



Making History with DSM™ Stereo-Surround Microphones

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Tips to operate and maintain portable audio recorders

How to optimize the playback listener experience

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Types, Methods of HRTF

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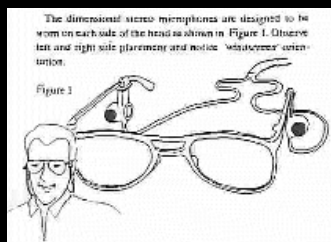
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DSM HRTF HEADMOUNT TIPS

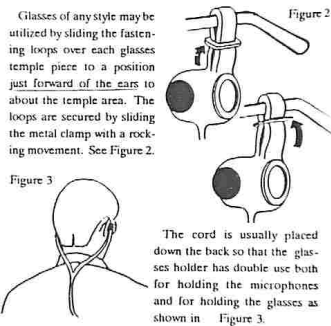


DSM Stereo Mics are Headworn (**HRTF Dual-Omni BAFFLED**) design pickups to record the best 3-D stereo sound possible. The instruction pamphlet included with every DSM suggests positioning the two pickups forward of the ears to about the temple of a person (or dummy head) but, there's more to the story.

The position the pickups are placed, back towards the ears or forward into the temple area, makes a difference to the *perceived* higher frequencies on

the recording.

Positioning DSM's closer to the ears will give excellent 3-D headphones reproduction while still retaining very good (*much better than in-ear Binaural*) loudspeaker reproduction, but...the perception of higher frequency detail is 'softer' speaker reproduced than perception encountered with headphones listening.



Alternately, positioning the pickups far forward into the temple area increases the perception of higher frequencies on loudspeakers while still retaining excellent 3-D headphone reproduction!

Oftentimes it's how your ear/brain actually perceives that makes all the difference. That's psycho-acoustics for you!

A better understanding of this phenomenon is simplified by realizing that DSM microphones are positioned at a place where you record the acoustical impression in dimensional acoustic space. Conversely, reproducing the recorded impression involves completing what you started by doing a recording in the first place, namely, completing the action by reproducing the DSM recorded sound exactly from same the place in space!

**COMMENT:** While person head mounting or using LiteGUY baffle is best for stereo image quality (and a number of other good reasons), some want "max stealth" low profile recording instead, having outfitted a special shirt or jacket with (button-down?) collars to hide the pickups from view underneath the collar front flaps.

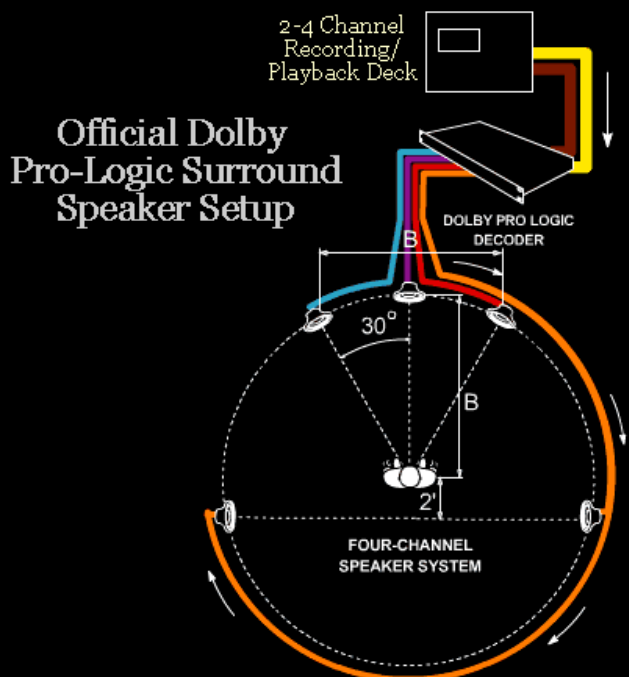
A custom button hole located at the inside rear of the collar allow the pickups + cord threaded from inside to being secured under the collar flaps. Safety pins, gaffer's tape, and a custom made cloth loop may be considered to secure the pickups. This arrangement must be carefully tested to avoid rubbing noises and blocking the front view of pickups, but will give satisfactory speaker playback recorded results when head mounting is not practical.

While the stereo image recording quality is significantly diminished with collar mounting, there's some advantage when blocking (or at least reducing) some of the rear/side crowd sounds is desired.

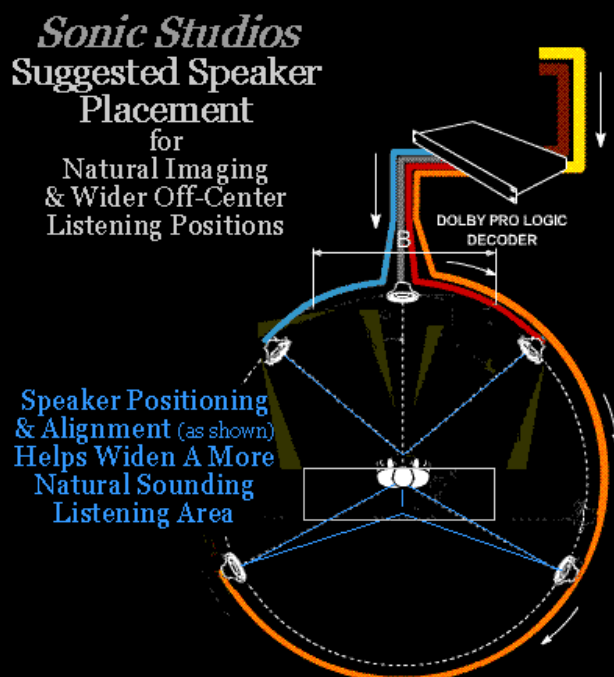
For the best 3-D image fidelity, listen to the DSM recording from wide spaced, precisely angled speakers directed or positioned exactly the opposite (reverse facing, 180 degree) direction of the original live sound recording microphones as suggested below.

If a DSM recording was made with pickups placed close to the ears, best listening experience is with open type headphones having large 40-50+mm sized diaphragm. Jecklin 'Float Phones' electrostatics (at one time sold by MAY AUDIO) and Sony MDR-F1 or CD2000 and newer MDR-SA3000/5000 models are known to reproduce the most natural sounding 3-D and optimum high frequency details (SA5000).

If loudspeaker listening is you main objective, position the DSM pickups further forward of the ears, even centered into the temple area for best high-frequency details perception with loudspeaker playback systems. See Speaker positioning for 2 or more speaker systems that allow for best imaging.



Dolby Pro Logic decoded speaker playback (with 4 or more



For more natural sounding listening experience with wider sweet spot seating, Left/Right Stereo Speakers are best positioned set at least as wide apart as the dead center sitting or listening

surround speakers) will give a realistic 360 degree sound image with the rear channel decoding the DSM ambient stereo correctly.

