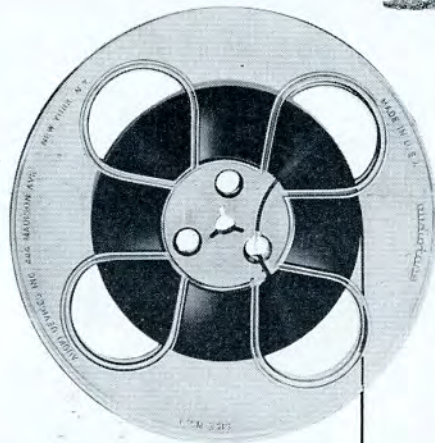


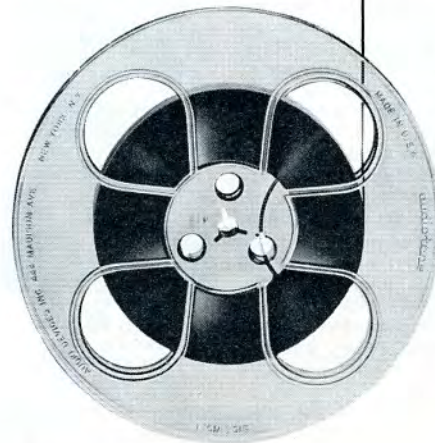


1959-60



THE **audio**
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directory

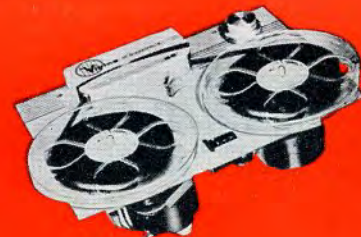
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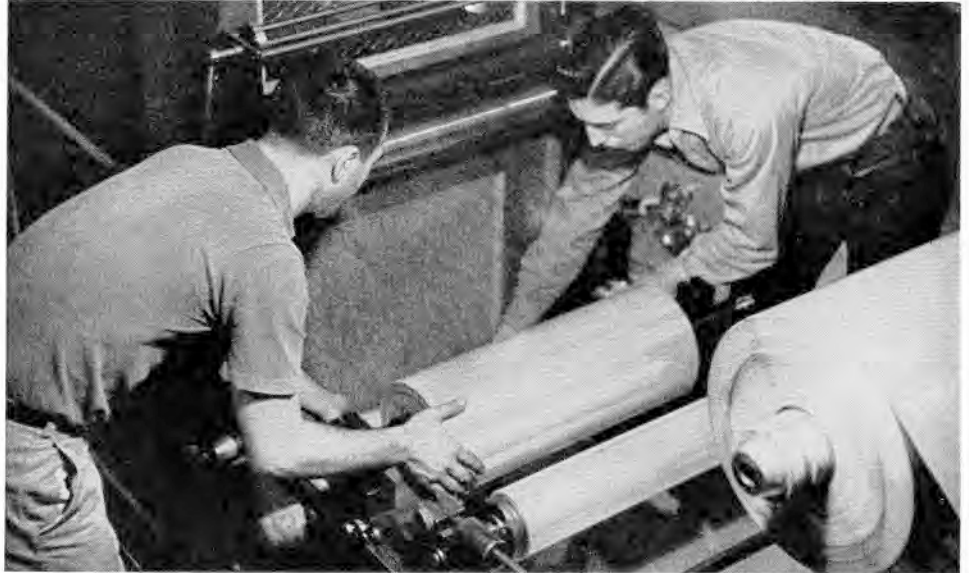
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TAPE IN THE MAKING

Random Scenes
From the Audiotape Plant



First step in actual tape manufacture is the physical formulation of the oxide coating. Special magnetic oxide powders, binders, antifriction materials, anti-static agents and solvents are mixed and dispersed in huge rotating drums filled with hardened steel balls. Then the liquid slurry is drawn from these powerful "ball mills," filtered and pumped to tanks that supply the coating machines.



Feeding an Audiotape coating machine with the large rolls of base material — cellulose acetate or "Mylar" — is a tricky job. The machines are never stopped; new rolls are fed in with a "flying splice." The coating machine applies a microscopically thin

layer of extra strong adhesive, which is quickly dried. Then magnetic oxide is coated on with micrometer accuracy. Thickness is electrically measured throughout manufacture and the recording properties are continuously measured and charted.



In the Quality Control laboratory, random samples are checked at regular intervals during production. The finished product is again checked for uniformity, sensitivity, frequency response, distortion, peak bias point and perfection of coating. Specially constructed testing machines are used to assure uniform surface quality, free from troublesome imperfections or "drop-outs."

THE FOG HAS LIFTED

C. J. LeBel Comments on Some Recent Technical Developments in Tape Recording

Years ago an unwary tape enthusiast remarked that tape was obviously superior to disc because there were fewer tape speeds in use than there were disc speeds. Little did he know that even at that time, ten years ago, there were as many tape speeds as disc speeds and more to come. Now we have not only the question of five tape speeds, but also of magazines and reels.

Much of the recent confusion resulted from the tendency to mistake optimistic laboratory claims for a guarantee of production performance. In the electronic field it is very seldom that production performance is every bit as good as the laboratory promise, and a great deal of time inevitably intervenes between the first successful laboratory experiment and consistent commercial production. In the intervening time, engineering and management receive a great many surprises. As engineers and the public have had a chance to test the newer proposals, the fog of confusion has dissipated.

At the present time, we have two different



C. J. LeBel
Vice President
Audio Devices, Inc.

tape speeds and three different methods of carrying the tape, all bidding for public approval. Let's see what they are:

A. *Two-track 7 1/2 ips tape on reels.* This is the old standby, the method which proved so good that it created stereo in the public's mind. As a proven arrangement, we may use it as the standard of comparison for the newer methods.

B. *Four-track 3 3/4 ips tape in a small magazine.* This created the fanfare a year to a year and a half ago, and has since been wending its slow way from the laboratory bench to the production line.

C. *Four-track 7 1/2 ips tape on reels.* This is the most recent method to be released to the public, though it was proposed by engineers some years ago.

D. In addition to speed and number of tracks we have the question of *two different types of magazines*, (1) the small type that is mentioned in "B" above, a two-hub arrangement (2) the other is a continuous loop system available in various sizes.

The public, of course, asks which method is "best." As always, it is not a question of what is best for the world as a whole, but rather a question of what is best for the individual user, with specific requirements of his own. Let's compare the different methods in detail rather than in generalities.






Two-track 7 1/2 ips tape on reels








This method is the old standby and many, many thousands of machines have been sold for what is the best in quality of the various alter-








(Continued on page 27)






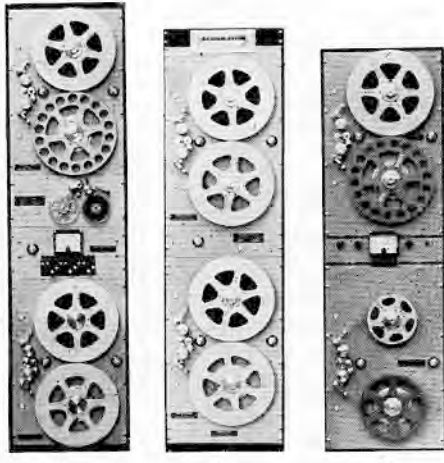
QUICK FACTS ON MAGNETIC TAPE RECORDERS








(Additional information can be obtained by writing to the manufacturer)






Manufacturer	Model and Price	Frequency Response	Data
<p>ALTO FONIC CORPORATION 981 Commercial Street, Palo Alto, California</p>	<p>Continuous Automatic Tape Reproducers for Rack Mounting</p>  <p>Model 450-D with pre-amp \$855.00</p> <p>Model 450-DA with combination pre-amp power amplifier and mixer. \$972.00</p> <p>Add \$33.00 for 7½ ips</p>	<p>50-10,000 cycles (± 2 db) at 7½ ips</p> <p>50-15,000 cycles (± 4 db) at 7½ ips</p> <p>50-7,500 cycles (± 2 db) at 3¾ ips</p>	<p>Ampex-designed, proved, licensed. Plays dual track, pre-recorded, 8-hour tapes continuously. Plays 4 hours on one track, reverses automatically and plays 4 hours on the opposite track, reversing and repeating indefinitely. Signal-to-noise ratio: 50 db. Simplest mechanism driven by hysteresis synchronous motor and Ampex reel take-up system. Includes plug-in electronic section with positive metallic tape impulse automatic reversing. Reel change switch. Operates with variety of accessories including Ad Merchandiser. Model 450DA, same as above except has combination pre-amp and 12-watt high fidelity power amplifier with 4, 8, 16 ohm and 70-volt output. Individual volume controls for music, microphone, chime tone pager, Ad-Merchandiser; master gain control, and tone control. Receptacle for timers, microphones, low impedance transformer, and Ad Merchandiser.</p>
	 <p>Model 465-A Deluxe Console \$1191.00</p>	<p>as above</p>	<p>Completely automatic packaged system to provide music and paging in installations up to 12 speakers. Contains Ampex-designed Model 450-DA reproducer. Space for Ad-Merchandiser in concealed compartment under tabletop together with other controls. Master volume control and monitor volume control. Extended range monitor speaker in a separate enclosure within console. Cabinet is wood construction 34" high, 37" wide, 17" deep. Snap-on front panel with plexiglass window and plastic grille cloth, can be moved to change reels and to store extra reels. 12-watt amplifier, T-10 timer, 8" monitor speaker. Shipping weight: 161 lbs.</p>
	 <p>Rack Mounted Systems</p> <p>Model 458 \$2275.00</p> <p>Rack Series. Prices Quoted On Request</p> <p>Model 450-DE \$909.00</p>	<p>as above</p>	<p>MODEL 458. Automatic unattended programming system. Timers and silent sensing provide music intermixing between two dual-track, 14", 8-hour reels. Plays 16 hours and then repeats. Each reel individually controlled by a timer that is variable from 0 to 3 hours. A third timer provides 7-day; morning-ON, night-OFF . . . automatic operation which is repeated each week. Ad-Merchandiser can be used in separate rack mount.</p> <p>RACK SERIES. Uses either Model 450-D or 450-DA Ampex-designed reproducer. Accommodates Ad-Merchandiser in pull-out drawer. Accessories available.</p> <p>MODEL 450-DE. For restricted space installations. Incorporates Ampex-designed Model 450-D reproducer into 36 ¾" h. x 22" w. x 15" d. wrinkle finish steel cabinet. Automatic reversing provides continuous playback.</p>
	 <p>AD-MERCHANDISER</p> <p>Model 480-A Playback only \$345.00</p> <p>Model 481-A Playback — erase — record \$495.00</p>	<p>50-7500 cycles (± 2 db) at 3¾ ips</p>	<p>Endless loop tape cartridge player used with any Alto Fonic Reproducer for automatic insertion of sales messages between music selections. Alto Fonic Silent Sensing Circuit provides switching during 5-second pauses. Selector switch permits playing of 1 to 10 musical selections between sales messages. Switch for monitoring. Snap-in cartridges hold 28- or 60-minute message. Self-contained 3-watt amplifier and speaker. High impedance output. External switch will trigger start. Cartridge tape automatically threads through transport mechanism as cartridge snaps into position.</p>
<p>AMERICAN CONCERTONE</p> <p>Division of American Electronics, Inc. 9449 West Jefferson Blvd. Culver City, Calif.</p>	 <p>MARK X BROADCAST RECORDERS</p> <p>X-1 Half-track monaural record/playback\$965.00</p> <p>X-3 Stereo record/playback1050.00</p> <p>X-6 Full-track monaural record/playback965.00</p> <p>X-8 Monaural or stereo playback 850.00</p> <p>X-9 Full-track monaural playback 820.00</p>	<p>30-17,000 cycles (± 2 db) at 15"/sec.</p> <p>40-12,000 cycles (± 2 db) at 7½"/sec.</p> <p>50-7,500 cycles (± 2 db) at 3¾"/sec.</p>	<p>New series of dual-speed recorders available with speeds of 15 and 7½ ips or 7½ and 3¾ ips. Three motor direct capstan drive: one hysteresis synchronous, two induction motors. Push-button controls. Timing accuracy: 99.8%. Harmonic distortions: 2.5% at maximum record level. Signal to noise: 55 db at 15 ips, 50 db at 7½ ips, 45 db at 3¾ ips. Flutter and wow: 0.15% at 15 ips, 0.25% at 7½ ips, 0.35% at 3¾ ips. Bias frequency: 100 kc nominal. Separate heads for erase, record and playback. All triode playback amplifier. Two high impedance inputs. Three outputs: cathode follower, 600 ohm, high impedance monitor phone jack. Dimensions: 14" h., 16½" w., 9" d. Weight: 45 lbs. including carrying case.</p>








Manufacturer	Model and Price	Frequency Response	Data
AMERICAN CONCERTONE Division of American Electronics, Inc. 9449 West Jefferson Blvd. Culver City, Calif.	 <p>MARK VII Recorder \$940.00 Mark VII-F Recorder \$995.00</p>	<p>30-17,000 cycles (± 2 db) at $7\frac{1}{2}$" /sec. 40-12,000 cycles (± 2 db) at $3\frac{3}{4}$" /sec.</p>	<p>New dual-speed recorder with 15 ips and $7\frac{1}{2}$ ips or $7\frac{1}{2}$ ips and $3\frac{3}{4}$ ips available. Has direct drive capstan motor, four pole induction type reeling motors. Push-button controls. Self energizing brakes. Master output volume control, VU calibrated meter. Dual inputs for mike and auxiliary sources with four separate level controls. Flutter and wow: 0.35% at $3\frac{3}{4}$ ips, 0.25% at $7\frac{1}{2}$ ips. Dimensions: 14" h., $16\frac{1}{2}$" w., 6" d. Weight: 35 lbs. Mark VII has three heads for recording and playback of two-track stereo and mono. Mark VII-F has four heads for recording and playback of two-track stereo and monaural, playback of four-track stereo.</p>
	 <p>SERIES 30 Model 31, full track recorder.....\$795.00 Model 32, half track recorder.....\$795.00 Model 32ST, monaural record/playback, stereo playback\$899.00 Model 33, stereo recorder.....\$995.00</p>	<p>40-15,000 cycles (± 2 db) at 15" /sec. 50-12,000 cycles (± 2 db) at $7\frac{1}{2}$" /sec. 50-5,000 cycles (± 2 db) at $3\frac{3}{4}$" /sec.</p>	<p>All Series 30 models have following features: Two-speed direct drive hysteresis synchronous motor and two torque motors; 3 heads with provision for 2 more; $4\frac{1}{2}$" VU-type meter; 2-channel input mixer; A-B test fader for cueing/editing switch. Instant speed selection of 15"/sec. and $7\frac{1}{2}$" /sec or $3\frac{3}{4}$" /sec and $7\frac{1}{2}$" /sec. Signal-to-noise, 55 db by proposed NAB Standard (full track). Total harmonic distortion, 2% at zero VU. Total flutter and wow, less than 0.1% rms at 15"/sec., 0.2% at $7\frac{1}{2}$" /sec. Fast forward and rewind, less than 60 sec. for 2500 ft. High impedance microphone input and unbalanced bridging input. Output impedance, cathode follower, 600 ohms with plug-in transformer.</p>
AMERICAN GELOSO ELECTRONICS, INC. 251 Park Ave. 5. N. Y. 10, N. Y.	 <p>Model G256/60 Geloso "StenOtape" Portable Recorder \$179.95</p>	<p>80-6,500 cycles at $1\frac{7}{8}$ ips</p>	<p>New imported dual-track recorder and dictating/transcriber. Speed: $1\frac{7}{8}$ ips. Four push-button controls for record, fast rewind, playback and stop. Automatic erase and correction. "Glo-light" recording level indicator. Tape counter hand-resettable. Plays up to 128 minutes. Transparent lucite cover. Signal-to-noise ratio better than 40 db. Wow and flutter: 0.3%. Output: $1\frac{1}{2}$ watts. Rewind ratio: 15-1. Fast forward ratio: 10-1. Input impedance: $\frac{1}{2}$ megohm. Output impedance: 3.2 ohms. Preamp output. Extension speaker jack. Accessories available. Dimensions: 4" x 10" x $5\frac{1}{2}$". Weight: $6\frac{1}{2}$ lbs.</p>
AMPEX CORPORATION Professional Products Div. 934 Charter St. Redwood City California	 <p>Model 300-C Console Tape Recorder \$2250.00</p>	<p>30-15,000 cycles (± 2 db) at 15" /sec. 30-15,000 cycles (± 4 db) at $7\frac{1}{2}$" /sec. (± 2 db 40 to 10,000 cycles)</p>	<p>Professional-type, single-track, dual-speed recorder operating at 15" and $7\frac{1}{2}$" per second. Signal-to-noise, over 60 db by NAB standards. Instant start and stop. Flutter and wow, less than 0.1% at 15"/sec. Rewind time, 1 min. for 2400-ft. reel. Timing accuracy, $\pm 0.2\%$. Push button controls for start, stop and record—may be remotely operated. Separate long-life, plug-in heads for erase, record and playback. Other features as on Model 351-C below. Also available for portable or rack mounting. Dimensions 36" x 25" x 26". Weight: 195 lbs.</p>
	 <p>Model 300-355C Three Channel "Sel-Sync" Console Recorder \$5125.00 Model 300-3C Three Channel Console Recorder \$4698.00</p>	<p>as above</p>	<p>Professional three-channel tape recorder with "Sel-Sync" feature for recording sound-on-sound in perfect synchronization. With this optional feature, any given track can be erased and re-recorded without effect to the other two channels. 300 Series multichannel recorders are equipped with selector for NAB and AME curves. Latter curve gives an effective 7 db increase in signal-to-noise ratio in the 2 to 6 thousand cycle range. Separate erase, record and playback heads. Signal-to-noise ratio (NAB curve): 55 db. Cross talk rejection 50 db. Otherwise same as model 300-C shown above. 300 Series recorders are available from one to eight channels. Rack mount units available. Dimensions: 64" x 25" x 26". Weight: 288 lbs.</p>
	 <p>Model 351-C Console Tape Recorder \$1475.00</p>	<p>30-15,000 cycles (± 2 db) at 15" /sec. 30-15,000 cycles (± 4 db) at $7\frac{1}{2}$" /sec. 50-7,500 cycles (± 2 db) at $3\frac{3}{4}$" /sec.</p>	<p>Professional-type (full or half track) recorder with tape speeds of $7\frac{1}{2}$" and 15" or $3\frac{3}{4}$" and $7\frac{1}{2}$". Signal-to-noise: 60 db. Flutter and wow, less than 0.15% at 15"/sec. Instantaneous starting. Timing accuracy, $\pm 0.2\%$. Features new "plug-in" etched circuits, new input stage, new plus 8 output, new internal power supply, and "de-popped" recording controls. Push-button controls for start, stop, fast forward and rewind. Independent record and playback systems permit monitoring. Also available for portable or rack mounting. Dimensions: 48" x $42\frac{1}{2}$" x 28". Weight: 168 lbs.</p>
	 <p>Model 351-2P Two-channel portable tape recorder \$1955.00</p>	<p>as above</p>	<p>Professional, dual speed two channel (stereo) recorder. Speeds: $7\frac{1}{2}$ ips and 15 ips or $3\frac{3}{4}$ ips and $7\frac{1}{2}$ ips. Signal-to-noise ratio: 55 db. Flutter and wow: less than 0.15% at 15"/sec; less than 0.20% at $7\frac{1}{2}$" /sec. Switch transfers 4" VU meter to read "input" or "tape" level, bias and erase current. Controls: separate record buttons on electronics. Electrically inter-locked relay-solenoid operation permits full remote control. Reel size switch. Also available for rack mounting. Other features same as 351-C listed above. Weight (two cases): 105 lbs.</p>







