Film-Tech

D I G I T A L

dts

S O U N D

DIGITAL THEATER SYSTEMS
Digital Sound For Movies

DTS TRAILER UNIT

INSTALLATION AND OPERATION MANUAL

WARRANTY

Equipment manufactured by Digital Theater Systems, L.P. is warranted against defects in materials and workmanship for one year from date of purchase. There are no other expressed or implied warranties.

Digital Theater Systems, L.P. obligation is restricted to repair and replacement of defective parts. Under no circumstances will Digital Theater Systems, L.P. be liable for any other damage, either direct or consequential.

All requests for repairs or information should include the unit serial number to ensure rapid service.

RETURNS

For warranty, repair, exchange or replacement parts, please call DTS for a Return Authorization number **before** sending any item back to us. At the time of the call, DTS will require that you provide the serial number of any DTS unit(s) to be returned **before** warranty replacement units will be sent. All return packaging should be clearly marked with the Return Authorization number on the **outside** of the package.

DTS Customer Service telephone: (818) 706-3525   or toll free   (800) 959-4109
                           FAX: (818) 706-1868

Unless directed otherwise, please send all returns with RA numbers to:

Digital Theater Systems
1270 Avenida Acaso, Suite C
Camarillo, California 93010 USA

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I. INTRODUCTION

The DTS Trailer Unit is an accessory part of the DTS-6 system and is designed to play DTS trailer discs in six-track digital sound. The trailer unit is connected to a modified DTS-6 player. The trailer discs reside in the trailer unit and are synchronized to play with DTS encoded trailer films through the DTS-6. A special DTS timecode is on the trailer print along with a conventional optical sound track. The timecode lies between the picture and optical sound track, and is printed onto the release print from the soundtrack negative. The backup optical sound track can be stereo or mono.

How Does It Work?

The DTS-6 playback unit must be modified to accept the trailer unit. Whenever possible, DTS encoded trailer films should be spliced in after all the analog trailers. The DTS system reads the trailer's timecode and plays the correct sound for each frame of film projected. It will be played in full six-track sound -- left, center, right, surround (stereo/mono), and subwoof -- through the DTS-6 system. Titles contained on the trailer disc are listed on the front of the disc. DTS encoded trailers and their matching disc will play with any analog or DTS encoded feature, or with another digital sound system and encoded movie (within certain parameters). DTS trailer discs will be updated as required by participating studios' trailer distribution department.

II. UNPACKING

The packaging is designed to handle normal shipping and handling. Upon receipt of shipment, check for signs of damage before opening and report all damage to the carrier. All shipments made from DTS are customer responsibility once they leave our premises.

Before installation is begun, a complete inventory should be taken to minimize problems or questions during installation. Additionally, save all packing material until installation is complete in the unlikely event that a component(s) requires return to the factory. Use the packing slip that came with your unit to verify received inventory.

The following is a sample packing list:

- DTS Trailer Unit
- Power cord, male to female, 6 feet long *2501-000400*
- SCSI cable, 25-pin to 50-pin "D" connectors, male to female, 6 feet long *2503-0007-00*
- V1.28 firmware chip
- ROM-DOS Rev. D firmware chip
- Modified DTS-6 rear panel   *2 old 9020-0828-00*
- Trailer Test Disc   *2 new 9020-0824-00*

And, if required:

- DTS Reader Head, Rev. F

Note: The trailer unit is shipped "desk top" style that can be placed on any flat surface. A rack mount kit and hardware are also available. Uses two rack spaces (19" wide, 3 1/2" high).

If any of the items on your packing list cannot be found, contact DTS with the P/N and description of the missing item(s).

Refer to **"RETURNS,"** page i, when sending any product back to DTS.

Tools required for installation:

#1 and #2 Phillips screwdrivers
R3322 (commonly called "greenie") and 1/4 flat-bladed screwdrivers
3/16 hex driver
Diagonal cutters

III. INSTALLATION PROCEDURE

- **The DTS reader head in the system must be Rev. F.** Examine the reader's circuit board by holding the reader in your hand and pointing its 9-pin connector towards you. While slowly tilting the reader, aim a flashlight just under the connector. The board's revision should be seen (D424 REV __). Anything lower than "F" must be changed. If installation is change-over, then change both readers.