This makes all DAT, MiniDISC, and Camcorder DSM recorded stereo sound virtually identical to the best DVD Movie and DVD audio surround experiences

distance is to the (imaginary) connecting line running from left to right speakers.

Angle the speakers inward to focus IN FRONT of the exact center listening position. Playing back regular stereo will sound better with this arrangement and DSM recorded sounds will have a smooth, seamless image that extends beyond the speakers for nearly a 180 degree wide stereo image that sounds good *even if seated way off dead center.*

## FORMATTING OF FLASH CARD MEMORY

New technology flash card recorders are very convenient in being able to quickly transfer recordings much faster than real-time, and then reuse the memory card.

However, some of the newer digital decks using flash memory are VERY particular on the format structure of this media. It is most wise to ALWAYS REFORMAT flash memory IN THE DECK whenever removing the memory card and placing into a dedicated card reader for file transfer purposes. In-deck reformat avoids 'mysterious' file corruption and deck freezes common with using cards SLIGHTLY changed from the deck's particular standard format during computer card transfer processes.

ALSO very good practice to REFORMAT EVEN IF NOT REMOVED after all recorded files needed have been safely transferred. Just deleting files may leave non-continuous file space on the card. Complete reformat wipes clean all stored files, and insures the deck can fully utilize the space in a continuous fashion. Using a freshly reformatted memory card helps avoid recording errors and deck freeze-up faults.

## USEFUL TYPES OF FLASH MEMORY FOR AUDIO RECORDING

New technology flash card recorders are totally immune to most all physical movements and shocks. Shakes and bumps that pose a liability to ruin the recording on MD, DAT tape, or hard drive decks are not a problem with solid state memory flash recorders.

Some hard drive recorders also record to flash, parking the hard drive heads for maximum shock resistance. So it's good practice to use flash for 'gorilla' field recording, later transferring to hard drive when deck is safely at rest.

However, some flash decks using solid state card memory are particular to the SPEED TYPE of flash media used for audio recording purpose.

Very, very fast (some ultra types *and other advanced types*) cards mostly use a BURST speed rating. This is mechanism useful for fastest transfer of many very small (*in comparison to audio file size*) digital camera photo files. Flash BURST schemes do nothing good, *sometimes* work AGAINST smooth, continuous large file audio recording, and is often the cause of audio file interrupts, corrupted files, and deck freeze-up.

Suggest using FAST proven reliable makes/models of cards, like SanDisk Ultra II that actual state continuous write/read speeds, not a burst speed rating. Then you know card has best chance of working for all audio recording purposes.

### CAUTION: MiniDISC Deck, **BE IT "NOT MOVED" WHEN RECORDING**



ALL small MiniDISC decks are extremely sensitive to skipping, leaving blank disk spaces if bumped or moved a little too much while recording. Severe skipping or blank recorded spaces may make your minidisc jump from playing one track immediately to the next track (*if you are lucky to have another*) during playback.



Do Not put MiniDisc decks in purses, equipment bags, or pants pockets while recording. Instead, place on a steady and secure (table) surface or HANDHOLD gingerly, keeping all necessary deck movements slow and deliberate.

If you often find yourself standing in an active crowd where getting bumped is the usual, or if you like to be moving around while recording, consider using a **DAT** deck instead, Mini-DAT's can usually hit the ground without audibly interrupting the recording; *noted from personal slippery fingered experience with TCD-D8 on several occasions!*

**SONY MD MZ-NH1**

NOT SO  
NICE for  
live mic  
recording

Hi-MD Models

To setup Sony MZ-NH1 HiMD for live music recording with DSM stereo mic suggest the following:

From the MENU, select RECset, and select RECvolume to enter MANUAL REC adjustment mode, and also select MICsens to select SENS LOW; USE ONLY THIS SETTING to avoid distortions and volume pumping with musical bass notes. Instruction for MANUAL REC mode is on page 38, and setting the mic sensitivity is on page 35 of the owners manual.

ALL MANUAL MIC INPUT RECORDING SETTINGS WILL RESET to full AUTO (Sony's TYPICAL default) when you STOP recording, so with Sony MD, you have to push all the buttons again to gain control for MANUAL REC level and LOW microphone sensitivity SETTING EVERY TIME YOU START UP TO RECORD AGAIN!

Avoid Sony's insanity to fully discourage practical high quality microphone recording in the proper manual REC level mode / low mic input sensitivity.

See Sony's typical MD deck mic recording setup problems for yourself by downloading Sony MZ-NH1 Hi-MD recorder Owners Manual ACROBAT.PDF file [HERE](#)



NICER  
for live recordings  
+ USB transfer into a computer

The RH910 HiMD model 'seems' to be reversing some of the analog recording problems associated with Sony MD models in general. Ability to transfer original analog .WAV files recordings using USB (for editing?) now appears possible, and is a first for this format, at least without resorting to a hack program. Someone needs to verify .WAV file on the MD deck is also accessible outside of the 'SonicStage' management program to appear like a regular audio file on an external drive as the [owner's manual](#) (.pdf) infers.

Manual REC level and MIC input sensitivity adjustment seem *less menu-buried* on the RH910. Still, REC level cannot be adjusted while recording, and it is unclear if MIC input sensitivity settings are also 'forgotten' along with manual REC level mode when stopping a recording session.

## REDUCING INPUT NOISE ON FOSTEX FR2 & MOST NEW TECHNOLOGY (NT) CF & HD PORTABLE DECKS

The good news is the FOSTEX FR2 is easy to operate and fairly well designed with good features and performance. Powering is an issue with solution using an external battery pack. One powering solution that connects 8 D cell pack using dummy AA cells as described at: [EXTERNAL BATTERY SYSTEMS/TIPS](#)

The internal mic preamplifier on the FR2 seems mostly adequate for larger diaphragm, high output 'true balanced' type mics. **However**, like most NT decks (Edirol-Roland R-1/R-4, Marantz PMD-600 series), the FR2's MIC/LINE balanced inputs are highly susceptible to internal/external noise sources. This is especially true when running on the AC adapter with **ANY TYPE** of mic input, and if inputting an UNBALANCED lower level mic or unbalanced line source (*like from standard configured DSM mics, single ended preamplifiers, and powering adapters*). This is due to less than optimized design of most first generation NT portable digital recording decks that includes digital system noise getting into the low level analog signal process, and external electrical noise (AC hum, radio signals) working into the not-yet-refined ground path circuitry of these newer decks.

At least one exception is Sound Devices 722/744T decks and (*some*) battery powered external microphone preamplifiers with refined very quiet/external-internal noise immune inputs.

