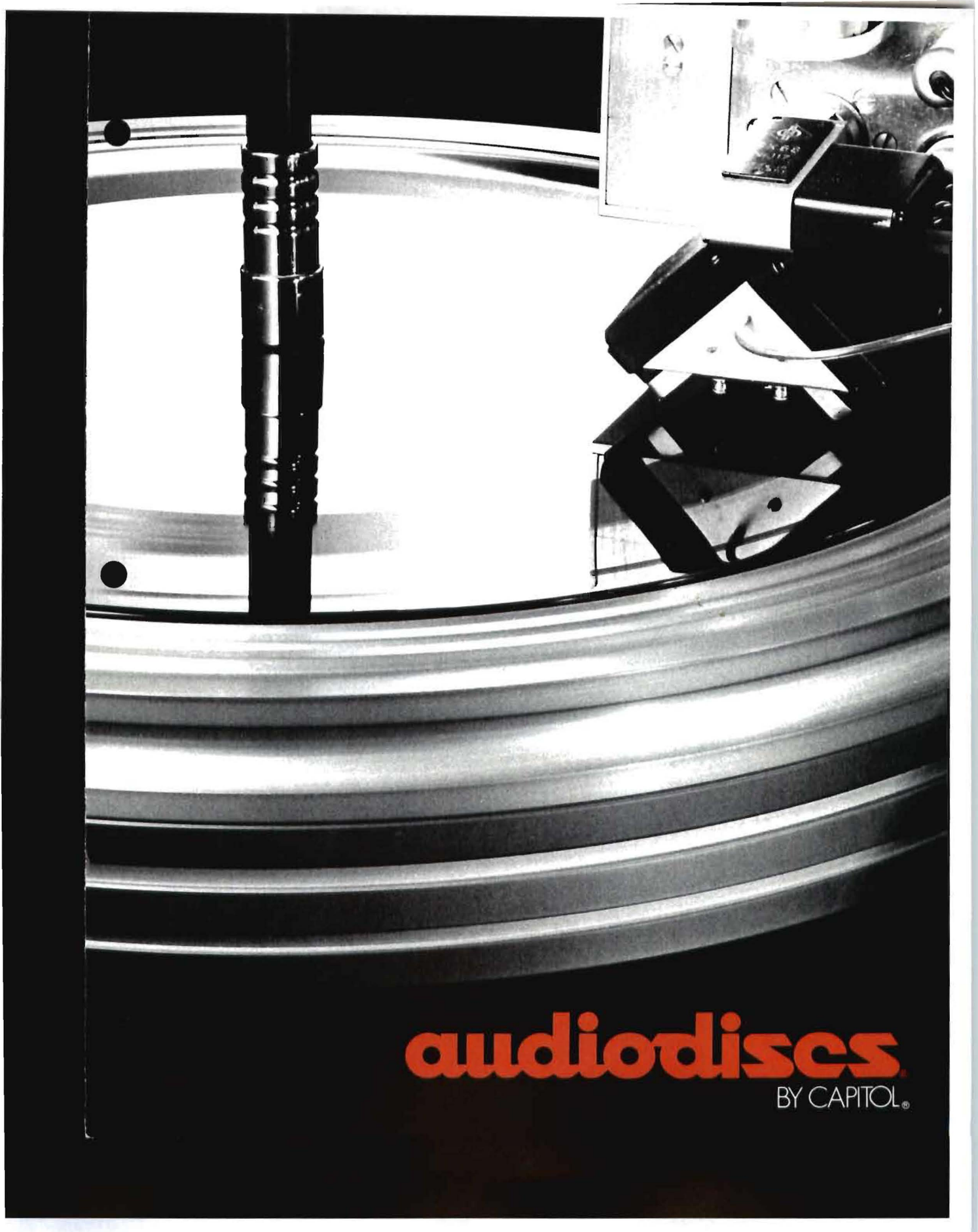
audiodiscs
BY CAPITOL®

For the first time in 25 years, there has been a breakthrough in lacquer disc production. It's the new Capitol Magnetic Products disc plant in Winchester, Va. Opened in late 1974 with first production in 1975, the plant incorporates the latest technology in all phases of lacquer disc production, testing and research. The result is improved disc quality today and preparation for tomorrow's demands and innovations.

Capitol Magnetic Products, then named Audio Devices, Inc., began manufacturing Audiodiscs® in 1937. Today they have established a firm reputation as the world's finest mastering discs. Audiodiscs are used successfully in all disc mastering applications, including discrete four-channel records and video discs. Capitol Magnetic Products is in the forefront of these innovations, due to its continuous work with major record producers, stylus designers and system developers.