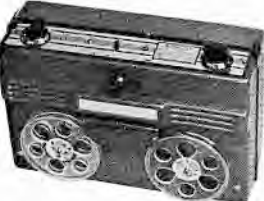
Manufacturer	Model and Price	Frequency Response	Data																					
AMPEX CORPORATION Professional Products Div. 934 Charter St. Redwood City California	 <p>Model 352-2 Stereo Tape Reproducer</p> <p>with console \$1460.00</p> <p>without console \$1350.00</p>	<p>30-15,000 cycles (± 2 db) at 15"/sec.</p> <p>30-15,000 cycles (± 4 db) at 7 1/2"/sec.</p> <p>50-7,500 cycles (± 2 db) at 3 3/4"/sec.</p>	<p>Professional tape reproducer for playback of pre-recorded tapes. No danger of accidental erasure since the 352 does not have erase or record heads. Specifications are the same as the 351-2P recorder listed on previous page, less the record feature; may be fully remote controlled. Other models available for full or half track playback. Also available for rack or portable mounting. Dimensions: 35" x 24 1/4" x 24 3/4". Weight: 109 lbs.</p>																					
	 <p>Model 3300-B High Speed Tape Duplicator</p> <p>with one slave unit (other duplicator models available)</p>	<p>Detailed specifications and prices available from manufacturer</p>	<p>New high speed tape duplicator for making four track 7 1/2 ips commercial stereo tapes, duplicating simultaneously two stereo tracks in the forward direction and two stereo tracks in reverse direction. Up to 10 one-hour reels of four track stereo program material can be duplicated in 4 minutes. Can feed from one to ten slave units, employing new permanently aligned head stacks. Equalization compensates for speed ratios used, tape copies have no appreciable change in frequency response from suitably prepared 4-track masters.</p>																					
AMPEX AUDIO, INC. a subsidiary of Ampex Corporation 1020 Kifer Road Sunnyvale, Calif.	 <p>Portable Model 960 \$650.00</p> <p>Model 910 \$495.00</p> <p>Model 2510 Stereo system \$849.50</p> <p>Model 2560 Stereo system \$995.00</p> <p>Uncased Model 902 \$449.50 Model 952 \$595.00</p> <p>Model 2010 Amplifier-Speaker \$199.50</p>	<p>At 7 1/2"/sec. 30-20,000 cycles (± 2 db)</p> <p>50-15,000 cycles</p> <p>At 3 3/4"/sec. 30-15,000 cycles (± 2 db)</p> <p>50-10,000 cycles</p>	<p>Model 960 is a two-speed recorder for either stereo recording or half-track recording. Speeds: 7 1/2 and 3 3/4 ips. Plays back half-track, full track, 2-track stereo and 4-track stereo. Automatic stop mechanism. Signal-to-noise, better than 55 db below peak record level at 7 1/2"/sec. and 50 db at 3 3/4"/sec. Flutter and wow, under 0.2% at 7 1/2"/sec., 0.25% at 3 3/4"/sec. Inputs: high impedance line 0.4v rms for program level; high impedance microphone. Playback output greater than 0.75 rms into high impedance load. Weight: 38 lbs.</p> <p>Model 910 is same as above except for two-speed, half-track monaural record. Plays back 2-track stereo, 4-track stereo, half track and full track. Model 2510 stereo system includes Model 910 and two speaker-amplifiers (2010). Model 2560 stereo system includes Model 960 and two speaker-amplifiers (2010).</p>																					
	 <p>Model 601 Portable Tape Recorder \$595.00</p> <p>Model 601-2 2-Track Stereophonic Portable \$995.00</p>	<p>30-15,000 cycles (± 4 db) at 7 1/2"/sec. (± 2 db 40 to 10,000 cycles)</p>	<p>Portable, professional-type single-track or dual-track recorder with 7 1/2" tape speed. Takes up to 7" reels. Signal-to-noise, over 55 db. Flutter and wow, below 0.17%. Starting and stopping time, less than 1/5 second. Fast forward and rewind, 90 seconds for 1200 ft. Timing accuracy $\pm 0.2\%$ for 30 minute recording. Separate record and playback amplifiers. Separate erase, record and playback heads. VU meter, independent level controls for microphone and line. Weight, 28 lbs.</p> <p>Model 601 tape transport with two modified 601 electronic chassis. Full-track erase, two-track record and two-track playback. Signal-to-noise, over 50 db either channel. Inter-track crosstalk rejection, over 50 db.</p>																					
	 <p>"Crescendo" Consoles</p> <p>6500 Series \$1895.00</p> <p>Other Consoles: 4000 Series from \$549.50</p> <p>8000 Series \$2650.00</p>	<p>At 7 1/2"/sec. 30-20,000 cycles (± 2 db)</p> <p>50-15,000 cycles</p> <p>At 3 3/4"/sec. 30-15,000 cycles (± 2 db)</p> <p>50-10,000 cycles</p>	<p>Each Crescendo console includes a Model 960 stereophonic tape recorder-reproducer, described on page 3, plus: a Garrard 4-speed record changer with stereo/monaural diamond stylus pick-up, push-button Audio Control Center, Ampex 2-channel AM and FM stereophonic tuner, two matched Ampex amplifier speaker units consisting of twin 15-watt amplifiers and six speakers — a 12" bass, 8" mid-range and one omnidirectional high-frequency projector for each channel.</p>																					
AMPLIFIER CORPORATION OF AMERICA 398 Broadway New York 13, New York	<p>"Standard Trans-Magnemite"</p>  <table border="1"> <thead> <tr> <th>Models</th> <th>Speed in/sec.</th> <th>Price</th> </tr> </thead> <tbody> <tr> <td>612-A</td> <td>15/16</td> <td>\$420</td> </tr> <tr> <td>612-B</td> <td>1 7/8</td> <td>\$370</td> </tr> <tr> <td>612-C</td> <td>3 3/4</td> <td>\$380</td> </tr> <tr> <td>612-TD</td> <td>7 1/2</td> <td>\$390</td> </tr> <tr> <td>612-SD</td> <td>7 1/2*</td> <td>\$390</td> </tr> <tr> <td>612-E</td> <td>15*</td> <td>\$430</td> </tr> </tbody> </table> <p>*Single Track Unit</p>	Models	Speed in/sec.	Price	612-A	15/16	\$420	612-B	1 7/8	\$370	612-C	3 3/4	\$380	612-TD	7 1/2	\$390	612-SD	7 1/2*	\$390	612-E	15*	\$430	<p>300 - 2,500 cps</p> <p>100 - 3,000 cps</p> <p>50 - 7,500 cps</p> <p>50 - 10,000 cps</p> <p>50 - 10,000 cps</p> <p>50 - 15,000 cps</p>	<p>Professional, transistorized, battery-operated, spring-motor, portable field recorder. Available in single-, two-, three-, and four-speed models. Models at speeds of 3 3/4, 7 1/2 and 15 ips exceed NARTB Broadcast standards. Uses small dry replaceable or rechargeable batteries which last 125 hours. No microphonics or motor noises; low noise input stage (0.25 microvolt). High-speed rewind; modular plug-in construction; ball-bearing supply and take-up reel shaft. Dimensions: 11" x 10" x 7". Weight: 15 lbs. Same units with VU meter: \$75 additional.</p>
	Models	Speed in/sec.	Price																					
612-A	15/16	\$420																						
612-B	1 7/8	\$370																						
612-C	3 3/4	\$380																						
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Model	Speed in/sec.	Price																						
312-A	15/16	\$436																						
312-B	1 7/8	\$386																						
312-C	3 3/4	\$396																						
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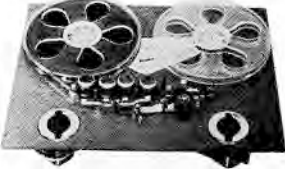





Manufacturer	Model and Price			Frequency Response	Data																																				
AMPLIFIER CORPORATION OF AMERICA 398 Broadway New York 13, New York (other models available)	 "Magnemite" Portables	<table border="1"> <thead> <tr> <th>Model</th> <th>Speed in/sec.</th> <th>Price</th> </tr> </thead> <tbody> <tr> <td>610-A</td> <td>15/16</td> <td>\$275</td> </tr> <tr> <td>610-B</td> <td>17/8</td> <td>225</td> </tr> <tr> <td>610-C</td> <td>3 3/4</td> <td>255</td> </tr> <tr> <td>610-TD</td> <td>7 1/2</td> <td>275</td> </tr> <tr> <td>610-SD</td> <td>7 1/2</td> <td>295</td> </tr> <tr> <td>610-E</td> <td>15</td> <td>335</td> </tr> <tr> <td>610-DM</td> <td>5/16-7 1/2</td> <td>355</td> </tr> <tr> <td>610-EM</td> <td>17/8-15</td> <td>395</td> </tr> </tbody> </table>	Model	Speed in/sec.	Price	610-A	15/16	\$275	610-B	17/8	225	610-C	3 3/4	255	610-TD	7 1/2	275	610-SD	7 1/2	295	610-E	15	335	610-DM	5/16-7 1/2	355	610-EM	17/8-15	395	<table border="1"> <tbody> <tr> <td>300 - 2,500 cps</td> </tr> <tr> <td>100 - 3,000 cps</td> </tr> <tr> <td>50 - 5,000 cps</td> </tr> <tr> <td>50 - 7,500 cps</td> </tr> <tr> <td>50 - 7,500 cps</td> </tr> <tr> <td>50 - 15,000 cps</td> </tr> <tr> <td colspan="2">} as above</td> </tr> </tbody> </table>	300 - 2,500 cps	100 - 3,000 cps	50 - 5,000 cps	50 - 7,500 cps	50 - 7,500 cps	50 - 15,000 cps	} as above		Completely self-contained, battery-operated portables with spring motor drive. Models 610-SD and -E, one track. Four speed models 610-DM and -EM, one or two track. All others dual track. Winding interval, 3 to 15 min. Motor can be rewound while operating. Indicator signals 30 sec. before motor rewind. Playback through headphones or external amplifier. Optional erase. Dimensions, 11" x 8" x 5" for 610-A and B; 11" x 10" x 7" for all others. Weight, 12 to 17 lbs. All standard "Magnemites" available in weather-tight sealed aluminum cases with tongue and grooved edges and built-in neoprene gasket seals; \$30 extra.		
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 "Magneloop" Continuous Loop Tape Recorder	<table border="1"> <thead> <tr> <th colspan="3">SINGLE CHANNEL</th> </tr> </thead> <tbody> <tr> <td>535-B</td> <td>17/8</td> <td>\$345</td> </tr> <tr> <td>535-C</td> <td>3 3/4</td> <td>365</td> </tr> <tr> <td>535-D</td> <td>7 1/2</td> <td>385</td> </tr> <tr> <td>535-E</td> <td>15</td> <td>405</td> </tr> <tr> <th colspan="3">DUAL CHANNEL</th> </tr> <tr> <td>536-B</td> <td>17/8</td> <td>\$495</td> </tr> <tr> <td>536-C</td> <td>3 3/4</td> <td>515</td> </tr> <tr> <td>536-D</td> <td>7 1/2</td> <td>535</td> </tr> <tr> <td>536-E</td> <td>15</td> <td>555</td> </tr> </tbody> </table>	SINGLE CHANNEL			535-B	17/8	\$345	535-C	3 3/4	365	535-D	7 1/2	385	535-E	15	405	DUAL CHANNEL			536-B	17/8	\$495	536-C	3 3/4	515	536-D	7 1/2	535	536-E	15	555	<table border="1"> <tbody> <tr> <td>50 - 2,500 cps</td> </tr> <tr> <td>50 - 7,500 cps</td> </tr> <tr> <td>50 - 10,000 cps</td> </tr> <tr> <td>50 - 15,000 cps</td> </tr> <tr> <td>50 - 2,500 cps</td> </tr> <tr> <td>50 - 7,500 cps</td> </tr> <tr> <td>50 - 10,000 cps</td> </tr> <tr> <td>50 - 15,000 cps</td> </tr> </tbody> </table>	50 - 2,500 cps	50 - 7,500 cps	50 - 10,000 cps	50 - 15,000 cps	50 - 2,500 cps	50 - 7,500 cps	50 - 10,000 cps	50 - 15,000 cps	Designed to record and play back any messages, musical programs or sound effects up to 60 min. in length on cartridge-loaded endless loop of std. 1/4" tape. Automatic erase. Push-button start and stop, switch or relay remote control. Electronic-eye recording level indicator. Microphone and bridging inputs. Output impedance, 600 ohms. Output level, +6VU. Headphone monitoring. Standard rack panel mounting or custom rack cabinet. Size, 19" x 8 3/4" x 9 1/2". Weight, 24 lbs.
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	Pre-Monitor Program Delay Device \$523.25	150-5,000 cps For Telephone Use Wider Range for Direct Mike Use	This endless loop device, using standard 1/4" tape, permits monitoring broadcast program several seconds before it goes on the air. Designed for 600-ohm balanced lines at plus 4 VU. For use with telephones, frequency response is intentionally limited to maximize intelligibility and minimize hum and noise.																																						
AUDIOMATION LABORATORIES 7230 Clinton Rd. Upper Darby 23, Pa.	 <p style="text-align: center;">A B C</p> <p style="text-align: center;">(Write to manufacturer for prices)</p>	40-15,000 cycles at 7 1/2"/sec. 40-8,000 cycles at 3 3/4"/sec.	<p style="text-align: center;">A. AUTOSPERSER</p> The new Autosperser has two Perfectone tape players, (described on next page), a control panel for either wired or multiplex service, and an Adcaster tape player for storecasting or similar special services. The Adcaster provides up to 30 minutes of recorded commercial on one track and automatically rewinds and cues to first commercial when played through. The twelve-station programming cycle repeats automatically. Automatic standby. New Autosperser-24 System available that is identical to standard Autosperser System excepting control panel has 24-station programming cycle. <p style="text-align: center;">B. CONSECUTOR</p> The Consecutor System is comprised of two Perfectone 8-hour machines and a control panel. For unattended operation in broadcast or wired service. Operating cycle: Machine #1 plays track A, reverses, plays track B, reverses, shuts off, starts machine #2. Machine #2 performs same cycle and restarts machine #1. Automatic standby. Provision for manual operation so that tapes may be changed without interrupting program. <p style="text-align: center;">C. VARYTAPE</p> Consists of two identical Perfectone automatic 8-hour tape-handling mechanisms arranged for unlimited variation of program continuity by the automatic inter-mixture of the music content of any two reels. Automatically stops one mechanism and starts the other whenever 30 seconds or more of silence occurs on the tape being played. Permits up to 16 hours of music without repetition. Cycling fully automatic. Automatic standby.																																						








Manufacturer	Model and Price	Frequency Response	Data
<p>AUDIOMATION LABORATORIES</p> <p>7230 Clinton Rd. Upper Darby 23, Pa.</p>	 <p>PERFECTONE Continuous Tape Player \$730-\$830</p>  <p>CONCERTCASTER Including Perfectone and amplifier \$835-\$1010</p>	<p>40-15,000 cycles at 7½"/sec.</p> <p>40-8,000 cycles at 3¾"/sec.</p>	<p>Heavy-duty rack type tape phonograph for providing up to 8 hours of unattended, background music without repetition. Two speeds. Automatic reversal and shut-off with unmodified tape. Automatic, continuous re-cycling or shut-off controlled by switch on panel. Simple controls, light tape tension. Easy and precise head alignment. Signal-to-noise, better than 50 db at 7½"/sec. Hysteresis synchronous capstan motor and two 4-pole torque motors. Max. reel size, 14". Price depends on type of amplifier and number of speeds desired.</p> <p>Concertcaster consists of the Perfectone, cabinet and power amplifier. The 7/32" crystal glass cover rests on a sponge rubber gasket to exclude dirt and dust. The mechanism pivots for easy access. Price depends on number of speeds and type of amplifier desired.</p>
<p>BELL & HOWELL COMPANY</p> <p>7100 McCormick Road Chicago 45, Ill.</p>	 <p>Model 785 Monaural Portable \$199.95</p>	<p>50-13,000 cycles (± 4 db) at 7½"/sec.</p>	<p>Two-speed, dual track monaural portable. Five push-button controls. Two 5¼-inch speakers. Tape speeds: 7½ and 3¾ ips. Recording level guide. Play and Record pushbuttons interlocked to prevent accidental erasures. Fast rewind: 1200 feet in 80 seconds. Distortion less than 1%. Signal-to-noise ratio more than 40 db. Wow and flutter less than 0.35%. Input for microphone, radio, phonograph or TV. Output jack for external speaker. Dimensions: 10" x 15½" x 15¼". Weight 33 lbs.</p>
<p>BELL SOUND DIVISION</p> <p>Thompson Ramo Wooldridge, Inc. 555 Marion Road Columbus 7, Ohio</p>	<p>Maestro Group for Stereo Tape Cartridge</p> <p>Model 404 Player \$239.95</p> <p>Model 405 Recorder \$309.95</p> <p>Model 450 Speaker System \$53.95</p> <p>The Playmate Model 406 Stereo Cartridge Recorder \$309.95</p> <p>Model 460 Speaker System \$42.50</p> 	<p>30-15,000 cycles at 3¾"/sec.</p>	<p>New series of four-track stereo tape cartridge players and recorders. Single speed: 3¾ ips. Flutter: less than 0.25%. Power output: 7 watts each channel. Dual outputs: 8 ohms for speakers. Model 404 has playback heads with playback preamps and amplifiers, selector for tape, phono, auxiliary. Model 405 has erase/record/playback heads with record/playback preamps and amplifiers; two volume level indicators; three dual inputs: phone, mike, auxiliary. Controls: knobs for selector, treble, bass, two volume. Model 406 is portable version of Model 405. Approximate dimensions for all three models: 9½" h., 16½" w., 15" d. Approximate weight for all three models: 43 lbs.</p> <p>Model 450 speaker system matches Models 404 and 405. Model 460 speaker system matches Model 406 recorder.</p>
<p>BELL SOUND DIVISION</p> <p>Thompson Ramo Wooldridge, Inc. 555 Marion Road Columbus 7, Ohio</p>	<p>Overture Series for Stereo Tape Cartridge</p> <p>Model 401 Transport \$104.95</p> <p>Model 402 Player \$134.95</p> <p>Model 403 Recorder \$204.95</p> 	<p>30-15,000 cycles at 3¾"/sec.</p>	<p>New series of four-track stereo tape cartridge players and recorder. Single speed: 3¾ ips. Flutter: less than 0.25%. Units have knob controls, where applicable. Model 401 has playback heads only. Model 402 has playback heads with dual playback preamps. Model 403 has erase/record/playback heads with dual record-playback preamps. Approximate dimensions of all models: 7" h., 12" w., 11½" d. Approximate weight of all models: 25 lbs.</p>
<p>BELL SOUND DIVISION</p> <p>Thompson Ramo Wooldridge, Inc. 555 Marion Road Columbus 7, Ohio</p>	<p>Tape Transports</p> <p>T210 \$118.95 T211 \$128.95 T212 \$138.95 T213 \$158.95 T218 \$319.95</p> <p>T221 \$149.95 T223 \$174.95 T228 \$339.95 T238 \$349.95</p> <p>RP 120B Record/Playback Pre-Amplifier \$62.00</p> <p>P 100 Playback Pre-Amplifier \$41.50</p> 	<p>25-12,000 cycles (± 2 db) overall-record-playback extends to 15,000 cycles playback only</p>	<p>A basic tape transport providing almost unlimited flexibility. Three motors. Two speeds: 7½ and 3¾ ips. Signal-to-noise ratio: better than 50 db. Flutter less than 0.25%. Distortion less than 1%. Has index counter, power off-on switch, piano-key controls, micro-switch automatic stop. Available in following combinations: T-210: monaural record/playback; T-211: monaural and half-track stereo playback; T-212: monaural record/playback and half-track stereo playback; T-213: monaural record/playback and half-track stereo record/playback; T-221: quarter-track and half-track stereo playback; T-223: half-track stereo record/playback and quarter-track stereo playback (above models require matching pre-amplifiers); T-218: incorporates T-213 with two RP-120 preamps in carrying case; T-228 incorporates T-223 with two RP 120B preamps in a carrying case; T-238 has monaural and quarter-track stereo record/playback and half-track stereo playback with two RP 220 preamps in carrying case.</p>
<p>BOGEN-PRESTO CO.</p> <p>A division of the Siegler Corp. P. O. Box 500 Paramus, New Jersey</p>	<p>Model PB-17C Tape Reproducing Mechanism \$785.50</p> <p>Model A-909 Pre-amplifier \$132.00</p> <p>Above in console \$1,118.75</p> 	<p>50-8,000 cycles at 3¾"/sec.</p>	<p>Dual-track reproducing mechanism with 3¾" tape speed and automatic reversal, giving up to 8 hours of continuous music on a 4800-ft. reel. At end of this time, mechanism may be made to recycle or stop. Heavy duty capstan drive unit with individual torque motors for each reel. Fast forward and fast rewind. Signal-to-noise, 55 db. Flutter 0.35% at 3¾" speed. Silence sensing switch and timing accessories available. Console Model PB-17C incorporates tape transport mechanism. Dynamic range, 45 db.</p>