SUMMARY: For lowest noise ANALOG recording performance, run deck solely on battery power, and input to these type decks ONLY true BALANCED output MIC/LINE externally connected equipment.

[PA-10DXLR5](#) is a true input/output balanced powering adapter for connector upgraded DSM microphones models. [PA-24NJ/X](#) is a balanced output external mic preamplifier suitable for all decks with balanced LINE level inputs.

## Avoid making a BLANK DAT or MD Recording !?!

DAT TAPES SELDOM MISLOAD, BUT IT DOES HAPPEN mostly due to a lousy cassette and/or deck's out-of-adjustment transport.

One or a combination of reasons for this to happen certainly disappoints the recordist with blank (MAYBE defective?) cassette tape & used batteries for effort/expense. Virtually eliminate this by checking the recorder **before** doing an important recording.

Do a brief (30 SEC) Test recording **before** *the* actual recording; then play back the tape while headphone listening (*also best way to check for clean-quiet connections*) and/or VU watching for proper (playback) operation.

IF playback is OK, Do Not Eject or Rewind!..BEST to Push Stop **within** half of the 30 to

60 second test section, NOT AT or NEAR the END of the test section to avoid time-code gap .....  
Then go out and record with reasonable confidence the recorder will work as expected.

The MD portable recording format is easy to use, very practical, and has respectable quality audio. However, the recordist must be far more careful against excessive movement than with DAT, CF, and HD type decks not to record skips or corrupt the TOC.

## MiniDisc (MD): VERY shock/movement sensitive

*As compared to DAT, CF, and HD  
type decks*

It is most important to realize that MD has (2)two LIFE-or-DEATH occasions when CRITICAL information is written to make for a good playable disc. DISC INITIATION, when first using a blank, is considerably less fallible than the dreaded Table Of Contents (TOC) error that makes the disc a 'virtual/useless BLANK,' and with all your recordings unreachable!

The TOC is written (at times) when the recording is STOPPED for any reason like to change to a new disk, take a recording break, and all other times intentional or consciously activated by the recordist at the end of recording. So every time the deck has recorded something, and before it shuts off, or if to remove the just recorded disc, a critical TOC track is written. At these known times, the wise recordist is most careful with deck handling until TOC writing is completed. This being the case, it is possible to remember not to move or shake the deck.

HOWEVER, avoiding movement at critical AUTOMATIC deck shutdown caused with LOW batteries is plain luck.

REASON: If the batteries get too low, the deck automatically performs the shutdown by quickly recording the TOC, and then turns off without further notice. Obviously, unless you just happened to be viewing the tiny screen at the time, you are NOT going to know to avoid MD deck movement at TOC critical writing time.

Remember IF the TOC is NOT written correctly, or the TOC gets CORRUPTED for any reason, you will NEVER get to play the disc regardless of any perfectly good recordings locked up inside. Therefore, if on the move with the deck recording, probably a good idea not using batteries in known LOW or questionable charge condition.

## AVOIDING ANALOG INPUT DECK OVERLOAD DISTORTIONS



**MOST Mini-portables in use today will overload to cause analog circuit clipping distortion.** Indication that mic input stage clipping is likely occurring is when LEVEL adjustment necessitates turning *down to* #4 or *below* 30-40% of the adjustment range for seeing VU peak indications -12 dB to -4 dB peaks for most other DAT models.

**LOOK** where you have this knob or the up-down button adjustment set.

If set < 40% of total REC adjustment maximum, then good chance of MIC input (sometimes also LINE) deck overload, at least until you know better from trying it first.

There are two main types of REC Level Adjustment Displays taking the place of the DAT's #0 to #10 REC LEVEL level knob markings (like shown in the picture above-left)

**INSTEAD, most newer digital audio decks indicate the REC LEVEL Adjustment ON THE LCD DISPLAY;** usually positioned somewhere *BELOW* the VU indicator

Some display a RECORD Level Adjustment Left-to-Right reading BAR GRAPH that indicates possible audible input overloads STARTING when the Bar Graph shows about 35-40% of 100% full up. If the REC LEVEL Adjustment bargraph indicates an adjustment is selected below 35% of full up, then input clipping distortion is likely easily audible.

Some decks do not use a bar graph to display where you've set the Manual REC LEVEL. INSTEAD, a series of numbers are displayed on the LCD display.

The series of setting numbers is sometimes in TWO SETS when in MIC input mode (Sharp MD). Displays of #0-#20 indicate the deck is set in "L" Low input sensitivity (equivalent to the 20 DB ATTENUATION setting on DAT) and input clipping distortion is unlikely with number settings indicated at #8 or higher out of #20 max, for getting adequate -12 dB VU to 0 dB VU REC signal peak readings.

The second numbered set on the Sharp MD reads #21-#30 indicating the deck is set in the "H" High mic input sensitivity range (equivalent to the 0 DB ATTENUATION setting on DAT).

**BEST TO AVOID using the #21-#30 "H" range.** You are RISKING having input clipping distortion UNLESS VU readings are unable to reach GREATER THAN -14 dB VU with the deck set at #20.

In other words, try to keep maximum recording level input "headroom" by staying in the "L" Low input sensitivity range, UNLESS VU is less than -14 dB peak, then good chance the +20 db "HIGH" boost setting is OK.



(Suggested TCD-D100/PCM-M1 mic input settings for moderate low-to-loud sounds shown below)

This Low or -20 dB mini switch position is considered **normal and best** for most moderate-low to very loud sound recording and is the preferred setting **even if the LEVEL Knob is needing to be 100% full up maximum** to for ~12

dB good VU indication.

On most models, the mic sensitivity input switch actually changes the first stage amplifier gain instead of conventional reduction of mic signal via resistor attenuation network positioned before the mic amplifier.

Sharp MiniDisc decks also reconfigure the gain of the mic preamplifier from low gain to boosted gain when crossing from #0-#20 record level adjustment to #21-#30 record level setting range.

Depending on the output or sensitivity of the microphone being used and how loud the sound recorded is, the L or -20 db Attenuated position MAY NOT lower the signal sufficiently to avoid overloads.

*This is common when using the larger diaphragm (capsule) sized and/or higher output 48 volt phantom powered microphones recording amplified Pop/Rock venues.*

## In this case there are three options:

- 1) Use the Attenuation switch (commonly found on the microphone body) or
- 2) Install an in-series attenuation network between the microphone and the deck, but **NOT** between the microphone and it's source of 'Phantom power' (when mic is without an internal battery supply).
- 3) Use the LINE input(s) on the deck which have at least -20 dB less gain than mic inputs and are much more resistant to be overdriven with direct Level Knob control(s); *exception* is the Sony D7/8 decks where the Level Knob does not totally control the line input signal from causing clipping distortion from very high 'Pro mixing board type' inputs.

