

# **AES information document for transfer technologies - Stylus dimensions and selection**

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## **Abstract**

This information document is aimed at the archivist, librarian or technician who needs to make transfers from mechanical sound records made during the past 100 years or more. Each period had its own technological style and there was little effective standardisation until the late 1940s. Making satisfactory and efficient transfers from these records means choosing an appropriate stylus to suit both the style of manufacture and also the physical condition of the particular specimen. This brief document sets out some guidance on stylus choice for vertical recordings on cylinders and discs, coarse-groove lateral recordings on disc, and comparatively modern microgroove records in both mono and stereo.

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### **Foreword**

This foreword is not part of the AES-16id-2010 *AES information document for transfer technologies - Stylus dimensions and selection*.

This information document was written jointly by members of the SC-03-02 Working Group on Transfer Technologies, part of the SC-03 Subcommittee on the Preservation and Restoration of Audio Recording, under the project AES-X106, *Stylus shape and size for transfer of records*.

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### **Note on normative language**

In AES standards documents, sentences containing the word “shall” are requirements for compliance with the document. Sentences containing the verb “should” are strong suggestions (recommendations). Sentences giving permission use the verb “may”. Sentences expressing a possibility use the verb “can”.

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## 1 Introduction

It is a widely adopted rule that the best sounding stylus is also the correct one. In most cases, the judgment will be made aurally by the engineer who makes the transfer.

For the purpose of stylus selection, a turntable with two tone arms equipped with the same model of cartridge is very useful in supplying the signals to be compared immediately after each other. Performance will still be a compromise between the highest undistorted signal and the most pleasant background noise. The decision will always be subjective but may be confirmed using visual signal support as well. To shorten the process of stylus selection, some knowledge about the physical parameters of the groove is essential.

The text that follows will use a number of terms that were widely used when manufacture of these records was at its height, and which still appear in contemporary literature of those periods. From today's technological viewpoint, with its carefully-harmonised units, these terms may seem a little old-fashioned. However, to cater for the historian and the modern technician, we will quote dimensions in both traditional and SI units.

To clarify, the "mil" is a US customary unit meaning one thousandth (1/1000) of an inch, and is exactly equivalent to 25,4 micrometres. A micrometre ( $\mu\text{m}$ ) is one millionth of a metre in modern *Systeme Internationale* (SI) units - that's 1/1000 of a millimetre - and is identical to the "micron", although this term is now deprecated in SI.

We use the term "stylus" throughout in the expectation that modern transcriptions will use modern lightweight pickups and diamond-tipped stylii. If this were not the case, the traditional alternative term, "needle" would be equally fitting.

## 2 Normative references

No referenced documents are required for the application of this document.

## 3 Parameters

### 3.1 Disc

Key parameters include the groove profile, surface composition, and the overall condition of the playing surface of the disc.

Groove profile serves as an initial decision-making aid. It provides knowledge about the useful range of stylus dimensions in general.

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