Audio®

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ANNUAL EQUIPMENT DIRECTORY

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DR-750

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October 1978 Vol. 62, No. 10

"Successor to RADIO, Est. 1917"

Feature Article

Equipment Directory

Audio In General

About The Cover: A veritable cornucopia of equipment this year, as the Directory expands to more than 2400 products, a jump of one quarter over last year.

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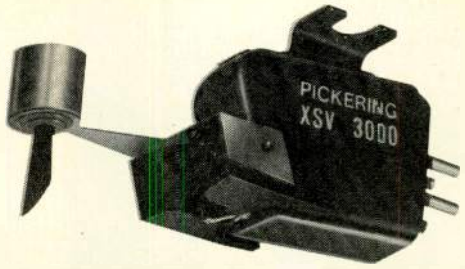


The XSV/3000 is the source of perfection in stereo sound!

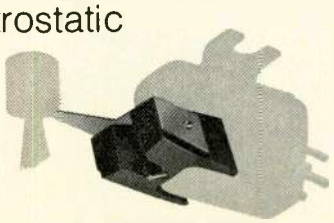
Four big features ... all Pickering innovations over the past 20 years ... have made it happen.

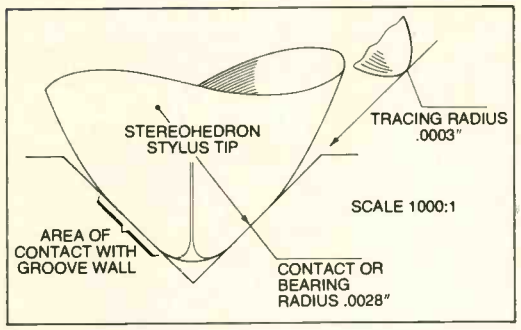
1976: Stereohedron® This patented Stylus tip assures super traceAbility™, and its larger bearing radius offers the least record wear and longest stylus life so far achievable.

1975: High Energy Rare Earth Magnet
Another Pickering innovation, enabling complete miniaturization of the stylus assembly and tip mass through utilization of this type of magnet.

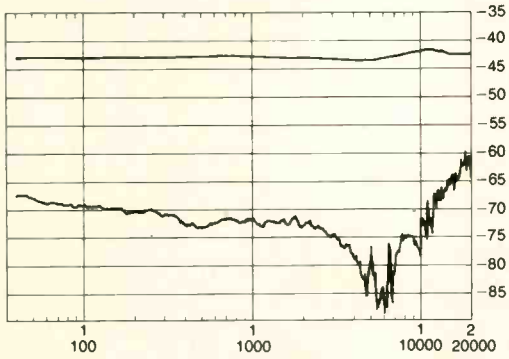
1968: Dustamatic® Brush
This Pickering patented invention dynamically stabilizes the cartridge-arm system by damping low frequency resonance. It improves low frequency tracking while playing irregular or warped records. Best of all, it provides record protection by cleaning in front of the stylus.

1959: Record Static Neutralizer
The patented V-Guard Record Static Neutralizer has been a feature of all Pickering cartridges since 1959. It eliminates electrostatic dust attraction at the stylus and discharges record static harmlessly into the grounded playback system.

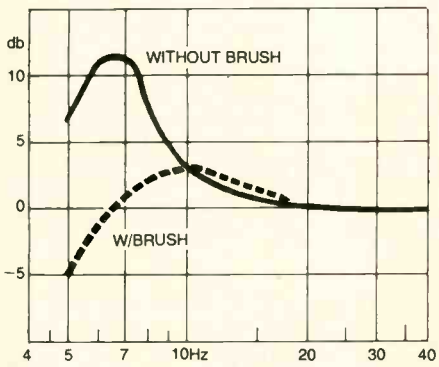




1. *Technical drawing of the Stereohedron shape.*



2. *Typical frequency response and channel separation curves of the XSV/3000.*



3. *Damping effect on tonearm resonance.*

4. *V-Guard Static Neutralizer, "Where the Stylus meets the groove."*

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Continental European Representative: V.B. Sanders, International Publishers Advertising Service, Raadhuisstraat 24, P.O. Box 25, Graft-De Ryp, Holland. Telephone, 02997-1303.
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World Library Congress Number ISSN 0004-752X
Dewey Decimel Number 621.381 or 778.5

Editorial Contributions are welcomed but should be accompanied by return postage. Submissions will be handled with reasonable care, but the publisher assumes no responsibility for return or safety of manuscripts, photographs, or artwork.
Printed in U.S.A. at Colombus, Ohio. Second-class postage paid at Philadelphia, PA and additional mailing offices. **USPS Number 036-960**
U.S. Subscription Rates: 1 year $12.00, 2 years $22.00, 3 years $30.00.
Other Countries: 1 year $18.00, 2 years $34.00, 3 years $49.00.
Back issues, when available, $5.00 postpaid.
Audio Publishing, Editorial, Subscription, and Advertising Production offices, North American Building, 401 No. Broad St., Philadelphia, PA 19108.
Telephone: (215) 574-9600.
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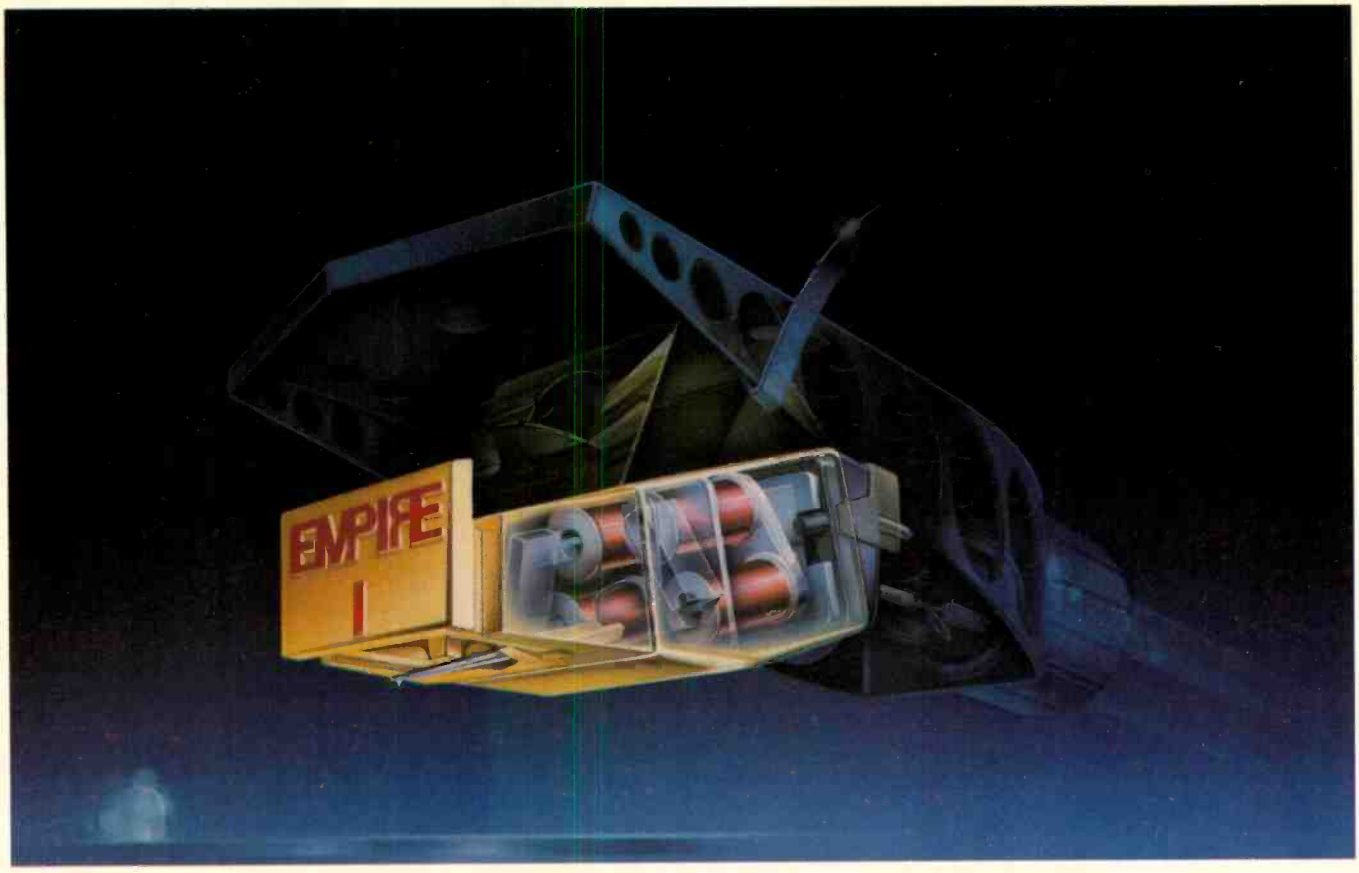

No matter what system you own there's an Empire Phono Cartridge designed to attain optimum performance.

Detail, brilliance, depth.
This is the promise of each Empire Phono Cartridge and although there are many Empire models, each designed to meet specific turntable performance characteristics, every Empire cartridge contains the following features:

Features	Details	Benefits
Unique Fixed Unidirectional Three-Magnet Structure	Every Empire cartridge uses 3 high energy ferrite magnets in the cartridge body to provide a high level of unidirectional flux.	Higher and more linear output signal, immunity to bi-directional magnetic distortion, and improved hum and microphonic rejection.
Molded Four-Pole Magnetic Assembly	Every Empire cartridge employs a four-pole magnetic assembly that is precisely aligned and locked in place by a high pressure injection molding process... providing a uniform and orthagonal magnetic field.	Improved crosstalk and reduced distortion that is insensitive to tracking force.
Tubular moving Iron Design	By using a tubular high magnetic saturation iron armature we obtain an optimum ratio of output level to effective tip mass.	Improved tracking ability and widened frequency response.
Four Coil Hum Bucking Assembly Plus Electromagnetic Shielding	Using custom designed computer controlled machines, a precision drawn copper wire (thinner than human hair and longer than a football field) is wound onto a symmetrical 4 bobbin structure. By using 2 coils per channel a symmetrical electrical circuit is formed.	Improved rejection of hum and stray noise fields.
Aluminum Alloy Cantilever	The Empire computer designed tubular cantilever provides optimum coupling of the diamond tip to the moving magnetic system resulting in minimum effective stylus tip mass.	Superb low level tracking, reduced tracking distortion... plus enhanced wideband separation characteristics.
Precision Ground Oriented Diamond Tips	Empire diamonds are precision ground, polished and inspected in house, using sophisticated television cameras and powerful microscopes to ensure accurate angular orientation.	Reduced tracing phase distortion, together with reduced wear of both the record and the diamond tip.

For the full story on Empire cartridges we suggest you "test-listen" to one at your local Empire dealer, and for information on our full line of cartridges, write for our brochure "How to Get the Most Out of Your Records": **Empire Scientific Corp.**, Garden City, N.Y. 11530

EMPIRE

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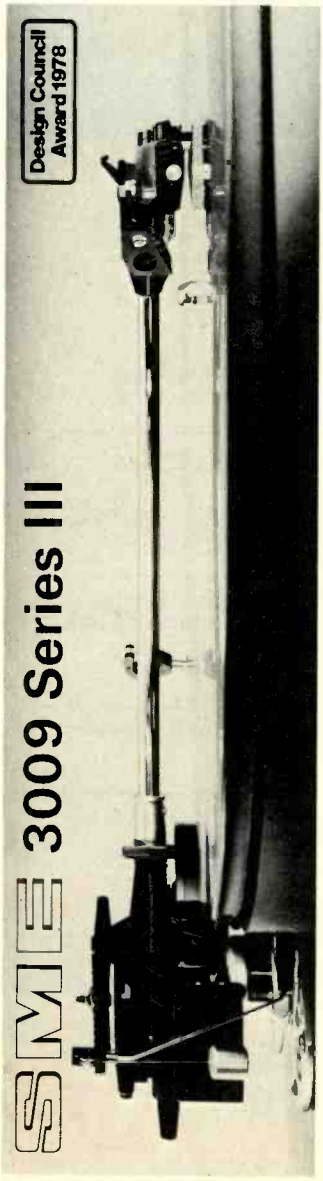
"Our technical test of the Series III tone-arm shows without any doubt that SME has succeeded in developing and producing a pick-up arm which enables high as well as low compliance cartridges to do their best."

"The effective mass of the arm is so low that the resonance frequency with a soft (high compliance) pick-up can be placed above the critical area below 5Hz. and the damping of resonance is so good that a stiff (low compliance) cartridge cannot produce resonances that can be heard or measured."

"The SME Series III is the first tone-arm in our experience where the choice of pick-up is not limited by excessive tone-arm mass or insufficient damping of resonances."

The above comments were made by Knud Søndergaard concluding a detailed technical review of the Series III precision pick-up arm in the December 'ny elektronik' (Denmark).



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Audioclinic

Joseph Giovanelli

Record Production

Q. I require information about the production of phonograph records. This information will be useful for a physics paper I am preparing. — John A. Cihak, Champaign, Ill.

A. The first step required to produce a phonograph record is to produce a "master" disc, which begins life as an aluminum base coated with lacquer to a thickness of about six mils and is mirror smooth. Grooves containing the program information are cut into the surface of this blank. The disc is then placed in a vacuum spray booth where a thin layer of silver, ordinarily no greater than the molecular thickness of the silver, is applied to the recorded surface to provide a conductive surface making it possible to electroplate nickel onto the surface. This plating is then stripped from the lacquer, and when this is carefully done, we have the original lacquer in good condition. We also have a metal part which is the negative of the grooves of the original lacquer from which it was stripped. This negative, or metal "master" is then plated. The new part is stripped from the metal "master" and is positive just like the original lacquer. This new metal positive is called the "mother." The "mother" is plated, which results in another negative called the "stamper" which is used to produce the finished disc. In the event that this "stamper" wears out or is damaged, a new stamper can be plated from the "mother."

Pressing a record is really a molding operation, the metal stampers go into the press just like the grids of a waffle iron. Next, preheated, hamburger-shaped, PVC material is placed into the press with the record labels already attached. The press closes and steam heats the two stampers to between 300 and 325 degrees F, at a pressure of about 2,000 lbs. per sq. in., which is held for about 30 seconds for a 12-in. disc. The press remains closed while the steam is replaced with cold water, and the disc is cooled down to about 120°F as the press opens. The edges are then trimmed from the disc. The PVC material doesn't like to be heated more than once, so the recycled material is not, usually, used for album production.

Many people complain about noisy pressings, but when we recognize that a deviation in smoothness of just one micron can be heard as a click or pop, we are actually dealing with a remarkable product. (See *Audio*, June, 1976, pg. 38.)

FM Frequency Accuracy

Q. I read with interest the letter of Dr. Leonard Drasin in your "Audioclinic" column, September, 1976, Audio Magazine.

In my contact with the general public and audiophiles in particular, I find certain misconceptions about broadcast regulations to be quite widespread. According to the FCC Rules and Regulations No. 73.269, FM transmitters must not operate more than 2,000 cycles away from the center frequency. A theoretical station operation on 100 mHz must, therefore, maintain a frequency accuracy of 0.002 percent, certainly a degree of accuracy far exceeding that of all but the most sophisticated receiving equipment.

Broadcast transmitter frequency is determined by crystal controlled oscillators which are temperature controlled, that is to say, the crystal operates in an "oven" which maintains it at a constant temperature at all times to provide greater accuracy.

Furthermore, stations are required to maintain a constant check of their operating frequency by means of a sophisticated monitoring unit. To insure even more accuracy, this frequency must be checked periodically with an outside frequency measurement service. Failure to follow these regulations can result in monetary fines by the FCC.

The popular conception that stations may adjust their frequency to suit their whims is totally untrue. Despite the rigid FCC specifications of 2,000 cycles deviation maximum, it has been my observation that, in actual practice, FM transmitters generally operate to an even greater accuracy, with deviations no more than 400 to 500 cycles under normal conditions. — Jerry Starr, Production Manager, WHOT AM/FM, Youngstown, Ohio.

If you have a problem or question on audio, write to Mr. Joseph Giovanelli, at AUDIO, 401 North Broad Street, Philadelphia, Pa. 19108. All letters are answered. Please enclose a stamped, self-addressed envelope.

Technics

The performance of separates. That's something most people want but, up until now, couldn't afford. Now you can, with the SU-7100 integrated amp and the ST-7300 tuner.

The SU-7100 is quite a lot of integrated amp, but then we put quite a lot into it. Starting with sophisticated circuitry that's as low on noise as it is on distortion. Like a high-gain Darlington circuit to maintain low distortion levels. Like 35 watts per channel, minimum RMS into 8 ohms from 20 Hz to 20 kHz with no more than 0.1% total harmonic distortion. That's the kind of power you need to get the dynamic range you want out of your music.

It may seem complicated, but it sounds beautiful. So do pair-packed dual transistors, especially since they help keep THD down to a mere 0.1% at full-rated power, and 0.03% at half-rated power.

When it comes to your records you want to hear music ...not noise. That's why the SU-7100 has a pre-amp with a two-stage, direct-coupled, low-noise phono equalizer that yields a very impressive and very quiet 78 dB S/N ratio (2.5 mV, IHF A). Or 90 dB S/N (10 mV, IHF A).

The SU-7100 also has low-distortion main tone controls. Two-way tape dubbing. A 41-step master volume control. A or B speaker selection. And more.

That's what you get with the SU-7100 amp. What you get with our ST-7300 tuner is just as impressive. Starting with a test-signal generator for optimum FM recording level settings. And like our expensive tuners, the ST-7300 gives you flat group delay filters for high selectivity and low phase distortion. Phase Locked Loop IC's for low distortion and wide, stable stereo separation. And zero-center and signal-strength tuning meters.

The SU-7100 and ST-7300. They're your way of turning one modest budget into two separate components.

Cabinetry is simulated wood.

Now you can step up to the performance of separates without overstepping your budget.

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How to improve

One of the most frequently-asked questions in high fidelity these days is how well a particular tonearm and cartridge work together. Because tonearm/cartridge compatibility is increasingly recognized as vital to accurate record reproduction.

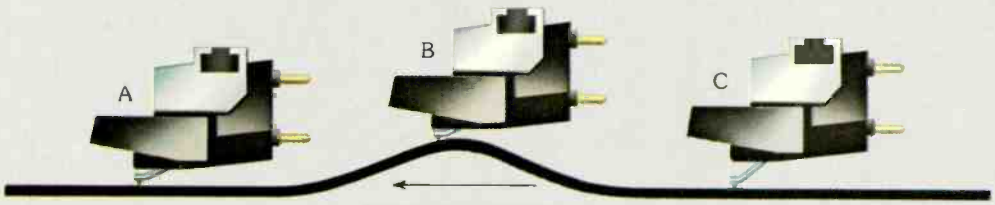

Figure 1. Record warp activates tonearm/cartridge resonance, undesirably reducing and increasing stylus force. (A) Normal position — normal tracking force. (B) Compressed position — increased tracking force. (C) Extended position — decreased tracking force. Record direction is right to left.

At Micro-Acoustics, we have a unique solution: *the first phono cartridge specifically designed to help any tonearm work at its best* — whether that tonearm is straight or S-shaped, low- or high-mass, with low to high cable capacity. We call it the 2002-e . . . and it offers significant advantages over conventional cartridge designs.

Tonearm/cartridge resonance: a critical problem

Record warp, present to some degree on nearly every disc you play, causes the cartridge to move up and down about the stylus (see Figure 1). This low-frequency up-and-down oscillation — called *tonearm/cartridge resonance* — can be considerable, since the amplitude of record warp can actually be *twelve to fifty times* that of the loudest musical program material.

During the upward motion of the tonearm/cartridge combination, the stylus tends to be pulled out of the groove, reducing tracking force to a fraction of the tonearm setting. When this lower tracking force coincides with a loud musical passage, the cartridge mistracks, causing audible distortion and sometimes, groove jumping.

There is a common misconception that tonearm/cartridge resonance can be "matched" out of existence. The fact is, it cannot: it must be *controlled* to allow the cartridge to function properly.

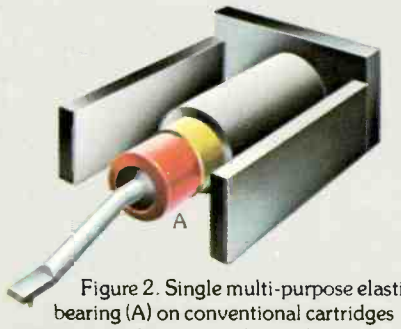

Figure 2. Single multi-purpose elastic bearing (A) on conventional cartridges compromises damping and compliance.

Compromised vs. optimized damping

The most important factor in controlling this tonearm/cartridge oscillation

© 1978, Micro-Acoustics Corporation

your tonearm.

is *damping*—a mechanical counterforce precisely applied to suppress resonance. Because the tonearm must be absolutely free to move, virtually all tonearms are totally undamped devices. *So damping must be supplied by the cartridge.*

In conventional cartridges, damping of tonearm/cartridge resonance must be a compromise.

Because it is provided by a *single*, multi-purpose elastic bearing (see Figure 2) which must trade off maximum compliance for tracking ability (less damping) with maximum suppression of high-frequency stylus resonance and tonearm/cartridge low-frequency resonance (more damping).

In contrast to this, Micro-Acoustics' 2002-e (Figure 3) has a sophisticated *multiple* damping system utilizing *eight* specialized dampers. One pair of these dampers are low-frequency warp stabilizers, *specifically designed* to control tonearm/cartridge resonance. This is the *first* effective warp-control system because it suppresses oscillation *at the cantilever pivot*, where it occurs—rather than ahead of the stylus. The remaining six dampers are optimized for stylus high-frequency damping and other factors, while our exclusive dual-bearing system *independently* optimizes tracking ability. By designing *separate* systems for damping and compliance within the 2002-e, we can precisely control tonearm/cartridge resonance *without compromising any other aspect of cartridge performance.*

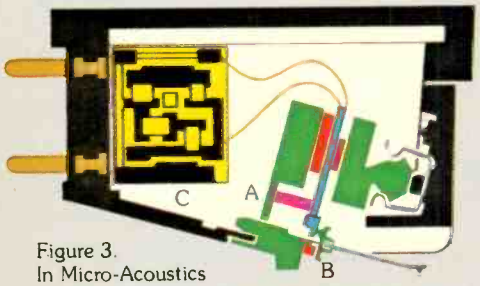

Figure 3. In Micro-Acoustics 2002-e, one pair of dampers—low-frequency warp stabilizers (A)—control tonearm/cartridge resonance. Other dampers optimize other characteristics. Dual bearings (B) provide maximum tracking ability. Microcircuit (C) optimizes cartridge output to any cable capacitance. (Only one channel shown.)

Figure 4. 2002-e is less than half the weight of many other quality cartridges.

High vs. low cartridge body weight

Regardless of the tonearm and damping system utilized, the lower the cartridge body weight, the greater the tonearm's ability to track warped records. This is because lower tonearm/cartridge weight allows damping to more effectively counteract tonearm/cartridge resonance.

At four grams, the Micro-Acoustics 2002-e is half the weight of many other high-quality cartridges, yielding *two or more times* the effective damping (see Figure 4).

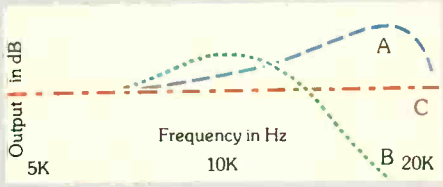

Figure 5. With conventional cartridges (A), low cable capacity causes response to peak; medium-to-high capacity (B) causes high-frequency response to roll off. Response of 2002-e (C) is unaffected.

Cable capacitance capability

Another important limitation of conventional cartridges is their interaction with cable capacity, which causes a deterioration in high-frequency response and transient ability (see Figure 5). In contrast to this, the 2002-e has a passive microcircuit which automatically matches the cartridge output to *any* tonearm's cable capacity, providing linear high-frequency response and transient accuracy.

Tonearm optimization made easy

If there were no such thing as tonearm/cartridge resonance or cable capacity, any cartridge would match any tonearm. But in the real world, where these problems exist, the only way to get optimum performance from your tonearm is the Micro-Acoustics 2002-e. Or our other direct-coupled cartridges: the moderately-priced 282-e and top-of-the-line 530-mp. All of them offer advantages you can hear today, at your Micro-Acoustics dealer.

Micro-Acoustics Corporation, 8 Westchester Plaza, Elmsford, NY 10523. 914-592-7627. In Canada H. Roy Gray Ltd., Markham, Ont.

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When you buy your next pair of speakers, do yourself a favor – audition the Interface:B's. If your criteria is musical accuracy, the Interface:B's are what you'll buy.

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Tape guide

Herman Burstein

Foreign Decks

Q. I am planning to buy a tape deck overseas and am wondering if there will be any problems concerning this European-made machine. — Erik Flaxman, Atlantic City, N.J.

A. When you buy a product overseas it may raise the following problems: It may not have U.S. (NAB) equalization, it may not incorporate the electrical safety requirements of the Underwriters Laboratories (UL), it may bear notations in a foreign language rather than English, it may contain parts not readily available in the U.S., it may be a mystery to American technicians, partly due to the lack of a schematic, and it may also present problems in securing service under provisions of the warranty.

In addition, it may suffer damage in shipment. This does not necessarily mean that all of the above hazards will apply to the machine you are contemplating. But these are general hazards that others have encountered with a variety of foreign machines not manufactured specifically for the American market, and not brought into this country through the customary way, via an authorized distributor.

Track Quandry

Q. I have taken a job at a major auditorium which presents a number of concerts that I am to tape. The auditorium is equipped with two half-track tape decks. An adjacent recital hall is equipped with two quarter-track machines. These two sets of machines are obviously incompatible with each other. What kind of modifications could be made to achieve compatibility and still retain the choice of track width. Can the heads be modified to allow each machine to be changed from quarter-track to half-track at will? —John Kudlaty, St. Paul, Minn.

A. While changing the heads from quarter-track to half-track, or vice versa, is feasible, it is a painstaking procedure and requires careful alignment of azimuth, height, and lateral orientation. My suggestion is that you convert two of the machines to the same head configuration as the other two, thus providing complete compatibility, either that or move them from one hall to the other as the need dictates. Unless you plan to edit extensively, or wish to record in only one direction, it would be most advantageous to have all the machines equipped with quarter-track heads.

Oxide Removal

Q. I would like to know about devices that remove dust and oxide deposits from tape heads. Are liquids safe or are electric head demagnetizers the best kind to use? — Ewen Cornish, Ottawa, Ont., Canada.

A. Head demagnetizers do not clean the heads. For information on which liquid to use to clean the heads, it is best to consult the manufacturer of the tape deck, although this information is usually given in the instruction manual. Denatured alcohol is satisfactory for most heads, but in some cases it isn't. Therefore, it is always wise to check the instruction manual.

Response Perception

Q. Which is a better frequency response: 30-22,000 Hz, ±3 dB, or 50-16,000 Hz, ±3 DB? — Walter Mattox, Jr., Atlanta, Ga.

A. On paper, 30-22,000 Hz within 3 dB certainly looks better than 50-16,000 Hz. But to the human ear, except for rare cases, I doubt that the difference really matters. In order to extend response to 22k, a tape deck had to make sacrifices in terms of signal-to-noise ratio and/or distortion. In other words, in settling for slightly more limited response, the 50-16,000 Hz deck may give better all around performance.

Space Premium

Q. Because of the lack of space I keep my open-reel tapes on the same shelf as my tape deck. Because of this proximity, will my head demagnetizer have any adverse effect on my tapes? — Bryan Long, Murfreesboro, Tenn.

A. As long as you keep the demagnetizer at least three inches away from the tapes, there is very little chance of any adverse effect.

If you have a problem or question on tape recording, write to Mr. Herman Burstein at AUDIO, 401 North Broad Street, Philadelphia, Pa. 19108. All letters are answered. Please enclose a stamped, self-addressed envelope.

