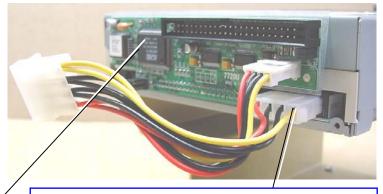# Film-Tech

This document provides instructions for installing a single drive kit into DTS-6/6D players or DTS-6AD cinema processor.
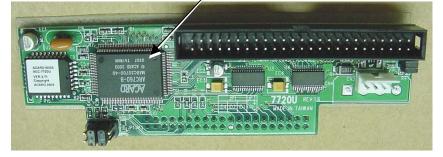
Required Tools

• Phillips head screwdrivers, #1 and #2

• Nut driver 5/16 inch

• Current DTS Setup Disc, Empirical Test Disc, or a movie disc

• Single Drive Upgrade Kit, part #9005E83001, contents:

- CD-ROM, DTS 6/6D System Update Disc V2.40.24 or higher, PN 9311E82701

- Firmware IC (AQRM chip) V2.40.24 or higher, PN 9050AQRM04

- SCSI extender cable PN 9022E83500

- DVD Drive assembly with SCSI-IDE bridge board and power adapter cable PN 9020E83200

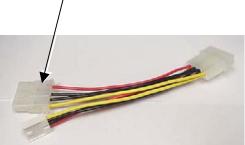- Anti-static wrist strap PN 1050000200

SCSI extender cable

Back view of DVD drive assembly. Note: The SCSI-IDE bridge board is already attached to the drive. You may need to attach the power adapter cable.

SCSI-IDE bridge board

Power adapter cable

⚠️ **Warning**: When handling boards or ICs, be careful – they are easily damaged by static electricity discharge. If the parts arrived in an anti-static bag, keep them in the bag until needed. Then, just before removing parts from the bag, hold the bag and touch the chassis of the player. This will make your body the same electrical potential as the player (and will prevent static discharge). It is a good idea to stand on a linoleum or cement floor (not carpet) and use the provided anti-static wrist-grounding strap when handling boards and ICs.

Installing the Replacement Drive Into the DTS-6 or 6D

☑ **Note**: This example shows the DTS-6D, however the procedure is the same for the DTS-6. For the DTS-6AD, please go to page 10.

Remove the player from the system

1. Remove all discs from drives.
2. Turn the player's power switch off.
3. Remove all cables from back of player.
4. Remove player from sound rack and open the top cover of the unit.

Remove the defective drive

5. Remove the SCSI and power cables from the defective drive.

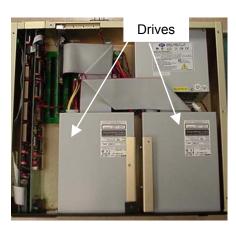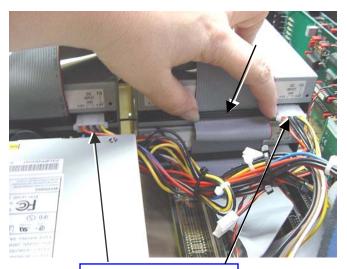⚠️ **Caution**: Disconnect cables by grasping the connector and pulling gently.

Figure 1. 6D cover removed

Remove power cables

6. Remove screws that secure the bracket of the defective drive to the chassis. Save all screws and nuts.

   There may be screws on the bottom of the chassis and on the front of the chassis that secure the drive bracket.

   ⚠️ **Caution**: Carefully examine your unit to determine which screws to remove. Be careful not to remove other screws, which may secure the motherboard or other components.

Figure 2. Typical: remove screws on bottom and front panel that secure drive bracket to chassis.

Install the new drive

7. Remove the brackets from the old drive and put them on the new drive.

Figure 3. Remove brackets from old drive and install onto new drive.

   ☑ **Note**: Work on one bracket at a time. Align new drive to the old drive in the bracket. This will allow the drives to fit flush with the front panel.

8. Verify the jumpers on the SCSI-IDE bridge board on the back of the new drive. (See page 4 for 3-drive player, and page 5 for 2-drive player.)