## SUMMARY:

Remember the #0 to #20 or "L" Low mic sensitivity or -20 dB attenuation MIC INPUT mode is the **NORMAL** setting for these decks.

The other, higher (boosted) gain mode **should not be used** for quality mic input purposes (maybe best for dictation, lecture/seminar low level recording), **UNLESS UNABLE to reach 50% half VU scale** or -14 dB VU with loudest momentary peaks.

USE the Line input with large (diaphragm/capsule) MICS (especially 24-48 volt) for moderate-to-VERY-LOUD live events.

INPUT SETTING TIPS ON **NON-STOCK DAT DECKS WITH (OADE MOD) LOWERED PREAMP GAIN**

In a message dated 11/16/01 6:43:09 AM Pacific Standard Time, txxxxxx@msn.com writes:

<<

I have been 'studying' your recording tips, so I THINK I know what to do for a quality recording. The only thing I'm afraid of is turning my record setting ABOVE '4'. I have never had to record above that level, but I'm hoping your mics will allow me to go above that, to avoid clipping.

Tom Axxxxxx

>>

Hello Tom,

I think you've got this tip totally BACKWARDS. Setting the level knob Below #4 or below (for having VU readings about -12 dB VU) means your mic input to the preamplifier or the input gain is way too much, and the bass is getting clipped even if the VU level shows it is not overloading! Knob settings above #4.5 (to #10 max) means your mic input level (and setting of the 0 dB and 20 dB attenuate switch) is totally OK.

Please reread the <http://www.sonicstudios.com/tips.htm> page. Also realize that most people with a DSM pop/rock low gain mic USUALLY MUST have the M1 DAT deck in the 20 dB attenuate switch setting for recording amplified club/concert music, and also remember to use only the MANUAL recording mode.

**HOWEVER, BECAUSE OADE MODIFIED YOUR DECK TO HAVE LOWER MIC PREAMP GAIN, YOU WILL** find the 0 dB attenuate setting IS MORE LIKE THE NORMAL (stock -20 dB deck) SETTING, FOR THIS DECK ONLY. YOU MAY STILL BE OK to use the 20 dB setting for most loud music concert venues and the loudest of club type venues.

HOWEVER, if you CANNOT get the -12 dB VU average reading with having #10 LEVEL KNOB (turned full up) with the 20 dB setting, ONLY THEN USE the 0 dB switch setting, turning the level knob down (but hopeful not below #4.5) to get about 50% VU deflections or -12 dB VU average peak readings.

ALSO READ [TAPERS TIPS](#) for more tips on keeping the recording level adjustment appropriate for the music.

IN OTHER WORDS, your deck is NOT STOCK (With having the OADE MOD), so some of the suggestions saying that 20 dB or LOW sensitivity is the normal DOES NOT ALWAYS APPLY TO YOUR CURRENT M1 OADE MODIFIED DECK. So, you may have to boost the mic preamplifier gain to 0 dB setting (which is a NO-NO on a stock DAT deck for recording not so loud Rock/Pop venues), but ONLY if the 20 dB setting gives too little gain/VU levels.

Follow these tips carefully and PRACTICE by going out to record some really loud club type pop/rock music A FEW TIMES. Much better to make your mistakes during practice than mess up during the U2 event. Most large concerts should actually be a bit to alot louder (and cleaner sounding) than most club venues, so using the 20 dB deck setting with nearly full up to #10 level knob is likely the best loud concert recording setting to start with even with having the OADE mod, but please be prepared for big events with having some practice first.

Best Regards,  
Leonardo

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## Maintain Mini-Stereo Jack/Plug Contacts & Strain Relieve Mic Cords

Smaller is Better for some things and not for others.

As portable recording decks, jacks, and plugs get smaller, the need to compensate for less contact area and spring force becomes increasingly important to insure consistent results when recording. Small decks are dependable as long as the recordist is aware of the limitations; therefore, some important facts about what's not so robust and problematic about the smaller connection hardware is important to know.

**TCD-D7 (MOD-2) + DSM Mic**

**FACT:** Mini-stereo contact spring pressure is far less than on 1/4" & XLR type connectors.

**RESULT:** Fingerprint residue that's not always wiped off before plugging-in will collect inside the jack, and quickly interfere with signal purity, even generate severe static (*mic DC power*) noises.

The lighter contact forces of mini-connectors don't push aside the film coating of grease and grime as do much larger connectors. Also realize that it's almost impossible to handle a mini-mic. plug without touching the metal surface, leaving fingerprint residue on the plug that's deposited into the mic jack with each insertion cycle. As *each* insertion continues to add more residue, the contacts reach 'saturation' and *can no longer push aside* this toughening film. Furthermore, contact corrosion from fingerprint salts (like that of sea water) eventually eats up the metal when moisture is present. This produces slightly audible degradation of the signal quality at best to complete intermittent interruption of delicate mic. Signals and will ruin the recording in the worst case.

When phantom type power is also supplied to the microphones through the mic. jack (*as with external microphone "Plug-in-Power" feature common to portable Video, DAT & MiniDisc decks*), highly audible static type noise is the result. This is especially audible when the microphones plug is *only slightly* moved by an unsecured mic. cord.

### **SOLUTION TO MINI-CONNECTOR STATIC NOISE AND INTERMITTENT AUDIO IS AS FOLLOWS:**

**Clean & recondition noisy mic. jacks with 91 - 99% pure isopropyl alcohol.** Repeatedly insert a headphone type plug soaked to the point of dripping (filling the alcohol bottle cap and dipping only the metal part of the mini-plug works well) into the mic. Jack until any connection noise disappears. Monitor the progress with a set of headphones while the deck is in a record function. Rotating the microphones plug should not produce audible noise with cleaned and conditioned contacts. Applying a contact conditioner to already cleaned plug and jack metal parts (*Stereo retailer & Sonic Studios available [ProGold](#)*

*by CAIG Labs works great*) once to several times a year will help protect contacts from corrosion/wear and from producing noise for much longer between cleanings.

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**CAUTION IS ADVISED:** AVOID PLACING CONTACT CLEANER ON ANYTHING BUT THE METAL CONNECTOR PARTS; Plastics can be softened, discolored, and even dissolved! This may actually coat the very metal contacts intended for cleaning! Fortunately, deck input jacks are reasonably resistant to alcohol and most 'plastic safe' cleaners when used occasionally and with care.



**WARNING: Never spray anything into the jacks on a deck.** Most Minideck jacks are not the enclosed type anymore, but are open, allowing sprays to go where they can cause mechanical problems with the mechanical type transport mechanisms and coat the tape/optical head(s). Use the method described above with the miniplug, or purchase a special plastic cleaning brush from CAIG or Sonic Studios (a tapered shaver/dental plaque cleaning brush may also be used).