You paid a lot for good specs. Now spend a little more and hear them.

Just because you put a great deal of money into your tape deck, it doesn't necessarily mean you'll get a great deal of sound out of it.

Unless of course, you're using the tape that's engineered to get the most out of high-performance equipment. Maxell.

Maxell is specifically designed to give you extended frequency response, the highest possible signal-to-noise ratio and the lowest distortion of any tape in its price range.

Which is why people who own the finest tape decks use Maxell more than any other brand.

Of course, there are other reasons. Like the fact that every Maxell tape has a unique non-abrasive head cleaner. And a full warranty that covers the one thing other manufacturers don't cover. Everything.

Try Maxell.

It's sure to make the sound that comes out of your tape deck worth every penny you put into it.

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Video scenes

Bert Whyte

It has been apparent for some time now that many new factors and developments in audio and video technology are responsible for an ever closer alliance between these industries. It seems inevitable that these ties will lead to some sort of "audio/video megastructure" . . . what shall we call it . . . "Audiovid" . . . "VideoFi" . . . "VideoSonics?" Whatever its ultimate appellation, in its purest form, it would be concerned with an interactive discipline whose products should present their audio-visual elements with the highest possible fidelity.

Needless to say, video is very much a mass-market business, and thus its general products must be a reflection of this fact. Whatever the gidget or gadget or process or technological advance in video, it must be priced to appeal to the broadest possible market. In contrast to this, whether or not there ever is a distinct merger of audio/video technology, I see the emergence of new manufacturers and venturesome established manufacturers, who will make ultra-specialized video products for those who want optimum visual fidelity as an addition to the audio high fidelity they already enjoy.

Some of this activity has already begun, and there is no doubt that many exciting new developments in video are well under way. *Audio* has published several preliminary articles and columns on video, and in view of the burgeoning interest in this subject, "Videoscenes" will become a regular feature, this being the new name of the "VTR-ing" column. As such, we will cover all aspects of video. We will bring you information, reviews, and "hands-on" reports on pertinent new products such as video cassette recorders, including portable units; all PCM adaptors for the VCR units, black and white and color video cameras, the video discs in their various embodiments, projection TV, TV receivers incorporating important new technology, new VCR blank tape formulations, TV/home movie interface products . . . even reviews of some of the various prerecorded video cassettes of feature movies, which are beginning to appear in ever-increasing quantities. (Naturally, we will review the quality of the cassette for such things as image clarity, brightness, contrast ratio, stability, etc., not the movie itself!)

Indicative of the heightened interest in video was the heavy participation of TV companies at the Summer Consumer Electronics Show. For some years now, TV manufacturers have been conspicuous by their relative absence from the CES. This time around, show visitors saw a plethora of new video products, in the aforementioned categories.

What was by all odds one of the most significant developments at the CES was unfortunately restricted to private demonstrations for the press corps. This was the Matsushita/Panasonic video-disc system they call "VISC." The system actually has four separate configurations . . . VISC 1 is a 12-inch disc which affords 30 minutes of video color playback with a stereo channel of audio per side; VISC 2 also a 12-inch disc with 60-minute playback per side; VISC S a 7-inch disc similar in size to 45 rpm records with 7-minute playback per side, and VISC AD, a 12-inch disc featuring digitally stored stereo sound with 30-minute playback per side. There is no video information on this disc. VISC 1, 2, and AD revolve at a speed of 450 rpm, while the VISC S spins at 720 rpm.

Heretofore, we have had video discs of the mechanical compression type (Teldec), the optical (laser read-out) type (Philips), and the electro-capacitance system of RCA. VISC 1, S, and AD have their signals cut in extremely fine grooves of 4.6 micron pitch. VISC 2 has an even smaller groove of 2.3 micron pitch, so that playing time is extended to 60 minutes per side. The signal is retrieved from the groove with what Panasonic terms a "Twist Stylus" system. It was said to be a variation on the strain gauge or piezo-electric principle. The special diamond stylus has no cantilever, and it converts its traversal of the groove undulations into mechanical vibrations and thence directly into voltage fluctuations. The especially significant feature of the VISC disc is that it is made of ordinary PVC (polyvinyl chloride), as in regular long-play records, and as such can be replicated in standard record presses with a 25-second pressing cycle. This obviously permits mass production of this type of recording. VISC master discs are cut on a special direct-cutting lathe, and they are cut at real-time, by means of an ultra-precision micro-cutting stylus which is ultrasonically driven by a PCM, piezo-ceramic device. In this manner, up to 10 megaHertz signals can be cut to record a wide frequency color picture, and two completely discrete audio signals simultaneously.

The VISC player unit was shown in two versions at the demonstration, but

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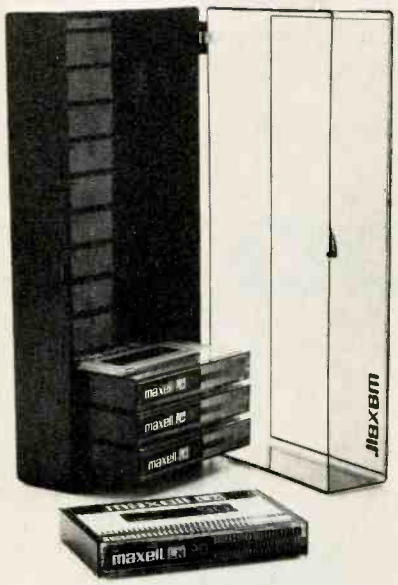

The case in point is this twelve slot cassette storage file.

It's free when you buy this special package of four Maxell Ultra Low-Noise cassettes. Some of the world's finest all purpose tape.

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the player that would be marketed is a universal unit that will playback all VISC configurations. The VISC player is a fairly simple device with ordinary electronic components. The VISC disc is tracked by a radial arm driven by a conventional lead-screw arrangement. There are no positional servos necessary. There are but two controls . . . one is an off and on power switch. The other activates play, and via an illuminated bezel on the front of the unit, the control can be positioned to lower the stylus on any desired portion of the recording. In production, the VISC player would be in the $450 to $600 dollar range. The specifications of the VISC player reveal they use the NTSC color video signal, with a signal-to-noise ratio of better than 45 dB; the stereo audio channels have a bandwidth of 20 kHz and a S/N ratio of 60 dB. A resolution of 270 lines is claimed. The AD function of the player is the playback of the digital stereo recordings. In this mode, the two channels have a bandwidth of 20 Hz to 20 kHz ± 1 dB, dynamic range is claimed to be more than 85 dB. It is a 13-bit system with a sampling rate of 44.056 kHz, and harmonic distortion of less than 0.1 per cent. Since the VISC disc is made of regular PVC and is tracked by a stylus, there is obviously the matter of wear on both groove and stylus. A usable life of more than 1000 hours is claimed for both record and stylus. Obvious too is that various record warps, and eccentric center holes could cause noticeable flaws in the picture. Thus, in pressing the VISC disc, particular attention is directed to minimizing these problems, and this care, plus the complex cutting technique, probably accounts for the anticipated 20 to 50 per cent higher price for VISC discs over present conventional recordings.

At the demonstration presided over by Ray Gates, the genial Vice-President of Panasonic, we were shown VISC 1 discs of an Olivia Newton-John program. The color balance, brightness and contrast ratio, and crisp resolution added up to the best TV picture I have yet encountered in any of the video disc systems. The same program was presented on the VISC 2 disc for comparison. Results were virtually identical except for a very slight loss in resolution due to the halving (to 2.3 microns) of the track pitch. Emphasizing that the VISC discs should receive the same care in handling as high quality stereo discs, Mr. Gates went on to point out that various cleaning compounds should be avoided, as they might give rise to "glitches" (tearing or distortion of the image) from the disc. Impressively, no glitches were observed during the demonstration. The VISC S 7-inch disc was shown with a different program, with equally as good results as its bigger brothers, although contrast ratio was wider, probably due to the program material. With all the VISC video discs, the images were exceptionally stable, with a minimum of jitter, and the quality of the stereo sound tracks, as heard through Technics 7000 speakers, was excellent. Since TV shows are presented in mono, this was a sort of "sneak preview" of what we can expect when the networks get around to stereo TV broadcasting. Mr. Gates saved the *piece de resistance,* the AD digital stereo disc, for the last part of his demonstration. Us-

Panasonic's Visc system provides up to 60 minutes of high quality video and audio reproduction.

ing the "big band" music that John Woram had recorded with the Technics open-reel PCM recorder for the Los Angeles AES convention, the wide frequency response, dynamic range, the uncanny quiet of a better than 85-dB S/N ratio, and the pristine clean quality afforded by the very low distortion were mighty impressive. I can't honestly say that what I heard was of any better quality than the Teac/Mitsubishi laser readout digital discs but on the other hand, the fact that this splendid audio was coming from a disc made of ordinary PVC, easily replicated in standard record presses, and played on a simple and relatively inexpensive playback unit, is sure to impress the software people. Therein lies the key . . . Matsushita has the special VISC cutting lathes, they know both the video and the digital stereo recordings can be economically mass-produced. They are, in fact, prepared to get into VISC production on fairly short notice, *IF* they can count on the support of the record companies, movie industry, TV networks, and all other software producers. Needless to say, this VISC system seems to hold much promise, but we'll just have to wait and see how they fare against the pressure of competing systems.

In the next "Videoscenes" column, we will report on a pair of new VCR recorders, a new portable VCR, with its nifty color camera and built-in mike, and assorted items of video interest.

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The peculiar disease that has made Infinity what it is today.

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To the rare listener who needs to consider neither speaker size nor price, our Quantum Reference Standard—at $6500* for the complete speakers-and-equalization system—offers tremendous energy handling capacity, accuracy of response, and a seldom heard warmth and reality.

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We're making progress. Five years ago only hard-core audiophiles ever heard of Infinity. Today we're one of the three largest speaker companies in America.

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We get you back to what it's all about. Music.

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Tall Tales

Anecdotes from an inventor and tape editor whose innovations set standards for the tape industry.

Joel Tall

(EDITOR'S FORWARD: When Gene Pitts, the Kindly Editor of *Audio,* asked me to edit these reminiscences by Joel Tall, I was happy to take on the job. I was pleased to meet Joel Tall several years ago at an Audio Engineering Society convention. He is one of the men who helped to make the tape recorder the important part of recording and broadcasting it is today. Those of us who have made our livings splicing tape are deeply indebted to Mr. Tall–you'll see why as you read this.–*W.J.J. Hoge)*

It seems that no sooner does a man pass the age of 70 than he begins to think about writing an autobiography. From all I have seen, it is a natural outgrowth of the process of ageing, so I won't fight it and, with your kind permission, excavate some things that may interest you from these old caverns of memory.

During all the years I worked in radio manufacturing, from 1921 onwards, I noted a few spectacular results of what I call "manufacturing errors," errors that crept in between the finished design of a prototype and the production line. Some of these errors were due to plain ignorance and others, I think, to mistakes of production engineers who forgot basics.

1921

Around 1926 or 27 I found work as a wiring inspector at the Freed-Eiseman factory in Brooklyn. My job was to check during the final testing for poor connections, especially what we called "rosin" connections. Soldering was performed by girls who had to be specially trained to solder. We found that women refused to hold a soldering iron like a man, and we had to rig the soldering irons so that they would hang down over the work bench and retract when let go. There was an occasional blood-curdling scream when a hapless girl unthinkingly grabbed the hot end of the iron instead of the handle but, all in all, the system worked well and, I understand, is still in use. The only real problem was that, for all our teaching, there were many connections that were not "flowed in" (indicating too short a time in soldering or "rosin connections") so that only the hardening rosin flux held the joint together. Operating tests and resistance tests showed up these malfunctions, and the defective units were put to one side for reworking. One day the big boss walked over to me to find out what was holding up production. I showed him. He was irate and ordered me to get the production out despite all defects. I warned him of the probable results, but he was obdurate. So, I just asked for a written order. One was furnished to me, and the receivers flowed out of my test section merrily but defectively. Of course, you know the result. After loading aboard ship, and unloading, etc., the sets were completely defective and the shiploads of defective receivers coming back to Brooklyn put Freed-Eiseman out of business. Moral: Never underrate a cold solder joint!

In 1938 I earned a living as a radio repairman, a somewhat insubstantial living I must admit, but an honorable one, though 1938 was a time of transition in radio receivers. On my shelves at that time were the small, overrated "table models" that produced sound we would not waste time listening to today. In favored locations around the shop were the "cabinet" models that produced better sound mainly because they had better baffled cone speakers. I was once forced to phone a radio manufacturer about that time who advertised that his receiver produced the best sound because of the built-in resonance of his cabinet! He seemed surprised to learn that probably the best speaker enclosure would be a cast-concrete one because its walls would have no resonance at all — at least at musical frequencies!

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Listen to the Fisher RS2000 series receivers. Once you do, you'll never be satisfied with the sound of a receiver without an equalizer.

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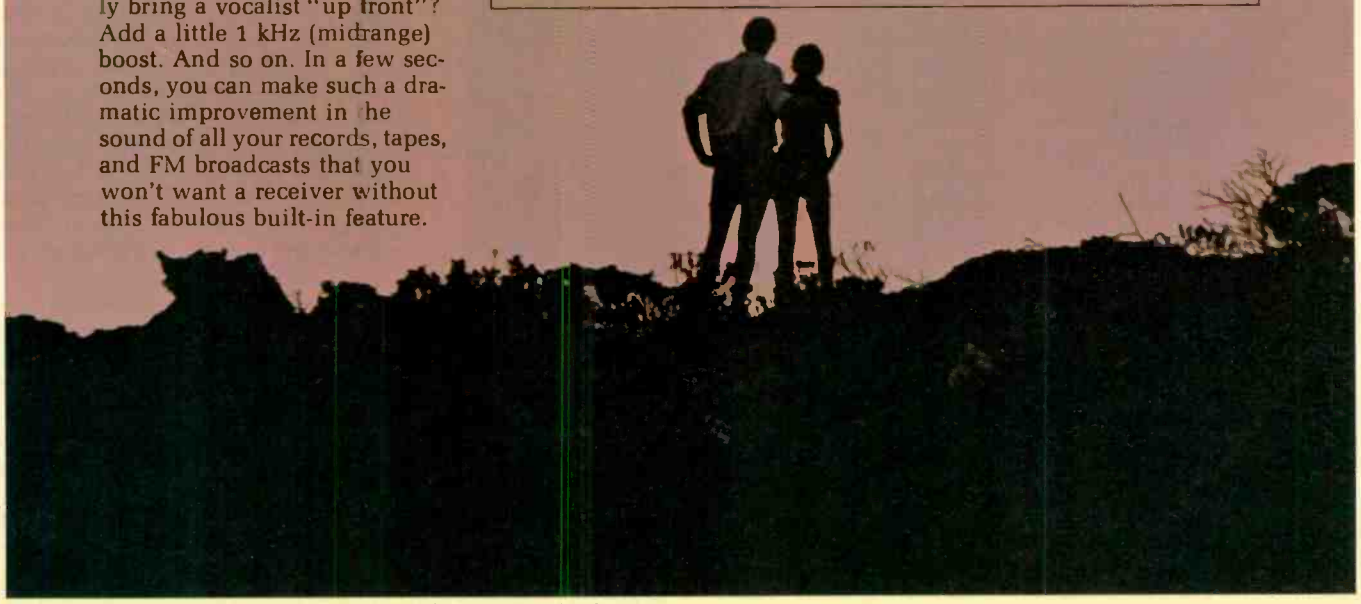

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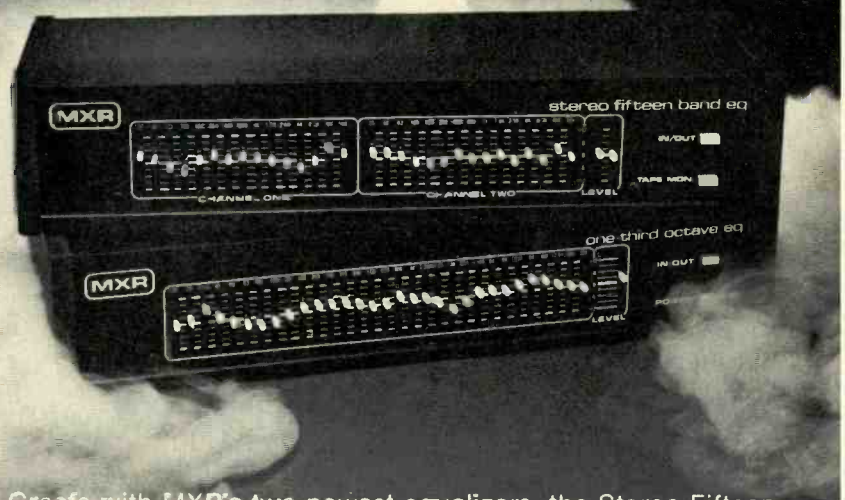

Create with MXR's two newest equalizers, the Stereo Fifteen Band Eq and the One-Third Octave Eq. Two great new eqs that not only put you in complete control of your acoustic environment but provide even more creative contour of your music as well.

The Stereo Fifteen Band Eq is an expanded version of our popular ten band Stereo Graphic Eq. With two channels each having fifteen bands spaced 2/3 of an octave apart, you have even more creative power for bending, shaping, enhancing the sound. No matter how fine your home component system is problems such as poor room acoustics or program quality may occur. The Stereo Fifteen Band Eq gives you the control to create the exact sound you desire.

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At that time possibly the most-prized "cabinet" job was the Capehart phono-radio. It was a large thing, almost as large as a piano, with an intricate disc-changer in the model I was most familiar with. It was supposed to be, at that time, an outward manifestation of good taste, both in cabinetry and music.

The town I lived and worked in was typical of Westchester County, New York, in those days. The railroad separated the business section from the living section, with the highest cost living far removed to the west of the railroad. I had several customers in the estate section and valued their business, even if it entailed night calls in any kind of weather. One of these customers was a very popular bandleader of the time, one of those who played with his band at the best hotels of New York City and was frequently noticed in the newspapers.

I was just turning out the lights preparatory to shutting up shop when the phone rang. I recognized W's voice. "Can you run up here for a few minutes?" I heard him say in a voice full of tears. "Of course," I answered, and locked the front door of the shop and drove up to the Ridge. As I walked into the 40-foot long living room, I saw W. slumped in a gigantic sofa at the far end of the room. Strewn about the oriental rugs in the middle of the room I saw many records. "What's wrong" I asked gently, for W. appeared almost lost to the world. He lifted his glass to his mouth, took a healthy slug and answered me, his voice almost completely lost in sobs. "Look at those records," he quavered, "They're all mine! That damn machine will play anything else beautifully, but when it comes to one of mine, it just picks it up and throws it at me!" I picked up the discarded discs from the rug and walked over to the Capehart at the other end of the room. I loaded one of them on the turntable and started the machine. It ground gently, the pincer-like arm picked the disc up delicately, held on to it and then flung it with gusto, it seemed, back onto the rug. I played one of the "other" discs. The turntable started properly, played the disc, then the pincers lifted the disc off the turntable and restored it to its storage place. I recognized the problem, stopped the machine, and went back to where W. sat in state on his oversized sofa.

"Whoever made these records for you made them on oversize discs" I told him. "Your machine will play 10-inch or 12-inch discs, nothing larger, and your records are considerably larger." W. relaxed visibly, assured now that the machine did not harbor some supernatural vendetta against him. Those pincer-like arms simply could not contend with any outsize discs — just held them and,

It's midnight. You're losing, and your roll is critical. Click. The music stops and so does your concentration.

Introducing the you-don't-have-to-stop-what-you're-doing switch.
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Some people just want to listen to good sounds. But if you're interested in how it happens, a specifically designed TEAC transport mechanism makes the auto-reverse and auto-repeat functions work with incredible precision. Independent capstans pull the tape in either direction. And our newly-designed head-shift mechanism has solved a problem that's plagued the industry for over a decade: how to achieve reversing convenience without sacrificing channel crosstalk. Now, with the A-601R, you can get one-way sound performance from a two-way machine. What's more, we've further improved sound quality by utilizing our new "Sendust" head which combines the permeability of metal with the wear factor of ferrite.

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All function indicators, including direction lights, are located on a central panel which also includes a solenoid-controlled direction switch. So one glance tells you what's happening. And then there's Memory Stop, Mic/Line Mixing, 3-Stage Bias and Equalization Selections, Precision VU Meters, a Timer Switch and all the other reliable features you've come to expect from TEAC.
TEAC tape decks are first.
Because they last.

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The A-601R can play longer than you can. Automatically.

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Signal to noise ratio:	65dB with Dolby
Frequency Response:	30-16,000 Hz (CRO_2/FeCr)
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SONUS
SERIES II.

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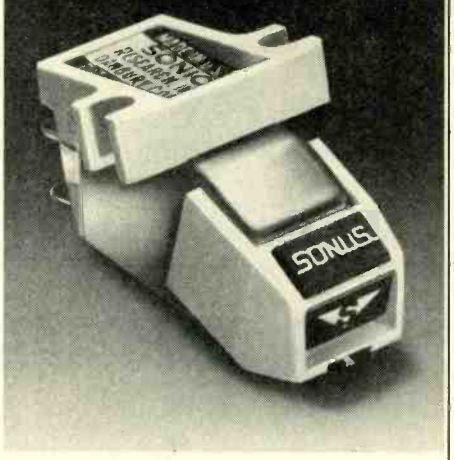

The original Sonus cartridge established a new standard in high definition phonograph reproduction. Yet we believe there is even further room for improvement in this often-overlooked area of high fidelity. So we have taken the original Sonus cartridges and refined their designs, taking full advantage of the latest in materials and techniques. Sonus Series II cartridges are the result of these new design developments.

The new Sonus Gold consists of three models with identical bodies and stylus assemblies, differing only in the form of their diamond tips. The new Sonus Silver comes in two stylus types, and shares all the qualities of their more costly counterparts, yet still can offer a dramatic improvement in sound reproduction overall. Both series employ a transducer system characterized by reproduction of exceptional accuracy, clarity and definition. For full details and a recommendation of which model is correct for your particular system, we suggest a visit to the Sonus dealer nearest you, or write us.

SONIC RESEARCH, INC., Sugar Hollow Rd.
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SONUS

High Definition Phono Cartridges

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1938

when it could not release them, as normally it would, just swung forward at the beginning on its next cycle and flung them onto the floor.

I have another memory of 1938. It was in that year that a very large company came out with a well-designed radio that performed admirably for a little while, but then stopped playing, sometimes almost in flames! After having had to repair about 50 of these, I made a standard repair charge for repairing this model. One afternoon I got a call to come up to repair a Model X-1, as I shall call it. Over the phone I told the customer that I had a standard charge for repairing that receiver and quoted the price. In addition I told her why, that the company had made a receiver which, in the r.f. section, generated a peak voltage of almost 400 volts, but bypassed the section with capacitors that broke down and shorted at 250 volts. In consequence, the resistor network burnt to a fine crisp and the repair job entailed replacing, with parts of correct values, the whole shooting match. She almost went up in flames herself! "My husband is president of the company that manufactured those radios," she explained. "I'll tell him to sue you!" "Please do so," I told her. "It would publicize the problem and save a lot of money for a lot of people." Of course, I heard nothing more of this.

So it went and probably still continues to go. People will make mistakes of judgment in all areas. Engineers sometimes forget that heat is an enemy to good operation, that accessibility is needed for repairs to be made, that they must allow a decent safety factor. It used to be that a factor of at least two was designed in; if operating voltage was 150 volts, you used a 300-volt capacitor; if a circuit was designed for 50 mA current, you made sure it could handle 100 mA without overheating. I wonder what today's safety factors are!

(Mr. Tall joined CBS in 1942. At that time the networks used discs as their principal recording medium. Wire recorders were used for some portable applications. After the war captured German tape recorders were copied and improved upon by several U.S. companies. They quickly found their way into broadcast stations — W.J.J. Hoge.)

It was just 31 years ago, in the month of September, that I edited the radio documentary "The British Crisis," broadcast from the old news studio, Studio #9 at CBS New York. The 60-odd tape segments were separated by one-half second of paper leader tape, and the tape itself was the first paper tape, very fragile and likely to break if you even sneezed at it! And you mustn't forget that the tape recorder then in use was the Brush BK-401, the brain wave of Dr. Semi Begun, the Brush engineer. The big problem at that time was the very high noise level of the Brush recorder, only about minus 35 dB. And you couldn't rerecord, because the resulting distortion was so high it was unthinkable. I asked the engineering department at CBS to try to correct these faults; they tried, but the results were still very poor. In self-defense, I did what I could. I removed the power pack of one Brush recorder from the common cabinet and attached a 7 or 8 foot cable to it so I could move the offending power transformer from the vicinity of the pickup head. The hum went down dramatically, to about 55 dB, which was barely usable. That was the machine which, with some negative feedback to reduce distortion, I used to edit and broadcast many, many shows and record and edit and play back to disc (at Columbia Records) the first part of that fellow Friendly's historical album "I Can Hear it Now." The only unfortunate thing that happened during that chore was that I stashed that power pack under Fred Friendly's stool and he burned his jacket, which almost reduced the poor man to tears! But that's another story.

1943

It is interesting, now, to note that my chief engineer, Tommy Thompson, wanted me to play back "The British Crisis" to air from disc. He said he was afraid the paper tape would break and we'd be left with no show. I told him it was too late for that — that it would be impossible for me to put the show on air from disc because I could not cue records with only the half-second cue on tape. He offered to fire me if I did not obey his order, but I went ahead with my plan to air from the paper tape. I must explain here that only part of the show was on the tape segments; some of it was live from the studio and cues came very fast. In fact, we had several conversations on tape, where the live voice asked a question which was answered from the tape.

After the whole show was rehearsed and timed with the live voice, I prepared for airing it. I made one complete copy, distorted though it was and set up in the

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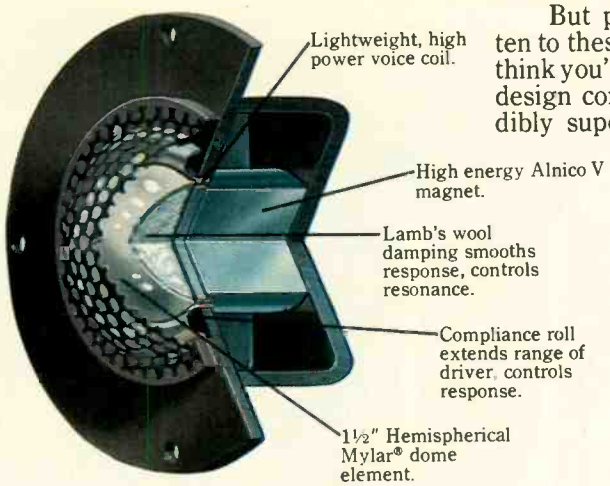

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control room of Studio #9 with two Brush machines on a table in back of the mixing console. The output of Machine #1 was patched into Line Key A and the other machine was patched into Line B. The engineer operating B machine was Jack Trapkin of CBS Field Engineering. I told Jack not to monitor the show at all — just watch me and synchronize the motions with mine. I told the mixing engineer to go to Line A for tape; if it did not come on cue, to switch immediately to Line B. Needless to say here, the show went on without a hitch, although we were all quite "nervy" because, I believe, we were feeding all three networks from that fragile paper tape!

I had to "slip" start the Brush machine. That is, I never stopped the motor capstan drive but, when not feeding, pulled back on the receiving reel so that the tape looped off the capstan and there was no pull. I did that because the motor starting switch often arced so that it created a loud "click" and sometimes a "clunk" in the output. Also, in this way I could get a very fast start, without any indication of a "wow."

