURING RECORD
SI + data	STATUS INFORMATION. data BYTES: MACHINE MODE EDIT ERROR PLAY STATUS DISK 1 STATUS DISK 2 STATUS DISK 3 STATUS

Machine Mode

HEX VALUE

10	PLAYING DRIVE 1
11	PLAYING DRIVE 2
12	PLAYING DRIVE 3
18	PAUSED DRIVE 1
19	PAUSED DRIVE 2
lA	PAUSED DRIVE 3
20	RECORD WAITING FOR START
21	RECORDING
80	EDIT ENVIRONMENT
90	PLAYBACK RECORDED TRACK
91	PLAYBACK LAST 10 SECONDS
92	PLAYBACK AND SET TERTIARY CUES
93	PLAYBACK LAST 10 SECONDS AND SET SECONDARY CUE
FF	STANDBY MODE

Edit Error

HEX VALUE

01	NO ERROR (ALWAYS FOR DC 10)
02	INVALID SOURCE DRIVE
03	SOURCE DRIVE ERROR
04	INVALID TRACK NUMBER
05	INVALID COPY DRIVE
06	COPY DRIVE ERROR
07	COPY SPACE TOO SMALL
08	SOURCE NOT READY
09	COPY DRIVE NOT READY
OA	INVALID TRACK DATA
OB	DISK WRITE PROTECTED
OC	CANNOT COPY TO ITSELF
OD	DIFFERENT SIZE DISKS
OE	DISK FULL
OF	FREQUENCY TOO HIGH
10	NO TRACK DATA TO EDIT
11	OTHER ERROR

Play Status

BITS 1, 0 = FREQUENCY

Play Status (CON'T).

00 = 22.05KHz SAMPLE FREQUENCY
01 = 32KHz SAMPLE FREQUENCY
10 = 44.1KHz SAMPLE FREQUENCY
11 = 48KHz SAMPLE FREQUENCY

BIT 2 = STEREO/MONO
0 = MONO
1 = STEREO

BITS 7, 6, 5 = PLAY MODE
001 = SINGLE PLAY
010 = SINGLE LOOP
011 = SEQUENCE
100 = SEQUENCE LOOP
101 = CUE NEXT TRACK
110 = CUE ALL TRACKS
111 = PLAY ALL

Disk Statuses

BITS 7 – 4 = 0001 – 1000 Number OF PLAYS
BITS 3 –0 = 0001 – 1000 SELECTED TRACK
IF BITS 7, 6 = 11, BITs 4 – 0 = ERROR NUMBER (0 –31)

Error Number

0	DISK NOT READY
1	BLANK DISK
2	DAMAGED DISK
3	BAD COMPRESSION
4	DISK WRITE PROTECTED
5	TRACK 0 READ ERROR
6	DISK READ ERROR
7	DISK WRITE ERROR
8	INTERRUPT TIMEOUT
9	FDC TIMEOUT
10	SEEK ERROR
11	CRC ERROR
12	DATA ERROR
13	INVALID FORMAT
14	FDC COMMAND ERROR
15	DISK FULL
16	BUFFER OVERFLOW
17	IDMA ERROR
18	HEADER WRITE ERROR
19	DISK ERROR
20	1MB INVALID DISK
21	FREQUENCY TOO HIGH
22	TRACK 0 WRITE ERROR

SECTION VI
FAULT MODES

6–1. The disks should not be removed from the equipment during play or read operation. Read operation is when the disk operating indicator is illuminated.

6–2. In the event of an equipment lock–up due to a fault, the equipment may be reset by disconnecting the primary ac power supply.