Manufacturer	Model and Price	Frequency Response	Data
BOGEN- PRESTO CO. A division of the Siegler Corp. P. O. Box 500 Paramus, New Jersey	 <p>800 Series Tape Recorder with Amplifier</p> <p>Monaural Rack Mtg. \$1375.00 Portable \$1480.00 Console \$1649.00</p> <p>Stereo Rack Mtg. \$1780.00 Portable \$1930.00 Console \$2094.00</p> <p>Transport only \$993.00</p> <p>Model 850 Rack Mtg. \$3500.00 Portable \$3695.00 Console \$3800.00</p>	<p>30-20,000 cycles (± 2 db) at 15"/sec.</p> <p>40-12,000 cycles (± 2 db) at 7 1/2"/sec.</p>	<p>New professional-type tape recorder featuring sweep loading, automatic tape lift, new type editing function for run-off of unwanted tape, new cue button for hand cueing without motor or brakes, and new solenoid brakes and pressure pulley. Has a direct-drive hysteresis synchronous capstan motor and two torque motors. Three speed ranges of rewind and fast forward. Input can be switched to balanced or unbalanced 600-ohm line, bridging input or microphone input. Illuminated VU meter. Two separate output circuits. Wow and flutter are no more than 0.10% at 15 ips or 0.15% at 7 1/2 ips. Signal-to-noise ratio is 60 db at 1.0% distortion. Distortion is 1.0% (harmonic) at ± 18 dbm output from 35 to 15,000 cps. Monaural version with either full- or half-track heads. Add \$50 to stereo prices for two channel version. Model 850 is new stereo recorder with exclusive design permitting instant change from half-inch to quarter-inch or vice versa. Has three amplifiers. Otherwise specifications are the same as above.</p>
BROADCAST EQUIPMENT SPECIALTIES CORP. P. O. Box 149 Beacon, N. Y.	 <p>Pocketape \$349.50</p>	<p>100-9,000 cycles at 7 1/2"/sec.</p> <p>100-6,000 cycles at 3 3/4"/sec.</p> <p>100-4,000 cycles at 1 7/8"/sec.</p>	<p>Pocket-size compatible subminiature transistor tape recorder-reproducer. Pocketape recordings may be played back on standard tape recorders. "Broadcaster" model records 90-mil track at single speeds of either 7 1/2 or 3 3/4 ips, giving up to 15 continuous minutes at 7 1/2 ips. "Investigator" model records at single speeds of either 3 3/4 or 1 7/8 ips on dual tracks totaling one hour or two hours respectively on 600' of 1/4" tape. Speeds of both models may be changed by a technician. All models erase, record, and play back. Interlocks. Microphone doubles as listening device. Signal-to-noise ratio: 55 db. 10-hour motor batteries. Size: 1 1/2" x 4 1/2" x 6 7/8". Weight: 2 1/4 lbs. "Tapelog" is the group proprietary name for various communications and instrumentation memory devices employing the basic Pocketape mechanism. Tapelog power source may be internal or external, AC or DC of any common voltage. Prices and performance data from the manufacturer on request.</p>
BUTOBA distributed by Turning Corp. of America 60 East 42nd St. New York 17, New York	 <p>Butoba Portable Recorder Model TS61 \$245.00</p>	<p>50-9,000 cycles (± 3 db)</p>	<p>Portable, transistorized, dual-track, four-flashlight battery-operated recorder with push-button controls. Driven by special spring-wound motor with elapsed-time indicator. Tape speeds: 3 3/4 and 1 7/8. Running time is 20 and 40 minutes respectively. Multi-purpose head: record and playback-erase. Volume level indicator is magic eye tube. Playback through built-in oval speaker or external amplifier. Telephone conversation recorder adapter optional.</p>
De JUR AMSCO CORP. 45-01 Northern Blvd., Long Island City 1, New York	 <p>Stenorette Dictating and Transcribing Machine \$179.50</p>	<p>150-5,000 cycles</p>	<p>A dictating/transcribing machine that uses "Mylar" magnetic tape. Push-button controls. Duplicate set of controls on microphone/speaker for start, stop, automatic review, electronic erase and correction. Functions perfectly in a moving car (with transformer). Has built-in conference setting for recording groups. Recording time: 30 minutes per reel. Transcription accessories: foot pedal control or typewriter control—features remote control backspacer for quick review. Dimensions: 11 1/2" x 9 1/2" x 4 1/2". Weight: 12 lbs.</p>
DELMONICO INTER- NATIONAL 42-24 Orchard St. Long Island City, New York	 <p>Saja MK-5 Portable Recorder \$129.95</p>	<p>50-16,000 cycles at 7 1/2"/sec.</p>	<p>New portable version of the Stenorette dictating recorder described above. Pushbutton operated, with duplicate set of controls on mike. Uses batteries that can be recharged. Operates three hours on each charge. Battery condition-indicator shows when recharge is required. Recording time: 30 minutes for standard tape. Dimensions: 10 1/2" h., 6" w., 3 1/4" d. Weight: 6 lbs.</p>
			<p>Two-speed West German portable recorder. Speeds are 7 1/2 and 3 3/4 ips. Two speakers. Illuminated function indicators. Single knob control. Double effect button for recording over a recording. Automatic end-of-tape shut-off. Magic eye record level indicator. Pause control for record and playback. Lock prevents accidental erase. Dimensions: 7" h., 15 3/4" w., 12 1/4" d. Weight: 40 lbs.</p>

Manufacturer	Model and Price	Frequency Response	Data
DICTAPHONE CORPORATION 730 Third Avenue New York 17, N. Y.	 <p>Dictet Portable Recorder \$294.00</p>	<p>200-4,000 cycles</p>	<p>Miniature, dual-track, magazine loaded, magnesium case tape recorder. Powered by two 7-volt mercury batteries for motor, and separate battery for transistor amplifier. Battery life: 20 hours for motor, 40 for amplifier. Battery life indicators. Magazine has self-adjusting spindles; automatic stop at end of reel. Records at 2 1/2 ips; 30 minutes recording time on each side of magazine. Wow and flutter: 2.25%. Signal-to-noise: 45 db. Magnetic microphone is both microphone and monitor speaker. Motor operates only when mike is plugged in. Dimensions: 2" x 4 1/2" x 6 1/4". Weight: 2 lbs. 11 oz.</p>
	 <p>Dictet Typer Reproducing Machine \$376.30</p>	<p>100-4,000 cycles</p>	<p>New Dictet Typer reproducing machine designed to reproduce magnetic tape magazines recorded on the Dictet recorder described above. Controls: instant start-stop, unlimited backspacing. Continuous variable volume, tone and speed. Fast forward and fast rewind. Separate erase head. Safety interlocks. Printed circuit amplifier. Four pole capacitor motor. Complete with power cable, foot or hand control, choice of hearing devices. Dimensions: 3 1/2" h., 11-9/16" w., 9 5/8" d. Weight: 12 lbs. This machine is also the key component of the AIMO message-control playback unit for conveying instructions to manufacturing workers. For more information write Dictaphone.</p>
	 <p>Dictatape Continuous Recorder \$3400.00</p>	<p>300-2,700 cycles (±3 db) at 1 7/8"/sec.</p>	<p>Five-channel recorder that permits simultaneous recording of four communication and one time-signal channel on a standard 1/4" magnetic tape. Up to 16 hours continuous unattended recording. Speed: 1 7/8 ips. Instant start and stop. Six motors. Separate reproduce heads and amplifier provide playback on either unit while recording. Automatic safeguards prevent accidental erase. Harmonic distortion: 5% or less at 1,000 cps. Flutter: 1%. Fast forward and rewind.</p>
EDUCATIONAL LABORATORIES, INC. 1048 Potomac St., N.W. Washington 7, D. C.	 <p>Transcriber Model K-3 \$1,100</p>	<p>depends on tape speed</p>	<p>A unique concept in magnetic tape transcribing equipment. Tape speed is continuously variable between two-tenths and thirty ips. Can play back any 1/4" magnetic tape recorded on American or European tape recorders. Passages may be rapidly scanned or slowed down by flicking a switch which doubles or halves the selected speed. Automatic back-spacing. Single channel, in-line or staggered stereo tapes can be played. Foot pedal control for stopping, starting and rewinding. Signal-to-noise ratio: better than 40 db. Wow and flutter: less than 0.5%. Weight, 46 lbs. Dimensions: 14" x 19" x 5 1/4".</p>
	 <p>Educorder Dual Model M-6A \$335.00</p>	<p>70-7,500 cycles at 7 1/2"/sec. 70-5,000 cycles at 3 3/4"/sec.</p>	<p>Portable, two speed, two channel recorder with single knob-control tape mechanism. Two separate record/reproduce amplifiers and two separate record-play-erase heads. Records or plays back both channels simultaneously or records on one while playing back the other. Monitoring by headphones while recording. Signal-to-noise ratio: 40 db. Wow and flutter: 0.3% at 7 1/2"/sec. Fast forward and rewind, 70 sec. for 1200 ft. Nominal 75 watt peak power from each channel. Two input connections. Three output connections: Channel 1, Channel 2 and Dual for binaural headphones. Includes headphones and microphone. Weight, 30 lbs.</p>
ELECTRONIC APPLICATIONS 194 Richmond Hill Avenue Stamford, Conn.	 <p>Stellavox SM4 Portable Recorder \$399.00</p>	<p>Record: 30-14,000 cycles (±2 db) at 7 1/2"/sec. Playback: 60-14,000 cycles (±2 db) at 7 1/2"/sec.</p>	<p>Transistorized professional miniature recorder. Speed: 7 1/2 ips. Speed accuracy plus or minus 0.5%. Wow and flutter: 0.4% PP. High frequency erase head in ferrite and combined record/playback head for half-track or full-track. Equalized either CCIR or NAB. Operates from rechargeable miniature dry cells. Operates three hours per charge. Recording time 20 min. per reel (2/10 min.). Built-in monitor speaker. Reel compatibility with all pro machines. Dimensions, 2 3/8" x 4 7/8" x 10 1/4".</p>
	 <p>Studer 30 Portable Recorder \$1,375.00 in case</p>	<p>30-15,000 cycles (+1, -2 db) at 15"/sec.</p>	<p>Professional, dual speed recorder that operates at 15 and 7 1/2 ips. Direct hysteresis synchro motor drive. Timing accuracy: 0.2% or better. Unique constant tape tension electronic servo system insures motor torque compensation for tape reel and effective hub size differences. Push button controls all functions. Remote all functions including "cue" position. Signal to noise: 56 db. Wow and flutter: 0.1%/0.15% PP. Tape time counter available. Independent playback/record amplifiers and all circuits use dual triode E 80 CC tube. Input 0.5 to 4 volts balanced bridge. Output 0.7 to 4 volts balanced 200 ohms. Size: 20" h., 13 1/4" w., 12 3/4" d. Weight: 66 lbs. in wooden case.</p>

Manufacturer	Model and Price	Frequency Response	Data
ELECTRONIC APPLICATIONS 194 Richmond Hill Avenue Stamford, Conn.	 <p>Nagra III B & E Portable Recorder \$675-\$925 depending on model</p>	<p>30-15,000 cycles (± 1.5 db) at 15"/sec. 40-12,000 cycles (± 1.5 db) at 7 1/2"/sec.</p>	<p>Portable, professional, completely transistorized unit available as Model B with three speeds (3 3/4, 7 1/2, and 15 ips) and as model E at 7 1/2 ips. Types B and E contain three heads. Speed constancy: 0.1%. Wow and flutter: 0.15% at 15 ips PP, or 0.2% PP at 7 1/2 ips. Signal-to-noise ratio: 55 db or better. Meter for battery condition and level. Output: +6 at 600 ohms balanced. Self-contained monitor speaker. AGC automatic gain-control for speech recording. All normal mike inputs plus 2 line mixers. Motor speed servo controlled. Operates from any 12 volt source or self-contained flashlight batteries. Accessories available. Fast forward and rewind.</p>
	 <p>Revox D-365 Stereo Portable \$429.00</p>	<p>40-12,000 cycles (± 2 db) 15,000 cycles (-3 db) at 7 1/2"/sec. 50-8,000 cycles at 3 3/4"/sec.</p>	<p>Semi-pro portable stereo, mono unit. Two speeds: 3 3/4 and 7 1/2 ips. Three motors; separate recording and playback amplifiers; wow and flutter at 7 1/2 ips: 0.20% RMS. Signal-to-noise ratio: 50 db; two cathode follower outputs; 6 watt internal push-pull monitor channel; 8" coax speaker; push-button solenoid operation; magic eye recording level; tape counter; end of tape switch-off; remote control of selected modes; up to 10" reels. Dimensions: 18" h., 11" w., 13 1/2" d. Weight: 43 lbs. Accessory: compatible 6 watt push-pull amplifier/speaker in portable case for full stereo monitoring.</p>
ELECTRONIC TEACHING LABORATORIES, INC. 1818 M St., N.W. Washington 6, D. C.	 <p>MONITOR 2-Channel Portable Model E-3 \$297.08 Model E-3C Console \$280.07 Model E-3CS Console \$273.05</p>	<p>50-6,500 cycles (± 3 db) at 3 3/4"/sec.</p>	<p>Professional language laboratory recorder, dual track, unique "split" amplifier performs simultaneous playback and recording function on separate tracks, distinctive in aural/oral laboratory work. Selector switch modes for listen/record, dual playback, master record, master play, duplicate. Volume level meter. Separate record/play heads with azimuth adjustment. Bias: 60KC. Signal-to-noise ratio: 45 db or over at 3% harmonic distortion. Model E-3C for console mounting, all components mounted on 3/8" aluminum panel, size 19 x 11 x 5 3/8, weight 15 lbs. Special feature: multiple installations have remote control tape duplication facility. Model E-3CS is same as Model E-3C except for omission of master record and master play selector switch modes.</p>
	 <p>MONITORET 2-Channel Recorder Model E-4 \$247.00</p>	<p>as above</p>	<p>Language laboratory recorder, dual parallel tracks — a "stripped-down" version of Monitor E-3 with same characteristics except only two selector switch modes for listen/record and dual playback. Model E-4C for console mounting.</p>
E.M.I. Sole U.S. Agents ERCONA CORP. 16 W. 46th St. New York 36, New York	 <p>E.M.I. Battery Portable \$395.00 Model L2A (3 3/4 ips) Model L2B (7 1/2 ips) Model L2C (15 ips)</p>	<p>50-7,000 cycles (± 2 db) at 15"/sec. 50-5,000 cycles (± 2 db) at 7 1/2"/sec. 50-2,500 cycles (± 2 db) at 3 3/4"/sec.</p>	<p>Battery-operated recorder manufactured by Electrical & Musical Industries, Ltd. of England. Accommodates 5" reels and requires no external power source. Signal-to-noise, better than 45 db unweighted, when replayed on high quality studio equipment. Wow, less than 0.2% at 15"/sec., 0.25% at 7 1/2"/sec. and 0.3% at 3 3/4"/sec. Separate recording and playback heads and amplifiers for monitoring and instantaneous playback. VU meter for recording level. Manually operated geared rewind device to conserve battery life. Operates with cover closed. Weight, 14 1/2 lbs. complete.</p>
ERCONA CORPORATION 16 W. 46 St. New York 36, N. Y.	 <p>Stuzzi Magnette Portable Recorder \$269.50 Carrying Case \$17.50 Professional Magnette \$369.50</p>	<p>50-9,000 cycles at 3 3/4"/sec. 60-4,000 cycles at 1 7/8"/sec.</p>	<p>Transistorized portable that operates up to 100 hours on 4 flashlight batteries. Dual speed (1 7/8" and 3 3/4"), dual track. Two motors; capstan motor electronically controlled. Magic-eye record level indicator. Battery condition indicators. Push-button controls: stop, record, replay, fast forward, fast reverse, and pause. Record safety button prevents accidental erasure. Three-digit counter. Wow and flutter approximates professional standards. Inputs: microphone, radio, pickup or telephone adaptor. Output: built-in speaker, outside amplifier, earphone connections. Size: 11" h., 4 1/2" w., 8" d. Weight: 8 lbs. Professional Magnette is professional version of above.</p>
FAMOUS MODEL CO., INC. Melbourne, Fla.	 <p>Privateer Mark VIII \$379.00</p>	<p>to 3,500 cycles at 1 7/8"/sec.</p>	<p>Portable dual track tape recorder, self-contained rechargeable batteries. Rewind electric. No batteries to replace. Battery charger separate unit but included in price. Units may be operated in covert fashion in briefcase from external concealed switch and making use of external concealed microphone. Available accessories include input level indicator, headset, external microphone, telephone recording adaptor.</p>