1946

I had been editing tape long before this "British Crisis" show, tapes recorded from overseas by short wave radio and tapes edited from discs. It all began, as far as I was concerned, in 1946 when, operating at Master Control, I evidentally collapsed with the onset of what the doctors later told me was Menieres Syndrome, a disease that affects the semicircular canals of the ear and results in a perpetual drunk. I know that I lost about 4,000 Hertz in the hearing of my left ear at the higher frequencies. After I came back to work and was dizzy only half the time, my chief told me he would give me some light work until I fully recuperated. The "light" work was editing the wire recorded on a trip around the world by Norman Corwin and Lee Bland. The result of that job was a series of shows aired from disc called "We Went Back." Editing wire was a lot more sloppy than editing tape; besides, it was lucky that I smoked cigarettes, because I found that I could cut the wire, make a square knot in it and then anneal the carbon steel wire in the hot end of a cigarette and pull the knot tight. In this way I got only a tiny "clunk" when the knot passed through the playback magnetic head instead of a devastating "crash."

I don't really know if I was the first professional tape editor in the U.S. I do

know that I tried to find anything written about tape editing, in any language, between 1947 and 1952, when I began writing my "Techniques of Magnetic Recording." There must have been tape editors in Germay, because they had fairly good tape recorders long before we did here, even though the first patent on coated tape was obtained by two Americans and the inventor of tape recording was the Dane, Valdemar Poulsen. I did, however, have a head start on editing when I began in 1946. I have been a lifelong student of hearing and the psychology of hearing. "Hearing," by Stevens and Davis, was my bible, and I experimented continually to find ways to get effects I wanted. I remember, later on, when John Mullin came to New York to record and edit Bing Crosby on 30-ips tape on his liberated Grman Magnetophon, that I told him that you could splice 30-ips tape with chewing gum; it was so easy to edit at that speed. My first tape machine ran at 7.5 ips; there was no room for error as there is at 30 ips!

Film splicing of that day was a matter of cutting between frames, and little attention was paid to smooth audio editing. Generally, in film editing, if you wanted to make a short fade, you simply painted out the optical track at any angle you wished. In short, I had to find a new way to go for magnetic tape cutting and splicing. My first attempt was a simple square groove cut into a block of aluminum. The tape would not stay in the groove. I tried slicing the block longitudinally and putting screw adjustments in so that I could narrow the groove to where it would hold the tape in place. That didn't work out either.

1947

One night, beset as I was with the necessity to find a way, I dreamt that, of course, any coated material (and tape was a coated material) would tend to shrink on the coated side. I don't know whether that is true now or was ever true, but it indicated my course to me. I woke up in the morning with the whole design of the splicing block (Editall Block — no commercial!) in my head. The next day I asked Victor Piliero, a good friend of mine at CBS, to make one for me according to my sketch. He did so, entirely by hand, and it worked beautifully with the curved groove for the tape, the two tiny shoulders so the tape could not slip out of the block, and the 45-degree cutting slot. I used this one block for quite a while; it disappeared one day, after I had had a few others made. I wonder to this day where it went?

But the way of the inventor, like that of the transgressor, is not easy. Years before, when I came to CBS I had signed a contract. I was what they called an "audio technician," except when one of us did something newsworthy, when we were called "engineers." When I signified to the powers that were at CBS that I wanted to patent my invention in my own name, they refused, at first, to permit it, saying that I had signed a contract giving the results of all my labors to CBS. I then told my particular vice-president that I would then keep all knowledge of my invention to myself, which would cost CBS several thousand dollars a year in extra tape editing time, because an editor with a block could work immeasurably faster than one with scissors, especially at 7.5 ips. I got written permission to proceed toward a patent.

Since I did not want to leave CBS to manufacture Editall blocks, I got a manufacturer in New Jersey to manufacture and sell the thing, Tech Labs. Their major business was making controls, switches, and pots of all kinds. I also left it to Magnus Bjorndal, Tech Labs' presi-

A) Dr. Peter Paul Kellogg, a graduate electrical engineer, and Tall were first to use a recording to show that the Western Meadow Lark could actually sing two distinct songs at the same time. Dr. Kellogg later helped establish the Laboratory of Ornithology at Cornell University.

B) The tape recordings of the Lowell Thomas expedition to Tibet gave Tall more work than anything else he handled in those days because of editing problems and variations in the tape recording speeds. The latter problem was solved through the use of a variable oscillator and a husky power amp to compensate for the sudden tape speed changes.

C) In 1948 the Army decided that it needed some peacetime publicity, so Lee Bland and Tall flew around the country recording bits and pieces in plane factories and experimental laboratories. The quality wasn't good, but the Army loved it.

D) Joel Tall with Quincy Howe, Jimmy Sirmons, John Pfieffer, and a WBBM-Chicago engineer recording the 1947 meeting of the American Association for the Advancement of Science.

E) Radio, press, and newsreel representatives at the 1953 Big Three Conference at the Castle Harbour Hotel, Bermuda. Shown are: Edwin F. Laker, CBS Radio Communications; Malcolm Williams, Fox-Movietone News; Bert Spershott, ZBM-1 and ZBM-2, Bermuda, and Walter L. Godwin of NBC Radio.

F) After a ride in the first Sikorsky two-seater helicopter, Lee Bland talks to the pilot after landing on the front lawn of the Pratt & Whitney plant offices in Connecticut.

dent, to apply for my patent. He had quite a bit of trouble with the Patent Office. I remember that the patent examiner wanted to reject my claims because, he said, the carpenter's mitrebox preceded it! I went to Washington and talked with the chief examiner. I explained to him how tape was made, what my whole philosophy of tape editing was and why my curved groove worked when nothing else did. He turned to his assistant when I was through and said "Give him his patent!"

(Thus one of the basic tools of the audio professional was invented. Mr. Tall did not approach tape editing from a strictly technical point of view. To him it is an art. —W.J.J.H.)

Quite some time ago, I edited an hour of Frank Sinatra for network (CBS) broadcasting, with the hour split up into four 15-minute segments. To set the scene, you must know that my recording studio was a distance from the Sinatra studio and that I had only one sense to inform me, my hearing. After the first rehearsal I was able to relax in the knowledge that everyone concerned was a pro and there would be nothing unforeseen to mar the programs. But, as we got into more and more programs, I found things to concern me. Once Sinatra seemed to be in a fractious mood and frequently informed an obnoxious studio audience of his feelings for them — his mildest advice to them was something like "You . . . jury, why don't you go home and wash the dishes?) If these kindly admonitions had only been set apart from his

singing and his music, I could have easily cut them out with room to spare. But, frequently, his breath intake for the purpose of animadverting upon the delinquencies of his audience followed his last singing note so rapidly that I had to use all my resources to edit believably.

It was my habit — and I recommend it as a good habit for tape editors — to record all of the audience "warm-up" period, just in case I might need a note or a bar of music, a cough or any audience noise during the editing of the show. One day I was very much surprised to hear, in my tape output (incidentally, I always monitored Tape Output, to make certain all was in order) the yapping of what I visualized as a small Pekingese lapdog. I paid no further attention to this extraordinary sound, realizing that someone had got past the studio attendants with the animal and hoping for the best.

I proved to be wrong, however. During the show, in the midst of a particularly poignant love song there went that dog again, loud and clear. I expected Sinatra to stop in the middle of the bar and bawl out the dog and his owner, but he went right on, like the great artist he is, and I was stuck with a yapping dog in the middle of a song I had no substitute for. What to do?

I went to my warm-up segment, which included the dog barking in the clear and inserted two seconds of barking just before the opening of the 15-minute period with the lovesong cum dog barking, an editing procedure which took the curse off, explained that there was a dog in the audience and made the whole ensuing sequence believable. That last word defines, at least to my way of thinking, the whole essence of good tape editing — could it easily have happened that way? If it could, the edit is right. In the above case, notifying the radio audience that a dog was present did not disturb it when the barking took place during the show.

(From time to time tape recordings play an important part in legal proceedings, and sometimes what is missing from the tape can be more important than what is left. Anyone can spot an

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18½-minute gap, but for shorter pauses the sharp ears of a good tape editor may come in handy. — W.J.J.H.)

I suppose that what happened in the middle fifties was predictable. No sooner was tape recording proved a fairly faithful medium for sound recording than it was used by all sorts of people to record, secretly, the voices of other people. Investigators used it, together with tiny transmitters and receivers, to record in secret, and lawyers used it to try to get evidence that would stand up in court.

During this time I was approached by a reputable attorney who asked me if I would examine some tapes and, after I had formed an opinion as to their veracity or lack of it, testify to my opinions in court. I agreed to his proposition, anxious as I was at that time to enlarge my skills.

1955

It seems that in the practice of the law (of which I know practically nothing) evidence available to one side must be made available to the other. Thus it was that, as the attorney explained to me, I got a batch of tape reels, attested to as true copies of recorded evidence that federal investigators would present in court to convict two lawyers of conspiring to evade taxes, or words to that effect!

I listened to those tapes for hours and hours, stopping when I felt that my hearing was becoming fatigued. After about a week of listening I notified my employer that I thought I had detected something very interesting but, in order to be certain about my opinion, I would have to make further tests. I learned that at that time or in that jurisdiction, aural evidence could not be entered — that a photograph of a sound was admissible but not the sound itself. Therefore, I scouted around looking for equipment that could be rented to photograph the sound I was suspicious of. I finally found what I thought would do the job but, before hiring the equipment, my attorney told me that the case was going to be heard in Brooklyn Federal Court and asked me to be ready to appear as an expert witness the next day or so. I promised to appear when requested and we left it at that.

I suppose that no sooner does an investigator begin to record secretly than he hires a carpenter or some other noise-maker to make as much noise as possible to be picked up by his secret microphone. Or so it appears to me, for I have participated in several of these "secret" recording jobs as a witness or expert and all of them were super noisy. Maybe this is due to the type of microphone used, which, at that time, did not discriminate and just accepted all sounds, near and far. In the case above, the tapes were filled with sounds of hammer blows; evidentally, the two alleged conspirators were having their offices remodeled or something like it. In any event, I got regular headaches listening to the stuff. But I did come out with an opinion that I wanted to verify — I heard HALF a hammer blow!

In court that day there were the usual ceremonies. Then two men got up into what I presume was the witness position, raised their hands and swore to the truth of the tapes presented in evidence. I don't know what my attorney said at the judge's desk during the following confabulation. All I know is that, after this conference the evidence was withdrawn and my man won his case.

I have been doing some work lately in trying to pin down, beyond any doubt, precisely how long it takes to hear a sound and so far have established 0.01 sec. But looking back to that time when I thought I heard HALF a hammer blow, that sound on tape running at 7.5 ips would occupy less than one-eighth of an inch of tape! As I told my attorney, I

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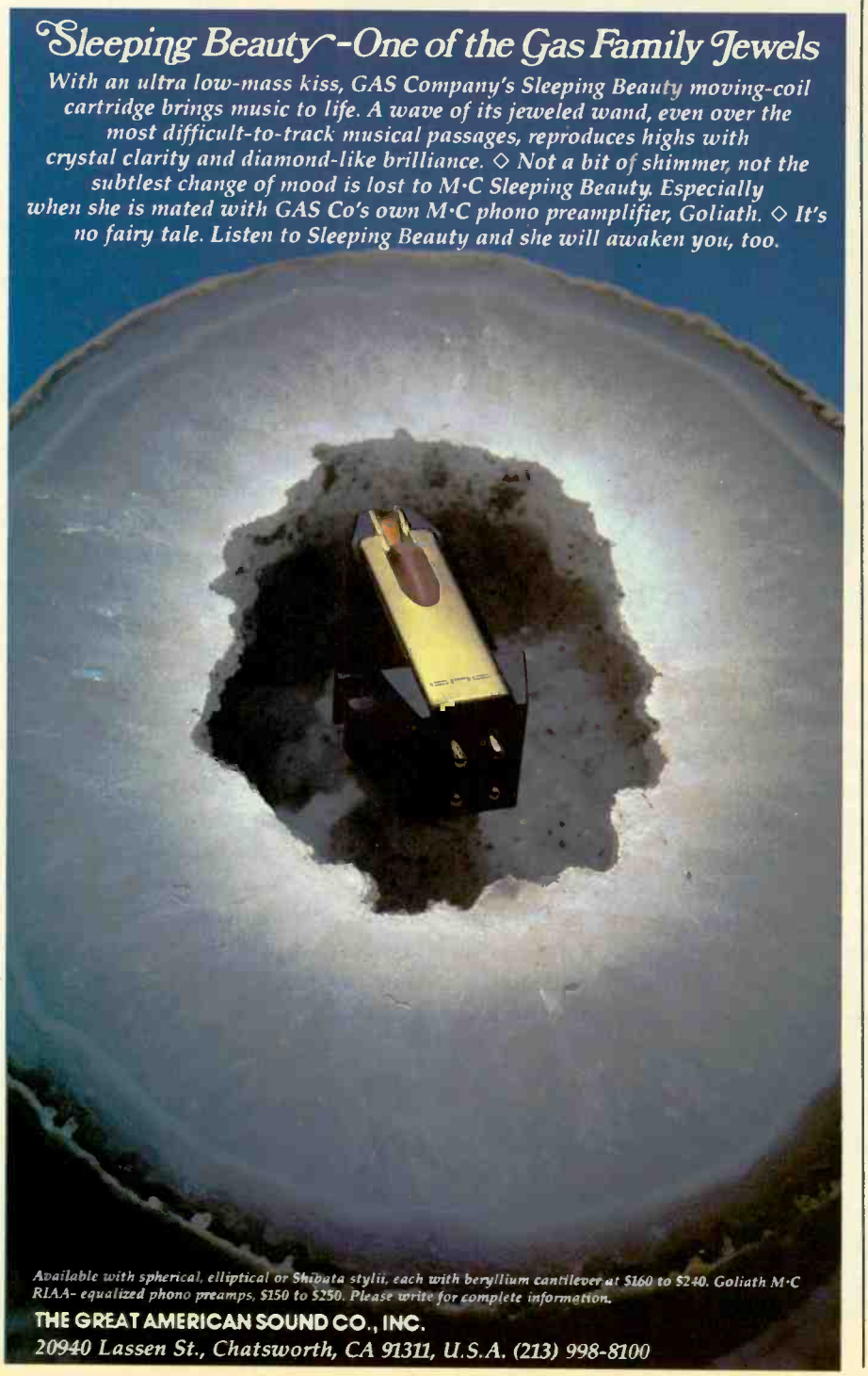
wanted to photograph the sound and compare it with photos of other hammer blows, but the case came to trial too fast, was not postponed and I had to go on my bare opinion. I guess my reputation at that time was such that I was unquestioned. Ah, well!

(Radio, more than any other medium, was responsible for American English becoming a single, national dialect. Broadcasters therefore have a special obligation to see that their speech is of the highest quality. As we shall see, Edwin Newman is not the only broadcaster who has a reputation for correcting his co-workers — W.J.J.H.)

Some time ago I was listening — and looking — at the CBS 7 PM network News and I heard Roger Mudd, I think, make a classic boo-boo. He said, if I heard him correctly, "A crack in the Alaskan pipeline will have to be replaced." Now, I know, these things will happen, but it seems to me that they happen more frequently now than when I worked in that little tape room just off to one side of Studio #9 on the 17th floor of 485 Madison Avenue, CBS headquarters at the time. When I officiated in T.R. #14, I was called "the old curmudgeon" by almost all the newsmen and even by some of the desk assistants simply because I was mean enough to mention to the offender that he had not only offended the whole radio audience by his mistake in English but me as well. Practically none of the newsmen but Ed Murrow accepted the idea that I could possibly be a bit more proficient in English than the ordinary audio technician. And they resented, rightly or wrongly, being corrected by "the old curmudgeon." Ed Murrow accepted advice that he thought good. Once, when he used the English "akewstics" instead of the American "acoustics," I corrected him and offered to drop in the word if he would record it again correctly. He grinned, said "Hell, Joseph, let's do the whole piece over again!" Which we did. Aside: Ed would NEVER call me Joel, even though I protested thousands of times that I was not related to a certain Biblical character in a fatherly way. He persisted, for some oblique reason, in using "Joseph." Oh, well, Joseph is much better than the "Hey, you!" I've been called by Hollywood producers.

I undoubtedly, now that I think back, earned that "curmudgeon" many times over. I made a practice of refusing to edit from a marked-up typescript, unless it was distinctly understood that the typescript was merely a guide, that I was not obliged to hew to the line but could make edits that would make sense and bring the piece in on time. I knew that the spoken word rarely agreed with the written word. It was one of my rules for editing, for example, to try to edit from one mouth formation to a similar mouth formation. This rule stems from the fact that one sets up one's vocal organs BEFORE voicing a word, and if you cut from a word before an open-mouthed sound to a word beginning with a closed-mouth sound, the edit sounds peculiar, if not botched. For example, in a sentence of this kind, "He said all he could say, what he wanted to say," I would prefer to edit (to reduce air time) simply, after the first phrase ending in "say." It would be difficult and it probably would sound botched to edit before "all" and go to "what he wanted to say." The formation of the mouth, anticipating voicing "all," is open, while the mouth formation to pronounce the word "what" is partially closed. This is, perhaps, a fine point in editing, but editing is a peculiar craft; you must always try to be perfect, not approximately so.

I probably was considered a nuisance by the veteran newsmen at CBS. I insisted on high quality sound, especially on the old trans-Atlantic radio transmission before the cable made things easier. I regularly insulted our Paris reporter, because he insisted upon speaking in a judicial voice about an octave below his normal, pleasant mid-frequency bari-



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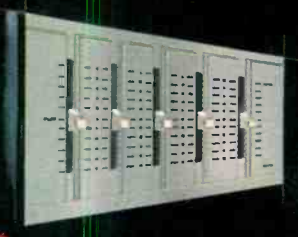

Our "Tri-DC" design in the JVC JA-S55 and JA-S77 further eliminates distortion-causing capacitors within the DC phono equalizer, DC tone control and DC power amplifier sections, providing frequency response from 5Hz to 100kHz (+0, −1.0dB). And they have dual power supplies—not one for each channel, as in conventional designs—but one for the Class A-operated preamp/tone control section, and a second which performs even heavier duty for the Class B-operated DC power amplifier section. This unique design practically eliminates both inter- and intra-channel crosstalk and distortion, or what we call "sonic backlash." The results: increased tonal definition and brilliance, especially with high-level transient signals.

The new JVC JT-V22 AM/FM stereo tuner is a standout in its class. With an FM front end that uses an FET RF amplifier, combined with a 3-gang tuning capacitor, the JT-V22 brings in the most timid FM stations and makes them sound as though they're just around the corner.

Or, if you're in an area where FM stations are a hairline away from each other on the dial, it delivers clear, interference-free reception. Then, to help you make sure you're on target, it has both signal strength and center-channel tuning meters.

Probably the most significant advance in recent FM tuner technology is JVC's Phase Tracking Loop circuitry in our new top model—JT-V77. This advanced circuit provides high signal-to-noise ratio as well as excellent interference rejection and freedom from multipath effects and adjacent channel interference. It's still another example of JVC's innovative engineering. But sounds speak louder than words. See and hear these magnificently-designed separates at your JVC dealer soon.

JVC High Fidelity Division, US JVC Corp., 58-75 Queens Midtown Expressway. Maspeth, N.Y. 11378. Canada: JVC Electronics of Canada, Ltd., Ont.

JVC

Top JA-S22 Bottom JA-S55 Top JT-V7* Bottom JA-S77

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JT-V22, JA-S44

*45 watts/channel, min. RMS, 8 ohms, from 20Hz-20kHz with no more than 0.02% THD. Rack mount handles and wood-grain cabinets optional.

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Stereo Review August 1978
Julian D. Hirsch

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tone. Two facts that I was acquainted with influenced my actions: Only good, mid-frequency diction could "cut through" trans-Atlantic radio noise, and getting a man angry enough to forget his dignity would cause his voice to go up in pitch. So I purposely got correspondents angry before they broadcast from Europe, Asia and, particularly, South America. With the result that I got tapes that could be aired and understood! I believe I once overstepped the bounds of good taste when I told a correspondent in either Argentina or Brazil that the only way I knew to make his voice acceptable for broadcast was for him to get himself operated on the same way those boys in the famous male soprano chorus in Rome did. He flared up and shrieked at me a few times, when I judged his voice had gone up enough in pitch to cut through that South-North transmission path, I gave him the "go ahead" and got a usable piece.

At that time I used a routine that was very helpful in making a poor piece usable. When all else failed I recorded the voice and later filtered out as much of the low frequencies as possible while at the same time reverberating it slightly. The effect of this operation, if judiciously performed, was to make the thing more easily understood, which, after all, was my function as news recording engineer. My job was simply to get a "readable" recording, and I used any means available to me to accomplish just that. For example, I remember when our Moscow correspondent was forced to try to transmit a piece of news from a phone booth (he told me) in a Moscow post office. I could barely understand him myself when he spoke, there was so much bouncing around of all sound within that booth. What to do? I asked him if he had his overcoat with him. He said "yes." I asked if he had memorized his piece or could "ad lib" it. He said he could do either. So I asked him to give me a few words with his overcoat wrapped around his head, with only his mouth open to the telephone mike. He did just that and I figured I could make do with it and told him to go ahead with his piece. As I recollect, it was good enough, after a little doctoring, to get on the air. Incidentally, I used that same "overcoat sound absorption" technique to get a piece from a correspondent aboard a US Navy destroyer. It succeeded in shutting out all the hash otherwise soaked up by the mike.

One thing I learned early in my career, never to try to fudge on room tone, for studios differ considerably in their acoustical properties, and sound recorded in one studio rarely comes close to sound recorded in another. One instance I remember clearly. Ed Murrow had recorded a piece for air in the large Studio #9.

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He disappeared right in the middle of Tchaikovsky's "1812 Overture." The victim of a low definition cartridge.

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Sonics

That, in the final analysis, is what counts.

While Apt can provide you with what is perhaps the most thorough technical explanation of any as to *why* the Holman Preamplifier actually sounds better in a high-fidelity system, what matters in the end is *how* it sounds.

The differences between preamps are not mysterious, and they are clearly audible. Apt seminars have demonstrated this to hundreds of people coast-to-coast. Interfacing problems account for most of the differences between otherwise fine equipment, and the Holman Preamp has been designed to be especially free from interaction.

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Just before air he added a bit to it, but, with Studio #9 occupied, we tried to record the addition from Studio #12 next door. Although it was the same voice and the same type of mike, the room acoustics were so different that I advised him to delay his departure and do the added bit from Studio #9. He did so, although a little upset, I thought, about being late for his next appointment.

Once, however, I had to try to fudge on room tone. I was given the job of assembling bits of tape recorded all over the country, in all kinds of studios or auditoriums, and making a unified show out of them for broadcast. I don't exactly remember the reason for this, except that I remember Jack Benny was in Hollywood, some other artists in the same location generally but in different studios, and other bits from Chicago and elsewhere. All of these were to integrated into a live show from Carnegie Hall and broadcast in one show, tape and live. The problem was to duplicate, as far as possible, Carnegie Hall acoustics in the tape segments. That was one time I fudged to beat the band (if anyone now alive remembers ancient slang!) I measured, or got the measurements of, Carnegie Hall reverb time, recorded room tone of the Hall, equalized all my recordings, as much as possible, to resemble each other, put them through reverb to equal, as far as I dared, the Carnegie reverb time (too much would be confusing in speech) and, finally, reverse re-recorded to reduce phase shift distortion. I understand the tapes were played back to the audience in Carnegie and to air at the same time. The studio engineer mixed applause to both air and the audience in the hall. All I remember now is that the show got on the air on time and got off on time and that there were no complaints from anyone. But I would not enjoy having to fudge that much again.

All in all, although I certainly did not enjoy being known as "the old curmedgeon," I did enjoy the reputation of "can do." What I did not already know about sound and hearing I made it my business to learn. There is enough to learn in tape editing to keep anyone busy for a lifetime. I am 73 now and still learning. And my best advice to you who would be tape editors is this: Never think you know all that is to be known — keep learning, like me and like the best pros around this world of sound.

(Afterword: Editing the material for this article was a most frustrating task. It was impossible to include even a third of the stories available. I hope Joel Tall will write that autobiography he alluded to in the beginning of this article. We young whippersnappers can learn a great deal from the experiences of the likes of him. — W.J.J.H.)

"The Dual 939 cassette deck is best described as 'beautiful'. It performs well, is notably easy to use ...and it has features most of us thought were impossible to get."

This quote, from a test report in *HiFi/Stereo Buyers' Guide*, is hardly alone in its appreciation of the 939. For example, *Radio-Electronics* reported:

"Superlatively low distortion, high signal-to-noise ratios, smooth tape transport action ... fit in nicely with the very best high-fidelity component systems."

High Fidelity's measurements for flutter "suggest that the performance level may be beyond not only your ability to perceive any flutter, but the lab's ability to measure it."

And this from *Stereo*. "Obviously loaded for bear, the 939 is one of the most feature-laden cassette decks we've encountered."

When they say "loaded for bear" here's what they mean:

The 939 reverses automatically in playback. (C-90 cassettes will play 90 uninterrupted minutes.) There's continuous play too. And recording is bi-directional. You never have to flip the cassette at the end of the tape.

Instead of slow-moving meter needles, there are instantaneous-reacting LED record-level indicators—twelve of them per channel. They're switchable from VU to peak reading and are visible from across the room.

Fade/edit control is another Dual exclusive. Unwanted sounds on a tape can be faded out gradually and smoothly, and the music faded back in. *While you're listening*, because it's all done during playback.

Still more operating features.

The list of features goes on and on. Line/microphone mixing; Dolby NR plus calibrated Dolby FM decoding; memory stop; separate output and headphone level controls; and an overload limiter that doesn't compress dynamic range.

Unique drive system and tapeheads.

The 939's drive system contains Dual's powerful Continuous-Pole/synchronous motor, two capstans, and special gear drives for fast wind in both directions. (C-90 cassettes fast-wind in just over a minute, the time other decks need for C-60's.)

Hard permalloy tapeheads provide extended life and superior magnetic linearity. The four-track record/playback head switches electronically when the tape changes direction; it never shifts position. Result: perfect tape alignment in both directions at all times.

Six ways to install.

You can install the 939 for front load or top load, plus three other angles. And you can also hang it on a wall.

One last quote.

Now you can appreciate why *High Fidelity* ended its report with: "We can think of no cassette deck that even approaches the 939's unique personality and range of features."

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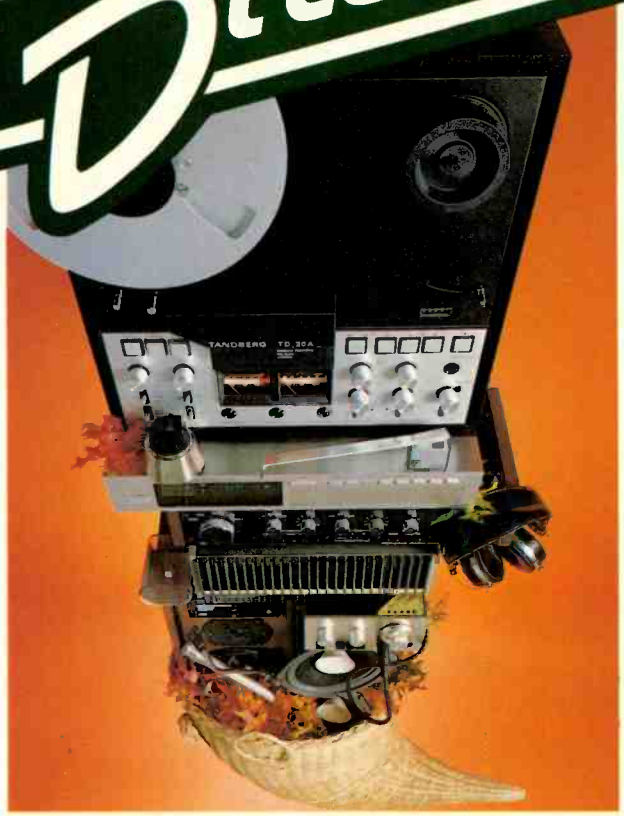
Annual Equipment Directory



Since **Audio** published its first Equipment Directory 20 years ago, the listings have grown from 55 components in the August, 1958, issue to more than 2,400 components in 13 different categories this year. Even so, it was impossible to list every product worthy of the adjective "high fidelity," as some manufacturers do not wish to supply specifications, while others didn't reply in time.

