

ACOUSTIC RECORDS:

(Technical explanation kindly provided by Larry Robinson – MidiMagic)

The acoustic recordings are essentially constant-amplitude recordings (the amplitude of the stylus swing does not vary with frequency); unlike the electrical constant-velocity recordings (the velocity of the stylus does not change with frequency).

Acoustic recordings

(mostly before 1926):

Crystal cutters, crystal cartridges, and ceramic cartridges are constant amplitude devices.

For a constant voltage, the amplitude of the stylus motion does not vary with frequency.

The velocity rises as frequency rises at 6 dB per octave.

(Note that newer ceramic cartridges are mechanically designed to give RIAA. So please check your instruction manual should you want to use one.)

On most preamps, the setting 800N-16 or 800N-18 are essentially straight-line playback characteristics for constant amplitude (acoustic) recordings.

800C-18 is closer to the real acoustic response due to the lack of travel of the horn diaphragm at low frequencies. And most acoustic records have little usable sound below 300 Hz or above 3 KHz.

The real trick for acoustic records is to have a parametric equalizer after the 800C-18 playback curve to get rid of the resonances in the recording horn.

Electrical recordings

(after 1925):

Magnetic cutters and magnetic cartridges are constant velocity devices.

For a constant voltage, the velocity of the stylus motion does not vary with frequency.

The amplitude drops as frequency rises at 6 dB per octave:

This is why high frequencies need amplification in recording.

The other way round, the amplitude rises as frequency drops at 6 dB per octave:

This is why low frequencies need attenuation in recording.

All of the equalization values (shelf, turnover, rolloff) given in the Wiki tables are based on such constant velocity cutters and reproducers – so they apply to electrical recordings being reproduced with magnetic cartridges.

Those have an inherent 6 dB per octave drop in response, and so must be compensated.