DTS-6D (3-drive player)

Drives are addressed as 3, 4 and 5 with 3 as the last drive ("C")

⇐ **Note**: The order of these SCSI addressing jumpers is different from all previous drives.

Jumper Location (X = ON)						
	ID4	ID2	ID1	LED+/-	JP4	JP2
Drive A (address 4)	X				X	
Drive B (address 5)	X		X		X	
Drive C (address 3)		X	X		X	X

Notes:
JP4 (Terminator Power ON/OFF) – leave this jumper ON for all drives.
JP2 (Terminator Enable/Disable) – For DTS-6D remove on drives A and B only.
Shunt removed = DISABLE
Only the last drive in the series is terminated (JP2 installed).

Figure 4. DTS-6D 3-drive player, SCSI-IDE bridge board jumper locations and settings

DTS-6 (2-drive player)

Drives are addressed as 4 and 5 with 5 as the last drive ("B").

ID 4

ID 2

ID 1

LED +/ -

⇐ **Note**: The order of these SCSI addressing jumpers is different from all previous drives.

Jumper Location (X = ON)					
	ID4	ID2	ID1	LED+/-	JP4	JP2
Drive A (address 4)	X				X	
Drive B (address 5)	X		X		X	X

Notes:
JP4 (Terminator Power ON/OFF) – leave this jumper ON for all drives.
JP2 (Terminator Enable/Disable) – For DTS-6 remove on drive A only.
Shunt removed = DISABLE
Only the last drive in the series is terminated (JP2 installed).
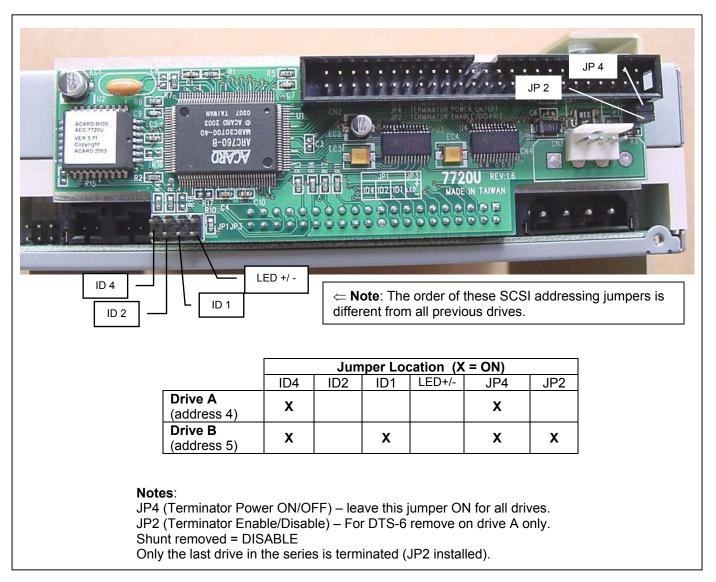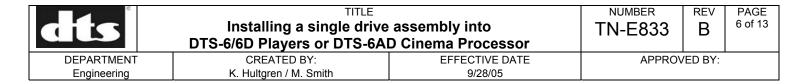
Figure 5. DTS-6 2-drive player, SCSI-IDE bridge board jumper locations and settings

Next, go to step 9 (next page).

9. Reinstall the drive assembly into the player. Reinstall the bracket screws removed in step 6.

Install SCSI cable

10. Use the SCSI extender, if the SCSI cable is not long enough.

Notice that the SCSI cable cannot reach the new drive.

SCSI-IDE bridge board

SCSI extender

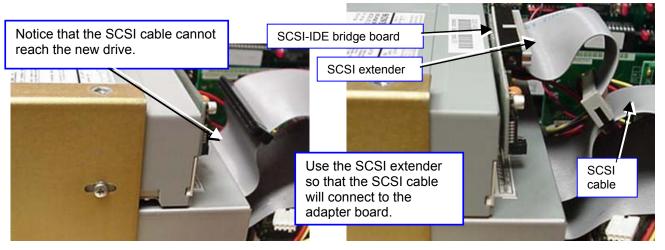Use the SCSI extender so that the SCSI cable will connect to the adapter board.