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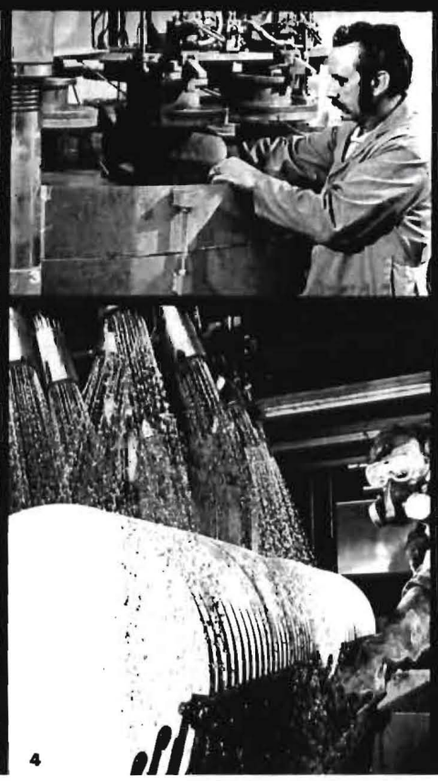

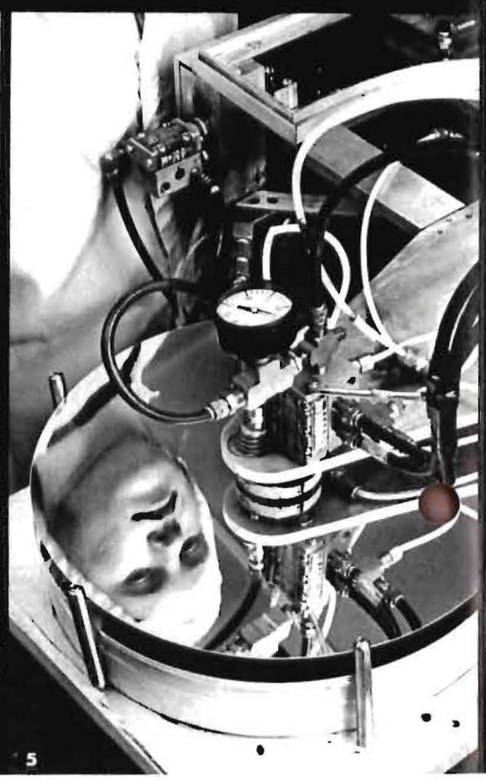

1 ASSEMBLING RAW MATERIALS: ALUMINUM SUBSTRATES
Aluminum substrates are manufactured to Capitol Magnetic Products' specifications. These "blanks" used for master discs are of a special alloy supplied in mill finish. Then, unlike any other disc manufacturer, Capitol does its own lapping to insure optimum thickness, flatness and smoothness.

2 ASSEMBLING RAW MATERIALS: THE LACQUER COATING
Capitol's nitro-cellulose lacquer formulation is blended for a fine balance between conflicting requirements: Lubricity and friction; compliance and stiffness; elasticity and hardness, etc. Blended into the lacquer are ingredients to prevent moisture absorption and ultraviolet radiation; extend stylus life; eliminate static; and prevent the thread from adhering to the hot stylus. The lacquer formulation is circulated and filtered continuously to achieve a smooth and uniform dispersion. This eliminates agglomerates within the coating which cause cutting problems. Then a deaerating process removes all air bubbles.

The fineness of the lacquer blend results in a surface approaching optical smoothness. Moreover, a properly burnished groove will have a typical smoothness of 0.4 microinch (100 Angstroms) center line average. This accounts for the unsurpassed signal-to-noise ratio of the Audiodisc when cut with any of the present or proposed modulation schemes. It has proven itself with all stylus types and cutting speeds.

3 LAPPING THE DISC
Other disc manufacturers use calendered blanks. With calendering there is a risk that imperfections will be pressed into the surface. Audiodiscs are lapped, instead. By grinding away the top layer, imperfections are removed. This fine polishing achieves a more consistent flatness. Adhesion is improved, as well, enabling the disc to withstand hotter bath temperatures.

4 BATHING THE BLANKS
After lapping, the blanks are treated with six different chemical solutions to remove lapping compounds, oil and debris from the surface. This prepares the aluminum for coating.

5 COATING THE DISC
Blanks are coated with lacquer in an environment-controlled "white" room so clean that it rates Class 100 air standards. (Less than 100 particles 0.3 micron or smaller per cubic foot of air.) This eliminates all possibilities of imbedded dirt.

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Magnetic Products' experience, manufacturing and research facilities and field contact.

But what does this mean to you? It means simply this: Far more reliable lacquer discs. We have improved and updated our manufacturing process, step-by-step. For example, we've achieved absolute control of air cleanliness which insures a defect-free disc surface. Flatness standards are unsurpassed due to lapping and improved coating techniques. The lacquer disc you order from Capitol will cut and plate precisely.