In such a massive undertaking we must, of necessity, rely on the manufacturer's data, and we have found through our **Equipment Profiles** that the data supplied is usually accurate. The tabular forms have once again been revised this year as an aid in supplying the most pertinent data for each category, though such features as the letter codes have been retained.

Naturally it is impossible to list all the features for any piece of equipment, and should the reader desire more complete information on any component, we suggest that he write directly to the manufacturer.

Addenda to this directory will be published in the December issue.

Directory of Manufacturers

AAL Speaker Systems
629 Cermak Rd.
Chicago, IL 60616

AB Systems
P.O. Box 369
Fair Oaks, CA 95628

ADS
1 Progress Way
Wilmington, MA 01887

A&E
SEE: Osawa

AKG
91 McKee Drive
Mahwah, NJ 07430

Acculab
SEE: RTR Industries

Accuphase
SEE: TEAC Corp.

Acoustat Corp.
4020 North 29th Ave.
Hollywood, FL 33020

Ace Audio Co.
532 Fifth St.
East Northport, NY 11731

Acoustical Mfg. Co. Ltd.
Huntingdon, Hants.
England PE17 7DB

Acoustic Research, Inc.
10 American Drive
Norwood, MA. 02062

Acoustique 3A International
871 Montee de Liesse
St. Laurent, Montreal P.Q.
Canada H4T-1P5

Acusta Craft
P.O. Box 12030
Shawnee Mission, KS 66212

Acutex International
246 W. Broad St.
Falls Church, VA 22046

Adcom Marketing Inc.
11A Jules Lane
New Brunswick, NJ 08901

What TDK did for your ears, it now does for your eyes.

You know us best for our reputation in audio. In fact, it's audiophiles like you who have made TDK SA the best-selling High bias cassette in America today. But here's something you may not know: the same Super Avilyn engineering principle that revolutionized audio cassettes is in TDK's equally revolutionary new Super Avilyn video cassettes.

No wonder that TDK Super Avilyn is the first 4-hour capability video cassette to be quality approved by the people who know: video cassette recorder engineers. And even less wonder that Super Avilyn makes possible an image so stunning, you will feel as though you are sitting in the broadcast studio.

What's more, TDK's strict quality control works to give you low wear on delicate video heads, virtually non-existent oxide shedding, and no problems with tape stretching, even with repeated playback.

That's because TDK Super Avilyn video cassettes are an actual component of the system, not just an accessory. Our tape is housed in a precision jam-resistant mechanism, for years of consistent high quality video reproduction. And TDK Super Avilyn VHS video cassettes are compatible with all VHS machines, both those with short-play (2-hour) capability and those with short and long-play (4-hour) options.

TDK Super Avilyn VHS video cassettes: model VA-T60 for one and two-hour recording; model VA-T120, for two and four hour recording. If you like things to look as good as you like them to sound, take a look.

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Akai America Ltd.
2139 E. Del Amo Blvd.
Compton, Ca. 90224

Allison Acoustics
7 Tech Circle
Natick, MA 01760

All-Test Devices Corp.
150 West Pine St.
Long Beach, NY 11561

Altec
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Anaheim, CA 92803

American Audioport
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Columbia, MO 65201

American Monitor Co.
7100 Case St.
N. Hollywood, CA 91605

Ampex
401 Broadway
Redwood City, CA 94063

Andante
SEE: Sumiko

Anglo-American Audio
P.O. Box 653
Buffalo, NY 14240

Apt Corp.
147 Sidney St.
Cambridge, MA 02139

Armstrong
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Aspen Ltd.
77 E. Floyd Ave.
Englewood, CO 80110

Audioalley, Ltd.
27 Fisher Lane
Levittown, NY 11756

Audioanalyst, Inc.
P.O. Box 262
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Audio Arts
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Minneapolis, MI. 55422

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230 Pickett District Rd.
New Milford, CT 06776

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Audio Scientific
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Audio-Visual Concepts
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Miami, FL 33158

Audio Works
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Santa Rosa, CA 95401

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Fountain Valley, CA 92708

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Avanti
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BSR (USA) Ltd.
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Elk Grove Village, IL. 60007

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Beta Sound, Inc.
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Bertagni Electroacoustics Systems
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Bolivar Speaker Works
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Bolivar, TN 38008

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Braun
SEE: Adcom

Breuer
SEE: Sumiko

British Industries Corp.
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Westbury, NY 11590

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Hayward, CA 94544

CSI
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Oakland, CA 94602

Calectro
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Calibre
SEE: CBS, Inc.

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Van Nuys, CA 91405

Canton
SEE: Adcom

Celestion Industries
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Vashon, WA 98070

Cizek Audio Systems
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Andover, MA 01810

Concept
1601 W. Glenlake Ave,
Itasca, IL 60143

Conrad-Johnson Design
1474 Pathfinder Lane
McLean, VA. 22101

Contrara Research, Inc.
5719 S. Avalon Blvd.
Los Angeles, CA 90011

Craig Corp.
921 W. Artesia Blvd.
Compton, CA 90220

Crisman Speaker Co.
824 Pearl
Boulder, CO 80302

Crosspoint Instruments
12 Irving Place
Framingham, MA 01701

Crown International
1718 W. Mishawaka Rd.
Elkhart, IN 46514

Custom Electronics
2350 Woodhill Drive
Lexington, KY 40509

DB Systems
Box 187
Jaffrey Center, NH 03454

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Newton, MA 02195

DCM Corp.
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Ann Arbor, MI 48104

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P.O. Box 88
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Sacramento, CA 95827

EPI
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EPS
SEE: CBS, Inc.

ESS, Inc.
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Sacramento, CA 95827

Eastman Sound Mfg. Co.
Harmony Rd. & Rte 295
Mickleton, NJ 08056

Eidolon Research
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Ann Arbor, MI 48104

Electronic Industries, Inc.
7516 42nd Ave., North
Minneapolis, MN 55427

Electro-Voice, Inc.
600 Cecil St.
Buchanan, MI 49107

Elpa Marketing
Thorens & Atlantic Aves.
New Hyde Park, NY 11040

Empire Scientific Corp.
1055 Stewart Ave.
Garden City, NY 11530

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Environmental Sound
SEE: RNS

Epicure Products, Inc.
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Newburyport, MA 01950

Ercona Corp.
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Bellmore, NY 11710

Eumig (USA) Inc,
Lake Success Business Park
225 Community Drive
Great Neck, NY 11020

Ezekiel
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Faber Audio
468 Yolanda
Suite 3
Santa Rosa, CA 95404

Fidelity Research of America
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Ventura, CA 93003

Fisher Corp.
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Chatsworth, CA 91311

Frankmann Research
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Greenville, OH 45331

Frazier, Inc.
1930 Valley View Lane
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7616 City Line Ave.
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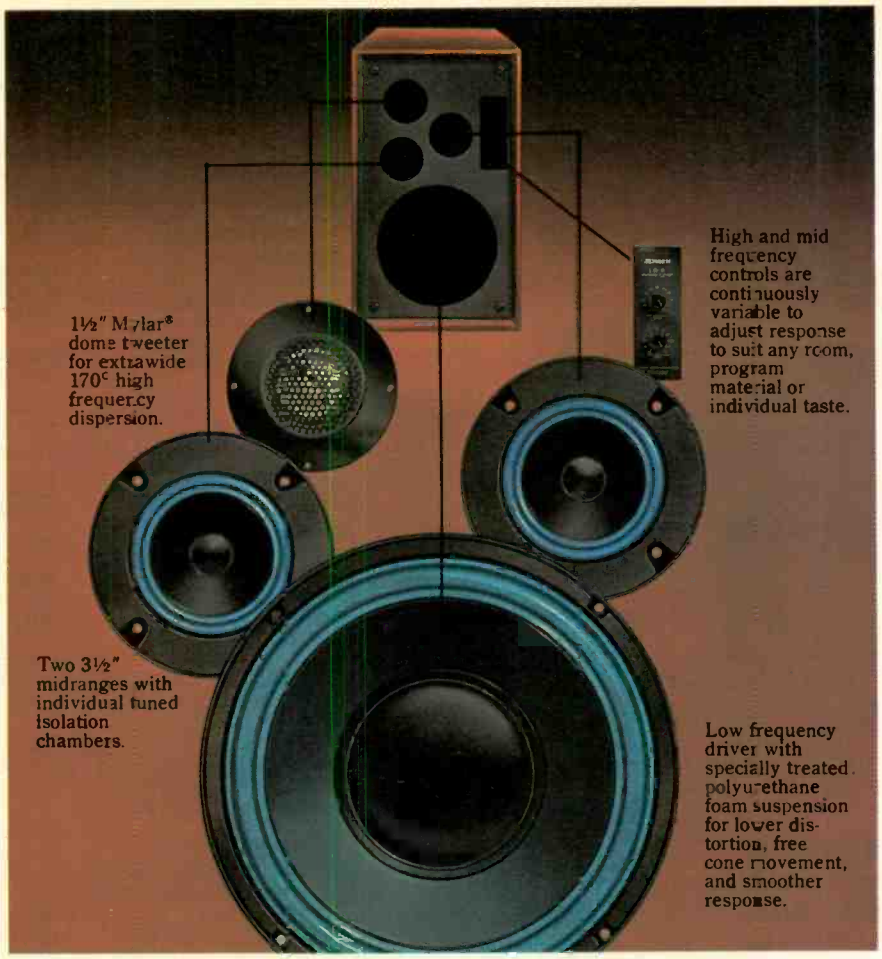

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In fact, for perfectly integrated speaker systems and total quality control, we make every element that goes into the manufacture of our Lifestyle speakers. From the heavy duty magnets to our handwound, high power voice coils. Even the computer-designed crossover network. And of course, all of our precision woofers, midrange drivers and 170° dispersion dome tweeters.

But please, give a critical listen to these speakers in person. We think you'll agree, a notably superior design concept has resulted in audibly superior sound reproduction.

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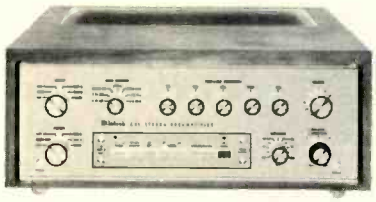

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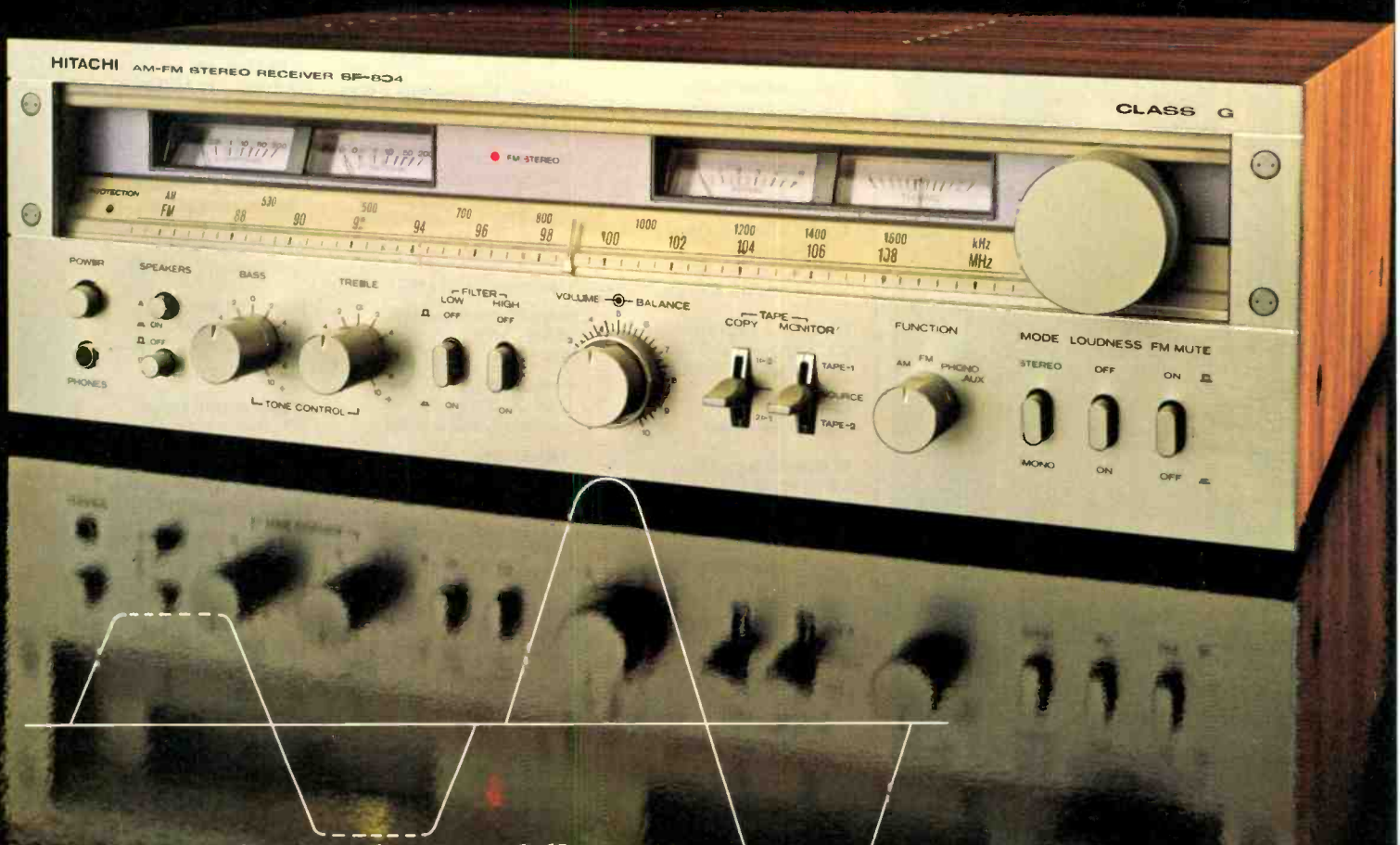

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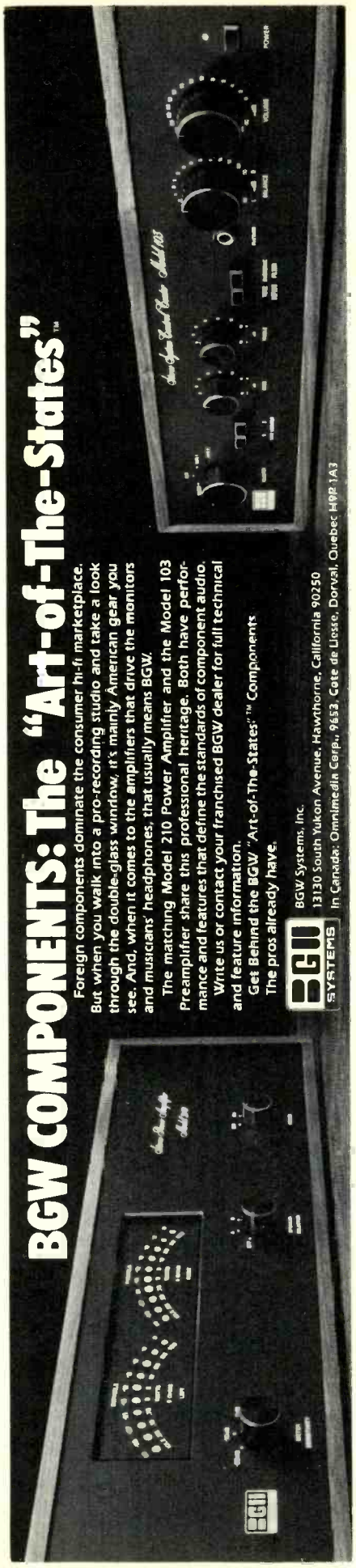

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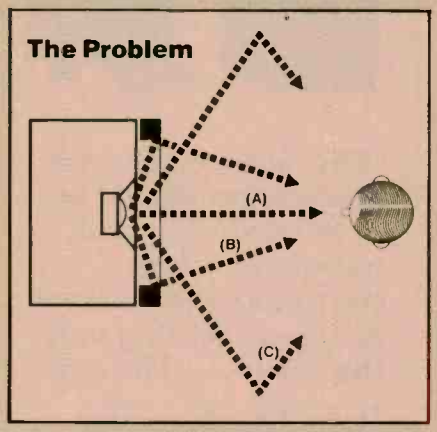
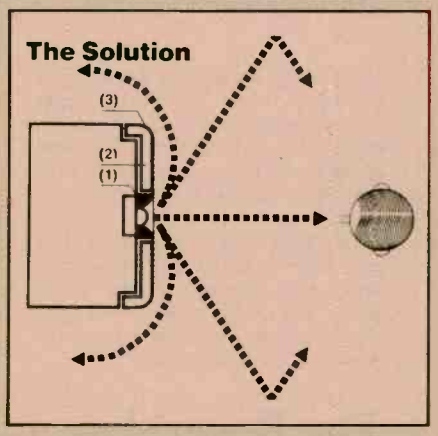
Unboxed Sound

Introducing minimum diffraction loudspeakers™ by Avid.

Unwanted cabinet/grille diffraction effects **(B)** give listener clue as to the size/shape of sound source—in this case a box. First arrival signals **(A)** locate source, while brain uses delayed room reflections **(C)** to identify listening environment.





The careful integration of special engineered Optimum Dispersion Couplers™ **(1)**, and solid front grille panels **(2)** with rolled edge design **(3)**, significantly reduces the unwanted cabinet diffraction effects—a principal contributor to "boxy" sound. These design principals are incorporated in all Avid Minimum Diffraction Loudspeakers™

In the quest for accuracy, cabinet loudspeakers, regardless of price, still generally suffer from a common failure—they still sound like loudspeakers, or more precisely their sound obviously comes from a box.

Your brain hears the box.

Without going too deeply into psycho-acoustics, cabinet speakers tell us their sound is emanating from a box because the brain has been conditioned to recognize the characteristics...size, shape, etc....of any sound source.

What creates the boxy effect? Diffracted or reradiated sound waves, those that bounce off the sharp edges of the speaker and grille assembly, are the clues interpreted by the brain as "box-like."

No diffraction, no box.

The problem is graphically illustrated in the drawings. By eliminating sharp cabinet edges and grille panel obstructions, you reduce diffraction effects...which means you eliminate the boxiness of the sound. And that's exactly what we've done with our new line of Avid Minimum Diffraction Loudspeakers™

To open the box, we closed the cover.

The solution was deceivingly simple.

By engineering the drivers, cabinet enclosure and, importantly, the grille assembly to create a totally integrated acoustic system, we eliminated cabinet diffraction and the boxy sound quality inherent in typical cabinet loudspeakers.

Our new tweeter and midrange drivers have specially engineered coupling devices (we call them Optimum Dispersion Couplers™) which transmit sound waves with minimum diffraction.

"Solid front" grille panels perfectly mate with each coupler eliminating grille panel diffraction. And, the grille panels have rounded edges creating a smooth, gradual transition from the grille to the cabinet, significantly reducing cabinet edge diffraction—a major cause of boxy sound.

These three simple, but audibly significant, features, coupled with Avid's critically acclaimed accuracy, assure you a new level of performance and sense of reality.

Of course there's a lot more to the Avid story—like our new drivers and Q-Span testing. Write us for literature and a full description. We invite your comparison.

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Harold N. Beveridge

No one's speaker is perfect, including our own. We're still trying to achieve perfection. However, we believe our 2SW-1 achieves this on an order of magnitude better than any other speaker system in the world.

The Beveridge Electrostatic System 2SW-1 is the most expensive production speaker in the world today. We invite music lovers with the dedication and funds to enjoy the best with us. Thank you.

The Beveridge Electrostatic System 2SW-1

Two full range electrostatic line sources, two direct drive tube amplifiers for electrostatics, two solid state amplifiers for subwoofers, two electronic crossovers, (18 db per octave, 100 hz), two HD subwoofers and the CM-1 Control Module. Warranty: No time limit parts (1 year tubes) 5 years labor. About $7,000.

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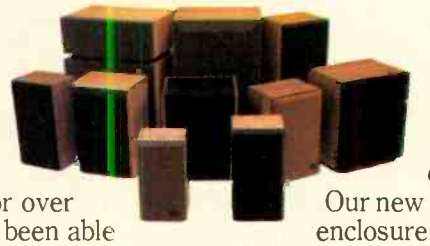

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Hirsch-Houck Laboratories — Equipment Test Reports
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*Higher in the South and West.

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Behind the scenes

Bert Whyte

Note: Hopefully you noticed the absence of "Behind The Scenes" last month. No, I didn't go on an Everest expedition, or run off with a starlet. Just a nasty bug that laid me low at the wrong time — B.W.

This is the time of year I report on my annual pilgrimage to the Consumer Electronics Show in Chicago, which convened June 11-14 at its usual locations, McCormick Place and assorted satellite hotels. However, this year the SCES was preceded by the first trade show sponsored by the Institute of High Fidelity, which was held May 18-21 at the Georgia World Congress Center in Atlanta.

As you may be aware, for some time now a substantial number of audio industry people have been disaffected by certain aspects of the Consumer Electronics Show. Most specifically, they wanted to disassociate their audio products from the displays of calculators, watches, TV games, CB, and assorted electronic doohickies, which, in recent years, have been indigenous to the CES. This attitude touched off considerable controversy among audio manufacturers and retailers about the relative merits of the CES and desirable alternatives. In any case, it was decided that it was logical for an all-audio show to come under the auspices of the Institute of High Fidelity, and the result was the aforementioned show in Atlanta.

Detractors of the IHF show were particularly annoyed about the location . . . Atlanta wasn't as central as Chicago . . . and the dates, May 18-21, which they considered much too close to the CES. Many complained that in their circumstances, they could not risk putting all their eggs into the untested IHF show and, for self-protection, would have to bear the expense of participating in both shows. Smaller companies, which could not afford both shows, had some agonizing decisions to make. In an effort to bolster these companies' confidence in the show, the IHF designated the Hyatt-Regency Hotel as exclusive province for esoteric hi-fi products. In spite of all the travail, the die was cast, and with appropriate fanfares the IHF Atlanta show was opened by President Carter's sons, Jeff and Chip.

As it turned out, there was considerable duplication of displays, with many companies showing their wares at both the IHF and CES. I feel that the plethora of new audio products that were the substance of both shows was ample evidence of a healthy industry. Thus, for the most part, I will not belabor the point of "which product was shown at what show." Suffice to say that the Atlanta show had good facilities, albeit with some confusion as to booth locations and traffic flow. While the IHF claimed a registration of over 9000 show attendees, it must be admitted that many of the exhibitors felt there was very sparse attendance by buyers, and there was much grumbling. On the other hand, some manufacturers were quite pleased with their results and liked the idea of a slower-paced show giving them more time to talk things over with key accounts. Along with others, I liked the concentration of the "esoteric" hi-fi companies on several floors of the spectacular Hyatt-Regency Hotel, although the rooms were on the smallish side for really effective demonstrations. In talking to many people at the show, it would appear that the main bone of contention was the scheduling of the IHF show such a short time before the CES. Now that the "returns are in," so to speak, the IHF appears to be scheduling a second show in early May of 1979.

It must be said that whatever people may have thought of the IHF show, its mere existence had a salutary effect on the CES management in respect to its audio facilities. More sound rooms were made available at McCormick Place itself, the McCormick Inn was once again devoted exclusively to audio, and the Pick-Congress Hotel was officially designated as headquarters for high-end esoteric hi-fi products. Well, enough of show politics. There was much exciting new technology unveiled at these shows, and I would like to report on these developments first, and then review what new equipment impressed me within the various product categories.

Ferrous Esoterica

Readers may recall that about four years ago I visited the Philips laboratories in Eindhoven, and I reported on experimental work their scientists were

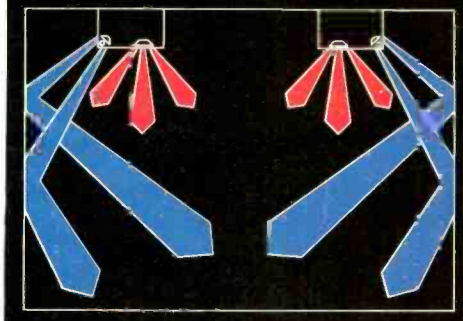
The Bose® Model 301 bookshelf speaker. Is it the best-selling, or just the best?

Small size, small price, big performance. That potent combination is the reason why over a quarter of a million Model 301 Direct/Reflecting® speakers have been sold since they were first introduced. And that probably makes the Model 301 the best-selling bookshelf speaker in the world.

But we didn't build the Model 301 to win popularity contests. We built it to give you Bose sound...open, spacious, clear, room-filling sound...in a small, economical package.

And to do that required an exceptionally sophisticated design.

The right and left speakers are designed as a mirror-image pair.



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The price? A little over one hundred dollars apiece. With the Model 301, you get a dimension of performance you can't buy in speakers costing twice as much.

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For complete technical information on the Model 301 speaker system, write Bose Dept. T, The Mountain, Framingham, MA 01701.

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doing with a cassette tape using pure iron metal particles, instead of the usual ferric-oxide formulations. In an actual demonstration, it was easy to hear the six to seven dB improvement in signal-to-noise ratio and dynamic range afforded by the metal particle tape, as compared to the conventional oxide tape. At the time, this metal-particle tape was little more than a laboratory curiosity, with such problems as stability and corrosion yet to be resolved. The very finely divided iron powder was pyrophoric . . that is, it could spontaneously burst into flames! Also, when a web (the wide sheet of tape that winds off the calendering rollers in the final stage of manufacturing) was slit into cassette widths, the tape edges would literally "rust!" In this case, of course, the "rust" was iron oxide, but nonetheless undesirable. Now, metal-particle tape is very much in the news as an emerging new technology that will permit significantly higher quality in analogue tape recording. (I have been wondering what happened to the Philips experiments with metal-particle tape, as to date there have been no announcements from them concerning consumer availability of this kind of tape.)

It turns out that the 3M Company started a research program on the feasibility of metal-particle tape back in 1965. They called their tape "Metafine" and by 1972 had brought it to the point where they furnished samples of the tape to cassette machine manufacturers for experimental use. Between 1972 and 1976, the performance characteristics of Metafine were verified by the hardware people, the instability and corrosion problems of the tape had been largely solved, and at the end of 1976 the first Metafine tapes made from the metal-particle pigments presently used were deemed economically feasible for marketing. However, the introduction of the Metafine tape had to wait until the cassette equipment manufacturers developed erase and record heads capable of using this type of tape. Even the heads in the finest "state of the art" cassette recorders could neither erase nor record with Metafine tape. Stated rather bluntly, it means that all present cassette machines cannot record metal-particle tapes. It should be pointed out, however, that in the unlikely (at least for now) happenstance of pre-recorded tapes using metal-particle tape, those cassette machines with the 70-microsecond, so-called "chrome" playback equalization (which is also used for such as TDK-SA and Maxell UD XL-II) could properly playback such tapes with the attendent improvement in quality. In other words, at least we have a "one-way" compatibility for playback of metal-particle tapes on many present cassette recorders.