- Power off the DTS-6 player and remove it from the rack. Find a suitable work area to put the player on. To prevent static buildup, work in an area with linoleum flooring.

- Remove the unit's top cover and existing back plate. Replace plate with the "trailer mod" plate. Copy the serial number of the old plate onto the new plate in the space provided. Only "current" plates need the serial number copied to it. See Figure 2T.

- In the DTS-6, cut tie holding down SCSI board to motherboard. Unscrew SCSI board's bracket from chassis and move board over left one position (as looking from the rear panel). The SCSI connector should line up with new back plate cut-out. Press SCSI board down onto motherboard connector. Screw down SCSI bracket to chassis. See Figure 4T.

- **Change DTS-6 firmware** (U14) to V1.28 and ROM-DOS to Rev. D. Both of these parts are on D422 card (one with the LEDs). See Figure 3T. Use caution when installing new firmware: Make sure all pins are in the sockets and that the notch on the IC matches up to the notch in the socket. The notch indicates pin 1.

- Plug in "non-sync" (twisted pair) wires from new rear plate to D422 "W1" header position "2". Position it so that the black wire is on top row and the red wire on the bottom row. See Figure 3T.

- Determine where to install the trailer unit. Rack or desk mount? Be sure the cables will reach -- should be within 6 feet of the DTS-6 player.

- **Rack Mount Installation**

  * Assemble rack mount kit. See Figure 1T. Use hardware provided.

  * Find an empty double rack space. Mount kit to rack using hardware provided.

  * Remove rubber feet from bottom of trailer unit. From the rear of the rack, slide the trailer unit onto the rack shelf. The back of the trailer unit should fit into the rear lip of the shelf. The front of the trailer unit should be poking out of the front panel.

- Attach data cable from the trailer unit to the DTS-6 SCSI card. Secure data cable: Close the cable clamps on the trailer unit; and tighten the cable thumbscrews to the DTS-6 SCSI card.

-continued-

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- Attach the male - female power cable to DTS-6 player and the trailer unit. The power cord from the DTS-6 to main AC power is still needed and should remain connected to the bottom AC connector. The power cable for the trailer unit plugs into the DTS-6 top AC connector. See Figure 2T.

- Do not connect to the "non-sync" terminals on the rear panel. It is not used at this time.

- **Installing the trailer unit in a system with more than one digital sound system.**

Installations that want to play DTS digital trailers with a movie formatted for another digital playback system need special consideration. In this case, all digital readers must be threaded at the same time. To avoid confusion, it is recommended that <u>all</u> readers be threaded <u>all</u> the time for <u>each</u> show. And the delay in each system must be set for this configuration. Existing systems that are adding the DTS trailer unit must recheck and (if necessary) reset the delay setting for each digital system. Failure to do so will result in the sound being out of sync with the picture projected.

* If the DTS reader is before other digital reader(s), reset the offset (delay) setting in the DTS-6 player. Thread film through all readers. Count the number of frames from the DTS reader's lens to the picture aperture. Multiply this number by 1.25. The result must be within 14 and 70. This is your offset (or delay) for the DTS-6. If needed, reposition the DTS reader so that the offset is within the correct parameters. See the DTS-6 Installation Manual, Section 4.2, for details. Recheck the delay for the other systems. **Leave a threading map for the projectionist.**

* If the DTS reader is last in a multi-digital system, reset the delay for the other digital system(s). For information on how to reset those delays, consult the system's manual or manufacturer. **Leave a threading map for the projectionist.**

IV.   **CHECKOUT PROCEDURE**

You will need the "Trailer Test Disc" or the "DTS 6-Track Setup, Rev. D" disc to perform the checkout and finish the installation. **The Rev. C Setup disc will not work.**

- Power on the DTS-6 player. Both the DTS-6 and the trailer unit should power on together. Be sure the trailer unit is powered -- indicated by its green LED illuminating. The trailer unit has its own power switch, so if its power indictor light is not on, push its power switch. Cycle power on the DTS-6 unit.

- Remove any disc from the DTS-6 player. Insert the Trailer Test Disc into the trailer unit. The DTS-6 should do its self-test sequence and then automatically play the disc.

- Remove the Trailer Test disc from the trailer unit. If a level check is needed for the DTS-6 player, do it at this time. See the DTS-6 Installation Manual, Section 4.1, for details.

