

solid state

DC-Coupled Video Sound

By Darcy Staggs

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A simple circuit fix to improve DVD sound quality.

I finally decided to make another attack on the two-channel audio output circuit of my much-modified DVD player^{1,2,3} which I rely on for both cinema sound and CD reproduction. Having tested the effects of improved power supply and coupling capacitors, I determined it was time to see whether further changes could coax even better sound out of the D/A converter.

This easy change converts the AC-coupled audio output system to DC and eliminates input and output capacitors by short-circuiting the capacitors and adding a static offset-voltage nulling circuit⁴ (Fig. 1), where the original and modified configurations are presented.

THE CHANGES

The "before" circuit in Fig. 1 is a commonly occurring design in many consumer-grade products, and serves as a useful example. The series capacitors keep any DC from appearing at the output jacks. A DC bias comes out of the D/A converter, a common state of affairs,

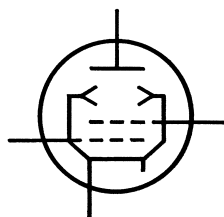
which polarizes the first series capacitor for a small improvement in its sound.

First I shorted the output capacitors with notably better musicality, then installed the nulling circuits (see Parts List), shorted the input capacitors, and adjusted the offset voltages as close to zero as possible. Since the shorted capacitors are through-hole electrolytics, generous solder pads exist for the jumpers. I noted another appreciable gain in musicality, low level detail, and stereo imaging.

I played the unit for a while in this condition with interest, thanks to the welcome improvements. Ultimately I removed the capacitors themselves and replaced them entirely with jumpers, resulting in the "after" circuit of Fig. 1.

Some distance from these audio circuits are 470Ω series short-circuit protection resistors, two in each output line. I jumpered one resistor in each line, with improved low-level detail and high-frequency resolution—another easy fix.

Finally, I removed the three-terminal ±8V DC voltage regulators powering the audio op amps and replaced them with resistor/zenor regulators. This change brought out more air and space in the



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image, and cleaned up the high frequencies even more. Evidently because they consume a constant current, these regulators make life a little easier on the power-supply chain supplying them, and that visibly sharpened up the video imagery.

All told, substantial sonic improvements have resulted from very easy changes, so this enjoyable player will probably stay like it is for some time. **aX**

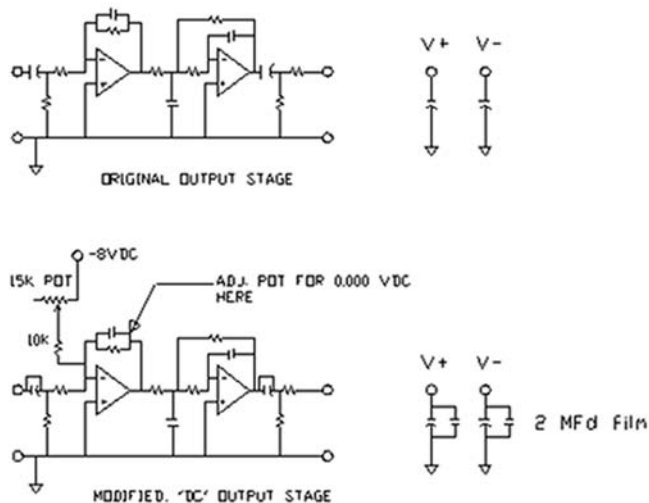
PARTS LIST

15k Ω 10-turn potentiometer (2)
 $\frac{1}{8}$ or $\frac{1}{4}$ W 10k Ω resistor (2)
 Solid, plated copper jumper wire (single strand)

REFERENCES

1. audioXpress, July 2002, pp. 24–27.
2. audioXpress, June 2003, p. 4.
3. audioXpress, July 2003, pp. 67–68.
4. Circuit courtesy of Michael Danbury.

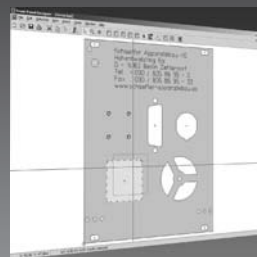
FIGURE 1: TOP—ORIGINAL OUTPUT STAGE. BOTTOM—MODIFIED DC OUTPUT STAGE.



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Front Panels?

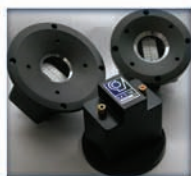
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