## Avoiding The Mini Connector Shortcomings For Professional Work:

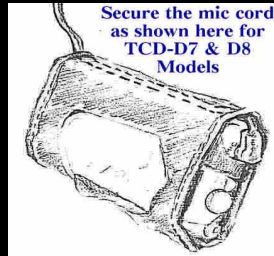
TCD-D100 & PCM-M1

DAT Deck Tip

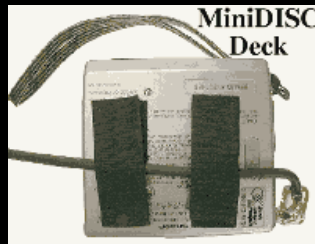


Secure MIC Cord On TCD-D100 & PCM-M1 Models

**Always wipe off the mic plug before plugging-in** with a clean cotton cloth (or shirt) or tissue paper. The plug should be mirror-bright-shiny clean before making the connection.



Secure the mic cord as shown here for TCD-D7 & D8 Models



MiniDISC Deck

*Click for MiniDISC MIC cord securing & General MD recording setup tips*

(The photos on the left and far below illustrate the best strategy for Sony DAT, MD, and portable audio hard disk recording decks)

2) Secure the mic cord between the deck and the carrying case, or use Velcro to prevent connection movement noise, spontaneous unplugging, & input jack damaging strains from occurring.



(Right) The input/output cords are both secured with PA-24NJ preamp's integral Velcro tie.



SUGGESTED PREAMP INPUT JACK TO DSM MIC OUTPUT PLUG CONFIGURATION WITH NEUROS HD 20 AUDIO COMPUTER

A more permanent smart right-angle mic. cord bend around the deck is best produced by carefully heating the entire bend section (a hair dryer is handy), applying the necessary bend, then let cool before releasing the bend.



(NEUROS system bottom view)  
MOUNT TWO SELF-ADHESIVE PLASTIC FEET HERE

The Sharp MD-MT20 minidisc deck has room for just 1 cord securing strap.

Position the 2 Velcro patches (the hook

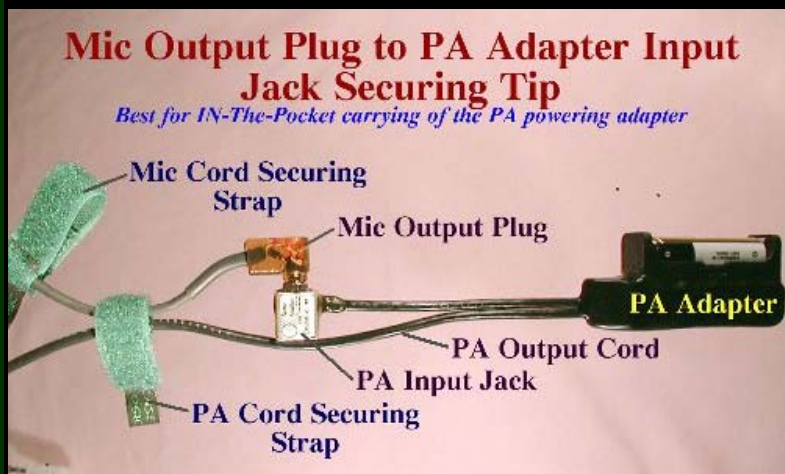


type) as shown to avoid blocking anything important.

Secure the cord with the bridging strap (the loop type) as shown above.



PA Adapters are accessory for powering DSM mics and have options of also having "Bass Cut" filters.



The Input Jack to the PA connects to the DSM mic output Plug.

This interface should be kept from disconnection or movement by using one of the two available moveable cord securing straps as illustrated here in the two photo tips.

The PA's output plug is secured to the deck just like the DSM mic plug/cord shown in the previous tips.



## Are Gold Plated Connectors Naturally Better?

Gold is plated onto a connectors base metal and is a <5 to ~25 micro-inches very thin to extra thick plating; usually much less than 5 micro-inches is used. It may be surprising to know that Gold is NOT the best conductor of electricity, silver is far better, with copper just behind as the most common materials in use these days.

However, Gold does make a better and more consistent electrical contact because it is corrosion resistant to most everything. But what may really matter the most is what's UNDERNEATH the Gold plating. Gold is very, very soft metal and is easily pushed aside leaving the base metal of the connector to show through in the most used areas, which is exactly the area where the metal-to-metal electrical connection takes place.

Most frequently the underneath base metal on gold plated plugs is BRASS; this looks a lot like the gold plating until it tarnishes and gold plates very easily to the brass metal alloy. In contrast, most NON-Gold plated connectors have a form of nickel plating (over brass) that is also very corrosion resistant, but not as corrosion resistant as gold. However, nickel plating is made thicker than gold and is a much less soft metal; lasts much much longer as a plate for sliding contact purposes.

If the gold plating is really thin (most usual for consumer gear), then using just brass underneath allows the connector to look 'good as gold' in the store, BUT after getting used a bit, the gold plating will wear through to expose brass to corrosion.

Here is the bad news: brass metal surfaces will quickly corrode to having a very, very hard surface skin (acts like anodized aluminum that resist further deep corrosion) that will not conduct electricity.

This leaves you with a far worse connection than most anything you can think of. Mostly leaves you with no connection until something scrapes down hard on the brass to make a good but very temporary connection again. So as the gold wears off, the brass shines through to tarnish; hard to keep from making anything but very inconsistent and mostly poor connections. This is the bad news with these types of gold plated connectors, especially after they get worn from active cycles of plug and unplug use.

The commercial electronics industry also makes use of gold plating for sliding contacts, BUT ONLY after a 15 to 50 micro-inch plating of NICKEL is first laid down on copper (PC circuit boards) or brass/steel (as for quality military/commercial connectors). In this way, as the Gold predictably gets worn away after repeated working, but there is still a good nickel plating metal contact underneath. This dual plating method always insures that some kind of good reliable electrical contact surface remains after years of active service. With Gold plate over nickel, the brass or steel base metals rarely ever wears through the nickel in normal expected use.

So, it is often best NOT to get the gold plated connectors as they more often DO NOT MAKE A GOOD CONNECTION after too short a time of use. Better to get more durable nickel (sometimes made better with silver alloy) types that last far longer and can be cleaned with alcohol easily. Brass does not clean well and needs an abrasive material to scrape down to some newer brass; like using a pencil eraser or extra fine abrasive grit paper.

Why the makers of these connectors do not first plate nickel over the base BEFORE gold is almost a mystery to me, but go to Radio Shack and take a look at all those gold plated connector parts. They all seem just Gold plated over Brass; not good at all. Using Brass as the only base metal seems to look better when using the usual very thin Gold plating; you will buy this quicker than the appearance of thin gold over nickel, it would not be as bright or 'gold looking' I would guess.