SCSI cable

Figure 6. Install the SCSI adapter cable.

11. Using the power adapter, connect the power supply to the drive and to the SCSI-IDE bridge board.

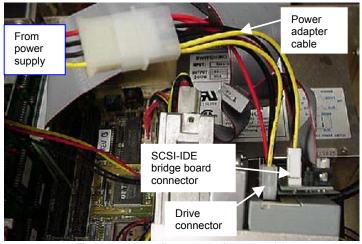From power supply

Power adapter cable

SCSI-IDE bridge board connector

Drive connector

Connect one end of the power adapter cable to the power supply connector and the other ends to the drive and to the SCSI-IDE bridge board.

Figure 7. Install power adapter cable.

Install new software

12. First, determine which motherboard is in your player. There are several types of "old" motherboards. The "old" type motherboards do <u>not</u> have the DTS logo on them. The new type of motherboard E363 has a logo silk-screened onto it. This DTS logo should be visible with the cover off the unit. If you do not see this logo, then it is an "old" type motherboard.

> The new motherboard has DTS logo with E363 silk-screened onto board.
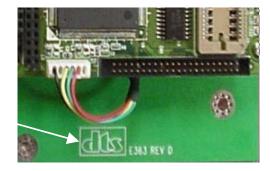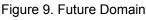
Figure 8. Current E363 "new" motherboard

13. **If you have a current E363 motherboard**, power ON the unit, load the System Update disc into the "C" drive of the DTS-6D or the "A" drive of the DTS-6, and allow the information to download into the player. The download is complete when the LED indicators "System" and "CD ROM" are alternately blinking. Remove the disc from the drive. Cycle power on the DTS and proceed to step 16.

Figure 9. Future Domain   Current board set: SCSI and AQRM ROM boards

14. If your player has an **old-type motherboard**, check to see if it has a "Future Domain" or current SCSI board (see Figure 9). "Future Domain" boards <u>cannot be used with the new software</u>.
    If you need to update your SCSI board, contact DTS Customer Service.

15. If you have an **old-type motherboard with a ROM board**, replace its AQRM chip with the new one that is included in the kit.

    a. After grounding yourself with the enclosed anti-static wrist strap, carefully remove the chip.
        We recommend using a chip removal tool, however you can use a small screwdriver to gently pry up each end a little at a time.

    b. When installing the new chip take note of correct orientation (shown in Figure 10).

c. Insert the bottom row of pins first. Then, guide the top row pins into the socket. Be sure all the pins go into the socket.

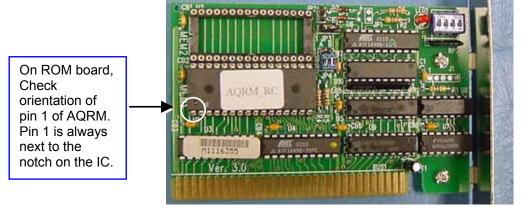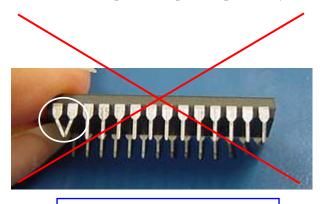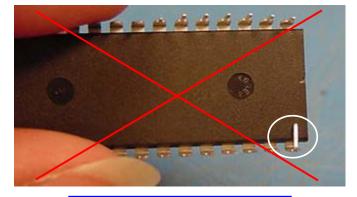On ROM board, Check orientation of pin 1 of AQRM. Pin 1 is always next to the notch on the IC.

Figure 10. ROM board with AQRM chip

⚠ When replacing the chip, be careful to avoid the mistakes illustrated below. (These photos are typical examples of chips, not specifically the AQRM chip.)
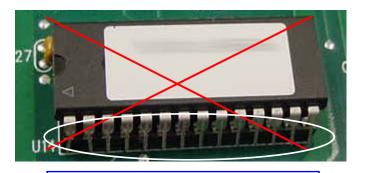

Pins must NOT touch each other.