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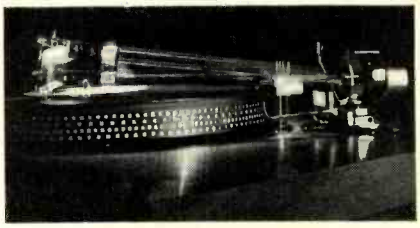

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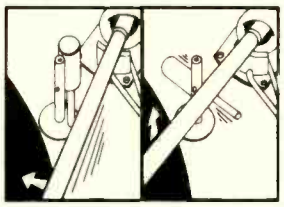

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Particle Practicality

At a press conference in New York, just before the CES, 3M officially introduced its "Metafine" brand of metal-particle tape. At this point let us take a look at the characteristics of Metafine and see why the advent of metal-particle tape has caused so much excitment and enthusiasm in the industry. Metafine has a retentivity of 3400 gauss, compared to 1400 gauss for typical chromium-dioxide cassette tape. Metafine has a remanence of 0.80, while the figure for chrome is 0.43. Metafine has a coercivity of 1000 oersteds versus 550 oersteds for chrome tape. The high retentivity of Metafine improves low frequency output and its high retentivity and coercivity also improve high frequency output. This all adds up to a maximum output level at 12.5 kHz (saturation) for Metafine 7 dB higher than typical chromium-dioxide tape at the optimum bias for each tape. Maximum modulation level (3 per cent third order harmonic distortion at 333 Hz) is up to 9 dB higher.

Now you know that in setting bias for a particular tape on a magnetic tape recorder, you have a choice of a parameter you can favor. You can set the bias for widest frequency response, best signal-to-noise ratio, or minimum distortion. Often you wind up with a compromise setting of these variables. Now if you have a three-head cassette machine that can handle Metafine, and the record head has a 2.5-micron gap, and you decide to set the bias for minimum distortion, then with the bias reference point set at 0 for chrome tape and at ±6½ for Metafine, the distortion level of Metafine is a rather incredible 23½ dB less than the chrome tape! The particles of Metafine are considerably smaller than the very finest particles in conventional oxide formulations, so packing density can be extremely high. The 3M people pointed out that while Metafine is being introduced in the cassette format, it will ultimately be available in other formats, and its high packing density will afford commensurate improvements in open-reel, videotape, and digital recording.

The "rub" with all this (at least as far as Metafine cassettes are concerned) is that because of the high coercivity and remanence of the tape, erase and bias current must be considerably increased. This could be done fairly easily with the electronics in our present cassette recorders, but . . . even with the very best record heads, when recording on tapes like TDK-SA or Maxell UDXL-2, current levels are already so high that the heads are on the ragged edge of core saturation . . . hence the limited headroom. Thus, the need for special new types of erase and record heads to cope with the recording requirements of metal-particle tape. The 3M demonstration of their Metafine tape was certainly impressive and exciting in its potential for true high-fidelity tape recording. But wait! The plot thickens!

Compatible Cassette Decks

A month or so previous to the 3M introduction of the Metafine tape, the audio press corps attended a seminar at the New York offices of JVC. Among a number of interesting new developments we were shown was a special version of their new KD-85 cassette deck, which was capable of recording metal-particle tape! The purpose of the exercise was to show us that JVC's proprietary Sendust heads can be made to handle this kind of tape. As a matter of fact, JVC showed us the results of tests they made with *five different kinds* of metal-particle tapes, but declined to name the brands, so we didn't know which one took top honors in the tests. Obviously, a JVC deck that will handle metal-particle tape is waiting in the wings, pending the release of Metafine. Wait! There is more to come!

Just after the conclusion of the 3M press conference on Metafine, the audio press corps walked down the hall of the St. Regis and into a Tandberg press conference. Lo and behold, they not only showed us their new TCD-340AM cassette deck with the capability of recording metal-particle tape, but a new open-reel recorder, the TC20A with the same capabilities! Furthermore, these were not prototypes, but production units, with a price of $1300 for the cassette machine and $1200 for the open-reel unit. Both machines use the new Tandberg "Actilinear" recording system, which was partially described in the July, 1978, issue of ***Audio***. The Actilinear system claims to have more than 20-dB headroom capacity above the level of any competing recorder now on the market. Ally this with metal-particle tape and, according to Kjell Hoel, President of Tandberg, the results are a dynamic range and signal-to-noise ratio in analog recorders which approaches those of PCM performance. The TCD-340AM cassette deck is a three-head, three-motor, dual-capstan, closed-loop drive system.

The Dolby B N/R system is compatible with metal-particle tape, and the TCD-340AM deck incorporates four Dolby processors. Naturally, the unit is equipped with controls to furnish the higher levels of erase and bias current necessary for the metal particle tape, and the heads are of special construction as well. The erase head is a dual-gap unit which affords over 70 dB of erasure with Metafine and is made of a special ferrite. The record head is the same ferrite with a fairly wide 5-micron gap. The playback head is hard permalloy with a 1.2 micron gap. The TD20A open-reel deck is a three-head, four mo-

tor unit with a phase-locked, brushless synchronous capstan-drive motor. There are many interesting performance and convenience features on this recorder, including circuits for phase correction. The Metafine-capable heads are a dual-gap ferrite erase, a hard permalloy record head and a ferrite playback head. Finally, as a surprise, at the 3M press breakfast at the CES, Tandberg unveiled their TD320AM cassette deck, a two-head unit capable of handling Metafine tape. The machine has the same dual-gap ferrite erase head as the TCD340AM. The record/playback head has a 1.5-micron gap and is made of a new proprietary material Tandberg declined to reveal at this time. Obviously, with Tandberg offering production cassette and open-reel decks capable of handling metal-particle tape, they have gained a significant advantage in this new technology. The availability of these units should also hasten 3M's production of Metafine, which has tentatively been set for September of this year.

At the CES, Fuji announced it would produce metal-particle tape. TDK and Maxell are known to be making samples, and just before I wrote this, I received a bulletin from BASF stating that they had metal-particle powder available now, but were awaiting word on "standardization" of the parameters of this kind of tape before commencing production. More on this aspect later.

Scenario Surprises

The final part of this scenario on metal-particle tape involves Nakamichi, always an important factor in matters concerning cassette technology. Some weeks before the CES, at a preview of new Nakamichi equipment in New York, the press corps was given a demonstration of the playback capabilities of metal-particle tape, and an announcement was made that experimental work was going on with this kind of tape. Thus, it was no surprise when Nakamichi unveiled at the CES prototype cassette decks, the three-head Model 1000 II "ZX," and the two-head Model 600 II "ZX," both capable of record and playback on metal-particle tape. But there was a further surprise in that the new Model 1000 also incorporated the Telefunken "Telcom" noise-reduction system and the Model 600 was demonstrated with the same system in an outboard "black box" processor. Heretofore, the Telcom system has been a four-band professional noise reduction system, available separately, or as a package with Magnetophon tape recorders from Gotham Audio in New York. The Model 1000 ZX employes a dual-gap erase head which accepts higher erase currents for 70 dB of erasure and a wide-gap Crystalloy record head and 0.8 micron Crystalloy play-

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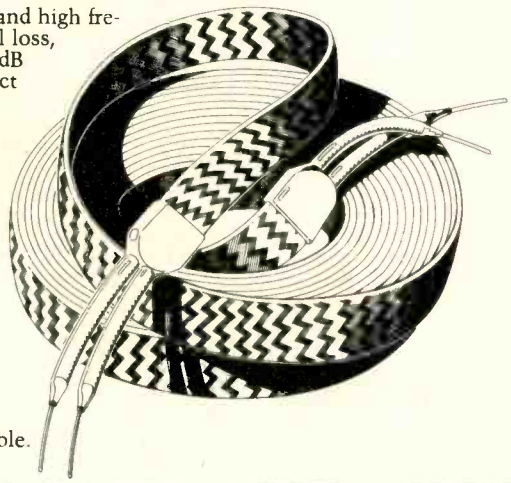

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back head. Nakamichi has put forth the interesting proposal that in spite of the high coercivity figures for metal-particle tape, it would be possible to produce a version of this tape which could be recorded with the current CrO^2 bias levels. They suggest calling this "Broad-Bias Metalloy," and it could be used on present cassette decks, although the decks would need new erase heads to cope with the tape. (Alternatively, a person could use a high power bulk eraser, to erase previously recorded metalloy tapes.) On the Model 600ZX/BB deck, the 0.9-micron gap record/playback head and the dual-gap erase head can use the metalloy with the chrome bias, approximately 0.8 per cent with 1.8-mA bias current. They claim this will give ruler-flat response to 20 kHz at -10 dB record level.

Needless to say, metal-particle tape technology has the midnight oil burning in labs all over the world.

Having covered the major story at the CES, metal-particle tape, now we'll get on with the new product round-up. Between the Atlanta show and the CES, there was a truly mind-boggling array of new audio products in every category. I defy anyone to tell me that he has covered them all. Maybe some young buck, sound of wind and limb could hack it . . . but not yours truly! Thus I am unabashedly "cherry picking" . . . so if I don't tip my hat to your particular product. . . just remember the spirit was willing, but the flesh (and I have a lot of it) was weak!

(Editor's Note: While I am slightly fleeter of foot than Mr. Whyte, I too found it quite literally impossible to cover EVERY press conference, booth and room at the two shows. In the hopes, therefore, of achieving somewhat better press coverage, as well as lower taxi and shoe repair bills, I would like to plead with the various manufacturers that they check with the CES offices before scheduling an event in conflict with two or three others; that product, rather than personnel, be emphasized, and that some thought be given to the locations' seating capacity, air conditioning, and ease of traffic flow. Most of the press corps. find it difficult to be positive when forced to stand in a hot, smoke-filled room, listening to speeches about anything but product when the "next" press conference started half an hour earlier. — E.P.)

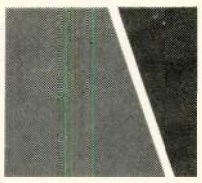
Every year I dutifully report on what is the latest and greatest in receivers. I have a confession to make, friends; I don't like receivers. Never have. Never had one in my home. I'm a "separates" man. A snob. A lot of manufacturers think I'm a fink, because I steadfastly refuse to check out their latest "jimdandy" receivers. However, in spite of my antipathy to them, one has to admire the incorporation of so many diverse elements into a single chassis, the engineering complexity, the stylish cosmetics, and the "human engineering" that brings symmetry and order to the myriads of controls. And every year the receivers get bigger and more powerful. For example, the new "king of the hill" is the Technics SA-1000, all 87 pounds of it. Can you imagine that this unit is rated at 330 watts per channel into 4 or 8 ohms! And they claim THD of no more than 0.03% at that output. You know, there are very few separate amplifiers with that kind of rating in power. Maybe that is why I cast a beady eye at the breed. Sansui's new G-33000 receiver comes in at a hefty 300 watts per channel with a claimed THD of 0.009%. This unit has a new wrinkle in an amplifier configuration known as the "Takahashi Double Differential Diamond Circuit." It is claimed this circuit permits high levels of negative feedback to reduce THD, without the concomitent penalty of high levels of transient intermodulation distortion which usually results from large amounts of negative feedback. While slew rate is a relatively new specification for a receiver, this unit boasts of having one of 175 volts per microsecond. High slew rates may be given too much significance, but in any case, to my knowledge, there is no separate power amplifier with a slew rate higher than 105 volts per microsecond. It would seem the receiver people are really encroaching on the "separates brigade!" Such new sophistication in receivers doesn't come cheaply. The Technics unit is $1400 and the Sansui G-33000 is $1900. Marantz and Pioneer, both veterans of the horsepower race in receivers, didn't choose to challenge Technics for the crown, but concentrated on lower distortion and more convenience features. Marantz did show the Model 2600 at 300 watts, while Pioneer had earlier shown the Model SX-1980 at 270 watts. This was also true of Kenwood and Harman-Kardon, the latter opting for ultra-wide band frequency response, fast rise times, and phase linearity. Toshiba had a 150-watt-per-channel receiver that may be the first to feature digitally synthesized FM tuning. If you want to have a graphic equalizer built into your receiver, the JVC JR-S201 will fit the bill with 120 watts per channel and direct-coupled circuitry.

Amps and Preamps

Of exotic amplifiers, there was no shortage of either the Atlanta show or at the CES. Most of them had companion preamplifiers, but oddly enough, I didn't see very many new preamplifiers on an independent basis. Analog Engineering Associates of Rockville, Maryland, had a

brute force unit in their new A-620 power amplifier, which is rated at 325 watts into 8 ohms, 650 watts into 4 ohms, and a rather breathtaking 1000 watts into 2 ohms. The designers claim it is perfectly stable at the 2-ohm load and, in fact, with any speaker reactance. Finesse has not been forgotten either, with only 10.5 dB of negative feedback, a 75-volt-per-microsecond slew rate, and a rise time of 1.6 microsecond. Full 20 Hz to 20 kHz THD is less than 0.04% with IM distortion at full rated power of 0.04%. The almost legendary Electro-Research A75-VI Class-A amplifier made an appearance at the Atlanta show, with its inventor, the controversial John Iverson. I found John a nice, no-nonsense guy, with strong convictions, and some fascinating ideas. His amplifer puts out 75 watts per channel at 8 ohms, and on down to 300 watts per channel at 1.25 ohms. Output current is quite substantial at 25 amperes full scale. THD and IM distortion is rated at typically 0.0015% d.c. to 50 kHz, slew rate is up there at 105 volts per microsecond. One of these units bridged for mono puts out over 400 watts. Trouble is, for stereo you are talking about a 4K outlay of dollars. Stability is so great that in one professional application, it is claimed that one Model A-75VI drove 18 paralleled pairs of speakers to concert hall levels! The Threshold Corporation keeps on coming up with new ideas in power amplifiers. One of their newest designs is the Model 4000, which is listed as a "cascode/Class-A" amplifier. This unit is rated at 200 watts per channel, but if bridged to mono configuration, the output is 700 watts. Rise time is a very fast 1 microsecond, slew rate 50 volts per microsecond, and transient intermodulation sidebands are claimed to be 80 dB down from a 10-watt output signal.

The Acoustat Company has had an electrostatic speaker, with integral hybrid solid-state/tube amplifier which directly drives the electrostatic elements, on the market now for several years. It was known as the Acoustat X and certainly qualified as one of the best-sounding full-range electrostatic loudspeakers in production. Now the Florida-based firm has introduced the Acoustat Monitor. This is essentially an update from the X model, with now four panels of electrostatic elements, in an attractive reconfigured framework. The extra panel affords wider horizontal dispersion, and an azimuth adjusting device reduces vertical beaming. Higher sound pressure levels are now possible with this Monitor version, which in fact was so named after successful usage in the well-known Criteria Studios in Miami. This had to be one of the best sounds in Atlanta and at the CES, even with the less than ideal demonstration suites. Using Frank Van



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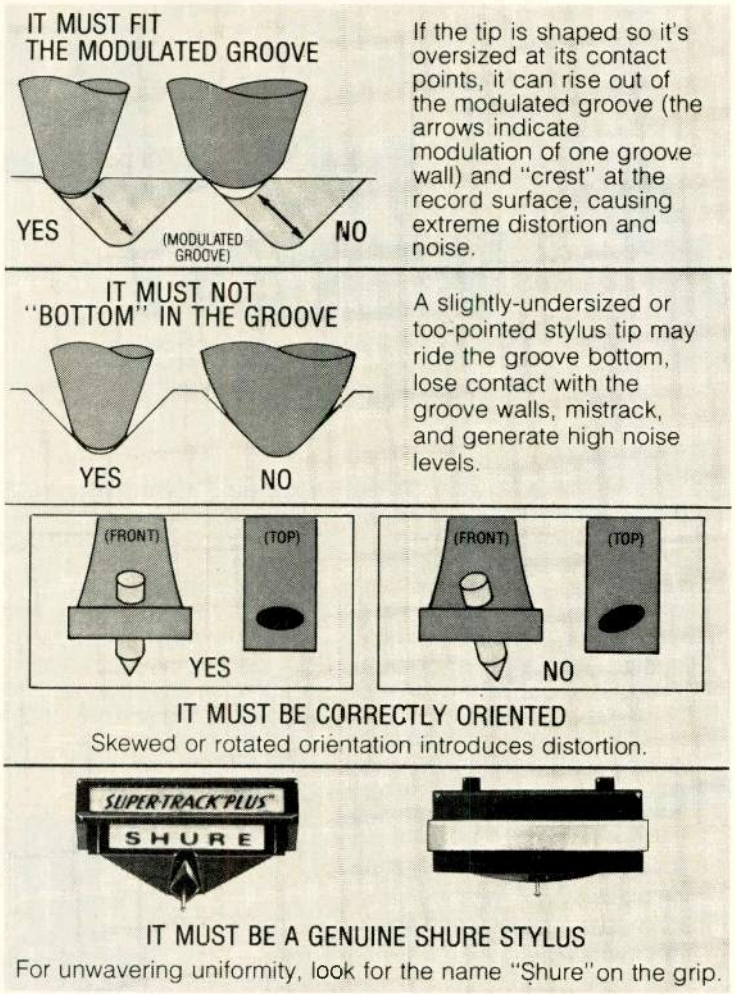
Here are the basic criteria a top-quality stylus tip must meet:



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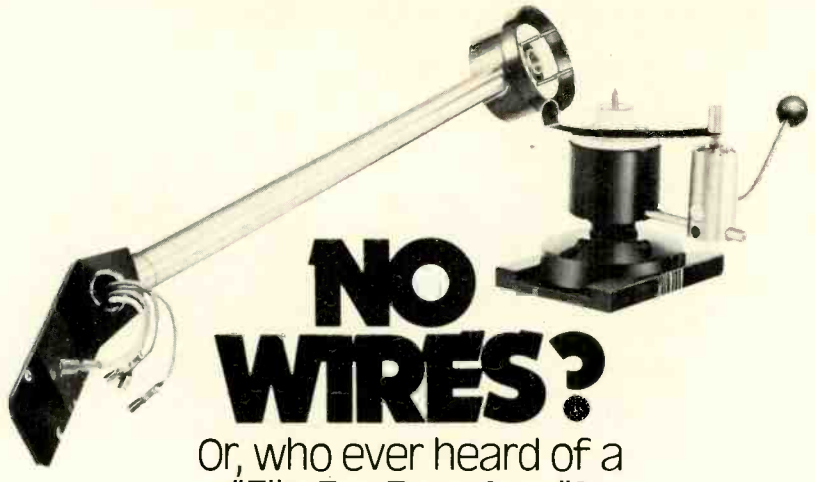

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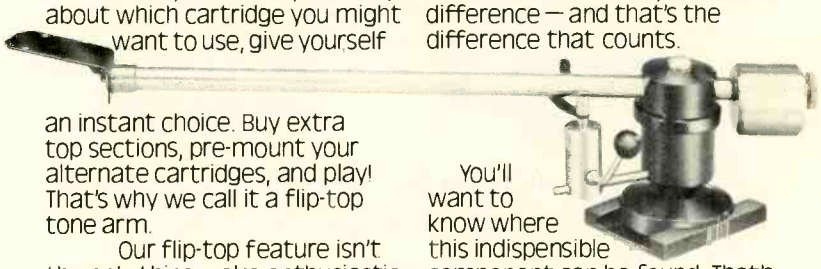
We have! At Keith Monks, we've created a new technology that allows our tone arm top sections to be changed at will. For the first time, you can alternate cartridges without re-mounting and re-balancing. You see, there are no friction-causing lead-out wires from our top section to our base.

So if you're really choosey about which cartridge you might want to use, give yourself an instant choice. Buy extra top sections, pre-mount your alternate cartridges, and play! That's why we call it a flip-top tone arm.

Our flip-top feature isn't the only thing we're enthusiastic about. Our other design accomplishments are just as exciting. The low mass, precision damping, record pampering cuing, and magnetic anti-skate features — combined with a suggested retail price of $179.95 — make our tone arm about the most astonishing component in today's audio market. At any price, we have surpassed the performance levels of other tone arms by an audible difference — and that's the difference that counts.



You'll want to know where this indispensible component can be found. That's easy. See your local Keith Monks Audio dealer.

KEITH MONKS (AUDIO) LTD
42 Tiffany Place, Brooklyn, New York, 11231 • (212) 596-3460

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Alstine's excellent-sounding new induced-magnet phono cartridge, with some Philips and EMI recordings, the sound was seamless across the full spectrum from about 35 Hertz to beyond audibility. The smoothness was exceptional, images were stable and there was a lovely transparency and sense of depth that was most ingratiating. Transient response was instantaneous, and the clarity outstanding. In short, a lovely, musical sound that refutes the notion that electrostatics are too "clinical" and overbright.

The big news in the cassette world . . . metal-particle tape . . . I've already covered. But there were several other items of interest in this category. One was the arrival of three new cassette decks from B•I•C, Models T-1 and T-2, both two-head, front-loading units, and T-3, a three-head, front-loading unit. So what, you say? Well, all of these decks feature the standard 1⅞ ips cassette speed *and 3¾ ips as well.* We won't get into the legal ramifications with Philips on this.

Suffice to say that any problems, which frankly were expected by quite a number of manufacturers, have evidently been resolved. Is there any advantage to the doubling of the tape speed? According to our experiences in open-reel recording, faster linear tape speed means, at the very least, a demonstrable improvement in high frequency response. There are other benefits as well. B•I•C states that the 3¾ ips speed affords "less noise; better highs, mid-range and lows; clearer, more detailed sound; wider dynamic range, and better stereo imaging." It must be admitted, that a number of people pooh-pooh all this as "wishful thinking." I haven't had one of these decks at home yet, but at the CES, Chief Engineer Dick Auerbach of B•I•C, ran a curve on the UREI Model 200 frequency plotter, using special graph paper with response to 30 kHz, and there, neatly traced, was the improved overall flatness and extended high-frequency response of the 3¾-ips speed in comparison to the standard 1⅞ ips (which was pretty good in its own right). In addition to the 3¾-ips speed, other improvements and new circuitry was incorprated in these decks. For example, the well-known "contour effect," which causes severe anomalies in the low frequencies usually beginning around 60-70 Hz, has been appreciably reduced by optimizing head shape and some circuit changes. There are other interesting deviations from standard casette circuitry which we will report on after we have had a chance to live with a unit for awhile. Before we take our leave, however, the frequency response at 3¾ ips with 70-microsecond EQ, was ±3 dB, 25-22,000 Hz. The same tape at 1⅞ ips topped out at 19 kHz. *A*

"The Sansui AU-717 is a superb amplifier. We like it with no ifs, ands, or buts." (Julian Hirsch) It offers "as much circuitry sophistication and control flexibility as any two-piece amplifying system." (Len Feldman)

Everyone says great things about the new Sansui AU-717, but the experts say it best.

The Sansui AU-717 DC integrated amplifier is "Sansui's finest .... It incorporates a fully direct-coupled power amplifier section whose frequency response varies less than +0, −3dB from 0Hz (D.C.) to 200 kHz. The amplifier's power rating is 85 watts per channel (min. RMS) from 20 to 20,000Hz into 8-ohm loads, with less than 0.025 per cent total harmonic distortion .... If any amplifier is free of Transient Intermodulation Distortion (TIM) or any other slew-rate induced distortion, it is this one .... The slew rate ... was the fastest we have measured on any amplifier, an impressive 60 V/μsec.

"The preamplifier section of the AU-717 .... has very impressive specifications for frequency response, equalization accuracy, and noise levels ... The AU-717 has dual power supplies, including separate power transformers, for its two channels ... [and] exceptionally comprehensive tape-recording and monitoring facilities .... Good human engineering ... separates this unit from some otherwise fine products....

"The Sansui AU-717 is a superb amplifier. We like it with no ifs, ands, or buts." (Reprinted, by permission, **Stereo Review** Magazine, Feb. 1978. Julian Hirsch Test Report. Copyright © 1978. Ziff-Davis Publishing Company. All rights reserved.)

"One clear advantage of DC design is apparent. Even at the low 20Hz extreme, the amplifier delivers a full 92 watts — the same value obtained for mid-frequency power — compared with its 85 watt rating into 8 ohms....

"The equalization characteristic of the preamplifier was one of the most precise we have ever measured, with the deviation from the standard RIAA playback curve never exceeding more than 0.1dB....

"Sansui claims that this unit has reduced transient intermodulation distortion — a direct result of the DC design, and, indeed, the model AU-717 delivered sound as transparent and clean as any we have heard from an integrated amplifier....

"...worth serious consideration — even by those who prefer separate amplifiers and preamplifiers." (Reprinted in part from Len Feldman's test report in **Radio-Electronics,** January, 1978.)

Listen to the superb sound of the Sansui AU-717 at your Sansui dealer today. And be sure to ask him for a demonstration of the matching TU-717 super-tuner.

SANSUI ELECTRONICS CORP.