V. OPERATION

• Splice in the DTS encoded Trailer Films

If possible, add the DTS encoded trailer after all the analog trailers. If you have a Dolby CP200 cinema processor, add a cue to the film so that the processor pluses to "04" before the DTS encoded trailer is played.

• Splice in the DTS (logo) Trailer Film

Splice in the DTS logo film at about six frames after fade-out (should still have timecode) and add it directly to the first frame picture (of the movie) with timecode.

• Verify Trailer Discs

The DTS trailer disc will arrive in a case instead of a caddy. The trailer unit has "caddy-less" CD-ROM drives. Make sure your disc matches the trailers you have spliced in. If the DTS encoded trailers are not listed on the trailer disc the digital sound track will not play. To verify you have the latest version trailer disc, contact DTS Customer Service.

• Handling a CD-ROM disc

When removing discs from their packing, handle only the edges of the disc. Avoid touching the bottom of the disc as this is where the digital information is stored. If needed, wipe the disc off with a clean damp cloth. Do not use window cleaner/alcohol.

• Load trailer disc into the DTS Trailer Unit

Turn power on. Press the open/close button on the trailer unit to slide out the CD tray. Remove any disc left in the tray. Remove the new disc from the CD case and place it on the tray. The disc should lay printed side up and flat in the tray.

Press the open/close button to slide the tray back into the drive. While the DTS-6 is playing, do not press the trailer unit's buttons as it will cause an interruption in sound and reset the system.

The trailer disc will also play in the CD-ROM drives on the DTS-6 player. However, it is recommended that the trailer disc be loaded and reside in the trailer unit.

• Load DTS movie discs into the DTS-6 player

Even if the feature film is not playing in DTS, leave the DTS-6 powered on. If the DTS-6 is turned off, the trailer disc will not play.

IMPORTANT: Whenever DTS discs are changed, turn power off on the DTS-6, wait 2 seconds and then turn power on again. This reboots the system.

- **Thread DTS Timecode Reader**

Installations with more than one digital sound system must thread the film through all reader heads that were used when setting the delay (for each system). Failure to do so will cause sync problems when the feature or trailers play in digital. See Section IV.

- **Starting Show**

Power on the DTS-6 player. Less than a minute after disc(s) are loaded in the DTS-6 player and/or the trailer unit, the DTS-6 SYSTEM light will flash. This indicates it is ready to play in digital. If the SYSTEM light does not flash, cycle the power on the DTS-6: turn unit off, wait 2 seconds, turn unit on. If the light does not flash after 40 seconds, turn off the DTS-6 unit, and contact DTS technical support.

When DTS timecoded film reaches the DTS reader, the green light on the reader and the TIMECODE light on the DTS-6 processor will illuminate. A second later, the DIGITAL light on the DTS-6 processor will illuminate and the DTS digital sound track will start playing. The DTS-6 player should also pulse the cinema processor to the digital format.

You do not need DTS movie discs loaded in the DTS-6 player for the trailer disc to play, but the DTS-6 player must remain powered. This allows theaters to play DTS digital trailers while the movie plays in analog or in another digital format.

- **After The Show**

Keep the trailer disc in the trailer unit until you receive a new one. Keep the trailer unit and the DTS-6 powered on. Turn off the DTS-6 player only if it interferes with the operation of another digital system.