If you have gold connectors, then I strongly suggest NOT using anything abrasive to clean them (at least until the gold is worn out in critical places), just use pure 91% isopropyl alcohol on a cloth. I suggest using some ProGold contact conditioner to the cleaned connector to help keep the brass base metal from wearing through the gold very quickly.

Remember, that which is golden is not necessarily the best connector for the long run.

NOTE: Sonic Studios gold plated connectors are a full 25 micro-inches of gold OVER 50 micro-inches of high quality nickel plate; this will always provide long life and reliable connections for many, thousands of cycles and for years of challenging environmental exposure.

A technical sheet on connectors and what happens to gold with and without ProGold treatment is linked to my accessories page at: <http://www.sonicstudios.com/access.htm>

## Recording MUSIC *with* Bass Filters: Advisory

<< ----- DAT-Heads Digest Query ----- Date: FBI, 21 Jul 2000 18:08:44 -0500

From: " J V "

Subject: Bass filter for older Sonic Studios DSM-6P

I'm looking for a an inline bass roll-off box (preferably with adjustable settings) that will be fully compatible with the Sonics DSM-6 P ( the older hardwired power supply model) , i.e., it can accept a 1/8 inch stereo plug and can plug into the 1/8 inch mic input on my M-1. I understand

Marcsounds used to carry something similar to this, are they still around ?

john

>>-----

GuySonic Replies:

IN-Series Bass filters for electret are mostly too specialized to mix and match from different mic models/makes. The unique driving ability or impedance of a particular mic capsule AND the input resistance (Impedance) of the deck's input will greatly effect both the mic's AND the filters performance and quality factors; the parameters are INTERACTIVE.

In other words, mixing is not a good idea in this case for more than one reason and especially if you care about getting specific and quality results without needing to be also extremely lucky.

In specific to John's situation, the suggested solution is to change the hardwired DSM-6P (vintage) version to being up-to-date with current DSM models. This would allow connection to any of the current PA powering + Bass filter models that best fit his particular recording requirement. (SEE PA powering and bass filter adapter chart on page:

[http://www.sonicstudios.com/pa\\_x.htm](http://www.sonicstudios.com/pa_x.htm))

The best service now for the updating of older DSM- 6P models is the low cost DSM mic "Refurbishment" service that includes the new model form-factor update + diaphragm clean + new windscreens = mics look and work like a brand-new-one and can be directly powered by portable DAT/MD decks and/or a PA. bass filtering adapter.

AND WHILE ON THIS TOPIC:

It seems that "a bit too much that bass filtering" is an easy thing to do when all you got to do is slide a switch and viola! ..... there's now less bass in the recording.

Microphone BASS Filtering can be a good thing to even up the overall "tone" balance of a recording AND it also gives more analog input or recording "headroom" that helps to enhance the overall resolution of higher frequencies.

In other words, you can turn up the REC level a lot more FOR MIDS AND HIGHS because the strongest (bass) sound component is now at a much lower deck input level. Sometimes it's not that you can do it (reduce the bass content with a filter), but it's really about knowing WHEN and WHEN NOT and HOW MUCH TO reduce bass sounds. If the sound is SO loud that your hearing gets distorted OR if you are prudent in saving your ears with wearing earplugs (especially when right-up close to the stacks), you MAY NOT be HEARING the overall tonal balance of the venue WELL ENOUGH TO MAKING the most appropriate bass filter selection.

Too many recordings I've lately heard seem to error on WAY TOO MUCH BASS FILTERING as to lose most sense of the real "GUT and emotional FEELing" of the music; this is big part of the live sound that I personally find important. However, very "thin sounding recordings" are MORE OFTEN caused by POST BASS Filtering in a digital sound editing (DAW) program than by the use of real-time microphone filtering, but both mechanisms can do equal damage or benefit to a recording DEPENDING.

That's 'Depending' on your own taste in sound preferences and 'depending' on what's the most important aspects of a particular music style. For example; Maybe some Metal Rock styles are most cherished by the majority of their fans for that 'screaming in-your-face' guitar/vocals style that is impossible to hear from being buried in massive bass sounds if played 'straight' on home stereos. Lose most of the bass by filtering and you'll get the "in-your-face" guitar/vocal aspect much easier with regular good quality consumer playback gear. The only problem is it's a bit on the thin sound side of live, but the more important aspects of the music is most accessible to fans.

---

**QUESTION:** Would you THINK to strip the 'Gut Thumping Bass' sound out of most REGGAE music?

Well, of course you could, either during the recording with a mic filter OR afterwards with POST in pure digital editing. But, before you do it, please try to remember that a big part of Reggae and African music IS THE POWERFUL BASS Sounds.

Of Course THERE ARE TIMES when you really NEED to OR really SHOULD (and maybe ONLY SLIGHTLY) reduce the Bass to achieve a better balance between a 'live sound' feel and what's going to work with most speaker playback systems we have at home or automobile. Just be careful to not take away so much that the "ambient or live feel" of the recording is inaccessible by a thin sounding and over processed sounding recording.

## DSM Questions & Answers

[DSM Durable?](#)

[Using in the RAIN](#)

[Fragile Foam](#)

['Windscreens'](#)

[Event Recording Setup](#)

**Question:** How durable are they? Both the mic unit and the wiring. For instance, is it OK to wrap the cord tight and get it all into the smaller container? Will the loops that go around the glasses take a time crush push into position in the dark without breaking, or should that be done very carefully?

**Answer:** Mic, cord, & rubber loop are more durable than you might think.

I will suggest carefully winding the cord without twisting; like coiling a hairdryer power cord around dryer body (like Warren Beatty did in the movie 'Shampoo') so the coiled cord is layered flat without a single twist! This takes just a little more time and effort to keep the cord as compact as you want without ever showing a wrinkle; without a twist.

Done in this manner, the cord can be compactly coiled without stress. Practice at home with this. (And untangle that twisted hairdryer cord!)

ALSO, the hinged [black plastic capsule 'pill box'](#) in the DSM mic locking hard case IS REMOVABLE; YOU CAN PLACE JUST THE TWO PICKUPS INSIDE FOR SAFE POCKET CARRYING. Pull this out and use it often to protect the mics 'in transit' when not mounted on the eyeglasses or headband.

It may work better to already have the mics mounted on your eyeglasses and have them hanging down at chest level in a casual manner. A dark or dark-patterned shirt or opened jacket will make the pickups mostly disappear from viewing. Another technique is to have the pickups secured under your shirt collar, pulling out to attach later when seated. A firm, deliberate, and smooth mounting and assembly effort (avoid hasty actions) is best with all recording equipment connections and setup; a relaxed and confident manner will not attract attention or damage your equipment.