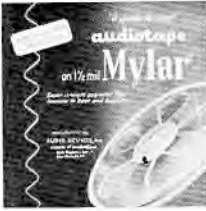


Manufacturer	Model and Price	Frequency Response	Data
<p>FAMOUS MODEL CO., INC. Melbourne, Fla.</p>	 <p>777 Series Battery Portables</p> <p>Tapo Model 777 (blue) \$295.00 Traveler Model 777-1 (brown) 298.50 Tempo Model 777-2 (gray) 314.00</p>	<p>to cps at</p> <p>3,500 - 1 7/8" /sec. 6,000 - 3 3/4" /sec. 12,000 - 7 1/2" /sec.</p>	<p>Portable dual track recorders with completely self-contained battery powered tape transport, amplifier and speaker for playback. Rechargeable battery cycle up to eight hours depending on tape speed. Has self-contained battery recharger. May be operated on 110 AC. Rewind is electric: speed 10 to 1. Maximum reel size, 5". May be operated with door open or closed. Monitors while recording. Inputs for microphone and headphone monitoring. Crystal or ceramic microphone included. Accessories include snap-on retractable legs, canvas carrying case and shoulder strap. Weight 21 lbs. Size 6" x 10" x 15".</p>
<p>FEN-TONE CORP. 106 Fifth Ave. New York 11, New York</p>	 <p>Fen-Tone Brenell Mark IV Tape Deck</p> <p>Mark IV (monaural) \$144.47 Mark IV/B (stereo) \$182.87</p>	<p>30-15,000 cycles (±3 db) at 15"/sec. 50-12,000 cycles (±3 db) at 7 1/2"/sec. 50-6,500 cycles (±3 db) at 3 3/4"/sec.</p>	<p>Three-speed tape decks for monaural and stereophonic record/playback, with three-motor drive. All mount up to four heads with individual azimuth adjustment. Capstan-sleeve speed change. Dual half-track operation for up to 7" reels. Two-knob control, fully interlocked. Wow and flutter, less than 0.2%. Fast forward and rewind, 45 sec. for 1200 ft. Monaural deck can be converted to stereo or sound-on-sound recording by installing additional heads. Can be used with PRO-2 amplifier.</p>
<p>FERROGRAPH RECORDER CO., LTD.</p>	 <p>Custom Installation</p> <p>Model 66/N (3 3/4"-7 1/2" ips) \$399.50 Model 66/H (7 1/2"-15 ips) \$445.00</p> <p>Portable (illustrated)</p> <p>Model 4A/N (3 3/4"-7 1/2" ips) \$399.50 Model 4A/NH (7 1/2"-15 ips) \$445.00</p>	<p>40-15,000 cycles (±2 db) at 15"/sec. 50-10,000 cycles (±2 db) at 7 1/2"/sec.</p>	<p>Dual-speed, dual-track recorders for portable or custom-installation, manufactured by British Ferrograph Recorder Co., Ltd. of London. Accommodates up to 8 1/4" reels. Signal-to-noise ratio, better than 50 db, 200-12,000 cps; 45 db unweighted (including hum). Wow and flutter less than 0.2% at 7 1/2"/sec. Longterm speed stability, better than 0.5%. Erase and Bias frequency, 53,000 cps. Inputs: Two; 1 megohm and 0.1 megohm respectively. Outputs: Two; 0.75 volts at 0.1 megohm for external amplifier; 15 ohms at 2 1/2 watts (undistorted). 3 motors including hysteresis synchronous drive. Includes "Ferrodex" counter, clock type with zero setting. Master control switch for permanent inputs and outputs. Weight: 45 lbs.</p>
<p>FERROGRAPH RECORDER CO., LTD.</p>	 <p>Stereo Model 4S/N (3 3/4"-7 1/2" ips) \$495.00</p> <p>Stereo Model 4S/H (7 1/2"-15 ips) \$520.00</p> <p>"Stere-ad" Unit \$195.00</p>	<p>as above</p>	<p>Model 4S — data on this model identical with 3A Series above except for addition of stereo playback. Signals from stacked stereo head may be fed into external dual amplifiers via an equalization chain for each section or to a "Stere-ad" unit which provides all power output for stereo replay requiring only a suitable speaker system. Weights: Model 4S: 49 3/4 lbs. "Stere-ad" unit: 12 1/2 lbs.</p>
<p>FERROGRAPH RECORDER CO., LTD.</p>	 <p>Model 808/2 Dual-track Stereo and Monaural Record/Playback \$595.00</p> <p>Model 808/4 Quarter-track Stereo and Monaural Record/Playback \$595.00</p>	<p>40-15,000 cycles (±2 db) at 15"/sec. 50-10,000 cycles (±2 db) at 7 1/2"/sec.</p>	<p>Portable recorders for stereo recording and playback manufactured by British Ferrograph Recorder Co., Ltd. of London. Signal-to-noise ratio, better than 50 db, 200-12,000 cps; 45 db unweighted (including hum). Wow and flutter, less than 0.2% at 7 1/2"/sec. Longterm speed stability, better than 0.5%. Erase and bias frequency, 53,000 cps. Accommodates up to 8 1/4" reels.</p> <p>Twin recording amplifiers and twin replay preamps terminating at 3 milliwatts across 600 ohms (balanced). Switched VU level meter provides proper recording levels for each track which is served by dual inputs (1 megohm and 0.1 megohm 0.003 V peak and 0.1 V peak respectively). Includes "Ferrodex" counter, clock type with zero setting. Weight: 48 lbs.</p>
<p>FI-CORD distributed by Kingdom Products Ltd. 514 Broadway New York 12, N. Y.</p>	 <p>Fi-Cord Monaural Recorder Model 1A \$330.00</p>	<p>50-10,000 cycles (±3 db) at 7 1/2"/sec.</p>	<p>Dual speed, dual track portable transistorized tape recorder that operates on batteries. Speeds: 7 1/2 and 17 1/8 ips. Uses 3 1/2" reels that will record 36 minutes per track at 17 1/8 ips. Can be operated closed. Fast rewind. Recording level indicator; battery and motor indicator. Battery is rechargeable. Inputs: microphone and radio/phono. Output for external speaker. Wow and flutter: 0.4%. Noise level: 35 db. Dimensions: 9 5/8 x 5 x 2 5/8. Weight: 4 1/2 lbs.</p>
<p>FILNOR PRODUCTS, INC. 101 West 31st St. New York 1, N. Y.</p>	 <p>Teltape Recorder \$29.95</p>	<p>to 4,000 cycles</p>	<p>Transistorized portable recorder with variable speed control. Operates on four type C flashlight batteries. Plays for 16 minutes with 3" reel containing 300 feet of 1/4" magnetic tape. Erase head can be swung out of the way so that erase is optional. Instant braking, fast rewind, automatic slack take-up. Plays back through headset furnished with recorder. Weight: 2 lbs.</p>

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GBC AMERICA CORP. 89 Franklin Street New York 13, New York	 <p>GBC Stenomaster Dictating/Transcribing Recorder \$159.50</p>	<p>75-7,500 cycles at 3 3/4"/sec.</p>	<p>New dual track, dual speed Italian portable recorder. Speeds: 3 3/4 and 1 7/8. "Picture" push buttons for fast rewind, playback, stop, record, fast forward. Magic eye volume indicator. Built-in loudspeaker. Undistorted power output: 2 1/2 watts. Two hours maximum recording time. Size in case: 5 1/2 x 10 x 11. Weight: 10 lbs.</p>
INTERNATIONAL RADIO AND ELECTRONICS CORPORATION South 17th St. & Mishawaka Rd. Elkhart, Ind.	 <p>Gold Crown Model GCP "Crown Prince" Half-track Monophonic Recorder \$445.00</p>	<p>30-30,000 cycles (±2 db) at 15"/sec.</p> <p>20-20,000 cycles (±2 db) at 7 1/2"/sec.</p> <p>30-11,000 cycles (±3 db) at 3 3/4"/sec.</p>	<p>Includes GCT transport, HTH head assembly and RPA amplifier to record and playback half-track monophonic. GCT transport: high current silicon diode power supply; three speeds, 15, 7 1/2, 3 3/4 ips (others available). Differential magnetic brakes, magnetic payoff, and two-position magnetic torque takeup. Up to 10 1/2" reels. Fast forward and rewind: 34 sec./1200 feet of tape. Forced air cooling and adjustable microsinc timing. Maximum wow and flutter: 0.06% at 15 ips, 0.09% at 7 1/2 ips, 0.18% at 3 3/4 ips. Timing accuracy: 99.5% for pole motor, 99.9% for synchronous motor. HTH head assembly is half-track monophonic. RPA amplifier: has two high impedance input channels; mike or phono and mike or play; bass and treble boost; recording bias check; three-speed record play equalization; VU meter. Hum and noise: 60 db below — 55 db input on mike channel and 75 db below — 20 db input on phono channel.</p>
	 <p>Gold Crown Model GCR "Crown Royal" Dual-track Stereo Recorder \$885.00 SXA amplifier alone \$190.00</p>	<p>as above</p>	<p>Includes GCT transport (described above), PSH head assembly, two RPA amplifiers (described above), SXA amplifier, for stereo record/playback to speaker outputs. PSH head assembly is for two-track in-line stereo. SXA amplifier: is two 30-watt power amplifiers on the same chassis; separate and master gain controls; push-pull EL 37 tubes; silicon diode power supply; fixed bias; 1 volt input for 30-watt output. Distortion: less than 0.2% harmonic and 0.3% in at 30 watt output. Maximum hum and noise: 80 db below 30-watt output. Output impedances: 4, 8, and 16 ohms.</p>
	<p>Gold Crown Model GCSX "Stereo X" Dual-track Stereo Recorder \$695.00</p>	<p>as above</p>	<p>Same as "Crown Royal" but without SXA amplifier. Records and plays stereo to cathode follower outputs.</p>
	 <p>Gold Crown Model GCV "Crown Vanguard" Dual-track Stereo Recorder \$810.00</p>	<p>as above</p>	<p>Includes GCLPT transport, PSH head assembly (described under "Crown Royal" above), two RPA amplifiers (described under "Crown Prince" above) and SR speed reducer for 1 7/8 ips. GCLPT transport has the same specifications as the GCT (described under "Crown Prince" above) except that it has provision for 14" reels.</p>
MAGNECORD, INC. P.O. Box 7186 Tulsa, Okla.	<p>Model 100 Series Stereo Recorders</p>  <p>WITH FORMICA CASE Mechanical Unit and Pre-amp only \$469.95 Speaker Amplifier \$159.95</p> <p>WITH PORTABLE CASE Mechanical Unit and Pre-amp only \$449.95 Speaker Amplifier only \$129.95</p> <p>WITHOUT CASE Mechanical Unit only \$255.00 Pre-amp only \$165.00 Mechanical Unit and Pre-amp only \$419.95</p>	<p>40-15,000 cycles at 7 1/2"/sec.</p> <p>50-7,500 cycles at 3 3/4"/sec.</p>	<p>A series of tape recorders for both stereo and monaural recording and playback. Two speeds: 7 1/2 and 3 3/4 ips. Separate channel balance controls. Master level control. Individual VU meters for each channel. Four inputs: two microphone-high impedance unbalance; two high level auxiliary for tuner, phono, tape. Outputs: two cathode follower, unbalanced. Binaural monitor phone jack. Recording indicator. Wow and flutter: less than 0.3%. Signal-to-noise ratio: more than 48 db. Distortion: 1% at 10-watt output. Formica cases available in walnut, blond and teak finishes. Add \$55 for synchronous motor available for all models except the mechanical unit and pre-amp in portable case.</p>
	 <p>Magnecord 536-B Recorder and Preamp. with Case \$415.00 Without Case \$385.00</p>	<p>50-15,000 cycles (±2 db) at 15"/sec.</p> <p>50-10,000 cycles (±2 db) at 7 1/2"/sec.</p>	<p>Single unit recorder and preamplifier for rack or portable mounting. Two-speed, single-track, with capstan speed change and hysteresis synchronous motor drive. Signal-to-noise, 50 db unweighted. Flutter, 0.3%. Rewind time, 40 sec. for 1200 ft. Erase and record/playback heads. VU meter for record and playback level. Phone jack for monitoring. Microphone and unbalanced bridging inputs. 600 ohm balanced or unbalanced line output. Weight: 40 lbs. in case.</p>
	 <p>Model 728 Stereo-stereo Recorder \$759.00</p> <p>Stereo-stereo Recorder with Fourth Head (1/4 track) \$800.00</p> <p>Case for either of above \$50.00</p>	<p>30-18,000 cycles (±2 db) at 15"/sec.</p> <p>40-15,000 cycles (±2 db) at 7 1/2"/sec.</p> <p>50-10,000 cycles (±2 db) at 3 3/4"/sec.</p>	<p>Professional portable for sound-on-sound stereo or monaural record/playback. Speeds: either 15 and 7 1/2 ips or 7 1/2 and 3 3/4 ips. Hysteresis synchronous motor. Electrical pay-off and take-up torques. Push-button controls. Tape position indicator. Can be supplied with full track, half track or stereo heads. Two VU meters. Separate record and playback amplifiers. Individual controls for record gain and master gain. Timing accuracy: ± 3 seconds in 30 minutes. Signal-to-noise ratio: better than 55 db per channel. Wow and flutter: 0.1% at 15 ips, 0.15% at 7 1/2 ips. Output: cathode follower. Input: two high impedance and two unbalanced bridges, two low impedance with plug-in transformer. Panel size: 17 1/2" x 13" x 12". Weight: 50 lbs.</p>




Manufacturer	Model and Price	Frequency Response	Data
MAGNECORD, INC. P. O. Box 7186 Tulsa, Okla.	 <p>Model N35-B Four Pole Motor \$299.95</p> <p>Model NS35-B Hysteresis Synchronous Motor \$349.95</p>	<p>Extended range to 12,000 cycles</p>	<p>Recorder and 8-watt power amplifier in composite carrying case. Tape speeds 7½ and 3¾ ips by capstan change. Phone jack on front panel for monitoring. High impedance microphone furnished. High and low impedance outputs for feeding external system. Printed circuit record amplifier. Interlock prevents accidental tape erasure. 6" x 9" speaker. Illuminated VU meter. Panel size 8½" x 15". Weight: 40 lbs. Half-track heads standard.</p>
	 <p>Magnecord PT6-6A Monaural Recorder Without Case Recorder \$375 Amplifier \$265 Add \$30 for case</p>	<p>50-15,000 cycles (±2 db) at 15"/sec.</p> <p>50-7,500 cycles (±2 db) at 7½"/sec.</p>	<p>Portable, two-speed, single-track recorder with speed-change switch and hysteresis synchronous drive motor. Signal-to-noise, 50 db unweighted. Flutter: 0.3% at 15"/sec., 0.4% at 7½"/sec. Rewind time, 40 sec. for 1200 ft. with automatic tape lift. Erase and record/playback heads. VU meter for bias, record and playback level. Monitoring by 5" speaker and phone jack from tape or input. 10 watt power amplifier. Microphone and unbalanced bridging inputs. 4 and 16 ohm power outputs, 600 ohm line output.</p>
	<p>Magnecord PT6BA2HZ Stereo Recorder Without Case Recorder \$450 Amplifier \$495 Add \$45 for case</p>		<p>Binaural recording version of above. Same specifications except for three speeds (15, 7½, 3¾ ips) with capstan change, 48 db signal-to-noise ratio, and interchannel calibration circuit.</p>
	 <p>Magnecord P75 Tape Transport with case \$575 without case \$535</p> <p>Amplifier with case \$305 without case \$265</p> <p>Magnecord Stereophonic P75 Tape Transport with case \$695 without case \$655 Tape Transport with Matched Amplifiers without case \$1,185</p>	<p>40-15,000 cycles (±2 db) at 15"/sec.</p> <p>40-12,000 cycles (±2 db) at 7½"/sec.</p>	<p>Rack-mounted or portable full-track recorder with 10½" reel capacity. Direct drive hysteresis synchronous motor. Push-button controls, instantaneous start and stop, fail-safe brakes and tape break control. Signal-to-noise, 55 db unweighted. Flutter: 0.2% at 15"/sec., 0.25% at 7½"/sec. Rewind time, 100 sec. for 2400 ft. Timing accuracy, ±3 sec. in 30 min. Separate erase, record and playback heads. VU meter for bias, record and playback level. Adjustable bias and high-speed cueing control. Microphone and unbalanced bridging inputs. Phone jack for monitoring from tape or input. 600 ohm unbalanced line output. For recorders with 50-cycle operation, add \$75.</p>
	 <p>Magnecord P73 Tape Transport with case \$575 without case \$535</p> <p>Amplifier with case \$390 without case \$345</p>	<p>50-15,000 cycles (±2 db) at 15"/sec.</p> <p>50-10,000 cycles (±2 db) at 7½"/sec.</p>	<p>Tape transport mechanism similar to above, but designed for use with P73-J amplifier instead of P75-C, permitting conversion of existing equipment to new, improved performance standards. Signal-to-noise, 50 db unweighted. Microphone input, 50 to 250 ohms balanced or unbalanced. Unbalanced bridge input. Monitoring by 5" speaker and phone jack from tape or input. Amplifier, 600 ohm balanced line output, 4 or 16 ohm, 10 watt speaker output. For recorders with 50-cycle operation, add \$75.</p>
	 <p>Magnecord M90 Tape Transport with case \$995 without case \$935</p> <p>Amplifier with case \$390 without case \$360</p> <p>Recorder/Amp. with case \$1375 without case \$1285</p> <p>Recorder/Amp. and Console Cabinet, \$1450</p>	<p>30-15,000 cycles (±2 db) at 15"/sec.</p> <p>30-15,000 cycles (±4 db) at 7½"/sec.</p>	<p>Portable, professional-type two speed recorder/amplifier units, also available in console cabinet mounting. Electrically interlocked push-button controls. Direct-drive hysteresis synchronous motor. Separate erase, record and playback heads — interchangeable assemblies for full track, half-track or instrumentation. Instantaneous start and stop, automatic tape lift. Separate record and playback amplifiers for simultaneous monitoring from tape. High speed cueing control. Signal-to-noise, 58 db unweighted. Flutter: 0.1% at 15"/sec., 0.15% at 7½"/sec. Rewind time, 55 sec. for 2400 ft. VU meter for bias, record and playback level. 50 or 250 ohm balanced or unbalanced microphone input, balanced or unbalanced bridge input. Line output, 600 ohms balanced or unbalanced.</p>
	<p>Magnecord Stereophonic M90 Record/Amplifiers with case \$2165 without case \$2035 Tape Transport with case \$1455 without case \$1385</p>		
	 <p>Magnecord 817DL Long Term Record Unit \$1814</p>	<p>50-10,000 cycles at 7½"/sec.</p> <p>50-5,000 cycles at 3¾"/sec.</p>	<p>A long term storage recorder that is completely automatic in operation. This single channel, two-speed, record/playback machine is designed to operate continuously for at least 8 hours (14" reels — 4800 feet of tape). To avoid any loss of recording information, the erase head has been eliminated. Will record and playback one track in the left-to-right direction, automatically reverse, record and replay the second track in the other direction. It will start and stop on voice signals.</p>

(Other models available)




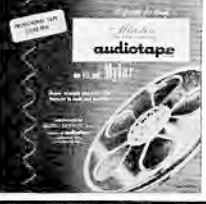
The COMPLETE LINE of professional quality AUDIOTAPE

Description	Type No.*	Length	Reel†	List Price
 <p>PLASTIC-BASE AUDIOTAPE on 1½-mil cellulose acetate (in the Red Box)</p> <p>Meets the most exacting requirements of the professional, educational and home recordist at minimum cost. Known the world over for its matchless performance and consistent uniform quality. Series 51.</p>	151	150 ft.	3" Plastic	\$ 0.70
	351	300 ft.	4" Plastic	1.35
	651	600 ft.	5" Plastic	2.25
	1251	1200 ft.	7" Plastic	3.50
	2551H	2500 ft.	NARTB Hub	8.50
	2551R	2500 ft.	10½" Aluminum	10.90
	‡2551FS	2500 ft.	10½" Fiberglass	10.90
	5051H	5000 ft.	NARTB Hub	17.00
	5051R	5000 ft.	14" Aluminum	22.10
	 <p>AUDIOTAPE ON 1½-MIL MYLAR* (in the Green Box)</p> <p>A premium-quality professional tape that provides the utmost in mechanical strength and immunity to temperature and humidity. Will not dry out or embrittle with age. Series 71.</p> <p>*DuPont Trade Mark</p>	671	600 ft.	5" Plastic
1271		1200 ft.	7" Plastic	6.65
2571H		2500 ft.	NARTB Hub	12.10
2571R		2500 ft.	10½" Aluminum	14.50
‡2571FS		2500 ft.	10½" Fiberglass	14.50
5071H		5000 ft.	NARTB Hub	24.20
5071R		5000 ft.	14" Aluminum	30.20
 <p>"LR" LONGER-RECORDING AUDIOTAPE on 1-mil "Mylar" (in the Black-and-Red Box)</p> <p>50% more recording time per reel. The strong, super-durable polyester film base assures trouble-free operation even under severe conditions of heat and humidity. Series 61.</p>		261	225 ft.	3" Plastic in Self-Mailer Pkg.
	961	900 ft.	5" Plastic	3.60
	1861	1800 ft.	7" Plastic	6.20
	3661H	3600 ft.	NARTB Hub	12.00
	3661R	3600 ft.	10½" Aluminum	14.40
	‡3661FS	3600 ft.	10½" Fiberglass	14.40
	7261H	7200 ft.	NARTB Hub	24.00
	7261R	7200 ft.	14" Aluminum	30.00
 <p>PLASTIC-BASE "LR" AUDIOTAPE on 1-mil cellulose acetate (in the Blue Box)</p> <p>50% more recording and playback time on low-cost 1-mil cellulose acetate base, affording maximum economy for applications where high strength is not required. Series 41.</p>	941	900 ft.	5" Plastic	3.50
	1841	1800 ft.	7" Plastic	5.50
	3641H	3600 ft.	NARTB Hub	10.00
	3641R	3600 ft.	10½" Aluminum	12.85
	3641FS	3600 ft.	10½" Fiberglass	12.85
	7241H	7200 ft.	NARTB Hub	20.00
	7241R	7200 ft.	14" Aluminum	26.00

Other AUDIOTAPE Items

Item	Type No.*	Description	List Price		
 <p>AUDIOTAPE IN THE SNAP-LOAD CARTRIDGE on 1-mil "Mylar"</p> <p>Strong super-durable polyester film base Audiotape in new cartridge that has two hubs enclosed in dust-resistant plastic magazine for easy handling and loading. Series 60.</p>	C560	560 ft. in twin-hub snap-load cartridge	\$4.50		
 <p>COLORED PLASTIC-BASE AUDIOTAPE on 1½-mil cellulose acetate (in same box as above with label for color)</p> <p>Green and blue colored Audiotape, in conjunction with the standard red-brown tape, provide instant visual identification of recorded selections spliced into a single reel (as shown) — permit fast and easy color cueing and color coding. Eliminate need for identifying leaders between selections.</p>	GREEN	BLUE	LENGTH	REEL	
	151G	151B	150 ft.	3" Plastic	.70
	351G	351B	300 ft.	4" Plastic	1.35
	651G	651B	600 ft.	5" Plastic	2.25
	1251G	1251B	1200 ft.	7" Plastic	3.50
	2551HG	2551HB	2500 ft.	NARTB Hub	8.50
	2551RG	2551RB	2500 ft.	10½" Aluminum	10.90
	‡2551FSG	‡2551FSB	2500 ft.	10½" Fiberglass	10.90
	5051HG	5051HB	5000 ft.	NARTB Hub	17.00
	5051RG	5051RB	5000 ft.	14" Aluminum	22.10
 <p>EMPTY AUDIOTAPE REELS IN INDIVIDUAL BOXES</p>	3PB		3" Plastic Reel in Box	.25	
	4PB		4" Plastic Reel in Box	.45	
	5PB		5" Plastic Reel in Box	.60	
	7PB		7" Plastic Reel in Box	.75	
	10RB		10½" Aluminum Reel in Box	4.00	
	10FS		10½" Fiberglass (RETMA) in Box	4.00	
	14RB		14" Aluminum Reel in Box	7.40	
	10H		NARTB Metal Hub	.70	

