



Restoration Tips:

Choosing the Best Stylus

Now we'll choose the best stylus for the particular surface that we're dealing with. In the case of an old 78, truncated elliptical styli are the best since the stylus tip will not be in contact with any dirt and grit at the bottom of the record groove. The criteria for stylus selection should be based on two parameters:

- Signal-To-Noise Ratio (in more common terms it would be referred to as surface noise).
- Distortion

Keep in mind that it is always possible to improve the effective signal-to-noise ratio of a recording, but it is much more difficult to decrease the harmonic distortion content of a recording in any post-transfer process. So find the stylus which produces the lowest distortion as the first criteria, and listen for the stylus which produces the best signal-to-noise ratio as a secondary criteria. Styli are available in different diameters specified in mils, and in geometry's such as spherical, conical, and truncated versions of both. Although there are charts which call out the best stylus to use for a particular record brand and era, you will probably find that the best one is always determined by trial and error, since the charts have no way to account for the wear pattern of the particular disc which you desire to transfer. However, if you prefer a more deterministic approach, you can use the following chart to get into the right ballpark:

- **Edison 80 RPM Diamond Discs:** 3.7 mil spherical or non-truncated conical stylus
- **Wide Groove Acoustical 78 RPM Lateral Discs:** 3.8 mil truncated elliptical
- **Edison White Wax, Brown Wax, Concert, and Gold Molded:** 7.4 mil Spherical stylus.
- **Edison Blue Amberol Cylinders:** 3.7 to 4.2 mil non-truncated spherical stylus
- **Edison Wax Amberol Cylinders:** 4.2 mil spherical stylus.
- **Pre-1935 Lateral Cut Electrical 78's:** 3.3 mil truncated elliptical stylus.
- **Transcription Recordings:** 2.3 mil truncated elliptical stylus.
- **Late 1930's Lateral 78 RPM Discs:** 2.8 mil truncated elliptical stylus.
- **Narrow Groove 78's such as Polydor:** 2.4 mil truncated elliptical stylus.
- **Standard Groove 78 RPM Discs:** 3.0 mil truncated elliptical stylus.
- **Modern LP's:** 0.7 mil elliptical stylus.
- **Early LP's:** 1.5 mil truncated elliptical stylus.
- **1931 to 1935 RCA Pre-Grooved Home Recordings:** 3.5 mil truncated elliptical stylus
- **Pathe 78's:** 3.7 mil truncated conical stylus

Note: Actual Groove widths can be measured with a 200X to 300X microscope equipped with a calibrated reticle. The location of the wear pattern can also be observed, so that you can choose a stylus having a dimension which will either ride above or below the groove-wall wear zone.

Tracer Technologies specializes in Audio Restoration and Sound Products. Their Diamond Cut products are world leaders in Record and Tape Restoration as well as Audio Forensics.

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