[\(Back to Q&A\)](#) [\(Back to Page Top\)](#)

**Question:** What if it starts raining on me and I'm wearing them?

**Answer:** Water will not harm the mics but, if enough water gets on the foam windscreen, the sound will be reduced; if on the inside diaphragm, the sound will be mostly muted until the mics dry out completely. If it should rain and your hair is too short to deflect the moisture, keep a cap with enough of a brim to shade the pickups from wind driven rain.

Dense fog is usually not a problem unless there is also a wind blowing directly into the windscreen; this will 'drive' moisture into the foam, might cause sounds to be water attenuated after a period of time. The WHB windscreen headband protects all water from reaching the foam and mic diaphragms but, the headband fabric can get water saturated to the point where the sound gets attenuated a little bit ; not a serious problem unless in a soaking downpour where an umbrella should be employed. [Back to Q&A](#)

Question: Any concerns the little wind screen will fall off?

Answer: After 4-8 years of steady usage the windscreens can get bit worn but, none have actually fallen (completely) off even after 8 years. The mic diaphragms can be cleaned after 3-5 years of usage (suggested \$85 refurbish service) and a new windscreen can be attached at that time. If you (are the first to!) experience any 'lifting' of the windscreen within two years, the windscreen will be repaired at no charge. ([Back to Q&A](#)) ([Back to Page Top](#))

Question: I'm psyched to use them! I'm just needing a little guidance about care. I'm generally pretty careful, but when I'm in a hurry (the lights went down as I'm headed to my seat...) I can be a little reckless...

Answer: 'Haste makes waste' is a good motto to abide by here!

I well know that feeling and excitement to get the recording equipment set up and operating while keeping from distracting my neighbors with my passion for recording AND get it operating BEFORE the program starts!!! Can't miss note with out regret!

You will not damage the mics with reckless abandon (unless you step on the pickups!) but, you may do damage to your deck's input jacks and transport if not ESPECIALLY very gentle and careful when loading and unloading the tape; do make sure the lid is ALL THE WAY OPEN until the latch 'clicks' before handling the tape.

It does well to give yourself as much time to set up or much better to have everything mostly in place and ready before walking in. I like to have the glasses hanging down on my chest and connected to the deck in my pocket or equipment pouch when entering.

I've already tested that the mic, deck, tape, and connections worked by doing a test recording at home or before walking in. (I do this for may own piece of mind and nerves).

When I do get to my seat, I start by pulling the deck out (within 3-5 minutes of the venue start), turning it on and pushing the REC button ONCE only for setup standby (*not in pause II mode yet*), double check that I've got the deck in MANUAL LEVEL (*NOT AUTO*), MIC SENS in (L), adjust the LEVEL knob up (4-10) until getting a definite VU indication, and put on the glasses 'just before the program starts' when everyone's attention is mostly on the stage (*even when recording with complete permission, a taper can be distracting to those around enjoying the show so try to be considerate*).

To Record, (TCD-D7 & D8/D100) now push the PAUSE (II) button TWICE to have the deck actually load the tape AND start recording.

Make sure the deck is still NOT IN PAUSE and is really recording by pushing the display Counter MODE button until the either REM (remaining tape time) or ABS (absolute) time indicator shows; this will show 00:00:01 seconds ticking off (up or down) if the tape is actually in motion.

You will see the 00:00:00 time display changing where before in pause it was not. You now are making a recording; occasionally check the deck's VU but, mostly enjoy the show!

When the venue starts, adjust for maximum VU peak at around -12 VU and leave it there unless the show gets louder later on; then leave it there unless it later gets louder still.

NOTE: *The D100/M1 (with more accurate VU over D7/8) & SBM-1 allow for fewer quality compromises when recording to close to maximum 0 dB (100%) VU peaks, but care must be taken to avoid overrange clipping.*

**Best to be conservative** with average VU readings of -12dB (50% full scale) with occasional signals reading no higher than -4 dB (-75%) MAX VU peaks in most cases. This is good advice for getting cleanest sounding recordings on BOTH DAT and MiniDisc recorders.

You can look up and down without much affecting the recorded sound but avoid looking to the left or right if possible; this will affect the recording. Grooving with the music with side to side or 'bopping' head motions is completely acceptable and recommended when appropriate.

Avoid being a distraction: When everyone is bopping and somebody is like a statue, guess who stands out? The statue is distracting to those around you gets noticed every time in a crowd of bopping people! So, get with the show like everyone else and take home a great recorded *personal* memory.

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## DECK MAINTENANCE TIPS

### DECK Cleaning Tips:

Avoid getting alcohol into any of the moving part's bearings, gears, and cams as this would dilute the important lubrication for these parts; never spray any solvent into a tape mechanism to avoid removing or displacing lubrication from and onto other areas. Always use the smallest alcohol holding foam swab that still allows a decent cleaning area and precision placement to only the areas within and concerning the tape path. Do be careful with the pinch roller and especially the capstan bearing to avoid running alcohol down the capstan and into the bearing lubrication area; invert the deck if possible to change the direction of gravity fed runoff to be away from this bearing.

In other words, always use as *little* cleaning solution as possible to avoid contamination from solvent runoff *into* lubricated parts areas; this can bleed lubrication from *where it needs to be* and run it to *where it should never be!!*

***Often 'foam tipped' swabs absorb too much solvent for safe cleaning. Instead, wet a lint free cotton cloth placed over the swab or handle for more sensitive area cleaning; i.e., capstan spindle/pinch roller.***

The most important areas of maintenance remain the rotating or stationary heads; less frequently, and on very used decks...the rubber pinch roller (*cleaned & reconditioned with CAIG Labs RBR product*)....capstan spindle.....and lastly.....tape path guides are much less likely to be of any problem; best serviced with the occasional dry *fabric* tape mentioned. [\(Back to Page Top\)](#)

## THREE BASIC TYPES OF CLEANING TAPES

### COMMON ABRASIVE

### WET-DRY TAPES

### NON-ABRASIVE DRY FABRIC TAPE

There seems to be (3)three distinct type cleaning tapes sold today for maintaining R-DAT machines. There's the very common dry abrasive type, the wet-dry fabric type, and the dry fabric type (***DIC DAT***). Service shops generally recommend the first (abrasive) category listed below but, there are proponents who argue that any one type is superior to the others.