-The World's Finest Magnetic Recording Tape

Description	Type No.*	Length	Reel†	List Price
 <p>SUPER-THIN AUDIOTAPE on 1/2-mil "Mylar" (in the Yellow Box)</p> <p>Twice as much recording time per reel as standard plastic-base tape. Suitable for extended-play applications where tape tension is not excessive. Series 31.</p>	1231	1200 ft.	5" Plastic	\$ 3.50
	2431	2400 ft.	7" Plastic	6.50
 <p>SUPER-THIN AUDIOTAPE on "Tempered" "Mylar" (in the Yellow-and-Red Box)</p> <p>Twice as much recording time per reel as standard plastic-base tape, and is twice as strong as other double-length tapes. Will not stretch or break on any tape recorder — will not dry out or embrittle with age. Series 31T.</p>	1231T	1200 ft.	5" Plastic	4.75
	2431T	2400 ft.	7" Plastic	8.75
	4831T-R	4800 ft.	10 1/2" Aluminum	20.50
	‡4831T-FS	4800 ft.	10 1/2" Fiberglass	20.50
 <p>MASTER LOW PRINT-THROUGH AUDIOTAPE on Plastic Base</p> <p>The finest, professional-quality recording tape. Base material, 1 1/2-mil acetate. Maximum fidelity, uniformity, frequency response and freedom from noise and distortion. . . . Plus low print-through. Series 51M.</p>	651-M	600 ft.	5" Plastic	2.75
	1251-M	1200 ft.	7" Plastic	4.30
	2551H-M	2500 ft.	NARTB Hub	9.80
	2551R-M	2500 ft.	10 1/2" Aluminum	12.50
	‡2551FS-M	2500 ft.	10 1/2" Fiberglass	12.50
	5051H-M	5000 ft.	NARTB Hub	19.55
	5051R-M	5000 ft.	14" Aluminum	26.00
 <p>MASTER LOW PRINT-THROUGH AUDIOTAPE on 1 1/2-mil "Mylar"</p> <p>Super-durable tape that meets highest standards of performance. Withstands extreme temperatures and is virtually immune to humidity. Gives maximum tape life under any conditions. . . . Plus low print-through. Series 71M.</p>	671-M	600 ft.	5" Plastic	4.60
	1271-M	1200 ft.	7" Plastic	7.70
	2571H-M	2500 ft.	NARTB Hub	14.00
	2571R-M	2500 ft.	10 1/2" Aluminum	16.40
	‡2571FS-M	2500 ft.	10 1/2" Fiberglass	16.40





* Type Numbers listed cover red oxide wound on reel with OXIDE IN. For tape wound with Oxide Out, change last digit of Type No. from "1" to "0." E.g. Audiotape 1250 covers 1200 ft. reel of plastic base tape wound with Oxide Out.






† COLORED PLASTIC REELS. Audiotape on 5" and 7" plastic reels can be supplied on colored reels at no increase in price when ordered in lots of 30 reels or more of any

one color. To designate color of reel (Red, Yellow, Green or Blue) add letters "RR" and "YR," "GR" or "BR" to Type No. listed. E.g. Type 1251YR covers 1200 feet of standard plastic-base tape on Yellow Reel. Type 1251GBR covers 1200 feet of Green plastic-base tape on Blue Reel.








‡ "FS" in Type No. indicates Fiberglass reel with solid hub and 5/16" center hole.








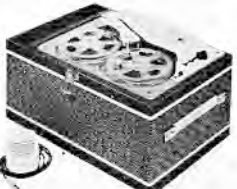
Audio Accessories






Item	Type No.	List Price	Item	Type No.	List Price
<p>CORRUGATED MAILING BOXES</p> <p>Strong, re-usable containers for 5", 7" and 10 1/2" reels.</p>	5M	\$.15	<p>AUDIO HEAD DEMAGNETIZER</p>  <p>Removes all permanent magnetism from recording and reproducing heads in a matter of seconds. Includes 7-foot cord and is individually boxed.</p>	400	\$10.00
	7M	.20			
	10M	.30			
<p>RECORDING HEAD CLEANER</p> <p>Especially formulated for use on recording heads. Contains silicone solvent. Superior to carbon tetrachloride. One-ounce bottle with brush.</p>	1HC	.65	<p>AUDIO HEAD ALIGNMENT TAPE</p>  <p>Pre-recorded at 2,000, 10,000 and 15,000 cps (15"/sec.) with precisely correct head alignment. Each box contains 300 ft. on a 4" reel and instructions.</p>	200	10.00
<p>AUDIO SELF-TIMING LEADER TAPE</p>  <p>A strong, durable leader tape of white "Mylar" material with spaced markings to permit accurate rate time of leader intervals. Each box contains 100 feet, 3/4" wide.</p>	3L	.55			
<p>ADHESIVE REEL LABELS</p> <p>Provide positive identification of your tapes right on the reel. Simply press to apply, pull off to remove. Envelope of 30, 2" x 1/2" labels.</p>	30AL	.20	<p><i>how to make</i></p> <p>GOOD TAPE RECORDINGS</p>  <p>This handbook of tape recording contains up-to-the-minute information of interest and practical value to every tape recordist. Profusely illustrated with photographs, charts and diagrams prepared especially for this book, it contains 150 pages of valuable information on all phases of modern tape recording.</p>	Clothbound	
<p>AUDIO ECHORASER</p> <p>A new instrument for the instantaneous removal of print-through (magnetic echo) from recorded tape during playback. Easy to use and install. Complete instructions provided.</p>	500	12.50		Paperbound	
				25C	2.50
				15P	1.50








Manufacturer	Model and Price	Frequency Response	Data
MAGNETIC RECORDING INDUSTRIES 126 Fifth Avenue New York 11, New York	 <p>Synchronone Dual Language Recorder Model 68-DL \$295.00</p>	<p>to 10,000 cycles at 7 1/2" / sec.</p>	<p>Dual recorder-reproducer permitting simultaneous recording on two channels, or simultaneous playback of "master" channel and simultaneous recording on "student" channel; or simultaneous playback of "master" as well as "student" channel. Speeds: 3 3/4 and 7 1/2 ips. Two record-play safety lights. Concealed selector switch for recording on "master" channel (makes student erasure of "master" impossible). Inputs: external line and microphone. Two outputs for headphones. Single volume control for both channels. Shut-off switch for external line. Single knob control; beltless drive. Automatic safety switch prevents accidental erasure during rewind; automatic shut-off switch; footage index counter.</p>
	 <p>Model MDA Tape Player/Amplifier \$250.00</p>	<p>as above</p>	<p>Master distribution amplifier complete with tape drive mechanism. Less than 1/2% total harmonic distortion at 8 watts. Total power output 10 watts. Complete with master meter system measuring proper output signal being fed into student positions. Sufficient capacity to handle up to 200 student positions. Separate bass and treble controls. Three position selector switch permitting instant flipover from tape to living voice (microphone) or to external source (phonograph, shortwave radio, etc.). Complete with 14" x 18" master panel.</p>
	 <p>Model 65 Synchronone Dual Language Recorder-Reproducer \$250.00</p>	<p>as above</p>	<p>Dual magnetic tape recorder-reproducer for simultaneous recording on two channels of magnetic tape; or simultaneous playback of "master" channel and simultaneous recording on "student" channel; or simultaneous playback of "master" as well as "student" channel. Two speeds: 7 1/2 and 3 3/4 ips. Built-in electronic mixer analyzer permits student to listen to "master" off magnetic tape as he speaks into microphone. Built-in electronic mixer for automatically mixing external "master" with student's microphone and automatic recording of both "master" and student's voice onto the student's tape. Concealed selector switch for recording on "master" channel (makes student erasure of "master" impossible), and/or for preparation of tape duplicates through the laboratory system. Two inputs: external line and microphone. Two outputs for headphones (one for student, one for instructor). Single volume control for both channels. Single lever control for all functions; built-in tape lifter and pressure pad mechanism; azimuth adjustment for all heads.</p>
	<p>Synchro-Magneticon Dual Tape-Disc Recorder-Reproducer Model ML-66, \$295.00</p>	<p>to 10,000 (tape) to 6,000 (disc)</p>	<p>Dual magnetic tape-disc recorder-reproducer using standard 1/4" tape as a master, and pregrooved magnetic disc, 9" diameter, as student's record-play medium; built-in electronic mixer analyzer permitting student to listen to "master" off magnetic tape as he speaks into his microphone, recording himself on magnetic disc as he progresses with the lesson. Tape speeds: 7 1/2 and 3 3/4 ips.</p>
	 <p>Model 44 Magneticon Linguist Magnetic Disc Recorder-Reproducer \$195.00 Model 45 Magneticon Examiner Dual Magnetic Disc Recorder-Reproducer \$295.00</p>	<p>to 6,000 cycles</p>	<p>Magnetic disc recorder-reproducer using pregrooved magnetic disc, 9" diameter, indestructible, erasable, instantly reusable. Rim drive mechanism employing four-pole motor with hum bucking shield. Built-in electronic mixer-analyzer permitting student to hear "master" and simultaneously hear his own voice from the microphone with automatic recording of both the "master" and his voice onto the student's magnetic disc. Instant playback of any or all of the recorded materials without need of stopping of mechanism or rewind. Instant scanning across entire recorded area. Split-a-word control permitting student to stop and start turntable from push-button on remote amplifier panel. Two inputs, external line and microphone. Two outputs for headphone listening (one for student, one for supervisor). Model 45 is dual version of above.</p>
ROBERT C. MERCHANT 1702 Annandale Road Falls Church, Virginia	 <p>Custom Language Teaching Equipment MC-16TA for 16 students, \$10,500.00 (Other model and price information on request)</p>	<p>Entire system balanced for language teaching and speech correction requirements</p>	<p>Model MC series multi-track language laboratory student listen-record-playback equipment. Designed for electronic classroom use with the Mark IV console. No equipment in student booth. System includes microphones and earphones of matching characteristics to insure optimum sound reproduction. Fully automatic electronic volume control on each student track (no manual controls). All transistor, plug in amplifiers with sealed circuits. Absolute minimum of moving parts and no student operated controls. Fully remote-control operation, record-play-rewind, with automatic stop and auto cut-off. Built in reliability for long, maintenance-free operation. Protected against humidity and fungus growth. Minimum space and power requirements. Negligible crosstalk. Permits the latest student testing techniques. Special provisions eliminate the need for head cleaning and reduce wear. Meets military specifications.</p>






Manufacturer	Model and Price	Frequency Response	Data
<p>METZNER ENGINEERING CORP. 1041 N. Sycamore Avenue Hollywood 38, California</p>	 <p>Starlight "120A" Stereo Tape Deck \$189.50</p>	<p>40-15,000 cycles (± 2 db) at 7 1/2" /sec.</p>	<p>Tape transport mechanism that records and plays stereo. Two speeds: 7 1/2 and 3 3/4 ips. Half- or full-track erase. Hysteresis synchronous motor. Flywheel loaded capstan drive. Index counter. Shielded head. Interlocked controls. Wow and flutter under 0.18% at 7 1/2 ips. Stereo head inductance 400 mhy. for high output voltage. Timing accuracy better than 0.2%. Signal-to-noise ratio: 55 db. Fast forward at 11.7"/sec. Connections to heads at sub-mounted phono-type jacks.</p>
<p>MINICORD CORPORATION 1915 Atlantic Ave. Atlantic City, N. J.</p>	 <p>Minicord Pocket Recorder \$239.50</p>	<p>200-6,500 cycles</p>	<p>Miniature recorder for up to 2 1/2 hours of continuous recording. Will pick up voice conversation up to forty feet away. Battery operated. No warm-up needed. Playback through conference amplifier. Dimensions: 4" h., 6" d., 1 1/2" w. Weight: 2 lbs.</p>
<p>MOHAWK BUSINESS MACHINES CORP. 944 Halsey Street Brooklyn 33, N. Y.</p>	 <p>Mohawk "Midgetape" Professional 500 Pocket Tape Recorder \$359.50</p>	<p>50-10,000 cycles at 3 3/4" /sec.</p>	<p>Pocket tape recorder that instantly records and plays right back. VU meter for distortion control. No electricity required. Battery life 12 to 50 hours. 6 transistors. Optional 1 battery operated, all transistor, palm size amplifier speaker. 45 minute cartridge-loaded tape. Three controls: On-Off, Play-Record and Volume. Wow and flutter: 0.3%. Signal-to-noise ratio, 48 db. Input 2,000 ohms or less —.2mv to 3mv. Outputs: two — one 10mw at 2,000 ohms; two Zero VU at 600 ohms. Sockets: three — 1 input, 2 output sockets. Distortion: maximum recording level: 2%. Tape type: 1/4" Mylar base, erase AC-20kc. Supplied with battery. Accessories available. Size: 8 1/2" x 3 7/8" x 1 7/8". Weight: 3 lbs.</p>
	 <p>Mohawk "Midgetape" 300 Pocket Tape Recorder \$249.50</p>	<p>150-5,500 cycles at 1 7/8" /sec.</p>	<p>Portable recorder. Instantly records and plays right back. No electricity required. Battery life 12 to 50 hrs. 4 transistors. 1 or 1 1/2 hr. cartridge-loaded tape. 3 controls: On-Off, Play-Record and Volume. Wow and flutter, less than 0.7%. Signal-to-noise ratio, 42 db. Input, 2,000 ohms-one mv min. Output, 10 milliwatts at 2,000 ohms. Tape used: 1/4" "Mylar" base, twin track. Supplied with battery. Optional internal transistorized loudspeaker. Accessories available. Size: 8 1/2" x 3 7/8" x 1 7/8". Weight: 3 lbs.</p>
	 <p>Mohawk Message Repeater Record-Playback Unit \$159.50 Message Repeater Junior \$99.50</p>	<p>200-5,500 cycles (± 1 1/2 db) at 3 3/4" /sec.</p>	<p>Midget recorder/playback unit with continuous-loop tape cartridges of from 15 to 240 seconds capacity. Repeats message continuously or intermittently by external switch control. No rewinding necessary. Neon bulb recording level indicator. Built-in 5" speaker. Output, 1.2 watts. Plug-in sockets for microphone, external start, external amplifier or speaker. Overall size, 6 1/2" x 5 3/4" x 5 1/2". Weight: 5 3/4 lbs. Numerous accessories available.</p>
<p>MOVIC COMPANY 738 22nd Street Santa Monica, California</p>	 <p>Movicorder A-1 Monaural Record Stereo Playback \$495.00 Movicorder A-2 Stereo Record and Playback \$595.00</p>	<p>45-12,000 cycles (± 2 db) at 7 1/2" /sec.</p>	<p>Model A-2 is new dual speed (7 1/2 and 3 3/4 ips) portable stereo recorder with hysteresis synchronous motor and two induction type reel motors. Records, plays and erases stereo. Records sound on sound. Two VU meters. Knob controls. Wow and flutter: less than 0.18%. Signal-to-noise ratio: 50 db. Outputs: two cathode follower; two internal or external speaker. Inputs: two radio, phono, TV; two mike. Dimensions: 18" h., 16" w., 6 1/2" d. Weight: 44 lbs. Model A-1 is monaural record, stereo playback version of Model A-2.</p>
<p>NEWCOMB AUDIO PRODUCTS CO. 6824 Lexington Avenue Hollywood 38, California</p>	 <p>Model SM-310 Stereo Recorder \$499.50</p>	<p>30-15,000 cycles (± 2 db) at 7 1/2" /sec. 40-10,000 cycles (± 3 db) at 3 3/4" /sec.</p>	<p>New two-channel stereo and monaural recorder that has two speeds: 7 1/2 and 3 3/4 ips. Records and plays back stereo and monaural. Joy stick transport control. Synchronous motor. Knob controls. Record interlock prevents accidental erase. Oversize brakes. Automatic shut-off switch. Four digit counter. Vacuum tube voltmeters for record level. Flutter: less than 0.2% at 7 1/2 ips, less than 0.25% at 3 3/4 ips. Signal-to-noise ratio: 50 db at 7 1/2 ips, 45 db at 3 3/4 ips. Inputs: two high level, two mike. Outputs: one for each channel, one monitor. Dimensions: 12 3/4" h., 16 3/4" w., 9 1/2" d. Weight: 34 lbs.</p>
<p>NORDMENDE distributed by Sterling Hi-Fidelity, Inc. 22-20 40th Ave. Long Island City 1, New York</p>	 <p>NordMende Titan \$389.95</p>	<p>30-16,000 cycles (± 3 db) at 7 1/2" /sec. 40-10,000 cycles (± 3 db) at 3 3/4" /sec.</p>	<p>New German imported recorder with two speeds: 7 1/2 and 3 3/4 ips. Push button controls with two editing keys. Recording control prevents accidental erase. Three-digit index meter. Three-motor drive. Magic-eye level indicator. Three speakers. Bass and treble controls with visual indicators. Inputs: mike, record, radio. Outputs: monitor, external speaker. Dimensions: 16 1/2" h., 8" w., 15" d. Weight: 33 lbs.</p>








