

DOLBY, HAFLER, TEAC MODS

I'D LIKE TO EXPRESS my gratitude for the fine quality of your magazine. The caliber of your articles has been steadily improving and you are presently offering a good balance between esoteric and very simple articles covering a large segment of audio. I'd like to see some articles on instrumentation (DMM, scope, THD meters, etc.) and less space donated to the subjective-objective evaluation debate. A few limits follow which may be of value to other *TAA* readers.

The Integrex[®] Dolby unit can easily be modified with marked improvements in quality.

1. C29, 229 should be replaced with a 1,000 μ F unit which marked increases low frequency separation.
2. C3, 103, 203, 303 should be replaced with a 2.2 μ F mylar. This reduces the low frequency cutoff from about 7.4Hz (input Z of IC \approx 65k Ω) to about 1.1Hz markedly reducing square wave tilt.
3. The inductor slugs must be removed from L1, 101, 201, 301 as described in *TAA's* review. This flattens the frequency response and eliminates the square wave overload.
4. The transformer must be external to the unit to eliminate hum which I presume is being picked up by the inductors.
5. The "play" stage on the four channel unit is inverting. This is most easily corrected by an inverting IC at the output. The LM387 is an excellent choice here connected as described in National's *Audio Handbook*. This is the only mod I haven't done yet (awaiting IC) so I'm not sure if its worth the effort. This subject has been fully covered in *TAA's* letter section.
6. Bypass the IC voltage regulator with a large computer grade caps and protective diode as described in Jung and White's PAT-5 mod article.

Several mods are easily done on the Hafler preamp for greatly improved sound.

1. Change all interconnecting wire to shielded to reduce hum.
2. Route the phono jack input directly to the circuit board and the output to the switch. This markedly reduces hum at the loss of selectable phono inputs.
3. Shield the on/off switch with a small piece of aluminum. The tone central wiring picks up hum.
4. Change phono input caps C2 to 2.2 μ F mylar. This markedly improves the sound compared to the tantalums used in my unit.
5. Change R10 and R11 to 47 Ω improving the current drive to the RIAA feedback net. This is the basic change in the Hafler authorized mod.
6. Eliminate C8, C11 and C20 and jumper with wire. Check offset! (\pm 10mV in my unit) This change markedly improves sound as described in Jung's recent article on caps in *Audio* and *TAA's* letters column.
7. Bypass C3, C4, C5 and C17 with film units for a subtle sound improvement.
8. Changing C6 to 7.5nF, R13 to 10k Ω , R14 to 118k Ω provide more accurate RIAA both by theory and measurement to your initial inverse RIAA generator.

A few general limits on modifying TEAC 4010S open reel decks.

1. Solder the play input leads directly to the circuit board to eliminate noise.
2. Shield the play lead reverse relay to eliminate hum. Signal level here is -60dB.
3. Install a 24V IC regulator for the preamp and a separate regulator for the bias oscillator. This reduces hum and improves sound and stability.
4. Cut the printed circuit board ground to the play lead preamp and run directly to chassis ground at the DIN input. This markedly reduces hum.

I trust some of the above will benefit others. Thanks for reading my letter.

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