Woodside, New York 11377 • Gardena, California 90247 • SANSUI ELECTRIC CO., LTD., Tokyo, Japan
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Sansui

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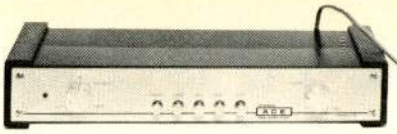
Preamplifiers

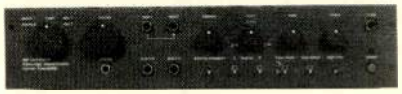


Ace 3100

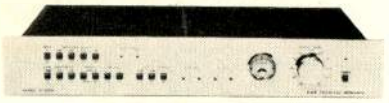
AGI 511

AB Systems Nine-Eleven

Audionics BT-2

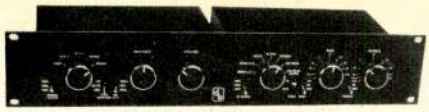


Apt. Corp. Holman

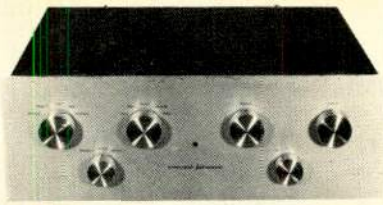


A&E E-2000

Model	Type of Unit — K=K-W; W=Wired-W; T=Tube-T; Phono Stage Only-P; Mono-M	Frequency Response, HZ to kHz + dB, - dB re:1KHz	Maximum Output, V	% THD	% IHF IM Distortion	S/N, "A" wtd., phono re: 5 mV input, dB	Phono Sensitivity mV	Phono Overload mV	Phono Input Impedance ohms	High Level Sensitivity V	Tone Control	Dimensions, to nearest quarter inch, W X D H	Weight, Lbs.	Price	Notes
A&E															
SCA-2000		d.c-500, -3	10	0.01			1.0			0.1		19 X 11 X 3½	10.6	950.00	No tone controls.
2000	P	d.c.-500, -3	1	0.01			2.5					19 X 11½ 3½	17.7	1850.00	No tone controls.
AB SYSTEMS DESIGN															
911		5-100 -0.15, +0.10	4	0.01	0.01	-80	2-10 (Adj)	250	47K	0.25	Yes	19 x 9 x 5¼	14	650.00	Fully auto select input w/mike mixing & V.C.A. level controls.
912		5-100 -0.15, +0.10	4	0.01	0.01	-80	5	250	47K	0.25	No	19 x 9 x 2½	10	550.00	As above.
ACE AUDIO															
Basic Stereo Preamp (BSP-a)	k	20-20 ±0.1	10	0.05	0.05	76	2.2	250	47K	0.1	No	11 X 3 X 7	3	167.50W 99.50K	Separate slide controls for level. All Class A circuitry with separate dual ground systems.
Zero-Distortion Preamp (ZDP-a)	k	0-67 +0 -3	25			76	10	110	47K	1.0	No	7 X 11 X 3	2½	138.00W 99.50K	Contains no high-level amplifiers, passive circuitry only.
3000	k	20-20 ±0.1	8	0.02	0.02	73	1	90	47K	0.1	No	2¾ x 12½ x 7	6	250.00W 156.00K	"Pancake" low-profile styling, all complementary circuitry.
3100		20-20 ±0.1	8	0.02	0.02	-89	1	90	47K	0.1	No	2¾ x 12½ x 7	7	325.00	Similar to model 3000 but uses separate power supply for lowest hum and noise.
AGI															
511a		20-20 ±0.1	9.5	0.005	0.005	82	1.3/ 0.56†	160/ 70	47k	0.23	No	14 x 5¼x 10	13	465.00	†Optional high gain phono no charge. Rack panel available $35.
ALL-TEST DEVICES															
ATD-25	P	20-20 ±0.5†	8		0.005	77		130	47k		No	8½ x 7 x 3½	5	170.00	†Of RIAA Curve.
APT CORP.															
Holman		20-20 ±0.5 dB	7	0.01	0.01	74†	1.25	100	47k††	0.080	Yes	3-¼ x 15 x 8-¼	10	447.00E 458.00W	†with cartridge connected. ††phono, also 50-400 pF capacitance.
AUDIO ARTS															
Bravura	T	2-120 ±1	8	0.02	0.01	71	2.2		47k	0.5	No	13½ x 2½ x 8	9	495.00	
Bravura Special Edition	T	1-190 ±0.8	9.6	0.006	0.005	73	1.8		47k	0.3	No	13½ x 2½ x 8	14½	995.00	
Bravura Elite	T	0.2-400	10	0.001	0.002	75	1.6/ 0.3		47k/ 4.5	0.2	No	19 x 5 x 11	26¾	2450.00	
AUDIONICS															
BT-2		20-20k -1	6	0.01	0.01/ 0.004	74	2.0	150	47k	0.1	No	19 x 3½ x 7½	10	444.00	Class A, feedback isolated from cartridge, 3rd order subsonic filter, $429.00 less handles.
AUDIO RESEARCH															
SP-4A		1-100 -3	10	0.005	0.005	78	5	150	50K	0.315	Yes	19 x 3½ x 8½	18	975.00	Overall gain 60dB, phono 36dB; rated output is 5V rms for reference.
SP-5		1-100 -3	10	0.005	0.005	78	5	150	50K	0.315	No	19 x 3½ x 8½	16	595.00	Overall gain 60dB, phono 36dB; rated output is 5V rms for reference.
SP-6	T	0.05-250 -3	75	0.03	0.008	66	5	700	50K	0.25	No	19 x 5¼ x 10¼	22	1075.00	Overall gain 60dB, phono 34dB; rated output is 5V rms for reference.
MCP-2		1-100 -3	0.25	0.005	0.005	60	†	50	†		No	19 x 3½ x 8½	12	595.00	Moving-coil pre-preamplifier; †gain & impedance adjustable.
AUDIO SCIENTIFIC															
1410		1-100K ±0.5		0.001	0.003		0.01	450	22K, 47K, 100K		no	19-in. rack		349.00	
1410 compander		1-100 ±0.5		0.001	0.003		0.01	450	22K, 47K, 100K		no	19-in. rack		425.00	As above adding integrated compander circuitry.



db Systems DBR-15A



Conrad-Johnson

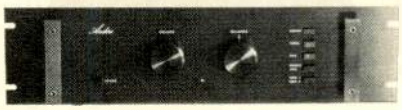
Audio Research SP-6

Crown DL-2

Cerwin-Vega
Metron PR-1

Bauman PRE-400

Dynaco 2510



Audire DIFFET 1A

Model	Type of Unit — K=K; W=C-W; T=T; Phono Stage Only=P; Mono=M	Frequency Response, HZ to kHz + dB, - dB re:1KHz	Maximum Output, V	% THD	% IHF IM Distortion	S/N, "A" wtd., phono re: 5 mV input, dB	Phono Sensitivity mV	Phono Overload mV	Phono Input Impedance ohms	High Level Sensitivity V	Tone Control	Dimensions, to nearest quarter inch, W x D x H	Weight, Lbs.	Price	Notes
AUDIRE															
Diffet 1A		DC-100 -0.25	15	0.005	0.001	83	1.2	175	40, 500, 47k	0.26	No	19x7x 4¾	9	525.00	Switchable gain and impedance for moving-coil cartridge.
Diffet 1		DC-100 -0.25	15	0.005	0.001	83	1.2	175	47k	0.26	No	19x7x 4¾	9	475.00	
BAUMAN RESEARCH															
Pre-400		2-250 ±1	10	0.005	0.005	80	2.9	150	47k-100k †	0.22	Yes	14x 2.5 x 9	5	850.00	†Selectable impedance & capacitance (50-350 pF); w. pre-preamp.
Pre-200		2-250 ±1	10	0.01	0.01	80	3.0	150	47k	0.25	Yes	12 x 2.5 x 6	4	495.00	Both Units Will Drive 600 OHM Loads.
CERWIN-VEGA															
Metron PR-1		10-50 +0, -0.06		0.01	0.01	-84	2.0	230	47k	0.25	yes	18.9 x 2.8 x 14.2	15	500.00	Precision step attenuators for all controls; double differential, full complementary discrete circuit.
CONRAD-JOHNSON DESIGN															
Conrad-Johnson	T	1-100 +0, -3	20	0.05	0.05	68		500			no	14 x 12 x 4¾	14	499.00	
CROWN															
IC-150A		3-100 ±0.6	12	0.05		83	2.5 adj	33-330	47k	0.227	Yes	19 x 5¼ x 8	10	399.00	
DL-2		1-100 ±0.5	17	0.008		88	2.5 adj	33-330	47k 100k	0.227	Yes	19 x 7 x 14	20	1995.00	Three piece unit, power supply, controller power mod. computor controlable.
DB SYSTEMS															
DB-1A		10-40 ±0.07	10	0.0008	0.001	83	1.8	150	47K	0.12	No	8½x3¼x 7	2.6	397.00	Power supply $62.00.
DB-4A		10-100 ±0.1	1	0.0008	0.001	98	†	90	9K			6¼x4½x 2¼	1.1	150.00	†3 gain settings, pre-preamp.
DBR-15A		10-40 ±0.07	10	0.0008	0.001	83	1.8	150	47K	0.12	Yes	19½x3½ x 7	5.2	720.00	Power supply $62.00.
DAHLQUIST															
DQ-CM1		5-250 +0,-1	12	0.002	0.002	80	1	120	50K	0.10	No			750.00	Moving-coil card $100.00; remote power supply, all discrete design.
DAYTON WRIGHT															
SPA Basic			9					100			No	19 x 13 x 3½	20	1080.00	Pre-preamp $270.00 more.
SPS Mk III			9					100	47k		No	6 x 11 x 6½	7	555.00	
DW535			0.8					14	12		No	10 x 7 x 2	7	470.00	Moving-coil pre-preamp.
DYNACO															
2510		10-60 ±0.5	8	0.005	0.002 †	79	1.26	180	25k	0.2	Yes	19x 14 x 3½	13½	499.00	†SMPTE, avail. wired only.
PAT-5 BI-FET	K	10-50 ±1	7	0.007	0.007 †	75	2.6	115	50k	0.2	Yes	13½ x 11¾ x 4¼	13	299.00	†As above, avail. kit only
EIDOLON RESEARCH															
MENTAT	T	3-100 +0, -1.5	15	0.05	0.05	76	1.5	380	47k	0.2	No	19 x 8 x 3.5	16	800.00	External power supply.
LB 2	K/T	3-50 +0, -1.5	15	0.05	0.05	70	2	300	47k	0.2	No	15 x 7 x 3.5	13	219.00	
ELECTRO RESEARCH															
EKI		1-400, +0, -3	15	0.1	0.1			500	200k	0.1	No				Opt. moving-coil cartridge board.
GLI															
3880		20-20 ±0.5	10	0.05	0.05	80	2.2	320	47	0.1	No	19 x 8¾ x 3	9	515.00	Mixer/preamp, bifet IC circuitry, rack mount.
1000		20-20 ±0.5	10	0.01	0.01	85			10K	0.1	Yes	19 x 3½ x 4	6	300.00	Three band tone control, dubbing blend.

Preamplifiers

Marantz 3650

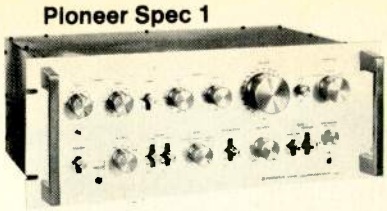
LUX C-1010

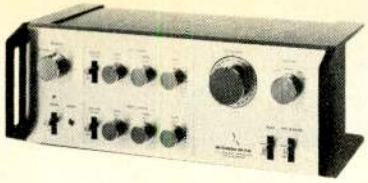
JVC P-3030

Hitachi HCA-7500

Model	Type of Unit — Kit-K, Wired-W; Tube-T; Phono Stage Only-P-Mono-M	Frequency Response, HZ to kHz + dB, - dB re:1KHz	Maximum Output, V	% THD	% IHF IM Distortion	S/N, "A" wtd., phono re: 5 mV input, dB	Phono Sensitivity mV	Phono Overload mV	Phono Input Impedance ohms	High Level Sensitivity V	Tone Control	Dimensions, to nearest quarter inch, W x D H	Weight, Lbs.	Price	Notes
GREAT AMERICAN SOUND															
	Thaedra II		20-20 ±0.1	10	0.01	0.01	80	0.07 1.6	3.5 100	47k	0.2	Yes	17 x 12¾ x 6	33	1049.00	
	Thoebe		20-20 ±0.1	10	0.01	0.01	78	1.6	100	47k	0.2	Yes	17 x 8 x x 5¼	28	599.00	
	Thalia		20-20 ±0.1	8	0.01	0.015	76	3.2	225	47k	0.2	Yes	19 x 10 x x 3½	11	339.00	
	Goliath II	P	20-20 ±0.1	0.2	0.01	0.01		0.07	3.5	600		No	5¼ x 8 x2¼	5	249.00	
DAVID HAFLER CO.	101K	K	20 -20 +0.0, -0.25	7	0.001	0.001	82	2.0	180	25K		Yes	13¾x3¾x 8½	9	199.95	*$299.95 Factory assembled.
HARMAN KARDON															
	Citation 17		3-270 +0,−3	14	0.002	0.0025	88	2.8	180	20K	0.2	yes	16 x 12 x 4¾	20	630.00	
	Citation 17S		3-270 +0,−3	14	0.002	0.0025	88	2.8	180	20K	0.2	no	16 x 12 x 4¾	20	450.00	
HEATH	AP-1615	K	20-20 ±0.2		0.05		72	0.73	100	47k	0.60	Nc	17½ x 8¼ x 4½	9	129.95	
HITACHI															
	HCA-6500													199.95	
	HCA-7500		20-20 ±0.2		0.005		87	2.0		50			19 x 13¾ x 6½	17½	370.00	
	HCA-8300			1	0.005		75	2.0		50			17¼ x 12¼ x 6	14.3	370.00	
JVC															
	JP-S7		15-100 +0, -0.5	5	0.02			2	300		0.200	10 Band SEA	22-¾ x 6½ x 10¾	19.1	749.95	
	P-3030		10-40 ±0.5	20	0.005			2	300		0.140	Yes	2½ x 16¾ x 13¾	12.8	429.95	
	EQ-7070		10-100 ±0.5	15	0.003			1.8	300		0.160	Yes	2½ x 16¾ x 13	16.5	949.95	
KENSONIC	C200		20-20 ±0.1	2	0.01		87	2-6	400	30K, 47K, 100K	0.2	Yes	17½ x 14 x 6	31	700.00	
KLARK-TEKNIK	DN15		40-20 ±0.5	1.2	0.02		81	2.5		100k	0.11	†	19 x 10 x 5.4	16	1099.00	†11-Band octave equalizer per channel.
LINN															
	PNAG	P	20-20k ±0.5		0.02	0.02		0.1	10	470				250.00	A.c-powered pre-preamp.
	NAG-20	P	20-20k ±0.5		0.02	0.02		0.1	10	470				150.00	Battery-powered pre-preamp.
LUX AUDIO															
	5C50		0.5-200 +0, -0.5	18	0.005	0.002		2.5	300	30k, 50k, 100k	0.15	No	17.7 x 16 x 4	18	895.00	
	C-12		1-200 +0, -0.5	18	0.005	0.002		2.3	300	30k, 50k, 100k	0.15	No	17¼ x 14¼ x 3	14.3	645.00	
	C-1010		2-80 +0, -0.5	13	0.007			2.5	450	30k, 100k	0.15	Yes	19¼ x 9¾ x 7	22	745.00	
	CL35/III	T	15-40 +0, -1	15	0.06			1.4		30k, 50k, 100k	0.14	Yes	19 x 11 x 7½	26.4	795.00	
	CL32	T	10-40 +0, -1	15	0.03			2	400	30k, 50k, 100k	0.16	No	17¼ x 12¾ x 3	12.5	645.00	
MARANTZ															
	3650		5-80 ±1.0	10	0.005		89	1.8	340	Var.	0.18	Yes	16½ x 5¾ x 9½	14¼	499.95	Pre-preamp, adj. cartridge loading, var. tone turnovers.
	3250B		7-60 ±1.0	10	0.01		86	1.8	220	47k	0.18	Yes	16½ x 5¾ x 9½	14¼	299.95	Pre-preamp, var. tone turnovers.
McINTOSH															
	C26													33	449.00	
	C27													32	749.00	
	C28													37	649.00	
	C32													39	1499.00	

Pioneer Spec 1





Mitsubishi DA-P10

GAS Thalia

Phase Linear 3000-II

Nakamichi 610

Model	Type of Unit — Kit-K; Wired-W; Tube-T; Phono Stage Only-P; Mono-M	Frequency Response, HZ to kHz + dB, - dB re:1KHz	Maximum Output, V	% THD	% IHF IM Distortion	S/N, "A" wtd., phono (re: 5 mV input), dB	Phono Sensitivity mV	Phono Overload mV	Phono input impedance ohms	High Level Sensitivity V	Tone Control	Dimensions, to nearest quarter inch, W X D H	Weight, Lbs.	Price	Notes
MERIDIAN	101	5-50 ±0.5	10	0.01	0.01	80	1.4	160	47K	0.90	No	5.5 x 12.5 x2	4	475.00	
	101 MC					70	0.150							525.00	Same as 101 except for moving coil phono input.
MITSUBISHI	DA-P20	10-100 -0.5, +0	18	0.002		84/ 77	2.3/ 0.1	290/ 12	50k/ 10	150	Yes	16¾ x 8 x 6¾	11¾	380.00	Pre-preamp, dual mono, subsonic filter, docking.
	DA-P10	10-70 -0.5, +0	9	0.02	0.02	73	2.2	270	50k	150	Yes	16¾ x 8 x 6¾	13	290.00	Dual mono, docking, subsonic filter.
	M-P01	10-100 -0.5, +0	18	0.002		90/ 77	2.3/ 0.1	290/ 12	50k/ 10	150	Yes	10½ x 9⅜ x 2¾	7	350.00	Pre-preamp, LED indicators.
NAIM	NAC 32	20-20k ±0.5		0.02	0.02	65	0.1/ 2.0	10/ 200	470/ 47k	0.075	No	8 x 12 x 3	5	860.00	Phono 1 moving coil, Phono 2 magnetic.
	NAC 12s	20-20k ±0.5		0.02	0.02	65	0.1	10	470	0.075	No	5 x 12 x 3	4	600.00	Built-in moving coil input.
	NAC 22	20-20k ±0.5		0.02	0.02	65	2.0	200	47k	0.075	No	8 x 3½ x 8	4	425.00	Opt. moving-coil boards.
NAKAMICHI	630	20-50 +0, -1.5	5	0.004		94	1/2/5	250	150k	0.1	Yes	15¾ x 9¼ x 6¾	15.5	730.00	Preamp section of FM tuner-preamp.
	610	20-100 +0, -1.5	5	0.005		94	1	250	75k	0.3	No	15¾ x 9¼ x 6¾	15.5	660.00	Peak level meters, test tone generator, 5/2 mike mixer, black version, $680.00.
	410	20-50 +0, -1.5	5	0.003		94	1/2/5	250	50k	0.1	Yes	15¾ x 9 x 3	9	370.00	Variable contour, precision attenuator, subsonic filter.
NIKKO	Beta 1	10-100 +0.1, -0.2	10	0.006		72†	2.0	400	Phone 22k, 47k, 100k	0.11	Yes	19 x 13 x 2½	11.6	340.00	†At 2 mV. $350.00 black
	Beta II	10-100 +0, -1		0.006		77†	2.0	250	22k, 47k, 100k	150	Yes	19 x 10 x 2½	9.9	210.00	†As above. $220.00 black.
	Beta V	10-20 ±0.1	10	0.01		76†	2.0	400	10k, 33k, 47k, 68k, 100k	0.2	No	19 x 17 x 9	12.7	750.00	†As above.
ONKYO	P-303	3.5-200 +0, -1.5	15	0.006 † (0.03)	0.01	89	2.5 † (0.1)	330 † (13)	30k, 50k, 100k † (10)	0.15		17¾ x 14½ x 3¼	16.5	409.95	† MC pre-preamp.
PS AUDIO	PS II phono	20-20 ±0.1	14	0.01	0.01	82	1	440	47		No	11½ x 5¼ x 2½	2.2	119.95	Passive EQ.
	Moving Coil amplifier	20-20 ±0.1	10	0.1	0.1			10	33		No	11½ x 5¼ x 2½	2.2	139.95	Equalized w/ 70-dB gain.
	Linear Control Center	2-100 ±0.5	14	0.01	0.01				10	4	No	11½ x 5¾ x 2½	4.2	199.95	High level only.
PHASE LINEAR	2000 Series Two	20-20 ±0.5	10	0.05	0.05	74	2.0	100	47k	0.2	Yes	19 x 6 x 5½	11	299.95	Left & Right tone control turnover and defeat.
	3000 series Two	20-20 ±0.1	10	0.04	0.04	84/ 72†	2.0/ 0.2†	120/ 12†	†	0.2	Yes	19 x 8 x 3½	10	499.95	† Moving coil. Digital logic control.
	4000 Series Two	20-20 ±0.4	10	0.04	0.04	74	2.0	100	47k	0.2	Yes	19 x 10 x 7	18	649.95	Tone control turnover and defeat, integral autocorrelator.
PHILIPS HIGH FIDELITY	AH572	10-50 -0.5 +0.5	12	0.008	0.008	83	2.0	750	50k	0.20	Yes	18 x 15 x 8	22	449.95	Touch switches. Black $469.95.
PIONEER	Spec-1	10-70 +0, -0.5	7	0.03		76	2.5	500	50k	0.15	Yes	19 x 14½ x 7¼	24¾	550.00	
PROFESSIONAL SYSTEMS ENGINEERING		20-20 ±0.25	14	0.01				150	47k		Yes	18 x 10 x 3½	15	579.00	Rack mounts.
QUAD	33	30-20 +0.5, -0.5	1.5	0.02	0.02	80	1.0	120	100k	0.1	Yes	10¼ x 6½ x 3½	6½	295.00	

Preamplifiers

Sansui CA-2000

SAE 2100

Spatial Coherence Preamplifier

Spectro Acoustics 101B

Model	Type of Unit—K=K; Wired-W; Tube-T; Phono Stage Only-P; Mono-M	Frequency Response, Hz to kHz + dB, - dB re: 1KHz	Maximum Output, V	% THD	% IHF IM Distortion	S/N, "A" wtd., phono re: 5 mV input, dB	Phono Sensitivity mV	Phono Overload mV	Phono Input Impedance ohms	High Level Sensitivity V	Tone Control	Dimensions, to nearest quarter inch, W x D x H	Weight, Lbs.	Price	Notes
QUATRE	GC-2	0.5-100 +0, -1	10	0.008	0.008	88	1.00	†	47k	0.5	No	16 x 11 x 6	14		† 1 V.
	DG-1	1Hz-1Mhz	0.2	0.05	0.05	80	0.1	10	100		No	8 x 4½ x 4	4	189.00	Head amp.
RABID AUDIOPHILE NOTIONS	Savage One	Inflat-able	DC-Light	115			250	8	10	1	1	Lots	monolithic	275.00†	what price glory?	† including optional lightning arrestor. Runs on 220V 3-phase.
RAPPAPORT	PRE-2											No	13 x 9 x 3.5	10	520.00	
	PRE-1											Yes	13 x 9 x 3.5	12	620.00	
	PRE-1A											Yes	13 x 9 x 3.5	10	555.00	No internal power supply. Must be used with PS-1 $200.00.
	MC-1	P											6.5 x 9 x 3.5	5	300.00	Moving-coil phono preamp with line level outputs. Used with PS-1 supply.
ROTEL	RC5000	5-100 +0, -1	1	0.12	0.12	85	2-8, 2, 0.1	500, 1V	50, 50, 32	0.15	Yes	19¼ x 16½ x 7¾	33	1500.00	Variable cartridge loading, 10-band graphic equalizer.
	RC2000	d.c.-100	1	0.002	0.002	80	2.0, 2.0, 0.1	450	30-100, 50, 32	0.15	Yes	19¼ x 13¼ x 5¾	22	500.00	D.C. circuitry.
SAE	-2100	20-20 ±0.25	10	0.005	0.005	90	1.4-2.8	100-200		0.14	Yes	19 x 8.5 x 7	20	950.00	Parametric EQ, tape EQ & filter.
	2100L	20-20 ±0.25	10	0.005	0.005	90	1.4-2.8	100-200		0.14	No	19 x 8.5 x 7	20	800.00	Tape EQ & filter.
	2900	20-20 ±0.25	9	0.01	0.01	84	2.5	150		0.14	Yes	19 x 3.5 x 5.25	15	500.00	Parametric EQ, tape EQ & filter.
	3000	20-20 ±0.25	9	0.02	0.02	81	2.5	150		0.14	Yes	19 x 3.5 x 5.25	10	350.00	Tape EQ & filter.
SANSUI	CA-2000	10-80 +0.5, -1.0	12	0.03	0.03	77	2.0, 4.0, 8.0	250, 500, 1000	30k, 50k, 100k	0.15	Yes	18¼ x 12¼ x 6½	21.8	440.00	
SERIES 20	C-21	10-100 +0, -0.2	20	0.006		86	2.5	300		0.15	No	16½ x 14¼ x 3¼	13¾	390.00	Variable cartridge loading.
SETTON	PS-5500	10-70	8	0.03	0.03	85	1.5	150	600	0.15	Yes	20 x 11¾ x 6½	27	549.95	
SONY	TA-E7B	1-150 +0, -1	15	0.003		91	2.5	250	50k	0.25	Yes	18¼ x 6¾ x 12¾	26½	820.00	Blt-in hd. amp. peak/avg., level outpt/voltage meters, tone turnovers.
SOUNDCRAFTSMEN	PE2217	5-100 ±¼	7	0.05	0.05	84	0.63	105	47k	0.08	Yes	19 x 11 x 5¼	23	549.50	Stereo 10-band equalizer, tape dubbing, 4 phono preamps, includes case & test record.
	PE2217-R	5-100 ±¼	7	0.05	0.05	84	0.63	105	47k	0.08	Yes	19 x 11 x 5¼	23	549.50	Stereo 10-band stereo equalizer, tape dubbing.
	SP4002	5-50 ±¼	10	0.01	0.01	90	0.141 to 14.0	150	47k/100k	0.08	Yes	19 x 10¾ x 7	20	699.00	Adj. phono gain preamps, adj. cartridge loading, 2 external processing loops, tape dubbing, subsonic filter, headphone amps, 20 band eq. with zero-gain.
SOURCE ENGINEERING	PNS	25-35	8.5	0.05	0.05	80	0.35/0.88	130	47k/75k	0.32	No	17½ x 12 x 2	6	390.00	
	Specialist	20-35	8.5	0.05	0.05	80	0.55	80	75k	0.32	†	17½ x 12 x 2	7	455.00	† Mono-treble control.
	UEA	20-35	9.0	0.05	0.05	80	†	80	75k			2¼ x 2½ x 3½	1	86.00	† RIAA gain 39 dB.
SPATIAL	TVA-1	20-20K ±0.2	30			85	1.5	1200	47k	0.10	Yes	19 x 12 x 3½	22	1195.00	Spatial coherence preamplifier.
SPECTRO ACOUSTICS	Model 217	5-100 -1+1	10	0.03	0.0075	75	3/10	100/300	47k/100k	0.3	No	17 x 7½ x 3½	10	250.00	Straightline design, variable cartridge loading.
	Model 217R	5-100 -1+1	10	0.03	0.0075	75	3/10	100/300	47k/100k	0.3	No	19 x 7½ x 3½	10	250.00	As above. EIA rack mount.
	Model 101B	5-100 -1+1	9	0.03	0.0075	75	3	100	47k	0.3	Yes†	17 x 6 x 5½	7	300.00	†Five-band shelving graphic EQ. Walnut cabinet avail.

Soundcraftsmen new class 'H' 250 w. amplifier

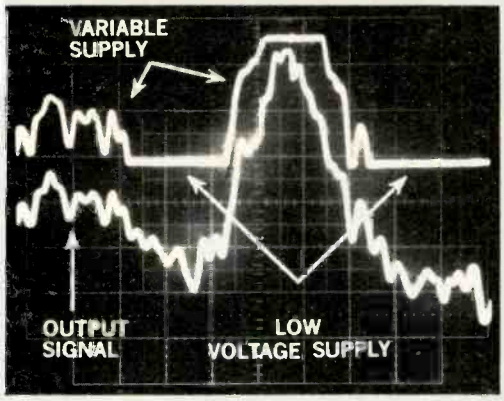
TEST REPORTS PRAISE IT — "Incredible Dynamic Headroom into 4 ohms"... "Transparent, uncolored sound"... "Outstanding amp"...

CUSTOMER CARDS COMMEND IT — "Perfect reproduction of my own Direct-to-Discs"... "An outrageous amp"... "Great—don't change it"...

MADE IN U.S.A.

GUARANTEED SPECIFICATIONS

250 watts RMS/Channel 20-20KHz both driven into 8 ohms, < 0.1% THD... Transient I.M. < 0.02%... S/N > 105 dB... Damping Factor > 100... Slew Rate > 50... Frequency Response ± 0.1 dB 20-20KHz... Fantastic Dynamic Range (Headroom) into 4, 8, or 16 ohms...



VARI-PORTIONAL SYSTEM® — TECHNICAL DESCRIPTION: A brief explanation of the VARI-PORTIONAL® SYSTEM is that its computer-like ANALOG LOGIC CIRCUITRY senses and calculates the amount of voltage required in accordance with the amplifier's rising or falling output power level, and it then directs the power supply to make available precisely the amount of voltage required, with no wasted energy. The 'scope photo illustrates this Patent Pending system by showing a loud rock music signal penetrating the upper voltage supply and also showing the supply **VARIABLY** increasing **AHEAD** of the signal.

VARI-PORTIONAL® CIRCUITRY-BENEFITS:

a. enables 350 watts at 4 ohms, 250 watts at 8 ohms, at very low cost.
b. reduces AC line current requirement to save 1 kilowatt every 5 hours, yet provide full power whenever needed for high level output.
c. combined with ultra-fast output circuitry, provides extremely low T.I.M. for clean undistorted sound, with a **SLEW RATE** of better than 50 volts per microsecond, far exceeding most other amplifier circuits.

VARI-PORTIONAL® L.E.D.'s: When either channel's output level reaches approximately 50% of total power, the green L.E.D. will start to flash. It is indicating that the ANALOG LOGIC CIRCUITRY is actuating the second power supply, a VARIABLE high voltage supply, and the A.L.C. is controlling that supply's voltage IN ANTICIPATION of a potentially higher output level requirement. The L.E.D. will glow proportionally brighter, showing the voltage supply increasing, as the metered power output rises above approximately 50%. When the green L.E.D. is NOT ON, the low voltage power supply is in continuous operation, and the amplifier is operating in its most efficient mode, drawing very little AC line current and therefore saving energy costs (for example, you save approximately 1 kilowatt every 5 hours over a conventional Class B or AB amp, both operating at ⅓ power).

CLIPPING INDICATORS: The red L.E.D.'s, indicating clipping, are able to respond to signals much faster than meters can, and the clipping lights will flash dimly as clipping begins. When the clipping lights are bright, the amplifier is exceeding its rated power output. (Clipping will occur at varying power levels, from somewhat over 250 watts at 8 ohms, to over 360 watts at 4 ohms.)