Manufacturer	Model and Price	Frequency Response	Data
NORTH AMERICAN PHILIPS CO., INC. 230 Duffy Ave. Hicksville, N. Y.	 <p>Continental "400" Four-Track Stereo Recorder \$399.50</p>	<p>50-18,000 cycles at 7 1/2"/sec. 60-14,000 cycles at 3 3/4"/sec. 60-7,000 cycles at 1 7/8"/sec.</p>	<p>New three-speed recorder for four-track stereo and four-track monaural record and playback. Speeds: 7 1/2, 3 3/4 and 1 7/8 ips. Records sound on sound. Piano key controls. Magic eye modulation indicator. Four-digit program indicator. Signal-to-noise ratio: better than 55 db. Wow and flutter: less than 0.3% at all three speeds. Inputs: one stereo mike; one stereo phono, radio; mixing of these two. Outputs: two speaker, two amplifier, one headphone. Dimensions: 8 1/2" h., 18 1/2" w., 15 1/2" d. Weight: 55 lbs.</p>
	 <p>Norelco "Continental" Portable Recorder Model EL 3516 \$269.50</p>	<p>40-16,000 cycles at 7 1/2"/sec. 50-8,000 cycles at 3 3/4"/sec. 60-4,500 cycles at 1 7/8"/sec.</p>	<p>Three-speed, dual track, push-button controlled portable recorder. Has "magic eye" volume indicator, piano-key controls. Head has air gap of only 0.0002". Contains 5" twin-cone speaker. Signal-to-noise ratio is 54 db. Wow and flutter is 0.2% at 7 1/2 ips, 0.3% at 3 3/4 ips, 0.35% at 1 7/8 ips. Fast forward and reverse: less than 2 minutes for 1200 feet. Automatic stop at end of reel with metalized tape. Inputs: one radio/phono, one microphone. Outputs: one external speaker, one external amplifier. Dimensions: 16" x 13" x 8". Weight: 30 lbs.</p>
	<p>Norelco "Continental" Portable Stereo Recorder Model EL 3516 G/73 \$299.50</p> <p>Amplifier/Speaker \$95.00</p>	<p>40-16,000 cycles at 7 1/2"/sec. 50-10,000 cycles at 3 3/4"/sec. 60-5,000 cycles at 1 7/8"/sec.</p>	<p>Stereo version of above. Same specifications as above except for following. Wow and flutter is 0.15% at 7 1/2 ips, 0.2% at 3 3/4 ips, 0.35% at 1 7/8 ips. Five outputs: three for external amplifiers, one for external speaker, one for monitor. Second amplifier and speaker are in a matching cabinet.</p>
	 <p>Norelco "35" Dictating/Transcribing Machine \$179.50</p>	<p>300-3,000 cycles at 2 1/2"/sec.</p>	<p>New dual track portable recorder for dictating and transcribing. Speed: 2 1/2 ips. 35 minutes total recording time. Two heads: erase and record/playback. Controls for: record, playback, rapid review, fast wind, fast rewind, stop, start, volume. Moving coil microphone doubles as loudspeaker. Many accessories available. Dimensions: 10" h., 7 1/2" w., 4" d. Weight: 8 lbs.</p>
THE PENTRON CORPORATION 777 South Tripp Avenue Chicago 24, Ill.	 <p>Concerto Model TR-10 Monophonic Recorder \$129.95 Concerto Model TR-10S Stereo Recorder \$159.95 Amplifier/Speaker \$59.95</p>	<p>40-11,000 cycles (±3 db) at 7 1/2"/sec. 40-7,000 cycles (±3 db) at 3 3/4"/sec.</p>	<p>New portable recorder with two speeds: 7 1/2 and 3 3/4 ips. Available as monophonic or four-track stereo version. Single lever control for play, record, fast forward, fast rewind. Motor: 4-pole, shaded pole heavy duty. Separate interlock. Neon type record level indicator. Speaker: 6" round PM extended range. Fast rewind: 7" reel in 90 seconds. Signal-to-noise ratio: 45 db. Flutter: under 0.4% at 7 1/2 ips. Inputs: one for mike; one for radio, TV, phono. Outputs: one for external amplifier or monitor; one for external speaker. Dimensions: 11" h., 14" w., 17" d. Weight: 25 lbs.</p>
	 <p>Model TR-20 Aristocrat II Monophonic Record/Playback Stereo Playback \$350.00</p>	<p>40-15,000 cycles (±3 db) at 7 1/2"/sec. 40-12,500 cycles (±3 db) at 3 3/4"/sec.</p>	<p>New dual-speed recorder system for stereo playback, monaural record/playback. Speeds: 7 1/2 and 3 3/4 ips. Single rotary control for play, record, fast forward, fast rewind. Interlock record button. Two volume control, two tone controls. Illuminated VU meter for record level. Two detachable speaker cabinets, each containing two speakers. Signal-to-noise ratio: 52 db. Flutter: under 0.3% at 7 1/2 ips. Inputs: one for mike or phono; one for radio, TV, phono. Outputs: two for external amplifiers or head phone monitoring; two for external speakers. Dimensions: 11 3/4" h., 22 1/2" w., 15 3/4" d. Weight: 42 lbs.</p>
	 <p>Triumph Model XP-60 Monophonic Recorder \$219.95 Model XP-60S Stereo Recorder \$249.95 Companion Amplifier/Speaker \$59.95</p>	<p>40-15,000 cycles (±3 db) at 7 1/2"/sec. 40-12,500 cycles (±3 db) at 3 3/4"/sec.</p>	<p>New dual-speed, push-button-operated portable recorder available in both monophonic and stereo versions. Speeds: 7 1/2 and 3 3/4 ips. Motor: 4-pole, shaded pole heavy duty. Automatic interlock prevents accidental erase. Electron beam record level indicator. Digital type index counter. Speakers: one 4 x 6 oval (with built-in whizzer cone) and one 4 x 6 round. Signal-to-noise ratio: 52 db. Flutter: under 0.3% at 7 1/2 ips. Inputs: one for mike, one for radio, TV, phono. Outputs: one for speaker, one for amplifier. Dimensions: 6 1/2" h., 12 1/4" w., 13" d. Weight: 18 lbs.</p>
	 <p>Emperor II Stereo System Model NL-4 Stereo Recorder \$500.00 Model ES-2 Speaker System \$75.00</p>	<p>40-15,000 cycles at 7 1/2"/sec. 40-10,000 cycles at 3 3/4"/sec.</p>	<p>Home stereo system that can play record and play back 2- and 4-channel stereo, and monaural. Speeds: 7 1/2 and 3 3/4 ips. "Finger Flite" single rotary control. Safety interlock record button. Dual pole erase head. Two 4" x 6" oval speakers. (ES-2 speaker system contains six more.) Power output: 20 watts push-pull. Two electron recording beam level indicators. Signal-to-noise ratio: 50 db. Wow and flutter: under 0.3% at 7 1/2 ips. Index counter. Automatic shutoff. Inputs: one for microphone, one for radio/phono. (Each jack has two input positions.) Outputs: two for external amplifiers, two for external speakers. Dimensions: 17" x 17" x 11". Weight: 45 lbs.</p>









Manufacturer	Model and Price	Frequency Response	Data
THE PENTRON CORPORATION 777 South Tripp Avenue Chicago 24, Ill.	 <p>LP Magazine R Repeater Model A-1 \$99.95 Model A-2 \$87.95 Model A-3 \$79.95 Model A-4 \$119.95</p>	<p>40-7,000 cycles at 3 3/4" / sec.</p>	<p>Series of magazine repeaters playing a regular loop for 28 minutes, Moebius loop for 55 minutes. Stopping by voice operated relay activated by silence on tape between messages. When applicable, signal-to-noise ratio is 45 db, flutter is 0.5%. A-1 is complete with amplifier, speaker, triggering circuit, case, handle. A-2 is same without triggering circuit. A-3 includes pre-amp, case, handle. A-4 is recorder/playback, speaker, recorder indicator, microphone, case, handle, magazine.</p>
PHILCO CORPORATION Philadelphia 34, Pennsylvania	 <p>Model ST 300 Stereo Recorder \$249.95</p>	<p>40-15,000 cycles at 7 1/2" / sec.</p>	<p>Dual track, dual speed recorder for monaural record/playback and stereo playback. Speeds: 7 1/2 and 3 3/4 ips. Push-button controls. Safety switch prevents accidental erase. Pause control. Automatic shutoff. Index timer. Two internal speakers. Tuning eye recording indicator. Wow and flutter less than 0.5%. Inputs: one for microphone, one for radio/phono. Outputs: one for external speaker, one for stereo speaker. Dimensions: 9 1/2" x 15" x 14". Weight: 39 lbs.</p>
PHONO-TRIX imported by Mathew Stuart and Co., Inc. 353 West 54th St. New York 19, New York	 <p>Phono-Trix Recorder \$69.95</p>	<p>Suitable for voice recording</p>	<p>Variable speed transistorized West German portable tape recorder that operates on four flashlight batteries for 50 recording hours. Speeds variable from 1 to 8 ips. Recording time is 30 minutes on each track of 3" reel of tape at 1 ips. Playback through microphone or speaker. Fast rewind. Color-coded slide button operation. Dimensions: 6 1/2 x 4 3/4 x 3 1/2. Weight: 5 lbs. in case.</p>
PREMIER ELECTRONIC LABORATORIES 382 Lafayette St. New York 3, New York	 <p>"Tapesonic" Model 70-C \$398.75 Stereophonic Model 70-C B.L. \$446.75</p>	<p>30-18,000 cycles (±3 db.) at 15" / sec. 30-15,000 cycles (±3 db.) at 7 1/2" / sec. 30-7,500 cycles (±3 db.) at 3 3/4" / sec.</p>	<p>Portable professional type three-speed dual track recorder. Three motors, including hysteresis synchronous drive motor. 4 1/2" VU meter. Push button operation using seven relays and one solenoid. Three separate heads, permitting instantaneous monitoring from tape while recording. A.B. switch permits comparison between original and recorded program. Flutter and wow 0.1%. Mixing channels for mike, radio or phono inputs. Accidental erase prevented. Bass and treble controls with flat response setting. Fast forward and rewind, less than one minute for 2400 ft. Electro-dynamic brake action and tape tension, never requires adjustment. D.C. on preamp heaters. Push-pull 16 watts audio output. Also available with stereo head for dual track record/playback.</p>
RADIO CORPORATION OF AMERICA RCA Victor Radio "Victrola" Products Cherry Hill Camden 8, N. J.	 <p>Model SCP2 Portable Cartridge Player-Recorder \$299.95 Model SH513 Speaker \$9.95</p>	<p>50 to 15,000 cycles</p>	<p>New portable tape cartridge player-recorder which plays or records either monaurally or stereophonically using new tape cartridge. Tape is four track, quarter-inch tape which runs at 3 3/4 ips, playing up to two hours of monaural music. Unit contains a 6 1/2 and two 3 1/2 inch speakers. Contains two microphones for home stereophonic recording and patch cord to record electrically from stereo phono or AM-FM radio. Push-button operation, no-erase guard, automatic shut-off or standby, window counter, pilot light, input jacks.</p>
RANGERTONE INC. 73 Winthrop St. Newark 4, New Jersey	 <p>"Rangerette" Portable Model A-2 \$1500.00 complete</p>  <p>Console Model R-5C with synchronizer \$4925.00</p>	<p>45-15,000 cycles (±2 db) at 15" / sec. 50-8,000 cycles (±2 db) at 7 1/2" / sec.</p>	<p>FOR SYNCHRONOUS SOUND RECORDING Professional-type, single or multi track, dual-speed recorders, with choice of 3 3/4", 7 1/2", 15" or 30" per second tape speeds. Up to 2 hours recording at 7 1/2" per sec. on 14" reel. Distortion, less than 2% total harmonic. Maximum signal-to-tape noise, 55 db. Double-puck, tight-loop tape drive. Peak-to-peak flutter, less than 0.1% at 15"/sec. Rewind speed controllable continuously from 0 to 250"/sec. in both forward and rewind. Meets all N.A.B. adopted standards. Complete monitoring and mixing facilities. VU meter, signal indicator and footage counter calibrated in minutes and seconds. Complete tape editing facilities. Also available with positive "sprocketless" synchronization for motion picture and TV applications. Weight of Rangerette—35 lbs. Kits added to other professional recorders for Synchronous Sound Recording for \$320.00.</p>
RECORDIO CORPORATION Charlotte, Michigan	 <p>Model 603 "Villa" Monaural Portable Recorder \$89.95</p>	<p>100-8,000 cycles at 3 3/4" / sec.</p>	<p>New single-speed monaural portable recorder that plays at 3 3/4 ips. Has knob controls. Takes up to 5" reels. Calibrated dial for record indicator. Provision for optional AM tuner. Harmonic distortion: less than 10% at peak output. Bias frequency: 80,000 cycle. Wow and flutter: 0.5%. Inputs: one for radio, phono, turntable; in "record" position serves as low level for radio, TV, phono; in "stop" serves as low level for complete amplifier and playback. Output: external speaker or earphones. Dimensions: 8" h., 10 1/2" w., 14 1/2" l. Weight: 19 lbs.</p>







Manufacturer	Model and Price	Frequency Response	Data
RECORDIO CORPORATION Charlotte, Michigan	 <p>Model 592 Stereo Portable Recorder \$219.50</p>	<p>80-10,000 cycles at 7 1/2" /sec.</p>	<p>New dual-speed, stereo portable recorder that plays 7 1/2 and 3 3/4 ips. "Piano key" controls. Neon light record indicator. Record interlock to prevent accidental erase. Harmonic distortion 7% at peak output. Signal-to-noise ratio: 40 db. Bias frequency: 80,000 cycles. Two 5 x 7 speakers. Wow and flutter: 0.35% at 7 1/2 ips. Inputs: dual for radio, phone, turntable: in "play" position serve as low level for external amplifiers; in "stop" serve as low level for complete amplifier and playback; mike input. Output: external speaker or earphones. Dimensions: 10" h., 14 1/2" w., 15 1/2" d. Weight: 37 lbs.</p>
	 <p>Model 591 Monaural Portable Recorder \$149.50 Model 602 Monaural Portable Recorder \$149.50</p>	<p>as above</p>	<p>New dual-speed, monaural portable recorder that plays 7 1/2 and 3 3/4 ips. "Piano key" controls. Neon light record indicator. Record interlock to prevent accidental erase. Harmonic distortion 5% at peak output. Signal-to-noise ratio: 35 db. Bias frequency 80,000 cycles. Wow and flutter: 0.35% at 7 1/2 ips. Inputs: one for radio, phono, turntable: in "record" position serves as low level for radio, TV, phono; in "stop" serves as low level for complete amplifier and playback. Output: external speaker or earphones. Dimensions: 9 1/2" h., 14" w., 14" d. Weight: 27 lbs. Model 602 is the same as Model 591 except that it includes a mechanical tape timer.</p>
REVERE CAMERA COMPANY 320 East 21st St. Chicago 16, Ill.	 <p>Model T-202 Monaural Portable \$207.50 Model T-204 Stereo Portable \$237.50</p>	<p>40-15,000 cycles (±3 db) at 7 1/2" /sec. 40-8,000 cycles (±3 db) at 3 3/4" /sec.</p>	<p>New two speed portable recorder. Speeds: 7 1/2 and 3 3/4 ips. Two matched speakers with cross-over network. Keyboard control. Automatic safety lock and warning light to prevent accidental erase. Two-level record indicators. Index counter. Automatic stop on tape runout. Appliance power outlet. Drop-in loading head slot. Wow and flutter less than 0.3%. Signal-to-noise ratio greater than 48 db. Model T-204 is the same as Model 2-202 except for the addition of stereo playback.</p>
	 <p>Model T-700D \$225.00 Model TR-800D \$275.00</p>	<p>40-14,500 cycles (±3 db) at 7 1/2" /sec. 40-7,500 cycles (±3 db) at 3 3/4" /sec.</p>	<p>Portable dual track recorder available with either single or dual speed. Convenient keyboard control, electrical solenoid operated. Signal-to-noise ratio over 48 db on dual speed machines and 50 db on single. Distortion less than 0.65% on normal levels. Rewind and fast forward speed, 170 ips. Flutter and wow less than 0.3%. Two neon lamps for accurate level setting. Precision revolution index counter, for instant location of recording. Can be operated as a PA system. Provisions for electrical remote controls. Models TR-800D, TR-800 and TR-20 have built-in AM tuner.</p>
	<p>Model T-700 \$235.00 Model TR-800 \$287.50</p>	<p>80-8,000 cycles (±3 db) at 3 3/4" /sec.</p>	
	<p>Model T-10 \$245.00 Model TR-20 \$297.50</p>	<p>60-15,000 cycles (±3 db) at 7 1/2" /sec.</p>	
	<p>Model T-700 B&M \$245.00 Model TR-800 B&M (with radio) \$297.50 Model T-10 B&M \$255.00 Model TR-20 BM (with radio) \$307.50</p>	<p>as above</p>	<p>Table models (as above) in solid blonde oak or solid Honduras mahogany. Special pressure relief port for extended frequency range.</p>
	 <p>Model T-1100 \$169.50 Model TR-1200 (with radio) \$219.50 Model T-1120 Stereo \$199.50</p>	<p>75-12,000 cycles (±3 db) at 7 1/2" /sec. 85-7,000 cycles (±3 db) at 3 3/4" /sec.</p>	<p>Portable dual track recorder available with either single (3 3/4 ips) or dual (3 3/4-7 1/2 ips) speed. Signal-to-noise ratio over 48 db on either machine. Distortion less than 1% at normal levels. Rewind and fast forward, 170 ips. Flutter less than 0.3%. Single knob control automatically return to stop when power is turned off. Dual level indicator. Revolution index counter. Instant stop button. Two-speed knob can be changed while in any function. Rugged fiberglass case. Two speakers. Can be operated as a public address system. Weight, 28 lbs.</p>
<p>Model T-900 \$199.50 Model TR-1000 (with radio) \$224.50</p>	<p>85-7,500 cycles (±3 db) at 3 3/4" /sec.</p>		








Manufacturer	Model and Price	Frequency Response	Data
REVERE CAMERA COMPANY 320 East 21st St. Chicago 16, Ill.	 <p>Model T-11 \$284.50</p>	<p>40-16,000 cycles (± 3 db) at $7\frac{1}{2}$" /sec.</p>	<p>High fidelity $10\frac{1}{2}$" reel tape recorder for monaural record/playback, stereo playback. Has built-in lower channel preamp. Signal-to-noise, over 50 db, wow and flutter less than 0.2%. Features: One volt cathode follower pre-amplifier output. Monitor amplifier with $2\frac{1}{2}$ watt output. Adjustable 70 Kc bias-erase oscillator with indicator. Less than $\frac{1}{2}$-second start and stop. Automatic head demagnetizing. Precision revolution tape counter. Electrical remote with automatic drive roller release.</p>
	 <p>Model T-100 \$169.50 Model TR-200 (with radio) \$224.50</p>	<p>85-7,500 cycles (± 3 db) at $3\frac{3}{4}$" /sec.</p>	<p>Portable, dual-track recorder available in either $1\frac{7}{8}$ or $3\frac{3}{4}$ ips tape speed. Signal-to-noise ratio, over 45 db at either speed. Distortion, less than 1.5%. Rewind and rapid forward: single knob control. Flutter less than 0.3%. Two level recording indicator. $5" \times 7"$ Alnico V speaker. Weight, 25 lbs.</p>
	<p>Model T-500 \$179.50 Model TR-600 (with radio) \$234.50</p>	<p>100-5,000 cycles (± 3 db) at $1\frac{7}{8}$" /sec.</p>	
ROBERTS ELECTRONICS, INC. 1045 North Sycamore St. Los Angeles, Calif.	 <p>Model 191 Monaural Recorder \$325.00 Model 90-C Stereo Recorder \$349.50 Model A-901 Stereo Amplifier \$149.50</p>	<p>40-15,000 cycles (± 2 db) at $7\frac{1}{2}$" /sec. 40-9,500 cycles (± 3 db) at $3\frac{3}{4}$" sec.</p>	<p>Dual speed monaural full-track portable recorder with hysteresis synchronous one-motor drive. Locking device prevents accidental erase. Digital index counter. Calibrated VU meter. Signal-to-noise ratio: 55 db. Wow and flutter: 0.18%. Inputs: level, high impedance mike; high level line. Outputs: high impedance preamp; 8-ohm amplifier. Dimensions: $15\frac{3}{4}"$ h., $14\frac{1}{2}"$ w., 9" d. Weight: 28 lbs. Model 90-C same as above except for following. Has stereo record/playback head. Frequency response is 40-7,500 cycles (± 3 db) at $3\frac{3}{4}$ ips. Signal-to-noise ratio: 50 db. Outputs: auxiliary speaker or line; input/output jacks for connecting directly to either or both channels. Switch for by-passing Channel 2 preamp.</p>
THE STANCILOFFMAN CORP. 921 North Highland Ave. Hollywood 38, Calif.	 <p>Minitape Recorder \$494.00</p>	<p>flat to 10,000 cycles at $7\frac{1}{2}"$ /sec. flat to 5,000 cycles at $3\frac{3}{4}"$ /sec. flat to 4,000 cycles at $1\frac{7}{8}"$ /sec.</p>	<p>New version of the Minitape available at single tape speeds of $1\frac{7}{8}$, $3\frac{3}{4}$, or $7\frac{1}{2}$ ips. Operates completely enclosed. External pushbutton for start or stop. Warning light for end of tape. Takes 5" reels, records up to two hours continuously. Battery-operated. Automatic volume control over a 40 db range. Does not contain amplifier/speaker. External amplifier/speaker and other accessories available. Dimensions of the Minitape: $9" \times 12" \times 5"$. Weight, including battery: 13 lbs.</p>
	 <p>Model R5 Magnetic Tape Recorder/Reproducer \$1,600.00</p>	<p>50-15,000 cycles (± 1 db) at $15"$ /sec.</p>	<p>Professional-type, single-track recorder/reproducer. Speeds: 15 and $7\frac{1}{2}$ ips. Direct drive hysteresis motor. Torque motors with mechanical brakes. Bridging or single low impedance microphone input and 600Ω zero level output. Continuously variable high speed forward and rewind for editing and cueing. Piano key push-button relay controlled for either local or remote operation. $10\frac{1}{2}"$ reel capacity. Less than $1\frac{1}{2}\%$ total harmonic distortion at 55 db signal-to-noise. Dimensions: $19" \times 14"$ panel space, $10\frac{1}{2}"$ d. Weight: 100 lbs.</p>
	 <p>Model S6 Magnetic Film Recorder/Reproducer \$2,000.00</p>	<p>16mm 50-10,000 cycles (± 2 db) 17.5mm 50-10,500 cycles (± 2 db) at 45 FPM 50-15,000 cycles (± 2 db) at 90 FPM</p>	<p>Magnetic film recording/reproducing system available in film sizes of 16mm and $17\frac{1}{2}$mm. Operating from 24 volt battery sources, a rotary converter is available for field use. System includes two microphone input pre-amplifier mixer, Model AM6; record playback amplifier, Model ARP6; and film transport unit, Model S6. Distortion: 2%. Signal-to-noise: 50 db. Wow and flutter for 16mm and $17\frac{1}{2}$mm at 45 FPM: 0.15%; for $17\frac{1}{2}$mm at 90 FPM: 0.1%. Dimensions (each case): $14\frac{1}{2}" \times 10\frac{3}{4}" \times 8"$. Weight (3 cases): 65 lbs.</p>
	 <p>Model S7 Magnetic Film Recorder/Reproducer \$2,500.00</p>	<p>16mm 50-11,000 cycles (± 2 db) 17.5 or 35mm 50-11,000 cycles (± 2 db) at 45 FPM 50-15,000 cycles (± 2 db) at 90 FPM</p>	<p>Magnetic film recorder/reproducer designed for 16mm, $17\frac{1}{2}$mm or 35 mm. Available for rack mount or carrying case housing; equipped for synchronous and/or interlock drive. Film capacities up to 8,000'. Uses large single film sprocket with automatic cut-off in case of film breakage. Automatic rewind and cut-off with dynamic braking. High speed cueing both forward and reverse. Distortion: 1.5%. Signal-to-noise ratio for 16mm, and $17\frac{1}{2}$mm or 35 mm at 45 FPM: 50 db; for 17.5mm or 35mm at 90 FPM: 55 db. Wow and flutter: 0.1%. Dimensions: $19" \times 31\frac{1}{2}"$ panel space, $10\frac{1}{2}"$ deep. Weight in cabinet: 150 lbs.</p>