Now for the first time in disc manufacturing, one company has a decided advantage. For the first time there's a difference in discs. And, for the first time, you'll want to insist on ordering only one brand of discs—Audiodiscs from Capitol Magnetic Products.

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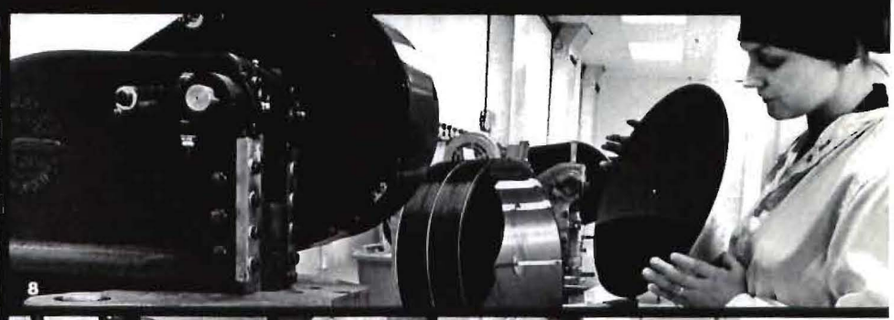

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6 CURING THE DISC

Audiodiscs are dried over a long exposure time to allow slow evaporation of solvents. Rushed drying at high temperatures would result in craters, pin holes and bubbles, sometimes even an "orange peel" surface.

As a result of the long, slow drying at the correct temperature, the coating is defect-free with consistent hardness to assure uniform stylus heat requirements. After drying, the discs are placed in a high temperature oven where they are "cured." The entire process, from coating to curing, is repeated for the other side.

7 INSPECTING THE AUDIODISC

Each Audiodisc is inspected visually for surface blemishes at least three times prior to packaging. Only perfect discs become masters. The masters have one perfect face, most with second face opportunity.

8 STAMPING THE DISCS

After the center hole is precisely punched, discs are stamped with a batch code number on the non-preferred face. This allows identification in case of customer inquiries.

9 ON-GOING QUALITY ASSURANCE

Continuous tests are performed on the lacquer formulation and the completed Audiodiscs. Raw materials are evaluated before production is authorized. Production discs are sampled and examined for adhesion, flexibility, lacquer and aluminum defects, solvent retention, smoothness, etc. Discs are tested for static, advance ball scoring, noise vs. stylus temperature, diameter vs. noise, and intermodulation distortion.

Special tests are performed to meet new application needs and customer requests. In addition, research is conducted at Capitol's support laboratories in Glenbrook, Conn., and Los Angeles.

10 PACKAGING

Since Audiodiscs are shipped all over the world, final packaging is a critical operation. A polyethylene, grooved edging is slipped snugly around each disc to separate the recording surfaces. A center spindle, protective paper and shrink-wrap keep the pack of 25 discs clean and immobile during shipping. The unit is cushioned inside a specially designed, reinforced carton.

AGING AND STORAGE

Although it is recommended that discs be used within a year, Audiodiscs two and three years old have been cut and processed and still meet original specifications without difficulty. Ideal storage conditions are approximately 70°F (21°C) and 50% RH. Capitol advises using the discs on a first in/first out basis.

audiodiscs®
BY CAPITOL®

MASTER RECORDING DISCS

Dimensional Specifications

	Diameter	
Type	Inch	(mm)
10 MI	10	(254.0)
12 MI	11-7/8	(301.6)
13 MI	13-1/4	(336.6)
14 MI	14	(355.6)

Thickness		
Aluminum	Coating	Overall
.036 in. (.914 mm)	.007 in. + .001 − .000 (.178 mm + .025 − .000)	.050 in. (1.27 mm)

Center Hole Dimensions:

.286 ± .001 in. (7.26 ± .025 mm)

Signal-to-Noise Ratio:

65 db. Test performed by cutting unmodulated grooves at different diameters using standardized stylus heater current. The SNR is referenced to a 1000 Hz signal recorded at 3.5 cm. (one channel) measured with an NAB "A" curve filter.

Test Equipment:

Recording:

Scully lathe with Westrex 3D cutter head. Selected Capps stylus and advance ball.

Playback:

Technics turntable and arm, with Stanton 681 A cartridge equipped with calibrated spherical stylus. Stylus pressure 1.5 grams. High powered amplifiers and studio monitor speakers are used to listen to the noise character and smoothness.

Four Channel Tests:

Special tests for CD-4 four-channel masters are performed at 16-2/3 RPM, cutting a 30 KHZ carrier and measuring the demodulated noise at 5.5 inch (140 mm) diameter through a DIN noise filter. The carrier is cut with a specially calibrated CD-4 narrow facet cutting stylus.

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HB 1064 7/76

PRINTED IN U.S.A.