3 MODELS: AMP-QUALIZER, METER AMP, POWER AMP— PRICED FROM ***$649.00***

"AUTO-CROWBAR®" INSTANTANEOUS OVERLOAD PROTECTION: This Soundcraftsmen AUTO-CROWBAR® protection circuitry is unique among amplifiers. It uses no relays, no circuit breakers. AUTO-CROWBAR® circuit will automatically and continuously attempt to reset itself every second or two, until the overloaded condition is removed.

NON-LIMITING CIRCUITRY protects speakers from limiter-caused distortion that results from overdriving in amplifiers that use current-limiting circuitry.

DIRECT-COUPLED output.

SPEAKER-PROTECTING input circuitry with automatic blocking of input below 1 Hz. This prevents DC from any input source from blowing out speaker cones.

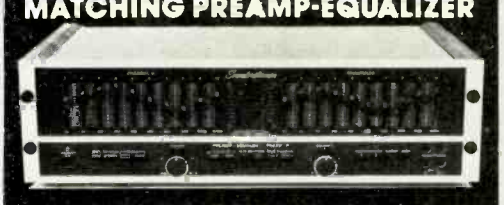
CERTIFICATE OF INSPECTION: Actual measurements of each unit are enclosed with each unit to show actual measured rms output per channel, actual measured distortion per channel, actual measured slew rate per channel, etc.

REMOTE TURN-ON TRIAC-ACTUATED delay circuit eliminates turn-on surge at time of switch closure, enables **REMOTE** AC turn-on plug-in for switching from your preamp.

INPUT LEVEL CONTROLS: The input level controls are designed to assist in system operation by providing input voltage control from 0 to full. This capability is particularly valuable in public address, sound reinforcement, and amplified musical instrument applications where many long cables are in use and where ground loops and other unwanted conditions might exist.

METER RANGE: When the meter range "times 1" (X1) button is depressed, the meter will indicate approximate power output in percentage (100%=250 watts, assuming an 8 ohm load at the speaker output terminals).

MATCHING PREAMP-EQUALIZER



Now the PE2217 rated **"State-of-the-Art"** and **"Best Buy"** in magazine Test Reports is available as the **PE2217-R** in rack silver-black form as a matching mate for our new amplifier. With the control flexibility of pushbutton-patching for tape monitoring and tape dubbing between two or three machines together with tape and program discrete-octave equalization, the **PE2217-R** is still the **MOST POWERFUL** and **FLEXIBLE** Preamp available at **$549.00**

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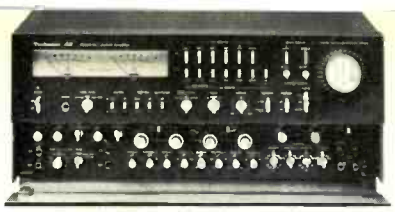
Preamplifiers



Technics SU-A2

Threshold NS-10

Van Alstine 1

Model	Type of Unit — Kit-K, Wired-W; Tube-T; Phono Stage Only-P; Mono-M	Frequency Response, HZ to kHz + dB, - dB re: 1KHz	Maximum Output, V	% THD	% IHF IM Distortion	S/N, "A" wtd., phono re: 5 mV input, dB	Phono Sensitivity mV	Phono Overload mV	Phono Input Impedance ohms	High Level Sensitivity V	Tone Control	Dimensions, to nearest quarter inch, W x D x H	Weight, Lbs.	Price	Notes
SUMO ELECTRIC	The Sumo Preamp	20-20 ±0.1	10	0.001	0.001	90	0.7	150	47k	1.0	Yes			899.00	Head amp, dynamic overload indicator, high freq. power supplies.
	The Smaller Sumo Preamp	20-20 ±0.1	10	0.001	0.001	80	0.7	150	47k	1.0	Yes			499.00	Dynamic overload indicator.
TECHNICS	SU-9070	d.c.-100 +0, -0.1	20	0.004		94	2.5	350	47k	0.15	No	19 x 14½ x 4	16	460.00	M-C phono input, d.c. design, subsonic filter, mounts in EIA rack.
	SU-A2	d.c.-100 +0, -0.1		0.003		101	2.5	500	47k	0.15	Yes	17¾ x 22½ x 8	85	8000.00	Class-A M-C input; graphic & parametric EQ; sine, square, warble, & pink generators; peak, peak-hold, & average meters; subsonic filter.
THRESHOLD	NS10	0.5-500	7	0.005	0.005	74	5.0	500	25k	0.05	No	19 x 10½ x 3¼	13	1045.00	M-C opt., 100 V/MS slew rate.
	SL10	1.5- 500	10	0.005	0.005	73	5.0	500	25k	0.05	No	19 x 10½ x 3¼	12	695.00	D.C. circuit, M-C input, 150 V/MS slew.
TOSHIBA	SY335	20-40 ±1	1.0	0.1		80	2.5	150	47k		Yes	16½ x 9½ x 3¾	6.7	104.95	
VAN ALSTINE	Model One											19 x 10 x 3½	7	600.00	D.C. circuit

WHAT'S THE REAL COST OF INACCURATE PHONO EQUALIZATION ?

RIAA equalization is a standard. It takes only design time and careful parts selection to do it right. So you'd expect every preamp to conform. But according to a recently published study, preamp cost bears no relation to equalization accuracy. And equalization discrepancies, as this study points out, just may be *the key* to reviewer ratings.

We at AGI would like to make this material available so you can decide for yourself the validity of their findings. Learn why equipment that sounds best on a reviewer's system need not sound best on yours. Why instruments are needed before making a valid *listening* test.

We thank International Audio Review for permission to reprint this approved abstract from their 60 pages of copyrighted text, graphs and test results. Every serious audio buff will find these 4 tightly packed pages provocative and illuminating. It may take some of the mystery out of the disparities between reviewers' subjective evaluations. It may also substantially improve the correlation between test data and listening. Best of all, it may lead to better sound. May we send you a copy?

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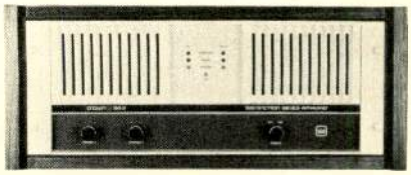
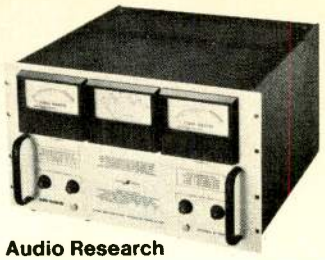
Amplifiers



Crown SA-2

GAS Ampzilla

AB Systems 720

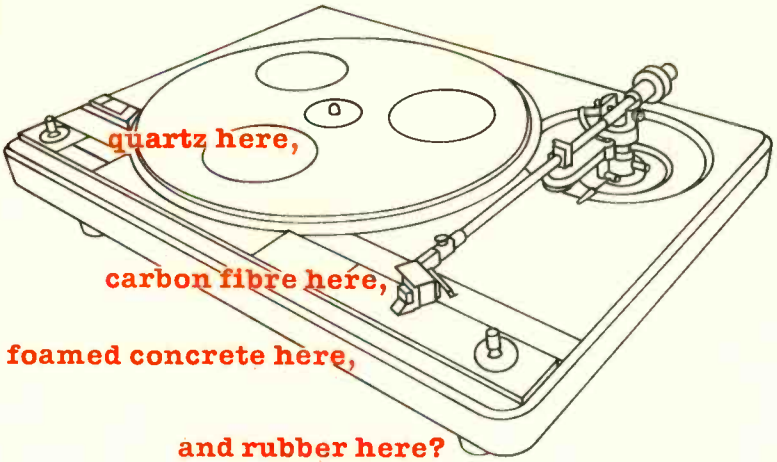


Audio Research D-110

Letter Key: K = kit; W = wired; T = tube; P = phone stage only; M = mono.

Manufacturer	Model	Type of Unit — Integrated I; Basic B; Kit K; Tube T	Cont. Ave. Watts per Chan. into 8 ohms	Freq. Resp. at rated power, Hz to kHz	Rated THD, percent	Rated IMF IM, percent	S/N, "A" wtd., Phono re. 5 mV, dB	Phono Sensitivity, mV	Maximum Phono Input, mV	Moving Coil Phono Input	High Level Sensitivity, V	Class of Output Operation	Dynamic Headroom, dB	Dimensions, to nearest quarter inch, W X D X H	Weight, lbs.	Price, $	Notes
AB SYSTEMS	205	B	100	20-20	0.25	0.1					0.75	AB		19 x 10¾ x 5¼	22	560.00	LEDs available; 200 w/ch, 4 ohms.
	410	B	200	20-20	0.25	0.1					0.75	AB		19 x 10¾ x 5¼	32	800.00	LEDs available; 325 w/ch, 4 ohms.
	810	B	200†	20-20	0.25	0.1					0.75	AB		19 x 16¾ x 5¼	32	800.00	† 4 ohms. LEDs available; 300 w/ch, 2ohms.
	710	B	200/100†	20-20	0.25	0.1					0.75	AB		19 x 10¾ x 5¼	24	700.00	† As above. Mono bi-amp with crossover.
	720	B	150/75†	20-20	0.25	0.1					0.75	AB		19 x 10¾ x 5¼	28	900.00	† As above. Dual bi-amp with crossovers.
	730	B	300/100/50	20-20	0.25	0.1					0.75	AB		19 x 10¾ x 5¼	28	950.00	Mono tri-amp with crossovers
ACE AUDIO	35x2	B/K/W	35	20-20	0.1	0.1					1	AB		14 x 8½ x 3½	13	225.00W 149.50K	
	35x2-SUPER	B/W	35	20-20	0.1	0.1					1	AB		14 x 8½ x 3½	13	239.00W 163.00K	
A&E	DCA-400	B	200	20-20	0.02						2			19 x 17¼ x 6¼	55	3250.00	
	DCA-120	B	60	20-20	0.02						1			19 x 11 x 3½	16½	800.00	
AKAI AMERICA	AM-2800	I	80	20-20	0.08		75	3/3		No	0.15	AB		17.3 x 16.6 x 6.5	28.9	399.95	
	AM-2600	I	60	20-20	0.1		75	3/3		No	0.15	AB		17.3 x 13.0 x 5.6	22.0	299.95	
	AM-2400	I	40	20-20	0.15		75	3		No	0.15	AB		17.3 x 13.0 x 5.6	20.0	199.95	
	AM-2200	I	20	20-20	0.5		85	3		No	0.15	AB		15.0 x 10.3 x 4.9	12.1	149.95	
Armstrong	621	I	40	20-20	0.18	0.08	65	3.0	150	No	0.25	AB		12¼ x 11¼ x 3¼	10½	395.00	
AUDIO RESEARCH	D-52	B	50	1-20	0.25	0.1					1.1	AB		19 x 10½ x 5¼	39	995.00	
	D-100A	B	100	1-20	0.25	0.1					1.5	AB		19 x 10½ x 5¼	42	1195.00	
	D-110	B	100	1-20	0.25	0.05					1.5	AB		19 x 17¼ x 10½	92	1995.00	3 meters, 3 fans.
	D-350	B	350	20-20	0.25	0.1					1.35	AB		19 x 17¼ x 10½	105	2785.00	3 meters, 3 fans.
AUDIO SCIENTIFIC (Superex)	1510	B	†	DC-200K	(A) 0.005 (AB) 0.01					No		A or AB				695.00	† 40 in class A; 150 class AB. Slew rate, 35 V/ µS; 24 LEDs.
AUDIO TECHNOLOGY	8700	B	350	20-20	0.005	0.005					1.0			19 x 17 x 8¾	105	1900.00	MOS-V FET.
AUDIONICS	CC-2	B	70	20-20	0.18	0.1					1.0	AB		19 x 8½ x 3½	17	429.00	225 W mono, 36 V/ µS slew rate.
	PZ-3	B	100	20-20	0.03	0.05					1.0	AB		19 x 15 x 6	31	489.00	Dynamic bias, meters $100 extra.
	MA-1	B/M	150	20-20							1.0	AB		19 x 15 x 5¼			
	BA-1	B, T	180	20-20	0.2						1.4	AB		19 x 14 x 8¾	75	2499.00	Tube/transistor hybrid, digital bias, adjust. feedback.
AUDIRE	DM700	B	350	20-20	0.05	0.05						AB		19 x 17 x 5¾	59	1050.00	Dual power supply, bridged outputs.
	2M	B	100	20-20	0.05	0.05						AB		19 x 13 x 5¾	32	575.00	Meters, LED clipping indicator.
	2	B	100	20-20	0.05	0.05						AB		19 x 13 x 5¾	31	450.00	LED clipping indicator.

What do you get when you put



ADC THE FIRST LOW-MASS TURNTABLE.

ADC is in the business of building breakthroughs.

First, we brought you the innovation of the low mass cartridge. Then the remarkable computerized Accutrac® turntables. Next, the State-of-the-Art Low Mass tonearms.

And now, our engineers have combined the latest advancements of tonearm technology and turntable construction to reduce mass and resonance to new lows.

Result: new benchmarks of high performance.

Finally, the integration of a carbon fibre design tonearm. The famous LMF Carbon Fibre tonearm was the model for the tonearm found on the ADC 1700DD.

In fact, until now you had to make a separate investment in an ADC tonearm to achieve this level of performance.

A level of performance never before available on an integrated turntable.

The mass is lowered by the development of a tapered profile. It is statically balanced with a lead-filled decoupled counterweight, and the headshell is molded carbon fibre, long known for its low mass to high tensile strength ratio.

Furthermore, the headshell is connected to the arm with gold plated computer terminal pins. And the main bearing cradle is made of sintered aluminum. The pivot system utilizes micron polished instrument bearings which are hand picked and matched perfectly to both the inner and outer races, for virtually frictionless movement.

The viscous cueing is a gentle 4mm/sec., and the tempered spring anti-skate adjustment is infinitely variable to 3.5 grams.

The design, the materials and the details interact to provide incomparable performance for a tonearm on an integrated turntable system.

In fact, the tonearm alone is worth the price of an ADC 1700DD.

Finally, resonance conquered.

The technical know-how that conquered the problems of the tonearm mass, also conquered the problems of turntable resonance.

The ADC 1700DD reduces resonance to levels so negligible they are virtually nonexistent.

The achievement lies in the innovative construction formula for the turntable base that incorporates the latest advancements from European engineers.

The base is constructed with two dissimilar materials that are resonance-cancelling. First, the outer frame of the base is molded, and then a composition of foamed concrete is injected to absorb and neutralize resonance and feedback.

Enter No. 31 on Reader Service Card

LOW RESONANCE

Beyond even this foamed concrete anti-resonance breakthrough, the base is isolated by energy absorbing, resonance-tuned, rubber suspension feet.

This is as close as technology has ever come to defying the physical laws of resonance.

The motor in the ADC 1700DD is also present standard of excellence: Direct Drive Quartz Phase-Locked Loop. The quartz is used in the reference oscillator of the motor.

An electronic phase comparator constantly monitors any variance in the speed, making instantaneous corrections. Even when out of the Quartz-Locked mode, the optical scanning system keeps drift at below 0.2%.

In fact, to check the speed at a glance, we've engineered the 1700DD with a pulsed LED strobe display for your convenience.

Low-mass. Low-resonance. High performance.

What is the result of all these breakthroughs? Pure pleasure.

The pleasure of enjoying your favorite music with less distortion and coloration than you may have ever experienced before. Now you can truly appreciate the integrity of the original recording.

Our engineers have reduced record wear and music distortion to a point where rumble is −70dB Din B, and Wow and flutter less than .03% WRMS.

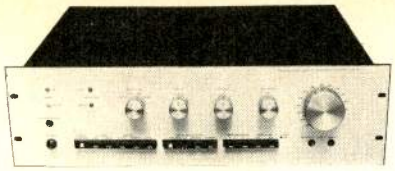
In the history of audio technology, significant breakthroughs have been made over the past four years with the development of Quartz Lock Direct Drive, carbon fibre tonearms, foamed concrete anti-resonance construction. And now, ADC is the first to bring them all together in the 1700DD. We invite you to a demonstration of this and the other remarkable ADC turntables at your nearest franchised ADC dealer.

Or, if you'd like, write for further information to: ADC Professional Products, a division of BSR Consumer Products Group, Route 303, Blauvelt, N.Y. 10913.

Low-mass. Low-resonance. We think you'll be highly interested.

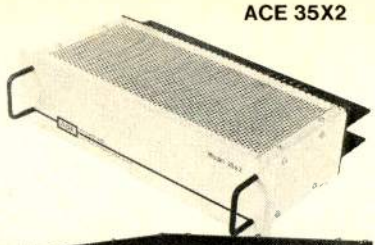
Distributed in Canada by BSR (Canada) Ltd., Rexdale, Ont.
*Accutrac is a registered trademark of Accutrac Ltd.

Amplifiers



Dynaco 2530

ACE 35X2



db Systems DB-6

Audionics CC-2

Denon POA-1003

Cerwin-Vega A-4000

Letter Key: K = kit; W = wired; T = tube; P = phone stage only; M = mono.

Manufacturer	Model	Type of Unit — Integrated I; Basic B; Kit K; Tube T.	Cont. Ave. Watts per Chan. into 8 ohms	Freq. Resp. at rated power, Hz to kHz	Rated THD, percent	Rated IHF IM, percent	S/N, "A" wtd., Phono re: 5 mV, dB	Phono Sensitivity, mV	Maximum Phono Input, mV	Moving Coil Phono Input	High Level Sensitivity, V	Class of Output Operation	Dynamic Headroom, dB	Dimensions, to nearest quarter inch, W X D X H	Weight, lbs.	Price, $	Notes
BAUMAN RESEARCH	WR-2120	B	100	10-250	0.1	0.1					1.00	AB	3	14 x 10¼ x 3¼	30	995.00	FET output stage, 100V/S slew rate.
BRYSTON	4B	B	200	20-20	0.5	0.025					1.25	AB		19 x 13½ x 5¼	50	1295.00	
	3B	B	100	20-20	0.5	0.025					1.0	AB		19 x 9 x 5¼	35	795.00	
	2B	B	50	20-20	0.5	0.025					0.75	AB		19 x 10 x 3½	25	495.00	
Cerwin-Vega	Metron M-200	B	125	2.5-200, -3	0.02	0.02				No	1.5	AB		19 x 13 x 5.875	31	550.00	Precision step attenuators; symmetrical, differential, full complementary circuit.
	Metron A-4000	B	350	2.5-200, -3	0.02	0.02				No	2.0	AB		18.9 x 18.5 x 7.87	79.38	1350.00	Precision step attenuators; sample and hold peak reading meters; symmetrical, differential, full complementary circuit.
CROWN	D-75	B	35	20-20	0.05						0.812	AB		19 x 9 x 1¾	10	349.00	Input-output comparator (IOC), signal present lights, balanced input.
	D-150A	B	80	1-20	0.05						1.19	AB		19 x 8⅜ x 5¼	25	549.00	IOC indicator.
	DC-300A	B	155	1-20	0.05						1.71	AB		19 x 9¾ x 7	48	899.00	IOC indicator.
	M-600	B	600	1-20	0.05						3.46	AB		19 x 16½ x 8¾	92	1795.00	
	SA-2	B	220	1-20	0.05									19 x 14 x 7	55		Professional PSA-2 includes XLR bal. input, filters, compressor, noise generator.
DB SYSTEMS	DB-6	B	40	20-40	0.003	0.002	113				1	AB		16 x 12¾ x 5	18	595.00	
	DB-6M	B	140	20-40	0.008	0.004	113				1	AB		16 x 12¾ x 5	18	615.00	Mono, bridged DB-6.
DENON	PMA 850	I	85	5-80	0.01	0.02	89	2.5	200	Yes		AB		17 x 6½ x 15¾	37½	800.00	W. phon cross-talk canceler.
	PMA 830	I	60							No		AB, A		17 x 6½ x 15¾	38	635.00	Class: A switchable, 15 watts.
	PMA 700	I	70	8-30	0.01	0.1	70	3.2	100	Yes	0.320	AB		17 x 14 x 5½	27.5	585.00	
	PMA 501	I	50	5-50	0.05	0.05	76	2.5	230	No		AB		17 x 5⅜ x 5½	28.5	410.00	W. phono cross-talk canceler.
	POA 1003	B	85	3-70	0.03	0.02					1	AB		16 x 11¼ x 7¾	39½	870.00	
DYNACO	ST-410	K/B	200	8-50 +0, -1	0.25	0.10†						AB	1.0	16¾ x 14½ x7¼	44	399.00	† SMPTE
	ST-150	K/B	75	10-40 +0, -1	0.25	0.25†						AB	1.5	14½ x 13¾ x6¾	29	269.00	† As above.
	SCA-50	K/I	25	15-45 ±0.5	0.25	0.10	76	1.65	100	††	0.125	AB	1.5	13½ x 12 x 4½	13	199.00	†† Use std. phono input for moving coils.
	2520	B	210	20-20	0.25	0.1†					0.113	AB	0.8	19 x 14 x7	53	1049.00	† As above.
	2521	B	100	20-20	0.09	0.02†					0.119	AB	2	19 x 15 x 5¼	34	599.00	† As above.
	2530	I	100	20-20	0.09	0.02†	75	8††	110	No	0.05††	AB	2	19 x 15 x 5¼	35¼	749.00	†As above. ††For 0.5V @ preamp out.
	ST-416	B/K	210	20-20	0.25	0.1†					0.113	AB	0.8	19 x 14 x 7	53	649.00	†As above.
ELECTRO RESEARCH	A75S	B	75	D.C. to 200	0.1	0.1						A			147		
FISHER	CA 2110	I	55	20-20	0.2	0.1	75	2.0	150					16¾ x 13¾ x 6	20.9	249.95	
	CA 2310	I	70	20-20	0.5	0.05	78	2.0	220					17½ x 15 x 6	31.9	349.95	

BEFORE YOU THROW OUT A GOOD TURNTABLE OR SPEAKER SYSTEM, CONNECT WITH A GREAT AMPLIFIER. THE PHASE 400 SERIES TWO.

Some speakers sound fine, until you hit a low passage. Then they turn to mud, or rumble at you like a cheap turntable. Chances are, that muddy, distorted sound is in fact, the result of an inadequate amplifier stretched to its limits. Clipping!

To improve your sound, you need plenty of reserve power. The Phase 400 Series Two delivers the tremendous power reserve you need for sonic accuracy over the audible frequency spectrum. To accurately reproduce low frequencies without clipping, your speakers require up to 10 times the minimum power requirement of the mid-range frequencies. With the Phase 400 Series Two, when you listen to the 1812 Overture, you hear the blast of the cannon with awesome clarity. Even the deepest notes are clearly distinguishable.

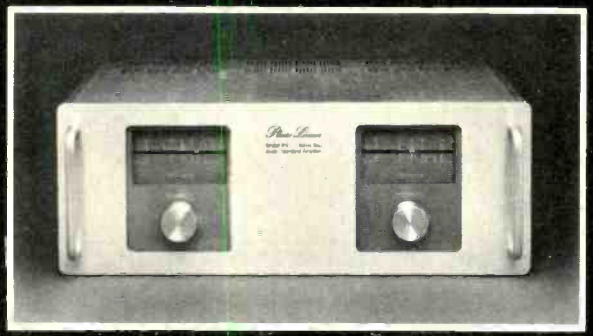
ACCURACY YOU CAN HEAR

To improve accuracy, the new 400 Series Two utilizes an advanced BI-FET input stage. This integrated circuit keeps the output virtually identical to the input. Distortion and noise are reduced to virtually inaudible levels. Beautiful music in, beautiful music out.

ACCURACY YOU CAN SEE

You might have some questions about the 400's instantaneous LED output meters. Conventional-style VU meters are slow in comparison because they have to move the mass of the needle. The LED's move at lightning speed, accurately monitoring the output voltage, with scales for 8 and 4-ohm impedances. For accuracy, the meter contains 32 graduations, plus 4 fixed flashers to alert you to clipping. You have a visual safeguard, in addition to the Electronic Energy Limiters to prevent damage from overloads.

See your Phase dealer about the Phase 400 Series Two. We think you'll recognize accuracy when you hear it. And when you see it.



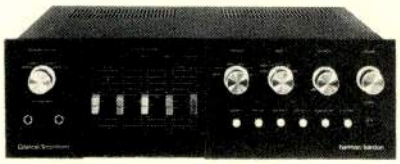
SPECIFICATIONS: OUTPUT POWER: 210 WATTS, MIN RMS PER CHANNEL 20Hz-20kHz INTO 8 OHMS, WITH NO MORE THAN 0.09% TOTAL HARMONIC DISTORTION. Continuous power per channel at 1000Hz with no more than 0.09% total harmonic distortion 8 ohms—260 watts, 4 ohms—360 watts, Intermodulation Distortion: 0.09% Max (60Hz: 7kHz—4:1), Damping Factor: 1000: Residual Noise: 120uV (IHF "A"), 1 Min, Signal to Noise Ratio: 110dB (IHF "A"), Weight: 35 lbs. (16 kgs.), Dimension: 19"x 7"x10" (48.3cm x 17.8cm x 25.4cm). Optional Accessories: Solid Oak or Walnut side panels.

Phase Linear®

THE POWERFUL DIFFERENCE

PHASE LINEAR CORPORATION, 20121 48TH AVENUE WEST, LYNNWOOD, WASHINGTON 98036
MADE IN USA. DISTRIBUTED IN CANADA BY H. ROY GRAY LTD. AND IN AUSTRALIA BY MEGASOUND PTY. LTD.

Amplifiers



Harman/Kardon Citation 17

Luxman MB-3045

JVC JA-S77

Letter Key: K kit; W = wired; T = tube; P = phone stage only; M = mono.