Manufacturer	Model and Price	Frequency Response	Data
THE STANCILOFFMAN CORP. 921 North Highland Ave. Hollywood 38, Calif.	 <p>Model CRM-16 16 Track Magnetic Film Recorder/Reproducer \$9,000.00</p>	<p>250-3,500 cycles (± 3 db)</p>	<p>A multi-channel communications recorder designed to record simultaneously signals from as many as 16 separate sources with playback of the recorded signals either at the time of recording or subsequently. Provides continuous recording for twenty-four hours. Distortion: 5%. Signal-to-noise: 30 db. Wow and flutter: 0.25%. Dimensions: 10" x 67" panel space, 21" deep.</p>
STEELMAN PHONOGRAPH AND RADIO CO., INC. 2-30 Anderson Ave. Mt. Vernon, N. Y.	 <p>Transitape Portable Recorder \$199.50</p>	<p>for voice recording</p>	<p>New dual-speed, dual-track, all-transistor portable recorder/player. Speeds: $3\frac{3}{4}$ and $1\frac{7}{8}$ ips. Electric motor drive with battery power. 64 minutes playing time. Battery level indicator. 4" speaker. Glow tube recording level indicator. Fast forward. Record safety interlock. Overall gain: 55 db. Wow: 0.5% at $3\frac{3}{4}$ ips. Inputs: one miniature jack, 100,000 ohms. Outputs: mike, earphone or external speaker. Dimensions: $9\frac{3}{4}$" h., $6\frac{1}{2}$" w., 3" d. Weight: $6\frac{1}{2}$ lbs.</p>
SUPERSCOPE, INC. 8520 Tujunga Avenue Sun Valley, Calif.	 <p>Sony STERECORDER Model DK-555-A (illustrated above) \$395.00 Portable carrying case \$70.00 Model PSC-212 Portable Stereo Speaker System \$189.00</p>	<p>30-18,000 cycles at $7\frac{1}{2}$" /sec. 50-15,000 cycles (± 2 db) at $7\frac{1}{2}$" /sec. 30-12,000 cycles at $3\frac{3}{4}$" /sec.</p>	<p>Complete self-contained stereophonic recording and playback unit . . . includes built-in circuit of two recording amplifiers, two playback preamplifiers and two power amplifiers. Hysteresis synchronous drive motor utilizing advanced rim drive principle on dynamically balanced flywheel. Two VU meters. Two high-impedance inputs for microphones. Two high impedance inputs for AM/FM tuners or stereo dubbing. Two low-impedance cathode follower pre-amp outputs. Two speaker outputs. Binaural/monaural headphone monitor output. Complete editing and cueing facilities. Flutter and wow less than 0.2% at $7\frac{1}{2}$ ips. Signal-to-noise ratio: 50 db per channel. Dimensions: $13\frac{1}{4}$" x $15\frac{1}{8}$" x $8\frac{3}{4}$". Model DK-555-A4 — same as Model DK-555-A plus additional $\frac{1}{4}$-track playback head for 4-track stereo tapes, \$470.00.</p>
	 <p>Sony Newscaster M4 \$395.00</p>	<p>100-6,000 cycles (± 2 db) at $7\frac{1}{2}$" /sec.</p>	<p>Single-speed, spring and battery operated portable recorder that plays at $7\frac{1}{2}$ ips. Built-in capstan strobe and viewing device for perfect speed accuracy. Variable speed adjustment control. Graduated level control for record/playback. Window lid. Signal-to-noise ratio: 55 db. Wow and flutter: 0.3%. Distortion: 2% at 3 db below maximum signal. Bias frequency: 30 kc. Inputs: mike. Outputs: headphone monitor, external amplifier. Dimensions: 15" l., 6" w., $6\frac{1}{2}$" d.</p>
TANDBERG OF AMERICA, INC. 8 Third Ave. Pelham, N. Y.	 <p>Model 5-3 Stereo \$469.50</p> <p>Model 5 \$399.50</p> <p>Model 5-2-266 \$608.50</p> <p>Model 4 \$349.50</p>	<p>30-20,000 cycles at $7\frac{1}{2}$" /sec.</p>	<p>New recorder for 4-track stereo and monaural record playback. Speeds: $7\frac{1}{2}$, $3\frac{3}{4}$ and $1\frac{7}{8}$ ips. Single lever control. Clock counter, automatic shut-off, dual recording level indicators, built-in monitor speaker, 2-power playback amplifiers, cathode follower output switch; equalization switch. Inputs: 2 each for microphone and radio, phono, or TV. Outputs: 2 for external speakers or external amplifiers. Signal-to-noise ratio: 60 db. Power output: 8 watts peak. Distortion below 1%. Dimensions: 15" x $11\frac{3}{8}$" x $6\frac{3}{8}$". Plug-in external stereo record amplifier, dimensions: $2\frac{1}{8}$" x 5" x $8\frac{3}{4}$". Luggage case is \$20 additional.</p> <p>Model 5 is a 4-track monaural recorder and stereo reproducer. Other features the same as Model 5-3. Wired for plugging in of external stereo record amplifier Model 241 (not furnished with 5). Luggage case is \$30 additional.</p> <p>Model 5-2-266 is stereo tape system consisting of Model 5-2 and 2 matched bookshelf speaker systems.</p> <p>Model 4 is a monaural 4-track recorder and stereo reproducer. Specifications are similar to Model 5. Has pre-amp output for lower channel permitting 4-track stereo playback. Built-in solenoids and plug-in foot pedal for remote control operation are \$50 additional.</p>
	<p>Model 2 \$249.50</p>	<p>30-10,000 cycles at $3\frac{3}{4}$" /sec. 30-6,500 cycles at $1\frac{7}{8}$" /sec.</p>	<p>Model 2 is a portable dual-track recorder with speeds of $1\frac{7}{8}$ and $3\frac{3}{4}$ ips. Precision laminar heads, microphone, radio-phono inputs, damped electronic eye recording indicator. Clock type counter. Goodman $5\frac{1}{2}$" x 8" speaker. Wow and flutter below .2% at $3\frac{3}{4}$ ips, .25% at $1\frac{7}{8}$ ips. Signal-to-noise ratio: 57 db at $3\frac{3}{4}$ ips. 3.5 watts output; distortion under 1%. Built-in solenoids and separate foot pedal for remote control operation are \$50 additional.</p>

Manufacturer	Model and Price	Frequency Response	Data
TAPE-ATHON 523 South Hindry Street Inglewood, Calif.	 <p>Model 375 Background Music System \$465.00 with 30-watt amplifier \$595.00</p>	<p>30-8,000 cycles at 3 3/4" /sec.</p>	<p>Monaural dual track background music system that plays at 3 3/4 and 1 7/8 ips. 10 1/2" reels. Automatic reverse. Automatic tape tension shut-off. Wow and flutter: 0.2% at 3 3/4 ips, 0.35% at 1 7/8 ips. Distortion: less than 1%. Signal-to-noise ratio: 50 db. Hum level: 90 db below rated output. Tolerance: 0.001". Inputs: two mike, one phono. Outputs: 30 watts; 4, 8, 16, 500 ohms, 70 volt line.</p>
TAPE RECORDERS ELECTRONICS, LTD. 784-788 High Rd. Tottenham, London, N-17, England	 <p>Model 444 Monaural Portable Recorder \$175.00 Model 555 Monaural Portable Recorder \$225.00</p>	<p>90-14,000 cycles (±3 db) at 15" /sec. 90-11,000 cycles (±3 db) at 7 1/2" /sec. 90-5,500 cycles (±3 db) at 3 3/4" /sec.</p>	<p>Model 444 is new triple-speed dual-track monaural recorder made in England. Speeds: 15, 7 1/2 and 3 3/4 ips. Instantaneous track change; pause control. Pushbutton controls. Electronic eye recording level indicator. Four erase and record heads. Tape tension device. Digit footage indicator. Wow and flutter: 0.1%. Signal-to-noise ratio: 45 db. High flux elliptical loudspeaker. Inputs: mike. Outputs: external speaker. Weight: 30 lbs. Model 555 is the same as Model 444 except for: three loudspeakers, full monitoring facilities, jack socket for hi-fi output. Signal-to-noise ratio: 50 db.</p>
	 <p>Model 333 "Belle" Monaural Portable Recorder \$85.00</p>	<p>90-8,500 cycles at 3 3/4" /sec.</p>	<p>New single-speed dual track monaural recorder made in England. Push-button control. Electronic eye recording level indicator. Wow and flutter: better than 0.1%. Signal-to-noise ratio: better than 45 db. Inputs: super imposition — has straight-through amplifier for pick-up, tuner or mike. Outputs: external speaker. Dimensions: 5" h., 10" w., 8" d. Weight: 11 lbs.</p>
TELECTRO INDUSTRIES CORP. 35-16 37th St. Long Island City 1, New York	 <p>Telectro Model 938 Price on Request</p>	<p>30-10,000 cycles (±2 db.) at 7 1/2" /sec.</p>	<p>Professional-type recorder for portable, rack or console mounting. Plug-in head assembly — single or dual track. Two speeds: 7 1/2 ips and 15 ips. Wow and flutter: less than 0.2% at 7 1/2 ips, less than 0.15% at 15 ips. Distortion: less than 0.2% RMS at maximum recording level. Signal-to-noise: over 55 db at both speeds. VU meter. Adjustable bias. Microphone, bridge and line inputs. Outputs: 600 ohms balanced; monitor jacks for power amplifier and headset. Playback timing accuracy: better than 0.2%.</p>
	 <p>Telectro 14" Tape Transport Price on Request</p>	<p>30-15,000 cycles (±2 db.) at 7 1/2" /sec.</p>	<p>Professional tape transport for rack or portable mounting. Hysteresis synchronous motor drive, with torque motors for supply and take-up reels. Speeds, 7 1/2" and 15" /sec. Starting time: 0.1 sec. Stopping time: 2" at 15" /sec. Timing accuracy: 0.2%. Fast forward and rewind: 1 min. for 14" reel. Wow and flutter: 0.15% at 15" /sec. Plug-in head assembly — 3 heads single or dual track. Push-button relay operation, editing knobs, automatic shut-off. Solenoid brakes.</p>
TELECTRO-SONIC CORPORATION 35-18 37th St. Long Island City 1, New York	 <p>"Stereo Master" Model 400 \$289.95 Model 5-200 Speaker \$24.00</p>	<p>50-15,000 cycles (±2 db) at 7 1/2" /sec. 50-10,000 cycles (±2 db) at 3 3/4" /sec. 50-5,000 cycles at 1 7/8" /sec.</p>	<p>New three-speed recorder for four-track, dual-track stereo record/playback and dual-track monaural record/playback. Speeds: 7 1/2, 3 3/4 and 1 7/8 ips. Pushbutton controls. Volume and tone controls for each channel. Two neon record level indicators. Wow and flutter: 0.25% at 7 1/2 ips. Signal-to-noise ratio: 45 db. Distortion: 1% at normal power output. Bias oscillator frequency: 65 kc. Speed accuracy: 2% at all speeds. Inputs: two low-level mike; two high-level radio, TV, phono. Outputs: two external speakers. Dimensions: 9 1/2" h., 18" w., 14 1/2" d. Weight: 35 lbs.</p>
	<p>"Stereo Fidelity" Model 360, \$179.95 Model AS-360 Speaker, \$59.95</p>	<p>as above</p>	<p>Model 360 is the same as Model 400 except stereo playback only, plus monaural record/playback. Preamplifier only for second channel. Outputs: external speaker jack, external amplifier jack. Weight: 30 lbs.</p>
	<p>"Stereo Fidelity" Model 333, \$219.95</p>	<p>as above</p>	<p>Model 333 is same as Model 400 except stereo playback only, plus monaural record/playback. Phono inputs for direct play-through in play position.</p>
	<p>"High Fidelity" Model 359, \$164.95</p>	<p>as above</p>	<p>Model 359 is same as Model 333 except monaural record/playback only. Can play tape through external and internal speakers simultaneously. Monitoring. Speaker 1 output cuts out internal speakers. Speaker 2 output parallels internal and external speakers.</p>
	 <p>Telectro Model 1965 \$79.95</p>	<p>Flat to about 8,500 cycles at 7 1/2" /sec.</p>	<p>Portable, dual track recorder with 3 3/4" and 7 1/2" tape speeds. Push-button speed control and single knob control for record and playback. Neon record-level indicator. Built-in 6" speaker. Patch cord available for direct recording from radio-phonograph. Weight: 15 lbs.</p>

Manufacturer	Model and Price	Frequency Response	Data
TELECTRO-SONIC CORPORATION 35-18 37th St. Long Island City 1, New York	 <p style="text-align: center;">Telectro Model 1985 \$99.95</p>	<p style="text-align: center;">100-10,000 cycles at 7 1/2" / sec.</p>	<p>Two speed monaural tape recorder. Speeds: 7 1/2 and 3 3/4 ips. Single-knob function control for Record and Play. Fast Forward-Rewind switch. Interlock prevents accidental erase. Two speakers. Output: 5 watts peak. Input: microphone, radio, TV, phono. Output: external speaker. Dimensions: 15" x 8" x 11 3/8". Weight: 24 lbs.</p>
	 <p style="text-align: center;">"Stereophonic" Model 1975 \$119.95</p> <p style="text-align: center;">Model A5-1975 Speaker-Amplifier \$29.95</p>	<p style="text-align: center;">100-12,000 cycles at 7 1/2" / sec.</p> <p style="text-align: center;">100-7,500 cycles at 3 3/4" / sec.</p>	<p>New dual-speed portable recorder for dual-track monaural record/playback and two- and four-track stereo playback. Speeds: 7 1/2 and 3 3/4 ips. Single-knob function control. Interlock prevents accidental erase. Neon record-level indicator. Wow and flutter: 0.3% at 7 1/2 ips, 0.35% at 3 3/4 ips. Signal-to-noise ratio: 40 db. Speakers: 5" woofer, 4" tweeter. Crossover. Inputs: one for mike, radio, TV, phono. Outputs: external amplifier, external speaker. Dimensions: 8" h., 15" w., 11 1/2" d.</p>
TELEFUNKEN distributed by American Elite, Inc. 48-50 34th St. Long Island City 1, New York	 <p style="text-align: center;">Telefunken Magnetophon Monophonic Portable \$349.00</p>	<p style="text-align: center;">30-20,000 cycles (±3 db) at 7 1/2" / sec.</p> <p style="text-align: center;">30-15,000 cycles (±3 db) at 3 3/4" / sec.</p>	<p>New dual speed German monophonic portable recorder. Speeds: 7 1/2 and 3 3/4 ips. Push-button controls. Three-digit counter. Automatic tape tension. Built-in splicing device. Signal-to-noise ratio: 50 db. Inputs: three, changeable by an input-selector-switch for radio, mike and phono. Outputs: for monitoring earphone and electric remote control. Dimensions: 7 1/2" h., 15 1/2" w., 11 1/2" d. Weight: 26 1/2 lbs.</p>
TOEPFER, A. C., INC. 1 Broadway New York 4, N. Y.	 <p style="text-align: center;">Harting Model HM 5 5 \$285.00</p> <p style="text-align: center;">(other models available)</p>	<p style="text-align: center;">30-16,000 cycles at 7 1/2" / sec.</p>	<p>Two speed (7 1/2 and 3 3/4 ips) stereo playback, monaural record, half track unit. Records stereo with auxiliary recording preamplifier. Basic unit has 4-watt amplifier and two playback preamplifiers. Second amplifier contained in speaker case, available as accessory. Signal-to-noise ratio: 55 db. Flutter and wow: 0.25% at 7 1/2 ips. Push-button controls. Double shoe mechanical braking.</p>
TRUVOX LTD. Truvox (U.S.A.) Ltd. 275 Seventh Ave. New York 1, New York	 <p style="text-align: center;">Mark IV Stereo Tape Deck</p> <p style="text-align: center;">TR-2106 \$199.50</p> <p style="text-align: center;">TR-2116 \$215.00</p> <p style="text-align: center;">Type "K" Record-Playback Amplifier \$109.50</p>	<p style="text-align: center;">40-15,000 cycles (±3 db) at 7 1/2" / sec.</p>	<p>Dual track, dual speed. TR-2106 with timing scale. TR-2116 with precision index counter, both fitted with stacked stereo head. With suitable electronics for monaural record/playback plus stereo playback or monaural record/playback plus stereo record/playback (half-track erase head requires raw tape). 3 shaded pole B.T.H. motors. Wow and flutter: less than 0.2% at 7 1/2 ips. Push button operation, electrical braking, high speed rewind (45 sec. for 7" reel). Automatic tape lifter. Dimensions: 14 1/4" x 12-13/16" x 5". Weight: 14 1/2 lbs.</p>
	 <p style="text-align: center;">Model T-A-B Stereo Twinset (2 units) Record/Replay \$495.00</p>	<p style="text-align: center;">as above</p>	<p>For monophonic and stereo record/playback. Unit "A" contains deck mechanism TR-2116 (described above) plus identical amplification system and pre-phased speaker in Unit "B." Amplification: 8 watt total output. Two input jacks for mono and stereo microphones, AM-FM, pickups or telephone adaptors. Outputs: external amplifiers and speaker systems. Speakers: 10" x 6" elliptical wide range with flux density of 10,000 lines. Each unit has tone controls and magic-eye level indicator, monitoring facilities. Accidental erase prevention. Dimensions, each unit: 15 3/4" w., 8 3/8" h., 14" d. Weight: Unit "A," 37 lbs. Unit "B," 22 lbs.</p>
UHER distributed by Warren Weiss, c/o Trans-World Electronics, Inc. 1650 Broadway New York 19, N. Y.	 <p style="text-align: center;">Uher Universal Monophonic Portable \$299.95</p>	<p style="text-align: center;">40-16,000 cycles at 3 3/4" / sec.</p> <p style="text-align: center;">40-8,000 cycles at 1 7/8" / sec.</p> <p style="text-align: center;">40-4,000 cycles at 15/16" / sec.</p>	<p>New triple-speed monophonic portable recorder. Speeds: 3 3/4, 1 7/8 and 15/16 ips. Hysteresis synchronous motor. Push-button controls. Record level indicator. Tape counter. Signal-to-noise ratio: 45 db. Wow and flutter: ±0.3%. Inputs: five; radio, phono, mike, remote control speaker; Akustomat (allows recorder to be operated solely on audio); mixer (allows four inputs to be mixed at once). Outputs: radio, amplifier; external speaker, earphones. Dimensions: 4 1/2" h., 12" w., 10" d. Weight: 17 lbs.</p>
VIKING OF MINNEAPOLIS 9600 Aldrich Ave., So. Minneapolis 20,	 <p style="text-align: center;">Viking Endless Play Cartridge Recorder</p> <p style="text-align: center;">35P \$60.00</p> <p style="text-align: center;">35R \$67.00</p> <p style="text-align: center;">(other models available by request)</p>	<p style="text-align: center;">40-14,000 cycles at 7 1/2" / sec.</p> <p style="text-align: center;">40-7,000 cycles at 3 3/4" / sec.</p>	<p>Portable handler for use with Fidelipac continuous loop tape cartridges holding up to 1600 feet of tape. Single lever control. Speed change control for 3 3/4 or 7 1/8 ips tape speeds. 115v, 60 cycle A-C motor (50 cycle motor available). Accommodates one or two PB60 pre-amplifiers, or PA62 combination preamp-amplifier, or RP61 record/playback amplifier: 10 1/2" x 9 1/4" x 5 1/4" mounted in case. Weight 5 lbs. Model 35P is monaural half-track playback only, mounted in case. Model 35R is monaural half-track record/playback/erase, mounted in case.</p>