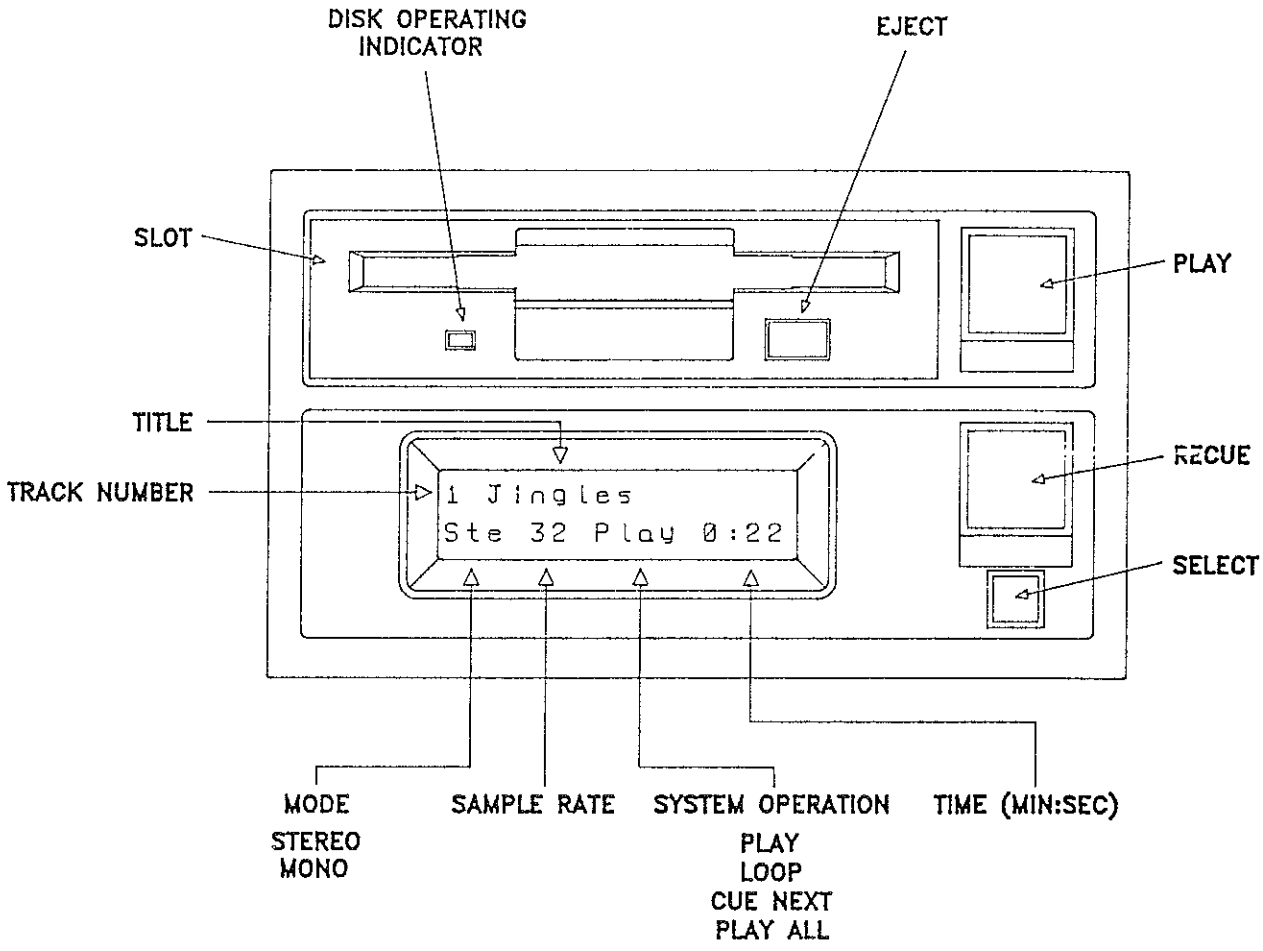
6–3. Equipment lock–up can be cleared from the front panel by: 1) depressing and holding the RECUE button and 2) depressing PLAY, SELECT, PLAY, and SELECT in sequence. The machine will respond by reseting. Depressing the SELECT button will access the on screen setup routines.