DTS TECHNICAL SUPPORT

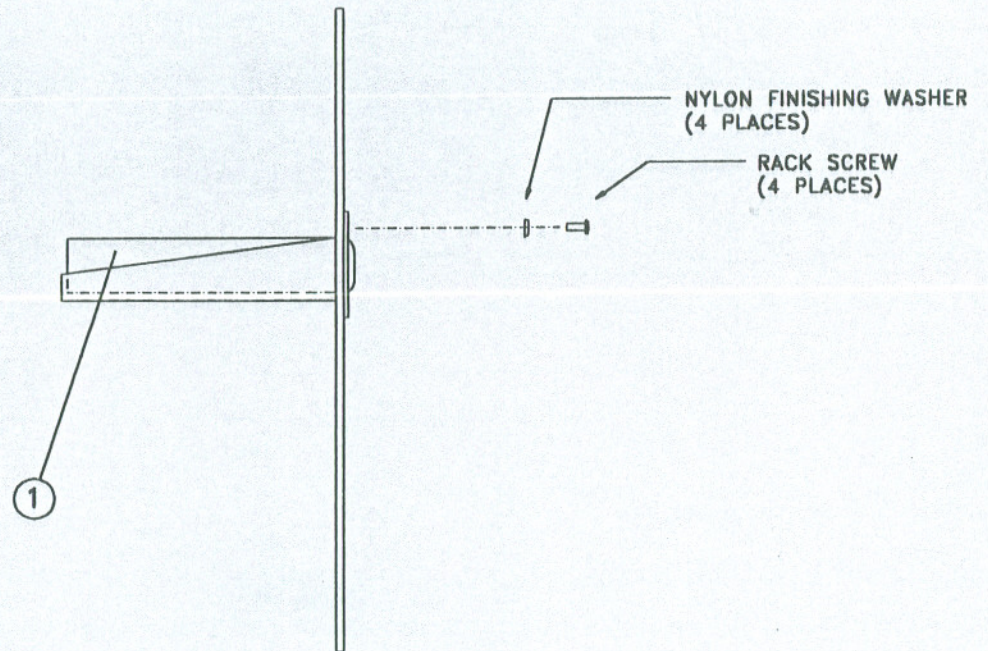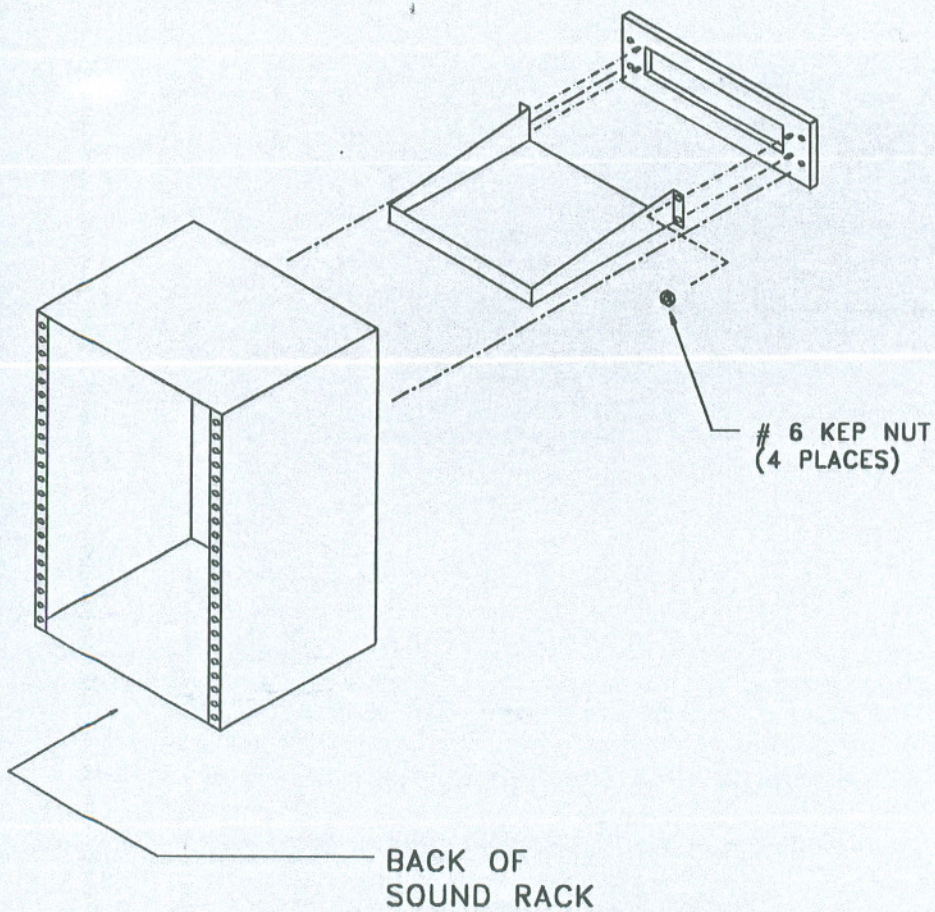|	
TELEPHONE:	(818) 706-3525 or toll free (800) 959-4109
FAX:	(818) 706-1868

INTERNET users may email DTS at the following address: 73362.1140@compuserve.com

DTS is on-line with CompuServe. Our user ID number is 73362,1140 E-mail can be directed to Karen Hultgren who oversees the service. DTS participates in the following two forums: Showbiz (section 2 - new films) & CEVideo (section 8 - film). Technical materials & movie lists are contained in their libraries.