Manufacturer	Model and Price	Frequency Response	Data
VIKING OF MINNEAPOLIS 9600 Aldrich Ave., So. Minneapolis 20, Minnesota	 <p>"95" SERIES Tape Deck (Prices available on request)</p>	Dependent upon type of heads supplied	Broadcast type recorder designed for professional applications. Available with any of three drive pulleys: 15 — 7½; 7½ — 3¾; or 3¾ — 1⅞ ips. Three motors: hysteresis synchronous drive; 6-pole induction torque motors. Space for six interchangeable heads allows head configurations for any tape application. Rewind and fast forward time, 70 sec., for 2400 feet tape. Instantaneous dynamic braking, less than 2 sec., from fast forward or fast rewind. Signal-to-noise ratio: 55 db or better. Wow and flutter: less than 0.1% at 15 ips, less than 0.15% at 7½ ips rms. Deck is available with matching VU Record/Playback Amplifiers, for rack mounting.
	 <p>Viking 75 Series Tape Decks</p> <p>Model FF75R-LP. Monaural Record/Playback \$ 78.50</p> <p>Model FF75RM-LP. Monaural Erase/Record/Monitor 87.00</p> <p>Model FF75SR. Monaural Erase/Record, Stereo Playback 113.00</p> <p>Model FF75ES. Stereo (In-Line) Erase/Record and Playback 113.00</p>	30-15,000 cycles (± 2 db) at 7½"/sec.	Component tape deck offered with a wide variety of interchangeable head assemblies. Features flutter-filter belt drive. Wow and flutter 0.2% rms. Front panel speed change, 3¾ and 7½ ips. Split-knob position shift for record/play, fast forward and rewind. For playback, requires preamplifier with low level tape input and NAB equalization. For recording, requires Viking RP61 or equivalent matched record/playback amplifier. (Two RP61 amplifiers and stereo deck serve for stereo recording.) All Viking decks may be modified through addition of heads and brackets to provide same functions as other models listed. Decks accommodate three heads and are also available with the quarter track head configuration. 12⅛" x 8¾" x 5" deep. 115v, 60 cycles A-C. (50 cycle cycle models also available.) Weight: 11 lbs.
	 <p>Viking 85 Series Tape Decks</p> <p>Model 85P. Monaural Playback \$ 99.00</p> <p>Model 85R. Monaural Record/Playback 119.00</p> <p>Model 85RQ. Monaural Erase/Record, Stereo Playback 147.50</p> <p>Model 85SR. Monaural Erase/Record, Stereo Playback 143.00</p> <p>Model 85SRQ. Monaural Erase/Record, Four-Channel Stereo Playback 167.00</p> <p>Model 85ES. Monaural-Stereo Erase/Record/Playback 147.00</p> <p>Model 85ESQ. Monaural Four-Channel Stereo Erase/Record/Playback 172.00</p>	30-15,000 cycles (± 2 db) at 7½"/sec.	Series of tape decks featuring flutter-filter belt drive. Two motors providing fast forward and rewind. Front panel speed change, 3¾ and 7½ ips. Dual rotary control. Inner ring selects "fast forward" and "fast rewind." Outer knob selects normal forward, stop and cue (edit). Footage counter. Space for five heads. Pressure pads provided at three head positions. Tape-lifters remove tape from heads except in play and "cue" positions. Short-gap record/playback heads. Ultra-short gap quarter-track in-line head available. See "Q" models. Signal-to-noise ratio: 50 db. Wow and flutter: 0.2% rms. Use with RP61 record/playback amplifiers for recording. Use PB60 preamplifier or amplifier having equivalent (NAB) tape equalization. Tapes recorded on Viking may be played back on any machine having standard NAB equalization. 110v, 60 cycles. (50 cycle models available.) (All 85 Series Viking decks are flexible in that heads may be added to provide special functions such as sound-on-sound recording, stereo monitoring, language teaching, etc.) Dimensions: 9½" x 13" x 5". Weight: 12 lbs.
	<p>RP61 Record/Playback Amplifier \$ 77.50</p> <p>RP61VU Record/Playback Amplifier 119.00</p> <p>PB60 Playback Preamplifier 29.50</p>		RP61 record/playback amplifier matches all Series 75 and 85 tape decks above. PP61VU is the same as the RP61 but has a VU meter instead of "Magic eye."
	V-M CORPORATION Benton Harbor, Michigan	 <p>"Tape-O-Matic" Stereo Portable Recorder \$225.00</p> <p>Model 166 Amplifier-Speaker \$75.00</p>	40-15,000 cycles (± 5 db) at 7½"/sec.
WEBCOR, INC. 5610 West Bloomingdale Ave., Chicago 39, Ill.	 <p>Royalite Model 2008 Stereo Portable \$244.50</p> <p>Royalite Model 2001 Monophonic Portable \$194.50</p>	50-12,000 cycles at 7½"/sec. 70-7,000 cycles at 3¾"/sec.	Model 2008 is a new triple-speed portable recorder for dual- or four-track stereo playback and mono record/playback. Speeds: 7½, 3¾ and 1⅞ ips. Knob controls. Editing key. Record safety lock. Cathode ray recording level indicator. Monitor control. Digit tape counter. Signal-to-noise ratio: 45 db. Wow and flutter: 0.4%. Two speakers. Input: one. Outputs: external amplifier, speaker; stereo speaker. Dimensions: 8" h., 14½" w., 14½" d. Weight: 23 lbs. Model 2001 is monaural only version of above. Same specifications, but weighs 20 lbs.
	 <p>Regent Model 2005 Monophonic Portable \$164.50</p> <p>Model 2006 Monophonic Portable, \$164.50</p>	as above	New triple speed monophonic recorder with the same specifications as Model 2001 above, except for single speaker. Dimensions: 9" h., 15" w., 16½" d. Weight: 28 lbs. Model 2006 is the same as 2005 except for remote control jack for starting and stopping recorder in record or playback with mike.

Manufacturer	Model and Price	Frequency Response	Data
WEBSTER ELECTRIC — ELECTRONICS DIVISION Racine, Wisconsin	 <p>"Ekotape" Model 300W Stereo Table Recorder System \$699.00</p>	30-15,000 cycles at 7 1/2" / sec.	New dual-speed table recorder system for monophonic, two- and four-channel stereo record/playback. Speeds: 7 1/2 and 3 3/4 ips. Central control selects tape direction. Second control for tape speed and on/off. Odometer type program selection finder. Automatic stop. Wow and flutter: 0.2% at 7 1/2 ips., 0.3% at 3 3/4 ips. Signal-to-noise ratio: 45 db. Inputs: six — mike, radio/phono, record/playback head — for each channel. Outputs: four — amplifier, erase head — for each channel. Deck and preamp only: \$439. Speakers, crossover network and power amplifier: \$149.
	 <p>"Ekotape" Model 320 \$279.50</p>	30-15,000 cycles at 7 1/2" / sec.	Portable, two-speed, dual-track recorder with monomatic single-knob control. Speeds: 7 1/2 and 3 3/4 ips. Meter type recording level indicator. Power output, 8 watts max. Distortion, 1.6%. Total harmonic at 6 watts, 400 cycles. Signal-to-noise, 43 db. Wow and flutter, 0.2% max. at 7 1/2" / sec. Odometer type selection finder. Fast forward and rewind ratio, 15 to 1. Two built-in speakers: 6" x 9" oval PM and 3" round. External speaker jack and output for preamp. Inputs: mike and radio-phono jack. Dimensions: 11" x 13 1/2" x 15". Weight: 35 lbs.
	 <p>"Ekotape" Stereophonic Model 350 \$455.50</p>	as above	Similar to Model 320 above, except designed for monaural record/playback and stereo playback with stacked heads. Includes two amplifiers for stereo playback — one for half-track monaural record/playback. Each amplifier has 12 watts maximum output. Weight: 44 lbs. Matching stereo speaker cabinet, including 6" x 9" oval and 3" round speaker, available at \$59.50.
	 <p>"Ekotape" Model 310 A-V Control Center \$399.50</p>	as above	Audio-visual control center for any automatic slide or strip film projector. Eliminates need for audible signal. Has two recording heads that record over full width of tape. One records from mike or radio. The other records 1000-cycle signal that operates an automatic projector. Speeds: 7 1/2 and 3 3/4 ips. Other specs same as Model 320 above except for following: output, 12 watts; no preamp output jack; microphone is accessory.
	 <p>"Ekotape" Stereo Decks Model 340 \$118.00 Model 342 \$138.00 Model 360 \$124.00 Model 362 \$144.00</p>	as above	Series of tape decks for stereo record/playback and monophonic record/playback. Model 340 is for record and playback of monophonic or two-channel stereo. Central control selects tape direction. Speeds: 7 1/2 and 3 3/4 ips. Second control for tape speed and on/off. Pause control button. Wow and flutter: 0.2% at 7 1/2 ips., 0.3% at 3 3/4 ips. Dimensions: 7 1/2" h., 12 3/4" w., 9" d. Model 342 is same as Model 340, but includes program selection finder and automatic stop. Model 360 is same as Model 340, but with four-channel record/playback head. Model 362 is same as Model 342, but with four-channel record/playback head. Stereo playback preamp for decks is \$70. Stereo record/playback preamp is \$199.
WOLLENSAK OPTICAL COMPANY 320 E. 21st St. Chicago 16, Ill.	 <p>Model T-1500 \$199.50 Stereo Model T-1515 \$229.50</p>	40-15,000 cycles (± 3 db) at 7 1/2" / sec. 40-8,000 cycles (± 3 db) at 3 3/4" / sec.	Portable, two-speed, dual-track recorder with interlocked keyboard control that can be operated in any sequence. Flutter and wow: less than 0.3%. Signal-to-noise: 48 db. Overall distortion less than 0.8%. Fast forward and rewind, 150" / sec. Dual level record indicator, revolution index counter. Automatic drive roller release when power switch is off. Pre-amp output for hi-fi system. Extension speaker jack. Built-in automatic head demagnetization. Remote foot control available. Weight: 18 lbs. Stereo model is same as above with built-in lower channel pre-amp added.
	 <p>Model T-1600 \$249.50 Stereo Model T-1616 \$279.50</p>	40-15,000 cycles (± 3 db) at 7 1/2 ips 40-8,000 cycles (± 3 db) at 3 3/4 ips	Automatic, dual track portable recorder. Two speeds: 7 1/2 and 3 3/4 ips. Stops, rewinds, replays and turns off automatically, by means of electrical tabs placed on the tape. Push-to-talk button on mike. Back space bar reverses tape and immediately replays. Keyboard functions electronically. Instant stop lever. Operates as 10 watt PA system. Remote electrical typewriter control available on secretarial models. Other specs same as Model T-1500 above. Stereo Model is the same as above with built-in lower channel pre-amp. Can play two and four track tapes. Frequency response goes 2000 cycles higher at upper level at both speeds.

All specifications and performance data on tape recorders listed in this directory are based on information supplied by the manufacturer. Performance data are generally based on average values and individual machines sometimes vary widely from published figures, depending on the amount of quality control exercised in manufacture. Space limitations do not permit listing of all features of each recorder. Consult manufacturer or local dealer for further information. Prices subject to change without notice. Consult manufacturer or local dealer for exact price, as some prices are list and others not.

The Fog Has Lifted

(Continued from page 2)

nates being compared. Since it is the highest in quality, it is natural that it is also the highest in cost. Nevertheless, it is a very convenient standard to compare the other methods with because it is so widely used and because it was extraordinarily successful in introducing stereo to the public. We know that it is easily possible to obtain uniform response up to 15 kc and that a signal to noise ratio of the order of 50 db is not too difficult to secure. These are the cornerstones of the quality which we recognize. We know that this method is good; the only question is whether we can find some other method that may be a happier compromise for some users, if not for others or all.

Four-track 3 3/4 ips in small magazine

This method generated a great deal of fanfare a year and a half ago, based particularly on some laboratory results; these tapes have been in regular production (for the last several months) since certain errors in the magazine design were remedied. This is the cheapest so far as cost of tape is concerned, but the saving is reduced considerably by the cost of the magazine itself and the cost of loading the tape into the magazines. We would naturally expect the lowest cost to be accompanied by sacrifices in quality, and this is indeed true: signal to noise ratio, distortion and practical frequency response are the poorest of the three methods. When we say poorest, we do not suggest that they are necessarily unacceptable results, but merely that they may prove satisfactory to some people and unsatisfactory to others. Let's examine the reason for the poorer signal to noise ratio first, since this is the easiest.

First, in order to get four tracks on a tape where two tracks used to go, it is necessary to use narrower magnetic tracks, and in fact, the track width has been reduced to about half of that used on a two-track system. This inevitably results in a signal to noise loss of 3 db. The reduction in tape speed produces another inherent loss in signal to noise, again 3 db. We then have the question of the much shorter length of the magnetic gap, which allows the head to pick up correspondingly less energy from the tape. This is not as easy to estimate as the previously mentioned losses since the effective length of the gap in a magnetic head is always longer than the physical length, however, we may very well accept a 3 db deterioration as the probable minimum. Finally, the "Elmore Distortion Effect" may force a reduction in recording level of perhaps somewhere between 6 and 15 db; the signal to noise ratio is then impaired to precisely the same degree as the record level is reduced. I have taken the liberty of naming a new distortion effect the Elmore Effect since it was first brought to my attention by Austin Elmore. This is a reverse intermodulation effect, resulting from the erasing action of the signal at abnormally short wave lengths and high recording levels. How much loss is produced depends on the quality standards of the user, since some users might insist on no Elmore intermodulation effect at all (they can best secure this by buying tapes recorded at 7 1/2 ips) or alternately, they may be willing to tolerate a varying amount of such intermodulation (in which case correspondingly less reduction in record level becomes necessary).

It is true that a certain amount of the loss in signal to noise ratio can be regained by the use of special head design and by improvements in duplicating technique, but we are inclined to believe that these would total no more than 3 db.

It should be noted that relatively few selections have been duplicated at 3 3/4 ips four-track at the time that this article is being written, and so engineers lack adequate statistical data on the problem. There is no doubt that the offensiveness of the Elmore Effect will depend a great deal on the particular musical selection; thus a number which is rich in high frequency effects, loud trumpets, percussion, etc. will call for a greater reduction in level than a string quartet. On the other hand, producing one tape with a duplicated level 15 db lower than that of another would arouse general public complaint, and we believe that this would force a somewhat lower recording level in general, to minimize the contrast between different numbers. The fact that the effect depends only on the presence of strong high frequencies is probably why it was not discovered early in the development of the four-track 3 3/4 ips system.

With this discussion as a preface, let's see what possible alternates offer themselves to us for consumer requirements:

A. For a system that will cope with a substantial proportion of the recorded repertoire we can envision the use of a fairly high recorded level, producing some considerable amount of Elmore intermodulation on the wrong type of musical selections or orchestrations. This would produce about 6 to 8 db poorer signal to noise ratio than the old two-track 7 1/2 ips system, and the overall result would undoubtedly be salable to the nonquality-sensitive public.

B. In this alternate the system record level would be reduced enough to minimize intermodulation for most, but not all, music, leading to a loss of signal to noise ratio of 12 to 15 db. The distortion would be then reduced to a level suitable for many quality-conscious customers, but the loss in signal to noise ratio might very well make the system unsalable to them.

C. If the record level is reduced sufficiently, then the system will cope with all music in the repertoire without excessive distortion, but the loss in signal to noise ratio will be 17 to 20 db, which guarantees that it is not salable.

We also cannot ignore the fact that the frequency response of the system would be abnormally sensitive to the cleanliness of the head, due to the abnormal shortness of wave length recorded on the tape; this means that in the actual home the machine would never have the frequency range which it showed in the laboratory, perhaps by a factor of two to one.

All of this discussion seems to characterize the 3 3/4 ips four-track system as a low cost system, competitive with disc, but happily free from the latter's ticks and pops. Nevertheless, the system would possess serious and not as yet fully measured distortion and noise limitations. These would seem to impair its interest to the audiophile market.

Four-track 7 1/2 ips tape on reels

Many engineers have long felt that this is the ideal combination of economy and quality. This system would be half as expensive as two-track recording in terms of tape, and there would be no magazine cost and no magazine loading problem. Result would be a cost half that of two-track tape and slightly above that of the disc. Happily, there would be very little quality loss since the 3 db loss due to reduction in track width could be compensated for by a combination of head design and improved duplicating techniques. Virtually none of the losses in signal to noise ratio previously mentioned would apply since they are tied to the abnormally reduced tape speed. There would be no Elmore Effect distortion. This adds up to slightly more cost than the 3 3/4 ips four-track magazine, but with substantially all of the quality of the original 7 1/2 ips two-track tape.

Accordingly, we believe that the very large quality market which bought two-track tapes will be interested in this version of the four-track tape, and the substantial economy will induce many to change. Conversion kits will help convert their machines inexpensively.

Some notes on magazines

Convenience is a rather broad term and often misused; thus the magazine for tape is often touted as extremely convenient. This is only true as regards ease of threading. It is certainly not true for the user who wants to do a bit of editing. Then the magazine becomes more awkward.

Magazines may be new in the audio field but they are very old in the home motion picture photography field. Five years ago a photography periodical published a directory of the 8 mm movie cameras available in the U. S. Of the 50 models shown, 26 were magazine type. In the same publisher's current home movie annual, a similar listing shows 101 models available, of which 23 are magazine-load machines. One well-known camera manufacturer has dropped magazine-load cameras entirely from his line due to lack of interest. A second manufacturer estimates the industry ratio 25:1 in favor of roll type movie cameras. Dealers report that roll movie film enormously outsells the magazine type and that the trend is overwhelmingly to the roll. This is a bit surprising because a home movie camera is much harder to thread than a home tape recorder. In fact, if home movie cameras were as easy to thread as the home tape recorder, the film magazine might never have been born. These tend to suggest that the magazine is not likely to overwhelm the world.

As a matter of fact, the magazine situation is a little more complicated than it seems. We actually have two magazines being offered at the moment. One of them is a small magazine which will hold only a limited footage of tape (on hubs) and therefore is irrevocably bound to use at 3 3/4 ips; it is this which has just reached the market. Since this magazine uses hubs, the tape can be shuttled backward as well as forward to find a particular selection part way through the length. Another type of magazine, using an endless loop of tape, has recently acquired new sponsorship. This construction is available in a series of interchangeable different sizes, and in fact the largest size will hold a full 1200-foot length of tape, which permits its use at 7 1/2 ips as well as at slower speeds. It is not necessary to use the large magazine for a shorter length of tape. For home applications this design has one unfortunate limitation: because of the endless loop arrangement the tape motion direction cannot be reversed so that it is impossible to use a reverse motion to find a particular selection, it is necessary to progress continuously through the length until the selection in question is reached. Nevertheless, this endless loop design has shown considerable advantage for restaurant entertainment equipment, and from this very broad application may well spread into the home also for background music. In view of what has been said in previous paragraphs, this magazine competes more with other designs rather than with tape on reels.

Conclusion

The fog of uncertainty which has hung over the tape field for the last year or so has finally lifted and we can clearly see that each of the various proposals has its own natural market in which it should do quite satisfactorily. In other than its intended market the going should be hard. This fall should see a new burst of activity in the home tape field with thousands of selections available in new recorded forms, and there will be machines to play them.

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