***The real reason for using a cleaning tape is to prevent or remove recording/playback head-clogs; the effects are usually noticeable as a loss of high frequency resolution and/or "stuttering". (Stuttering is most noticeable during playback of a good recording when dropout error-correction circuits cannot keep up with lost data due to head clogs that force the head away from close contact with the tape surface.)***

***Head clogging also effects the recording process in similar manner but errors are permanently tape recorded. Regular cleaning and good quality recording tapes is good preventative maintenance for all tapers.***

## COMMON ABRASIVE DAT CLEANING TAPES

[\(Back to Cleaning Tape Types\)](#)

The first, and most common used, is the abrasive type that utilizes a mildly abrasive tape good for over 100 cleanings. The tape removes deposits that clog heads by a polishing action. This type of cleaning tape will not be very effective in removing particulate or residues from other than the rotating recording/playback heads but, seems effective most times in curing a bad case of DAT "stutter". Some service shops recommend regular use of an abrasive cleaner claiming increased head life! The idea here seems to be that recording heads need a regular aggressive re-polishing cycle to reform the micro-sized head surface shape or to remove a head clogging 'hard-glazed tape residue' ; perhaps at the expense of increased DAT head wear-down!

*Service technicians are also quick to point out that regular DAT recording tape is abrasive anyway; therefore, R-DAT heads (like VCR's) are actually constantly "cleaning" themselves in a wear down process and really shouldn't need cleaning if quality recording tape that's in good condition (not worn out) is used.*

My personal experience, while limited, has lead me to handle each DAT deck individually; even if I have two of same model; one may regularly develop clogs, while the "identical" other DAT rarely needs maintenance. The variations of how each deck handles tape within the tape path (with high tension, normal tension, or too little tension, etc.) will vary with the R-DAT head's ability to write-read the tape, normally or excessive wear of tape, self-clean or accumulate clogging tape debris, and either graceful/even head wear without clogging or increasingly misshapen the R-DAT heads with use, displaying frequently clogging during the process.

The question still remains; are abrasive tapes good for your DAT machine? Answer: Maybe, sometimes, and yes occasionally; depending on the deck. The Dry-Abrasive type cleaning tapes are somewhat thicker and less flexible than normal tape and as such, will wear the R-DAT heads differently than what's occurring with normal tapes. This may be a benefit for those decks that excessively accumulate clogs due to a misshapen head that's in need of re-polishing to a different and perhaps better shape. However, it still needs to be determined if the abrasive cleaning tape is making the R-DAT head shape better or worse; careful evaluation of the frequency of clogs after 'polishing' is all-important.

## WET-DRY CLEANING TAPES

[\(Back to Cleaning Tape Types\)](#)

Like cleaning accessories for VCR's, the wet-dry cleaning tape consists of a fabric tape with or without access holes in the cassette shell for adding drops of cleaning fluid. When cleaning fluid (usually pure alcohol/Freon) is applied, sections of the fabric tape are "wet" with other sections left dry. When the tape is "played", the entire tape path and the rotating heads receive alternate solvent cleaning and dry scrubbing action.

The wet-dry type tapes seem quite capable of thorough DAT cleaning but, the deck must be left to "dry-out" before regular operation. Some opponents to this type argue that any kind of evaporating solvent fluid especially Freon always causes water vapor moisture to condense inside the deck. Pure condensed (distilled) water is harmless and will dry-out without consequence unless salt deposits (perhaps left from an excursion to a windy coastal beach or someone's fingerprint) are also present inside the deck. Corrosion to delicate heads, to the many highly polished transport components (and to PCB connectors) occur if salt residues get water-wet and stay moist for just a short period of time. Quickly drying the deck's inside with a hair dryer does help prevent this and may be necessary depending on the use/maintenance history of a particular deck.

Proponents of dry cleaning tapes argue that any moisture in the cleaning process is not worth the risks of transport corrosion and that dry cleaning tapes do a much safer job of deck maintenance.

## NON-ABRASIVE DRY FABRIC TAPE

[\(Back to Cleaning Tape Types\)](#)

The last cleaning tape type is made of a fabric that grabs dirt particles from the entire tape path while scrub-cleaning the R-DAT heads. The dry fabric is just as effective in maintaining decks against clogging and as just about as effective as both abrasive and wet-dry types in removing clogs; depending on the nature of what's actually doing the clogging.

If the clog's cause is a thick film coating (or label adhesive) on the front surface of the head, the wet-dry fabric cleaning tape might have a better chance of alternately

dissolving (wet section) and scrub-removing (dry section) the contamination away. Alternately, if the nature of clogging is a misshapen head that's "scooping" up and retaining tape particle material, then the abrasive type cleaning tape may do better job by "reforming" the head's surface shape with its accelerated wearing down action.

My personal preference to DAT deck maintenance is to use a dry non-abrasive ([DIC DAT type](#)) cleaning tape (available from Sonic Studios for \$14.50) after 5-10 hours of deck operation and especially before important recording sessions. Thus insuring that I've done all to be done to keep my deck's entire tape path clean working properly without accelerated head wear-down or inducing corrosion through condensed moisture.

In summary, use a non-abrasive fabric type cleaning tape for normal "entire tape path" deck maintenance and for the occasional clog; keep an abrasive cleaning tape handy as a last resort" for really stubborn or frequently clogging heads.

**PLEASE NOTE:** Both dry and wet/dry fabric cleaning tapes should not be rewound due to the fabric fiber breaking down after the first pass. The results of multiple fabric tape rewinds can create lint and dust inside the tape path that may also cause clogs.

## ALWAYS KEEP A SPARE DAT CLEANING TAPE HANDY

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## What's on **Sonic Studios** Web Site? (Click underlined text, and navigation photos)

[Home Page](#)

DSM™ Patented Stereo-Surround Microphone Technology



Eye-gear/Headband/HRTF Baffle mountable matched omni mics



Stops wind blast noise; transparent acoustic design; records real wind sounds



4 Channel Surround DSM™ Microphone System Headworn or HRTF LiteGUY Baffle Mounted



Passive DSM™ Mic Powering/Bass Filters

for MD, DAT, CF, HD, and Video Field/Event/Studio Recording

### Battery Powered-Portable Mic Preamplifiers

High-definition, low noise, very wide bandwidth preamp designs to fit any field/event/studio application using DSM™ stereo-surround mics.



### HRTF RECORDING

Stereo-Surround Omni Mic Baffle for Stand, Fishpole, Studio Boom, and Ceiling



MONO ONLY 'Lombardo' Lapel Mic for interview, Narration, Lecture, and clip-on acoustic instrument Recording



LitGUY HRTF Mic Baffle (shown w/optional Windscreen)

### RECORDING ACCESSORIES



Patch/Adapter Cables



20+ hours using 6 C alkaline cells  
50+ hours using 6 D alkaline cells

Portable Deck Power Solutions

BD-8 Ruggedized Power Sled



Long Running Power for Edrol R-4 Postfix FR2 Marantz: 670/671



Short cord + included extension

Field/Studio Monitoring Headphones, Reviews

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