

Constant Groove Depth Solves Microgroove Problem

by D. E. Ward*

Whereas variation in groove depth as small as .0005" little affects the quality of ordinary disc recordings, such variation seriously impairs microgroove results. The fact that uniform depth is difficult to maintain in cutting ordinary aluminum-base transcription blanks or master discs is borne out by the operating procedures of prominent fine-line recording companies. Recording engineers have found it necessary for fine-line work to select only the flattest discs out of their supplies of blanks. Where fine-line cutting is the predominant phase of their business, so relatively few discs are found to be ideally flat, that excessive inventories of less flat blanks quickly accumulate.

To alleviate this selection problem partially, at least, some recording departments use 13 $\frac{1}{4}$ " or 17 $\frac{1}{4}$ " discs as originals for even seven inch pressings. Due to the fact that the large master size discs are commonly supplied with .050" aluminum bases, the chance of obtaining a better degree of flatness in these sizes is greater.

On the other hand, however, because of the dependence of all disc manufacturers on only one source of aluminum bases, there is no real assurance that even the heavy bases will be consistently flat from shipment to shipment. This fact has doubtless been a contributing factor to what has sometimes been termed inconsistent behavior of ordinary coated discs. When, because of surface run-out, the cut changes from light to heavy once per revolution, surface noise may develop a "swish" which is often erroneously charged to hard and soft areas, a condition which actually never occurs on discs manufactured by modern methods.

The best disc bases obtainable often run out of flat as much as .015" at a 12" diameter. The commonly seen wavering of the reflection in a rotating disc is, of course, the plainest evidence of this usual run-out, and is ordinarily the recording engineer's criterion for judgment of flatness.

To eliminate the lost motion of having the user select out the flattest discs himself, and to minimize the resulting accumulation of inventory, one disc manufacturer, REEVES SOUNDRAFT CORP., now offers a full solution to the flatness problem by new innovations in the familiar Soundcraft line made possible by the Soundcraft Electronic Selector, an ingenious device which rapidly tests discs for compliance with close flatness tolerances. Soundcraft, therefore, now offers two new lines, 'Micromaster' discs for fine-line originals and New 'Microflat Broadcasters' for high quality radio reproduction. *Advertisement.*

*Sales Manager—Reeves Soundcraft Corp.

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Electronic Selector Picks Out Flat Discs

by A. C. Travis, Jr.*

To meet the urgent need for flatter-than-average discs for all fine-line applications such as 7 $\frac{1}{2}$ " 45 RPM and 33 $\frac{1}{3}$ RPM LP microgroove recordings, an Electronic Disc Selector has been developed by Reeves Soundcraft Corp. for use in Soundcraft Disc production.

Among the many problems attendant upon the development was the determination of standards and tolerances, in other words, "how flat is flat?" Microscopically speaking, there is, of course, no such thing as a perfectly flat surface. For practical purposes, however, it was determined that even the poorest cutting head suspension would produce a uniform groove at any standard speed if the vertical rise and fall of the surface under the stylus was less than .005" provided this run-out was not caused by a sharp bend or bump. Flatness testing all sizes of disc bases further determined that the larger diameters, 13 $\frac{1}{4}$ ", 16" and 17 $\frac{1}{4}$ " averaged flatter than ten and twelve inch bases, which commonly run-out of flat as much as .015".

Obviously, many ways can be devised for checking discs for flatness, but to check them at production speeds without damage from handling is quite another matter. The disc can, of course, be touched only by the edges, and nothing mechanical can bear against the surface without marring it. The Electronic Selector, therefore, to borrow a political phrase, literally has to "look at the record". A combination of optics and electronics, the Selector takes advantage of the fact that the truly flat, broadcasting-quality disc is a perfect darkened mirror. The Selector, therefore, makes use of reflected light beams and photocells to check not only whether the deviation from a truly flat surface is within limits, but also whether the steepness of the curve of deviation is within an allowable tolerance. The Selector makes fast decisions to keep up with Soundcraft's high production rate without sacrificing safety in handling. It would hardly be fair to say that the Soundcraft Electronic Selector is a great invention. The truth is that as a gadget, it is only a new application of prior art. Of real importance, however, is the fact that its use makes possible the offer in commercial quantities of remarkably flat recording discs for critical work.

The new selected discs are available in two types: NEW 'MICROFLAT' SOUNDRAFT 'BROADCASTERS' and 'MICROMASTERS'. The premium-grade Soundcraft 'BROADCASTERS' are now and henceforth being furnished at no extra charge as 'MICROFLAT'. Electronically selected 13 $\frac{1}{4}$ " and 17 $\frac{1}{4}$ " 'MICROMASTERS' are now furnished for all fine-line originals at a slight increase in price over the popular 'Maestro' line commensurate only with the cost of the selection operation. *Advertisement.*

*Vice Pres.—Reeves Soundcraft Corp.