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, stylists designers and system developers. No other disc producer has Capitol magnetic manufactures and field it made reliable in improved manufacturing. For exam

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 ultra violet 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 micron (100 Angstroms) center line average. This accounts for the unsurpassed signal-to-noise ratio of the Audiodisc when cued with any of the present or proposed modulation schemes. It has proven itself with all stylus types and cueing 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.

6 CURING THE DISC
Audiodiscs allow slow, high temperature curing is required for entire production process and ensures the other side.

7 INSPECTING EACH AUDIODISC
Audiodiscs are visually inspected for perfect finish.
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.

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

But what does this mean to you? It means simply this: For more reliable lacquer discs. We have improved and updated our manufacturing process, step-by-step. For example, we've achieved absolute
# MASTER RECORDING DISCS

## Dimensional Specifications

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Inch</th>
<th>(mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 MI</td>
<td>0.036</td>
<td>(254.0)</td>
</tr>
<tr>
<td>12 MI</td>
<td>0.044</td>
<td>(301.6)</td>
</tr>
<tr>
<td>13 MI</td>
<td>0.047</td>
<td>(336.6)</td>
</tr>
<tr>
<td>14 MI</td>
<td>0.050</td>
<td>(355.6)</td>
</tr>
</tbody>
</table>

### Thickness

<table>
<thead>
<tr>
<th>Aluminum Coating Overall</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.007 in + 0.001 in</td>
<td>0.050 in</td>
</tr>
<tr>
<td>0.000 in</td>
<td>(1.27 mm)</td>
</tr>
<tr>
<td>0.018 mm + 0.025 mm</td>
<td>(0.000)</td>
</tr>
</tbody>
</table>

## Center Hole Dimensions:

280 ± 0.001 in (726 ± 0.025 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 100 Hz signal recorded at 3.5 cm. (one channel) measured with a 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 CD4 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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**Capitol**

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