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Tracking Ability Test

If you'd like to learn more about the tracking abilities of your tonearm-cartridge combination, this test is a perfect tool. We cut a 315 hz signal and increase the amplitude in steps of 10 (1 = 0.001 mm) from 50 to 100. The higher the value, the better your tonearm-cartridge combination should be able to track even heavily modulated grooves without audible distortion.

Please make sure that your turntable is perfectly leveled, the azimuth and vertical tracking angle are properly set (We recommend using the Clearaudio Azimuth Optimizer). Start this tracking ability test by using the minimum recommended tracking force (antiskating set accordingly) and gradually increase both values until your cartridge is tracking 80 in both channels. Attention: Do not exceed the manufacturer's recommended maximum tracking force to prevent any damages. Keep in mind your records more than a marginally raised value would do.

If there is more distortion in one channel than in the other, please vary the antiskating force until both channels sound equally clean. Once the test signal begins to distort in both channels, the tonearm and cartridge are no longer able to track the groove correctly. It is a very good result if a cartridge tracks 80 without distortion. The test signal of 90 and 100 are extreme amplitudes, which never show up in cut music signals but if tracked by a cartridge it indicates a safety margin.

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Azimuth Adjustment with the Clearaudio Azimuth Optimizer

To experience music reproduction at highest quality levels from analog records it is required to achieve optimal positioning of the picked stylus in the record groove.

There are several possibilities to accomplish this:

- a) adjustment by visible control,
- b) adjustment by listening,
- c) adjustment by the use of measurement equipment.

Possibility a) is limited to the estimation by eye and turns out to be unrealistic for the following reasons:

The lateral tracking balance is determined by the tracking points of the stylus relative to groove sides. This must not be examined under static conditions but dynamically under influence of all acting forces when tracking a record. The friction pulls the stylus tangentially producing a vertical component which changes the VTA and reduces the tracking force. A skating force that is not ideal compensated acts in a radial direction and not only causes different pressure to the right and then to the left groove sides, but "riding-up" the 45°-slope further reduces the tracking force.

Depending on different tonearm constructions, possible additional torsional force may act upon the cantilever. All of these influences let the adjustment by visible control only be a second choice.

At any time adjustment by listening was favored by HIFI purists who experienced drastic improvements of sound when experimentally finding azimuth deviations from visual perpendicular orientation by iterative trials and numerous listening sessions. This method, however, is very time consuming.

The most exact and unbiased method is possibility c) by using measuring equipment. To avoid the necessity of expensive equipment, Clearaudio developed the Azimuth Optimizer which requires an appropriate test record with a lateral mono signal (see side B)

In the Clearaudio research laboratory we determined that the adjustment of the azimuth most obviously influences the level difference between right and left channel of a lateral mono signal, which therefore can be used for indication (see diagram)

From the diagram you see that the best orientation of the stylus is achieved when the curve of difference between right and left channel averages around 0dBV (the LCD display of the Azimuth Optimizer fluctuates around zero).

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