

Setting Up Your Phono Cartridge With The HIFI News Record And Diamond Cut

Our Hi-Fi News test record has been a surprising hit for us. We knew that some audiophiles would be interested in "dialing in" their tone arms, but it appears that many of our customers are interested in this subject. So this month we present an article showing how to use this test record to set up your cart.

First, we suggest using the pure (Sin Wave) tones on the test record in conjunction with the THD (Total Harmonic Distortion) Meter found in the Diamond Cut Spectrum Analyzer. The best results in terms of cartridge setup will occur when the % THD is adjusted for a minimum reading. The phono cartridge phasing can be checked with the X-Y display. A monophonic signal should produce a deflection on the X-Y display graph that is up and to the right at a 45-degree angle (meaning that the two signals are in-phase and equal in amplitude). If not, the wiring between your phono cartridge and the head shell is incorrect. Double check that it is set up as follows:

- White: Left Channel Signal
- Blue or Black: Left Channel Return (connects to the shield of the Left Channel RCA Connector {which is usually white})
- Red: Right Channel Signal
- Green: Right Channel Return (connects to the shield of the Right Channel RCA Connector {which is usually red})
- Make sure that the tone arm runs parallel with the surface of the record. Some arms have adjustments for vertical position to assure that this is correct.
- Make sure that the turntable is level. I use a bubble level mounted on the turntable to assure this. Matchbook covers make good shims to achieve a level turntable.

Use a protractor to set up the alignment of the phono cartridge in the head shell. This step is important if you are ever to achieve proper stylus tracking.

The test record that I use is simply called "Analogue Test LP" made by "Hi-Fi News, and is available here for only \$44.95:

<http://www.enhancedaudio.com/khxc/index.php?app=ccp0&ns=prodshow&ref=Hifinew>

It has a number of 300 Hz tones (called Bias Setting tones) recorded at different levels.

The procedure is to start at the lowest level signal and adjust the tracking and anti-skating until the distortion is minimized at each of the ever-increasing loudness levels. Always start at the cartridge manufacturers highest recommended tracking force and work downwards, but not the other way around. The highest 300 Hz signal level on this record is generally untrackable on my equipment - - the stylus just skips across the record when it is played. The modulation on the recording is simply too hot (+18 dB). I believe that they just put that signal on there as a joke.

The record also has a Pink Noise track which can be used to evaluate the frequency response of your phono system (cartridge and phono preamplifier) when used in

conjunction with the DC Spectrum Analyzer. One interesting thing to look for is the tone arm resonance. It normally should be in the 8 to 15 Hz range. If it is above that range, you should consider adjusting the dampening factor on your tone arm to reduce resonance, as this resonance will start to become noticeable in the audio signal. And, that should do the trick.

Note 1: If you have the equipment to set this parameter, the Vertical Tracking Angle of the stylus should be between 15 to 20 degrees.

Note 2: When you transfer the recording to your computer hard drive, keep your sound system volume as low as practical in order to minimize acoustical feedback to the turntable. Playing the recording too loudly while transferring the recording will amplify resonances in the system producing boomy transfers.

Note 3: A thin mirror can be used to assure that the azimuth of the stylus is correct. With the turntable motor turned off, set the mirror on the turntable platter and then set the stylus on the mirror. When viewing the stylus from the front of the cartridge, it should appear to be perfectly perpendicular to the mirrored surface, producing a straight vertical line in the mirrored image.