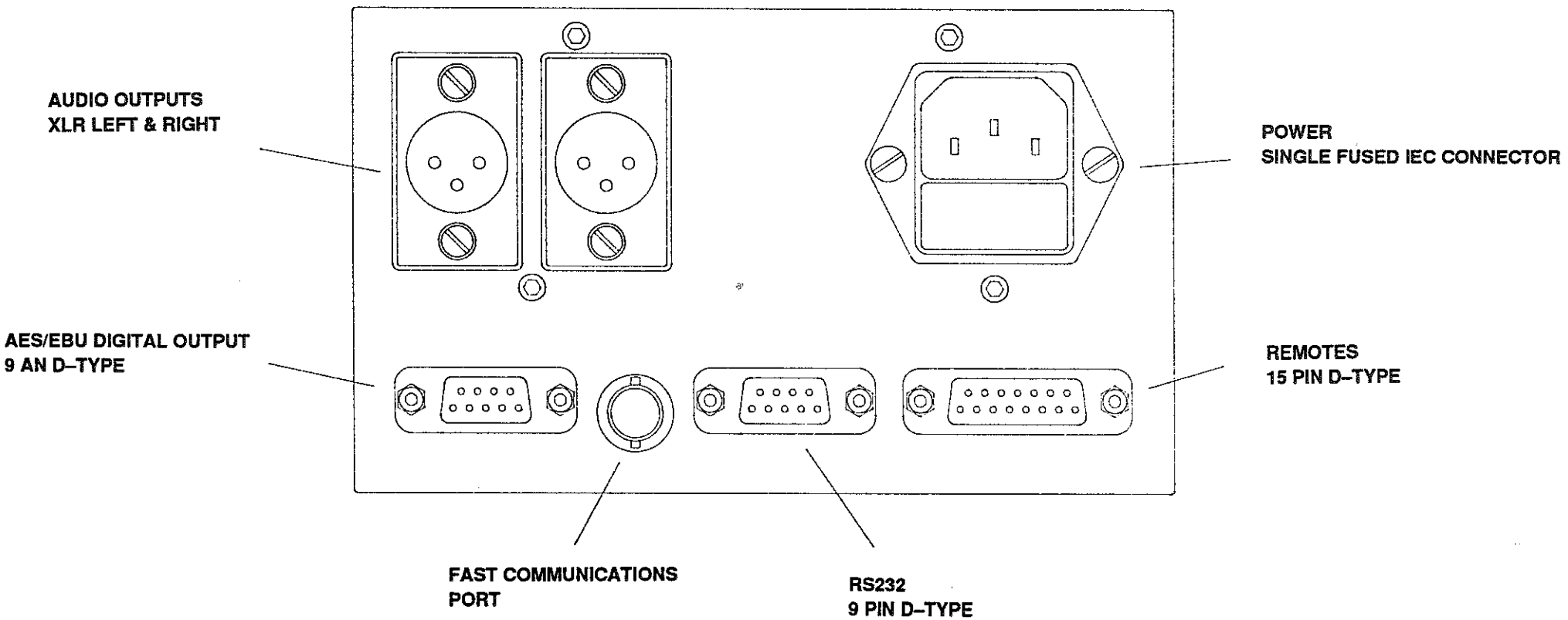
SECTION VII
DRAWINGS

7–1. **INTRODUCTION.**

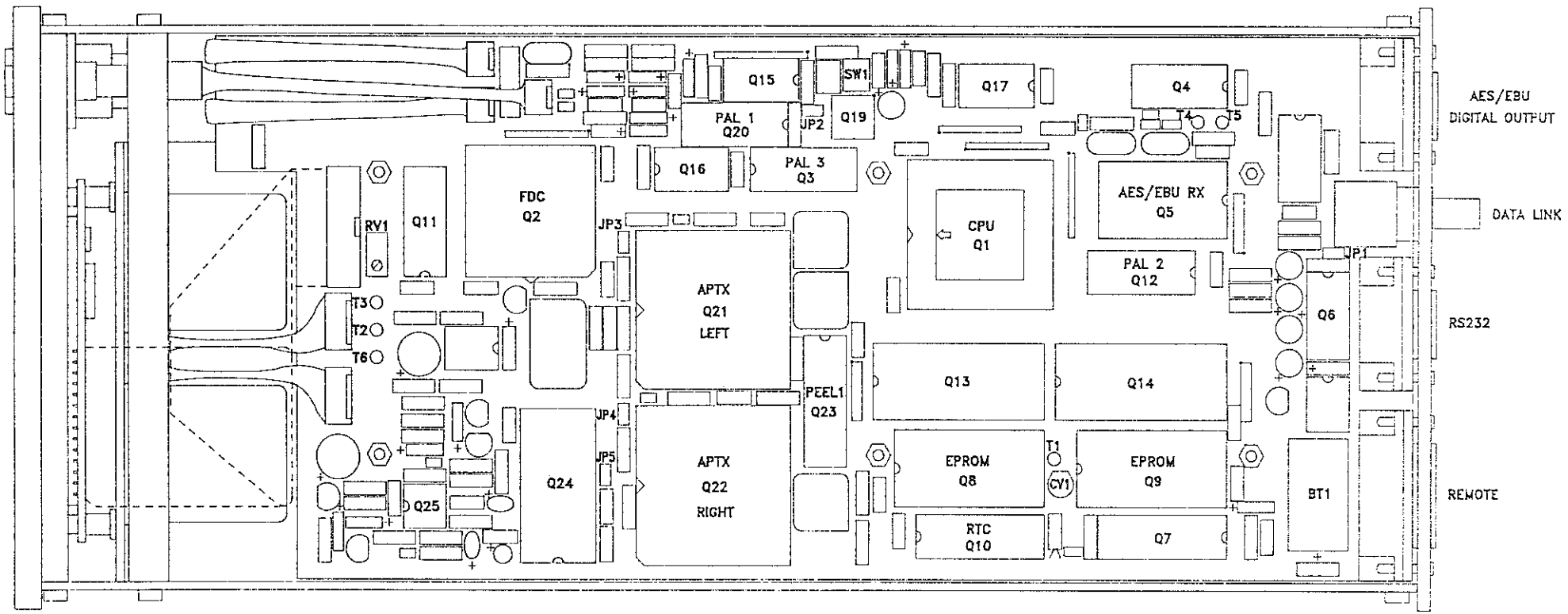
7–2. This section provides drawings for the Broadcast Electronics DC–10 Digital Cart Machine.