Pins must NOT be bent.

Chip is not aligned correctly with socket. Pin is outside socket.

Entire row of pins are outside socket.

Testing

16. Power on the player and test the new drive by using the current DTS Setup Disc, Empirical test disc, or a movie disc.
    Load the disc into the drive and verify the SYSTEM light blinks after about two minutes.
    If using a setup disc, it will self-play.
    A movie disc will not self-play but it should make the SYSTEM light blink.
    If the unit plays the disc in the new drive, the installation has been successful.
    If there are any problems, review the installation and call DTS Customer Service for assistance.

17. Check each drive as described in step 16.

18. Reinstall top cover and then reinstall unit into rack.

19. Test once again (repeat step 16).

20. Return unit to service.

Installing the Drive Into the DTS-6AD Cinema Processor

1. Turn off the DTS-6AD power switch. Unit may remain in the sound rack.

2. Use a #1 Phillips screwdriver to loosen the screw under the drives. Remove all drives from chassis.
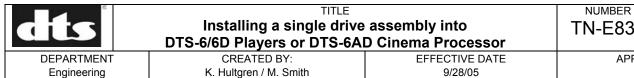

Figure 11. Loosen screw and remove drives

3. Remove all cables from the back of the drives.

Figure 12. Remove cables

	TITLE	NUMBER	REV	PAGE
![dts logo]	**Installing a single drive assembly into DTS-6/6D Players or DTS-6AD Cinema Processor**	TN-E833	B	11 of 13

DEPARTMENT	CREATED BY:	EFFECTIVE DATE	APPROVED BY:
Engineering	K. Hultgren / M. Smith	9/28/05	

4. Exchange the one defective drive with the new DVD drive assembly. See DTS-6AD Drive assignment set up (step 5, next page).

Figure 13. New drive assembly is shown on top

☑ **Note**: The new drive assembly is shorter than the previous TEAC drives. When replacing a single drive it will be necessary to use the SCSI extender cable. The new drive is shown in Drive "A" position in the figure above, however it does not matter <u>where</u> the single drive is placed, as long as it is correctly programmed for that position.
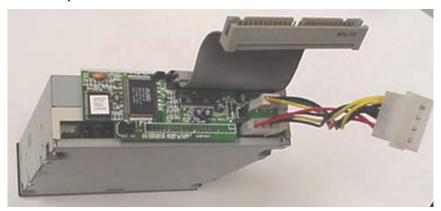

Figure 14. Back of DVD Drive with SCSI-IDE Bridge board, Power Adapter Cable and SCSI extender cable attached.

5. Set the shunts and jumpers on the SCSI-IDE bridge board as shown below.

   The drives are addressed as 4, 5 and 6 with 6 as the last drive ("C").

⇐ **Note**: The order of these SCSI addressing jumpers is different from all previous drives.

	Jumper Location (X = ON)					
	ID4	ID2	ID1	LED+/-	JP4	JP2
Drive A (address 4)	X				X	
Drive B (address 5)	X		X		X	
Drive C (address 6)	X	X			X	X

Notes:
JP4 (Terminator Power ON/OFF) – leave this jumper ON for all drives.
JP2 (Terminator Enable/Disable) – For DTS-6AD remove on drives A and B.
Shunt removed = DISABLE
Only the last drive in the series is terminated (JP2 installed).

Figure 15. DTS-6AD 3-drive player, SCSI-IDE bridge board jumper locations and settings

6. Connect the power adapter cable to the power cable inside the DTS-6AD.

7. Connect the SCSI-IDE bridge board to the SCSI cable inside the DTS-6AD (use SCSI extender cable).

8. Reinstall the drives back into the DTS-6AD.

9. Power on the DTS-6AD and use the current DTS Setup Disc or feature disc to check operation of the drives.
   Load the disc into the player
   The Format ⊙ Digital (F6) on the display will change to ◉ . This indicates the disc was read by the system and the drive is working.
   If using a setup disc, it will self-play.

10. Return unit to service.

Refer questions to

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Email: cinematech@dtsonline.com