DTS Web Site. If you have access to the INTERNET, look for the DTS web. In the web site you will find the latest DTS news for both theater and home products.
The address is: http://www.dtstech.com

INSTALLATION

DIAGRAMS

6 KEP NUT
(4 PLACES)

NYLON FINISHING WASHER
(4 PLACES)

RACK SCREW
(4 PLACES)

①

BACK OF
SOUND RACK

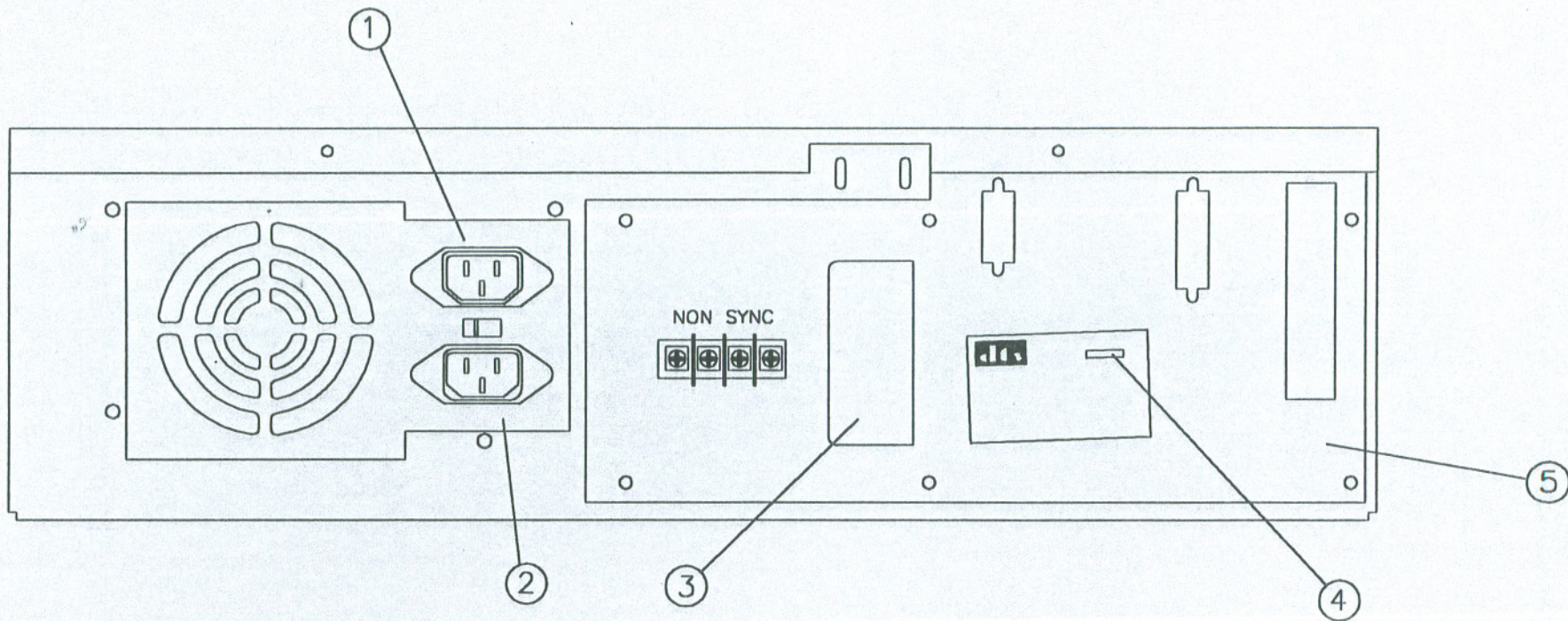SIDE VIEW OF SOUND RACK

NOTES:
① REMOVE FEET FROM CD ROM DRIVE
BEFORE PLACING ON SHELF

FIGURE 1T

1 POWER CABLE TO TRAILER UNIT

2 POWER CABLE — MAINS A.C.

3 SCSI CABLE TO TRAILER UNIT

4 ENTRY LOCATION FOR SERIAL NUMBER

5 CURRENT STYLE TRAILER MOD PLATE

6 OLD STYLE TRAILER MOD PLATE
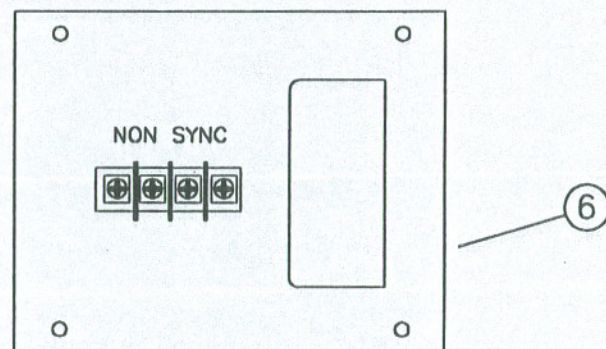
NON SYNC

FIGURE 2T   DTS-6 REAR PANEL

NON SYNC JUMPER POSITION:
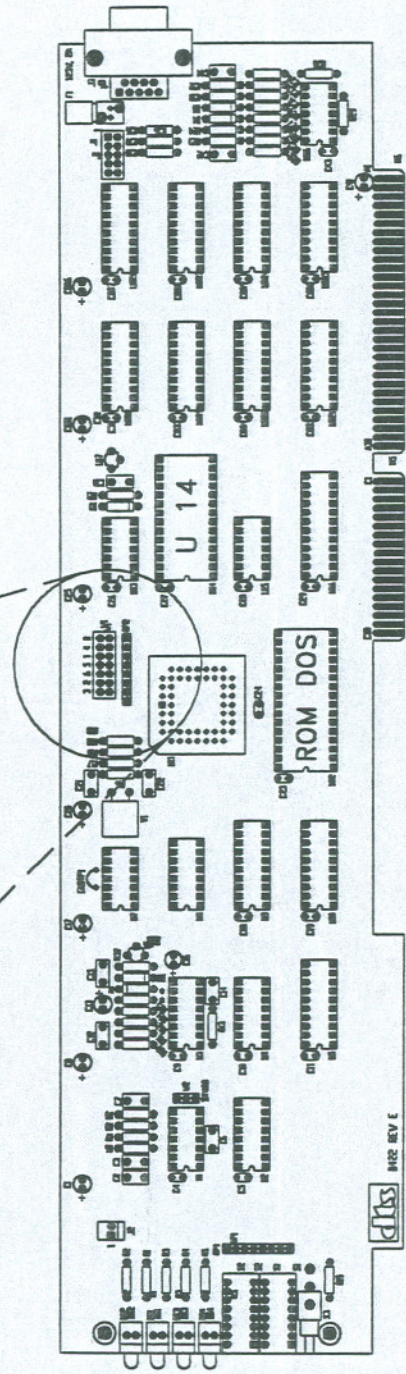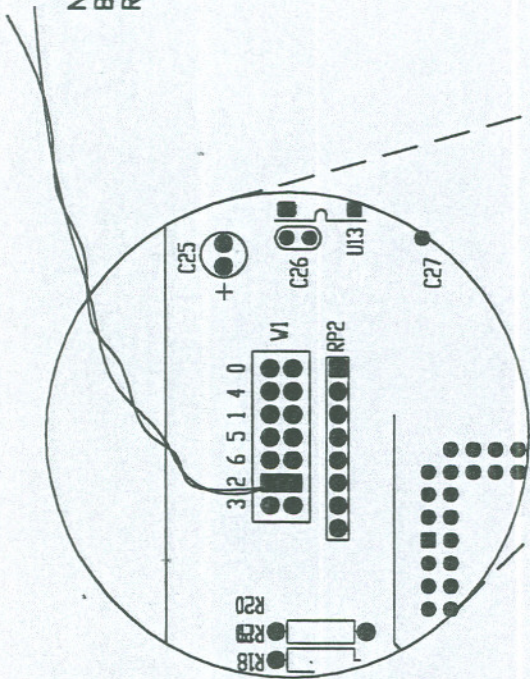BLACK WIRE – TOP ROW