DISC TRAK CONTROLS

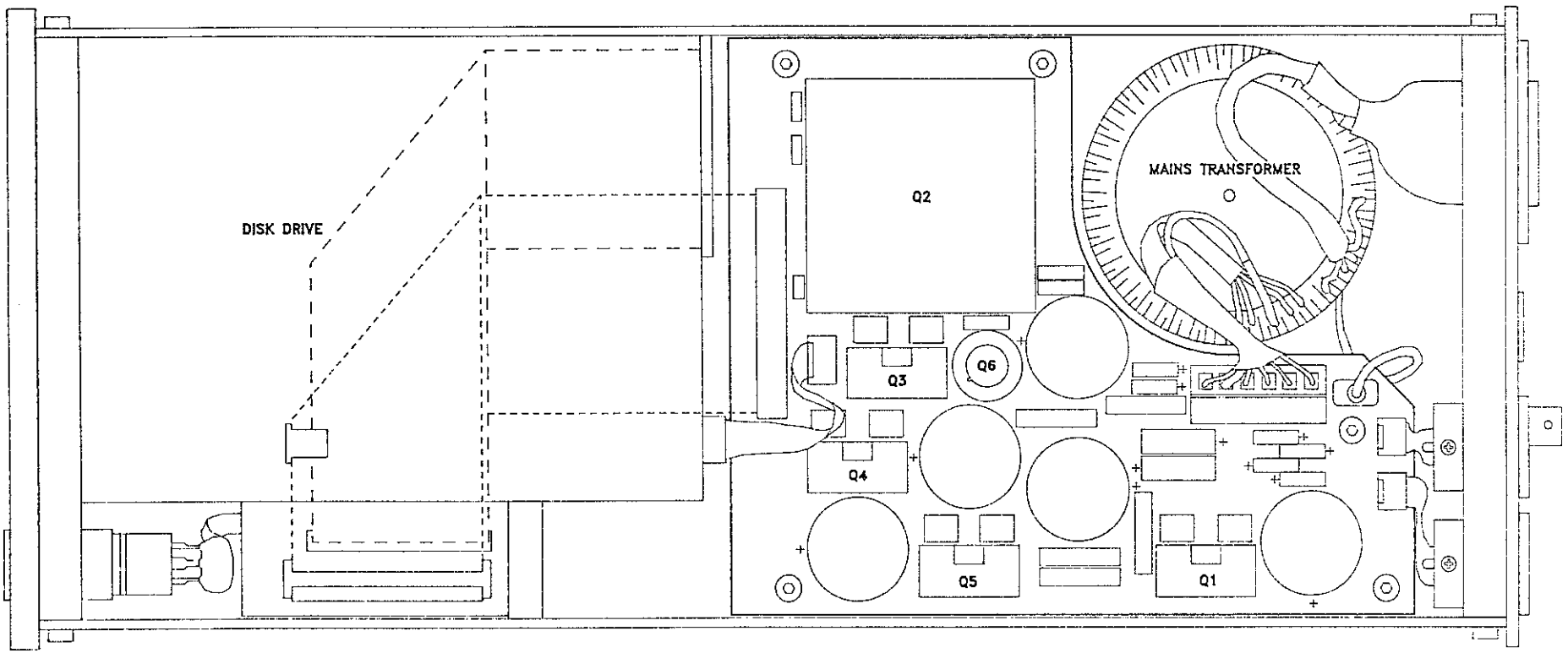




DISC TRAK DC–10 MECHANICAL DETAIL REAR PANEL



DISC TRAK DC–10 MECHANICAL DETAIL BOTTOM ELEVATION – PROCESSOR BOARD



DISC TRAK DC–10 MECHANICAL DETAIL
TOP ELEVATION – POWER SUPPLY AND
DISK DRIVE

PRODUCT WARRANTY

LIMITED TWO YEAR

While this warranty gives Purchaser specific legal rights, which terminate two (2) years (one year on turntable, cartridge and blower motors) from the date of shipment, Purchaser may also have other rights which vary state to state.

Broadcast Electronics, Inc. ("Seller") hereby warrants cartridge machines, consoles, and other new Equipment manufactured by Seller against any defects in material or workmanship at the time of delivery thereof, that develop under normal use within a period of two (2) years (one year for turntable, cartridge and blower motors) from the date of shipment, as such term is defined herein. Other manufacturer's and suppliers' Equipment and services, if any, including electronic tubes, solid state devices, transmission line, antennas, towers, related equipment and installation and erection services, shall carry only such manufacturer's or suppliers' standard warranty. This warranty extends to the original user and any subsequent purchaser during the warranty period. Seller's sole responsibility with respect to any equipment or parts not conforming to this warranty is to replace such equipment or parts upon the return thereof F.O.B. Seller's factory or authorized repair depot within the period aforesaid.

In the event of replacement pursuant to the foregoing warranty, only the unexpired portion of the warranty from the time of the original purchase will remain in effect for any such replacement. However, the warranty period will be extended for the length of time that Purchaser is without the services of the Equipment due to its being serviced pursuant to this warranty. The terms of the foregoing warranty shall be null and void if the Equipment has been altered or repaired without specific written authorization of Seller, or if Equipment is operated under environmental conditions or circumstances other than those specifically described in Seller's product literature or instruction manual which accompany the Equipment. Seller shall not be liable for any expense of any nature whatsoever incurred by the original user without prior written consent of Seller.

Seller shall not be liable to Purchaser for any and all incidental or consequential damages for breach of either expressed or implied warranties. However, some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to Purchaser. All express and implied warranties shall terminate at the conclusion of the period set forth herein. Any card which is enclosed with the equipment will be used by Seller for survey purposes only.

If the Equipment is described as used, it is sold as is and where is. If the contract covers equipment not owned by Seller at this date, it is sold subject to Seller's acquisition of possession and title.

EXCEPT AS SET FORTH HEREIN, AND EXCEPT AS TO TITLE, THERE ARE NO WARRANTIES, OR ANY AFFIRMATIONS OF FACT OR PROMISES BY SELLER, WITH REFERENCE TO THE EQUIPMENT, OR TO MERCHANTABILITY, FITNESS FOR A PARTICULAR APPLICATION, SIGNAL COVERAGE, INFRINGEMENT, OR OTHERWISE, WHICH EXTEND BEYOND THE DESCRIPTION OF THE EQUIPMENT ON THE FACE HEREOF.

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