RED WIRE – BOTTOM ROW
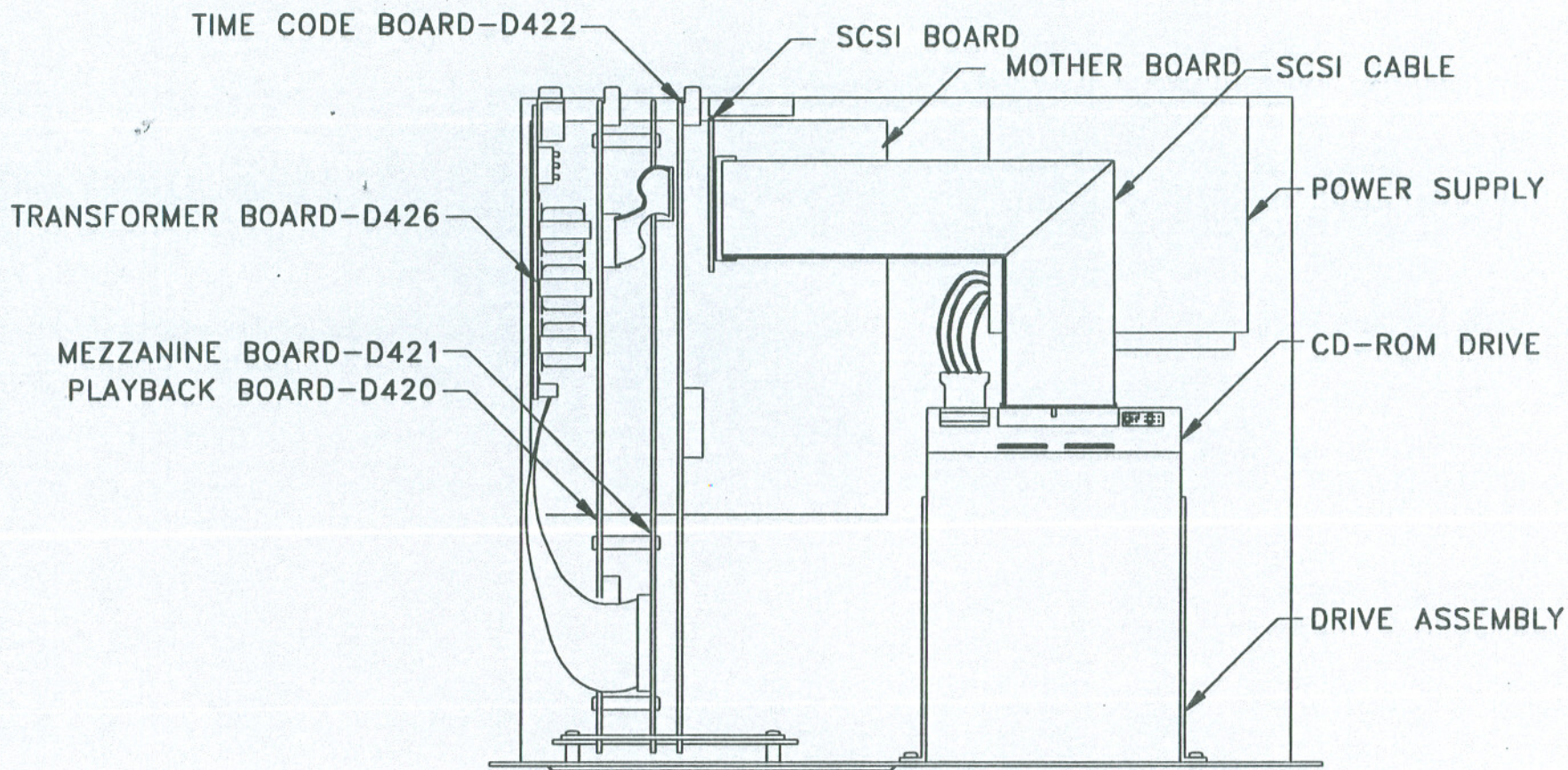
FIGURE 3T

FIGURE 4T   TOP VIEW

TIME CODE BOARD—D422 —— ⎯ SCSI BOARD

⎯ MOTHER BOARD ⎯ SCSI CABLE

TRANSFORMER BOARD—D426 ⎯

⎯ POWER SUPPLY

MEZZANINE BOARD—D421 ⎯
PLAYBACK BOARD—D420 ⎯

⎯ CD-ROM DRIVE

⎯ DRIVE ASSEMBLY

FRONT VIEW

DTS DIGITAL THEATER SYSTEMS
DIGITAL
TIMECODE
CD-ROM
SYSTEM

⎯ CD-ROM DRIVES