Manufacturer	Model	Type of Unit — Integrated I; Basic B; Kit K; Tube T.	Cont. Ave. Watts per Chan. into 8 ohms	Freq. Resp. at rated power, Hz to kHz	Rated THD, percent	Rated IHF IM, percent	S/N — "A" wtd., Phono re: 5 mV, dB	Phono Sensitivity, mV	Maximum Phono Input, mV	Moving Coil Phono Input	High Level Sensitivity, V	Class of Output Operation	Dynamic Headroom, dB	Dimensions, to nearest quarter inch, W X D X H	Weight, lbs.	Price, $	Notes
GLI	SA-250	B	125	20-20	0.25	0.25					1.0	AB		19 x 12½ x 7	20	650.00	Fan, thermal cutout w. auto reset, peak/overload indicators.
GOLD ELECTRONICS	CENTAUR	B	746	20-20	0.002	0.002					1.1	AB		19 x 17½ x 7	135	2495.95	400 V/μS slew rate, 1200 watts @ 4 ohms, separate preamp adaptor for long signal lines, w. 1 M speaker cables.
GREAT AMERICAN SOUND	Ampzilla IIA	B	200	0.012-20	0.05	0.05					1.6	B	2	19 x 12 x 8	59	1049.00	
	Son of Ampzilla	B	80	0.5-20	0.08	0.08					1.0	B	2	19x12 x5¼	35	519.00	$579.00 industrial.
	Grand-son	B	40	0.5-20	0.08	0.08					0.7	B	2	19x12x x4½	23	339.00	Meters, $40.00 extra.
HARMAN KARDON	503	I	40	10-100	0.18	0.05	88	2.2	150		0.08	AB				259.00	D.c. coupled, ultra-wideband.
	505	I	60	8-100	0.06	0.05	90	2.2	225		0.13	AB				359.00	As above and twin powered.
	19	B	100	5-50	0.08	0.08						AB		16 x 14¾ x 5¼	39	570.00	As above and LED power readout.
	16A	B	150	5-45	0.05	0.05						AB		19 x 14 x 9¾	55	850.00	As above.
	16AS	B	150	5-45	0.05	0.05								19 x 14 x 9¾	55	750.00	Ultra-wideband, twin powered.
HITACHI	HA-330	I	40	20-20	0.03		75									199.95	
	HA-5300		50													379.95	
	HMA-7500	B	75	6-200	0.01	0.01								9 x 14 x 6½	32.9	500.00	MOS-FET design.
	HMA-8300	B	200	20-20	0.1									17¼ x 16 x 7¼	53	800.00	
JANIS AUDIO	Inter-phase 1	B	60	20-1k	0.1						0.6	AB		10 x 10 x 4¾	10	495.00	Mono crossover amp for subwoofer use.
	Compan-ion 1	B	120	20-20	0.1							AB		10 x 10 x 4¾	15	425.00	Mono,w.d.c. compensation circuitry for woofer errors.
JVC	JAS-11G	I	30	20-20	0.1	0.1	73	2.5	150	No	0.015	AB		6¼ x 15½ x 13	15.4	159.95	
	JA-S22	I	40	20-20	0.02	0.01	75	2.5	200	No	0.016	AB		16¾ x 13½ x 6	18.7	199.95	2 power meters.
	JA-S44	I	45	20-20	0.02	0.01	75	2.5	200	No	0.016	AB		16¾ x 12¾ x 6	22	299.95	2 power meters, 5 band SEA.
	JA-S55	I	60	20-20	0.02	0.01	76	2.5	230	No	0.02	AB		16¾ x 13½ x 6	22	299.95	Tri-dc design, 2 power meters.
	JA-S77	I	65	20-20	0.02	0.01	78	2.5	280	No	0.02	AB		17¾ x 13½ x 6	25.3	399.95	Tri-d.c. design, 2 power meters
	M-3030	B	100	20-20	0.05	0.05					1 V			16¾ x 16½ x 12		699.95	
	M-7070	B	120	20-20	0.003						1 V			16¾ x 14¼ x 6	34	1599.95	Mono, Class-D power supply.
KENSONIC	E202	I	100	20-20	0.15	0.08	74	2.5/2.5	300/300	No	0.16			18 x 14 x6	43	800.00	
	P300	B	150	20-20	0.05	0.03					1.0			17½ x 14 x 6	55	850.00	
KENWOOD	L-09M	B	300	D.C.-50	0.02	0.007								19 x 16¼ x 6½	47.2		
	600	I	130	20-20	0.08	0.08	115	2.5	220					17½ x 15½ x 6¼	47		
	500	I	100	20-20	0.08	0.08	110	2.5	220					17½ x 15½ x 6¼	44.4		

(Continued)

Janis Companion 1

Marantz 1300DC

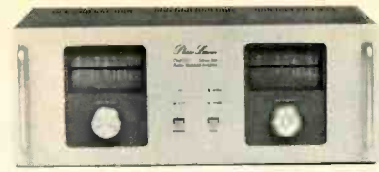
Kenwood KA-9100

Hitachi HMA-8300

Letter Key: K = kit; W = wired; T = tube; P = phone stage only; M = mono.

Manufacturer	Model	Type of Unit — Integrated I; Basic B; Kit K; Tube T	Cont. Ave. Watts per Chan. into 8 ohms	Freq. Resp. at rated power, Hz to kHz	Rated THD, percent	Rated IHF IM, percent	S/N, "A" wtd., Phono re: 5 mV, dB	Phono Sensitivity, mV	Maximum Phono Input, mV	Moving Coil Phono Input	High Level Sensitivity, V	Class of Output Operation	Dynamic Headroom, dB	Dimensions, to nearest quarter inch, W X D X H	Weight, lbs.	Price, $	Notes
KENWOOD (continued)	KA-9100	I	90	20-20	0.03	0.03	115	2.5	250					17 x 15¼ x 6		550.00	
	KA-8100	I	75	20-20	0.03	0.03	115	2.5	250					17 x 15⅛ x 6	32	425.00	
	KA-7100	I	60	20-20	0.02	0.02	120	2.5	200					17 x 15¼ x 6	25½	315.00	
	KA-6100	I	50	20-20	0.03	0.03	92	2.5	230					17 x 14½ x 6	25½	275.00	
	KA-5700	I	40	20-20	0.04	0.04	82	2.5	180					15 x 11¾ x 5½	17	200.00	
	KA-3700	I	20	20-20	0.08	0.08	78	2.5	150					15 x 11½ x 5½	12.7	155.00	
LAFAYETTE	LA-40	I/T	40	20-20	0.3		66	2.0		No				15¼ x 5½ x 13	17.3	219.99	
LUX	M-6000	B	300	20-20	0.05	0.05						AB		22½ x 16¾ x8¾	114	2995.00	
	M-4000	B	180	20-20	0.05	0.05						AB		19¼ x 15½ x 7	62	1595.00	
	M-2000	B	120	20-20	0.05	0.05						AB		19¼ x 11¾ x 7	40	995.00	
	5M21	B	100	20-20	0.008	0.008						AB		17.7 x 16 x 5.8	42	1295.00	
	5M20	B	100	20-20	0.008	0.008						AB		17.7 x 16 x 5.8	42	1095.00	Same as 5M21 less meters.
	M-12	B	80	20-20	0.006	0.006						AB		17¼ x 13 x 3¾	31.9	795.00	
	B-12	B/M	150	20-20	0.006	0.006						AB		17¼ x 13 x 3¾	25.3	645.00	
	MB3045	B/T/M	50	20-20	0.3	0.3						AB		14½ x 9½ x 6¾	33.4	495.00	
	L-85V	I	80	20-20	0.05	0.05		2.5	300	No	0.2	AB		17¾x 12¼ x 6¼	30.8	795.00	
	L-80V	I	50	20-20	0.05	0.05		2.5		No	0.12	AB		17¾ x 11¾ x 6¼	22.2	475.00	
	5L15	I	80	20-20	0.02	0.02		3		No	0.3	AB		17.7 x 16 x 5.8	29.3	995.00	
	L-11	I	100	20-20	0.02	0.02		2.5		Yes†	0.15	AB				895.00	†Has special jack for step-up transformer.
	L-5	I	60	20-20	0.03	0.03		2.5		No	0.15	AB				595.00	
	L-3	I	35	20-20	0.05	0.08		2.5		No	0.15	AB				395.00	
	L-110	I	120	20-20	0.05	0.05		2.7	330	No	0.22	AB		19¼ x 13¾ x 7	42	995.00	
MARANTZ	1300DC	I	150	20-20	0.03		89	1.8	340	Yes	0.18	AB		16½ x 17 x 5¾		949.95	Dual Power Supply, d.c. Amplifier, head amp for moving-coil cartridges, adjustable cartridge loading.
	1180DC	I	90	20-20	0.03		79	1.8	310	No	0.18	AB		16½ x 12¼ x 5¾	33	499.95	d.c. amplifier.
	1152DC	I	76	20-20	0.03		79	1.8	310	No	0.18	AB		16½ x 12¼ x 5¾	31	419.95	d.c. amplifier.
	1122DC	I	61	20-20	0.03		79	1.8	200	No	0.18	AB		16½ x 12¼ x 5¾	28¾	349.95	d.c. amplifier.
	1090	I	45	20-20	0.1		79	1.8	100	No	0.18	AB		16½ x 11¾ x 5¾	19.8	239.95	
	1060B	I	30	20-20	0.08			2.8	120	No	0.18	AB		16½ x 12¾ x 5¾	15.4	179.95	
	300DC	B	152	20-20	0.03						1.5	AB		16½ x 11¾ x 5¾	44	629.95	Dual power supply, d.c. amplifier, 2¼ inch VU meters.
	170DC	B	86	20-20	0.03						1.5	AB		16½ x 11¾ x 5¾	31	439.95	D.c. amplifier, 2¼ inch VU meters.
McINTOSH (Continued)	MC 50	B/M	50												24	279.00	
	MC 250		50												41	429.00	
	MC 2100	B	105												63	599.00	
	MC 2105	B	105												81	799.00	
	MC 2120	B	120												70	799.00	

Amplifiers

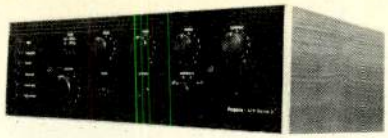


NAIM NAP-250

Mitsubishi DA-A15DC

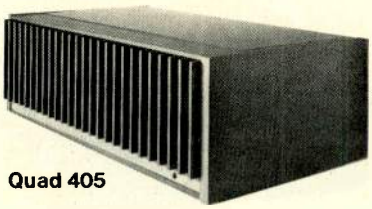
Letter Key: K = kit; W = wired; T = tube; P = phone stage only; M = mono.

Manufacturer	Model	Type of Unit — Integrated I; Basic B; Kit K; Tube T	Cont. Ave. Watts per Chan. into 8 ohms	Freq. Resp. at rated power, Hz to kHz	Rated THD, percent	Rated IHF IM, percent	S/N, "A" wtd., Phono re: 5 mV, dB	Phono Sensitivity, mV	Maximum Phono Input, mV	Moving Coil Phono Input	High Level Sensitivity, V	Class of Output Operation	Dynamic Headroom, dB	Dimensions, to nearest quarter inch, W x D x H	Weight, lbs.	Price, $	Notes
McINTOSH (Continued)	MC 2125		120												77	999.00	
	MC 2200	B	200												87	949.00	
	MC 2205		200												98	1199.00	
	MC 2300	B	300												143	1499.00	
	MC 2505	B	50												53	549.00	
	MA 1600	I	70												46	699.00	
MERIDIAN (ZEPHYR)	105	B/M	100	20-20	0.1	0.1					0.75	AB		11 x 2 x 12	13	425.00	
	103	B	35	20-20	0.1	0.1					0.75	AB		11 x 2 x 12	12	450.00	Separate power supply.
	103 D	B	45	20-20	0.1	0.1					0.75	AB		16 x 2 x 12	26	640.00	
METEOR LIGHT & SOUND	Power-master 75	B	75	20-20	0.1						1.5	B		10½ x 12 x 7½	20	449.00	Bass & treble controls, meters, and LED peak indicators.
MITSUBISHI	DA-15DC	B	150	20-20	0.01	0.008						AB		16¾ x 11¼ x 6¾	39	630.00	D.c. input-to-output, dual monaural design, "docking" feature.
	DA-10DC	B	100	20-20	0.01	0.008						AB		16¾ x 11¼ x 6¾	35	430.00	As above.
	M-A01	B	70	20-20	0.01	0.008						AB		10½ x 9½ x5	22	460.00	D.c. input-to-output, LED peak-power indicator, "Micro-Component."
NAIM	NAP250	B	70	5-40	0.02	0.02						B	7.7	17 x 12 x 5	25	1900.00	Transient 400 VA/ch.
	NAP160	B	50	5-40	0.02	0.02						B	7	17 x 12 x 5	20	1000.00	Transient 250 VA/ch.
	NAP120	B	40	5-40	0.02	0.02						B	5.8	9 x 8 x 4	12	590.00	Transient 150 VA/ch.
NAKAMICHI	620	B	100	5-20	0.01	0.002†					1.0	B		15¾ x 9¾ x 7½	28	740.00	†SMPTE. Complete mirror circuitry, peak power indication.
	420	B	50	5-20	0.02	0.002†					1.0	B		15¾ x 9 x 3	15	390.00	†As above. Complete mirror circuitry.
NIKKO	Alpha 1	B	220	10-100	0.08	0.08						AB		19 x 11½ x 7	50	670.00	
	Alpha 2	B	120	5-100	0.03	0.03						AB		19 x 13 x 5½	29.7	430.00	
	Alpha 3	B	80	5-100	0.006	0.01						AB		19 x 11½ x 5¼		490.00	D.C. power MOS FET.
	Alpha 5	B	100	0-100	0.03	0.03						A		19 x 17 x 9	60	3000.00	Class-A, switchable a.c./d.c. operation.
	NA 550	I	45	10-40	0.08	0.08	75†	2.2	190	No	150	AB		15¼ x 12¼ x 5¾	18	220.00	†At 2.2 mV.
	NA 850	I	60	10-40	0.08	0.08	75†	2.2	190	No	150	AB		15¼ x 12¼ x 5¾	20	270.00	†As above.
ONKYO	M-505	B	105	20-20	0.05	0.01					1.5	B	1.6	17¾ x 12¾ x 6½	37.4	579.95	D.c. power amp.
	A-10	I	85	20-20	0.08	0.1	84	2.5 (0.1)†	230	Yes	0.15	B	1.2	17½ x 15¾ x 6¼	39.6	464.95	† MC head amp.
	A-7	I	65	20-20	0.1	0.1	86	2.5	230		0.15	B	1.4	17½ x 15 x 6¼	29.7	359.95	
	A-5	I	45	20-20	0.1	0.1	81	2.5	170		0.15	B	1.6	17½ x 15 x 6¼	25.8	249.95	
PERKINS	DP 300	B/M	300	20-20	0.1	0.1					2.0	AB		19 x 17½ x 10½	125	2500.00	Forced air cooling, minimum load 0.5 Ohm.
	DP 200	B	200	20-20	0.1	0.1					1.5	AB		19 x 14 x 7½	60	1499.00	Forced air cooling, minimum load 0.5 Ohm.
	DP 100	B	100	20-20	0.1	0.1					1.5	AB		19 x 12 x 6	39	599.00	Forced air cooling, minimum load 0.5 Ohm.
	DP 40	B	40	20-20	0.1	0.1					1.25	AB		19 x 11 x 3½	22	399.00	Minimum load 0.5 Ohm.
PHASE LINEAR	200 Series Two	B	120	20-20	0.09	0.09					1.5	AB		19 x 8¾ x 5½	16	399.95	4-16 ohm speaker impedance.
	400 Series Two	B	210	20-20	0.09	0.09					1.0	AB		19 x 10 x 7	35	599.95	4-16 ohm speaker impedance, 36-segment LED output metering.
	700 Series Two	B	360	20-20	0.09	0.09					1.2	AB		19 x 10 x 7	45	879.95	4-16 ohm speaker impedance, 36-segment LED output metering.
	D-500 Series Two	B	505	20-20	0.09	0.09					1.5	AB		19 x 15 x 7	70	1349.95	2-16 ohm speaker impedance, 36-segment LED output metering.



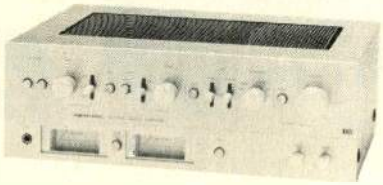
Rogers A-75 II

Philips 578



Quad 405

Pioneer Spec 2



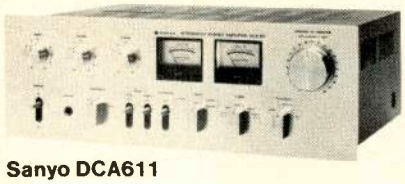
Realistic SA-2001

Letter Key: K = kit; W = wired; T = tube; P = phone stage only; M = mono.

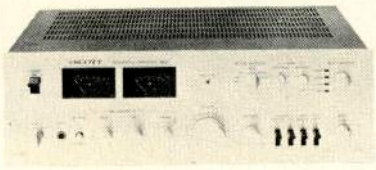
Manufacturer	Model	Type of Unit — Integrated I; Basic B; Kit K; Tube T.	Cont. Ave. Watts per Chan. into 8 ohms	Freq. Resp. at rated power, Hz to kHz	Rated THD, percent	Rated IHF IM, percent	S/N, "A" wtd., Phono re: 5 mV, dB	Phono Sensitivity, mV	Maximum Phono Input, mV	Moving Coil Phono Input	High Level Sensitivity, V	Class of Output Operation		Dynamic Headroom, dB	Dimensions, to nearest quarter inch, W X D X H	Weight, lbs.	Price, $	Notes
PHILIPS HIGH FIDELITY	AH578	B	210	20-20	0.06	0.04					1.0	B			18 x 15 x 8	63	599.95	Touch switches, $619.95 in black.
	AH384	I	40	20-20	0.1	0.1	71	2.5	130	No	200	B			19 x 14 x 5½		299.95	
	AH386	I	60	20-20	0.1	0.1	71	2.5	130	No	200	B			19 x 14 x 5½		349.95	Mike jack and mixing.
	AH388	I	80	20-20	0.1	0.1	71	2.5	130	No	200	B			19 x 14 x 5½		429.95	As above.
PIONEER	Spec-2	B	250	20-20	0.1	0.1					2.0	B			19X 17½ 7¼	54	900.00	
	Spec-4	B	150	20-20	0.01	0.01					1.0	B			19X 17½ 7¼	54	700.00	
	SA-9900	I	110	20-20	0.1	0.1	76	2.5	500	No	0.15	B			16½X 16X 6½	44	750.00	
	SA-9500 II	I	80	20-20	0.05	0.05	81	2.5	300	No	0.15	B			16½ 14¾ 6	35¼	450.00	
PROFESSIONAL SYSTEMS ENGINEERING	Studio II	B	80	20-20	0.02						1.2	AB			18 x 10½ x 3½	30	579.00	Rack mountable.
	Studio IV	B/M	350	20-20	0.02						1.5	AB			18 x 11½ x 5¼	60	895.00	As above.
PS AUDIO	Model one	B	80	2-150	0.1	0.1				No		AB			19 x 6½ x 7	20	379.95	
QUAD (Acoustical Mfg.)	303	B	45	20-20	0.03	0.03						B			12¾ X 6¼ x 4¾	18	320.00	
	405	B	100	20-20	0.01	0.01						†			13½ x 7½ x 4½	20	480.00	† Current dumping.
QUATRE	DG-250C	B	125	20-20	0.05	0.05					1.0	AB	2		16 x 13 x 6	39	575.00	
	DG-250CR	B	125	20-20	0.05	0.05					1.0	AB	2		19 x 13 x 6	40	605.00	
	GC-500	B	200	20-20	0.05	0.05					1.2	AB	2		16 x 14 x 6	44	835.00	
	GC-500R	B	200	20-20	0.05	0.05					1.2	AB	2		19 x 14 x 6	45	865.00	
RABID AUDIOPHILE NOTIONS (ZEPHYR)	BAZOOM 2000 MK 78	Defies Descrip.	900†	DC-Light	0.00	Less	2					High	oo	Variable		Heavy	Whatever the market will bear	† HP at idle, water-cooled, AEC approved.
RADIO SHACK	SA-1001	I	35	20-20	0.3	0.2	68	2.2	150	No	0.15	AB			16¼ x 12 x 5¾		279.95	
	SA-2001	I	60	20-20	0.2	0.1	63	1.3	180	No	0.19	AB			16¼ x 12 x 5¾		179.95	
RAPPAPORT	AMP-1	B										A			19 x 15 x 9.5	75	1695.00	No negative feedback.
ROGERS	A.75	I	45	20-50	0.08	0.08	70	2.7/ 90.0 μV	200	No		AB			14¼ x 11¼ x 4½	15½	520.00	

Amplifiers

Sansui AU-919



Sanyo DCA611



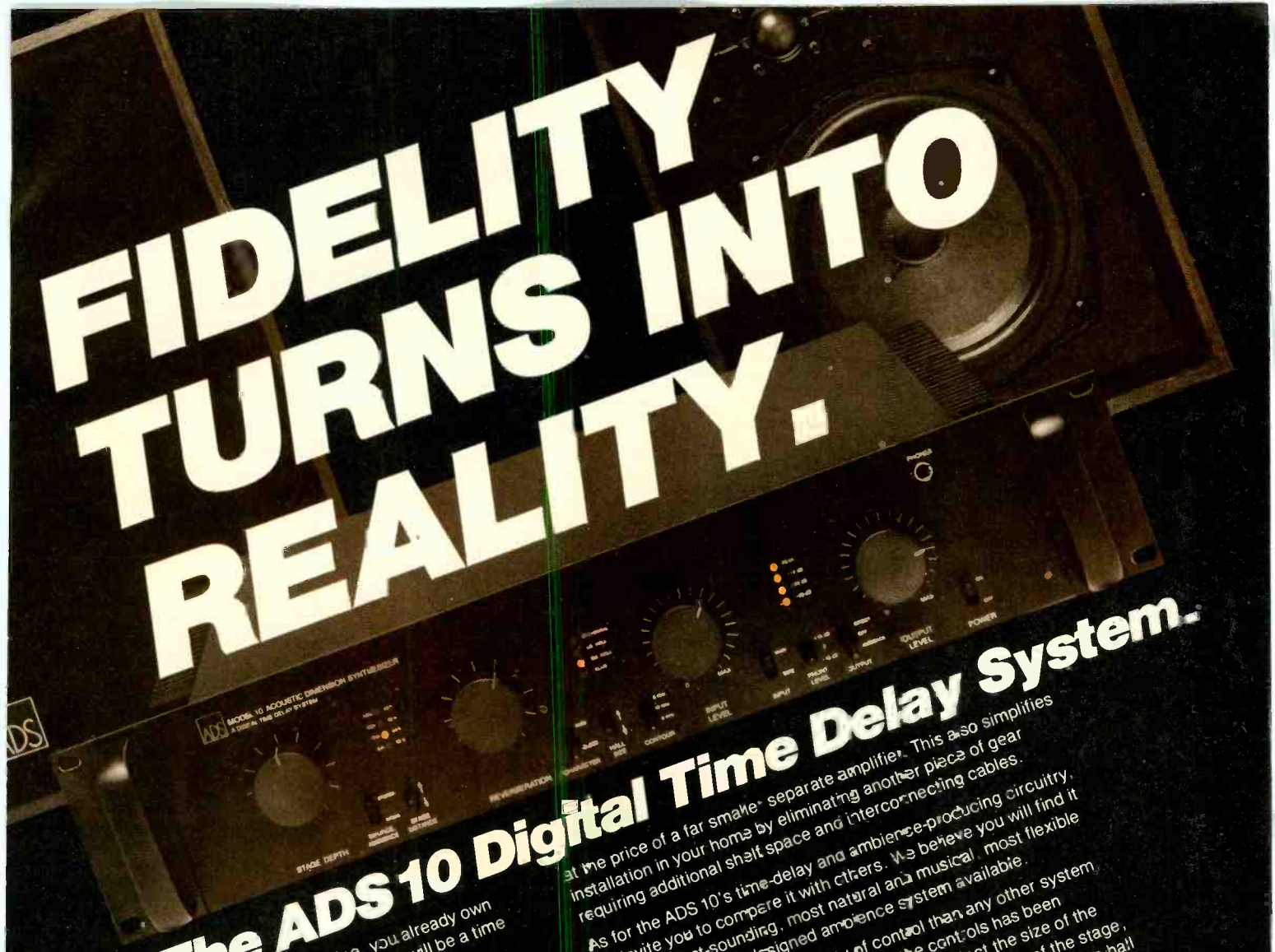
Scott 480A

SAE TWO C3A

Letter Key: K = kit; W = wired; T = tube; P = phone stage only; M = mono.

Manufacturer	Model	Type of Unit — Integrated I; Basic B; Kit K; Tube T.	Cont. Ave. Watts per Chan. into 8 ohms	Freq. Resp. at rated power, Hz to kHz	Rated THD, percent	Rated IHF IM, percent	S/N, "A" wtd., Phono re: 5 mV, dB	Phono Sensitivity, mV	Maximum Phono Input, mV	Moving Coil Phono Input	High Level Sensitivity, V	Class of Output Operation	Dynamic Headroom, dB	Dimensions, to nearest quarter inch, W X D X H	Weight, lbs.	Price, $	Notes
ROTEL	RB 5000	B	500	d.c.-200	0.009	0.009	120					AB		19¼x17¼x 9½	116½	2500.00	
	RB 2000	B	120	d.c.-200	0.01	0.01	110					AB		19¼x13¼x 5¾	39¾	570.00	D.C. design, Class A to 5 watts, AB above.
	RA 2040	I	120	d.c.-200	0.01	0.01	80	2.0/ 0.1	450	Yes	0.15	AB		19¼x16½x 5¾	48½	830.00	As above, LED readouts, changeable cartridge loading.
	RA 2030	I	80	d.c.-200	0.01	0.01	80	2.0/ 0.1	300	Yes	0.15	AB		19¼x16½x 5¾	39.6	660.00	As above.
	RA 2020	I	60	d.c.-125	0.02	0.02	75	2.0/ 0.1	200	Yes	0.15	AB		19¼ x 13¼ x 5¾	28.6	450.00	LED readouts
	RA713	I	45	5-65	0.1	0.1	68	2.5	125	No	0.15	AB		17¼ x 12½ x 5¼	22	280.00	
	RA413	I	35	5-65	0.2	0.1	65	2.5	115	No	0.15	AB		17¼ x 10¾ x 5¼	19.8	220.00	
	RA313	I	25	5-65	0.2	0.1	65	2.5	110	No	0.15	AB		17¼ x 10¾ x 5¼	17.6	180.00	
SAE	2600	B	400	20-20	0.05	0.05						AB		19 x 15.75 x 7	65	1,350.00	Complementary design, fan, parallel-series output.
	2400L	B	200	20-20	0.05	0.05						AB		19 x 11.5 x 7	47	850.00	As above w/feedback gain control.
	2300	B	150	20-20	0.05	0.05						AB		19 x 12.5 x 5.25	35	700.00	Fully complementary design w/ 30 LED display.
	2200	B	100	20-20	0.05	0.05						AB		19 x 8.5 x 5.25	28	500.00	As above
	3100	B	50	20-20	0.05	0.05						AB		19 x 8.5 x 5.25	19	350.00	Fully complementary design.
	Series Two C3A	I	50	20-20	0.05	0.05	79	2.5	150	No	0.15	AB		17.4 x 5.31 x 14	20	325.00	Complementary circuitry, direct reading meters, full tape dubbing.
	2922	I	100	20-20	0.05	0.05	84	1.5	150	No	0.08	AB		19 x 15 x 5.25	42	850.00	Parametric EQ & Tape EQ.
	3022	I	100	20-20	0.05	0.05	81	1.5	150	No	0.08	AB		19 x 15 x 5.25	42	700.00	Tape EQ.
	3031	I	50	20-20	0.05	0.05	81	1.5	150	No	0.08	AB		19 x 15 x 5.25	32	550.00	As above.
SANSUI	BA-5000	B	300	20-20	0.1	0.1					0.7	B		19 x 18½ x 8¾	108.0	1300.00	
	AU-20000	I	170	20-20	0.05	0.05	74	1.5/ 3.0/ 6.0	200/ 400/ 800		0.13	B		18¼ x 15¾ x 7¼	52.0	1000.00	
	AU-11000A	I	110	20-20	0.05	0.05	77	2.0/ 4.0/ 8.0	250/ 500/ 1000		0.15	B		18¼ x 16¼ x 7	42.3	750.00	
	AU-9900A	I	80	20-20	0.05	0.05	77	2.0/ 4.0/ 8.0	250/ 500/ 1000		0.15	B		18¼ x 16¼ x 7	38.8	600.00	
SANYO	DCA 611	I	60	20-20	0.08	0.02	70	2.5	150	Yes	0.15	AB		16½x13¾x 6		249.95	
	DCA 411	I	45	20-20	0.08	0.03	70	2.5	150	Yes	0.15	AB		16½x13¾x 6		199.95	
	DCA 311	I	30	20-20	0.08	0.05	70	2.5	150	Yes	0.15	AB		16½x13¾x 6		159.95	
H.H.SCOTT	480A	I	85	20-20	0.03	0.03	84	2.5	180/ 360	No	0.15	AB		5¼ x 17 x 14¼	29	399.95	Variable cartridge loading
	460A	I	70	20-20	0.04	0.04	84	2.5	180/ 360	No	0.15	AB		5¼ 17 x 14¼	27	349.95	Active filters, meters
	440A	I	55	20-20	0.05	0.05	79	2.5	180	No	0.15	AB		5¼ x 17 x 11¾	23.5	299.95	Power meters
	420A	I	40	20-20	0.08	0.08	74	2.5	180	No	0.15	AB		5¼ x 17 x 11¾	19.0	219.95	Power meters.

FIDELITY TURNS INTO REALITY.



With The ADS 10 Digital Time Delay System.

If you are a typical reader of this magazine, you already own a good stereo system and your next component will be a time delay ambience-reproduction system.

The best two-channel stereo sound is still a limited illusion, a sonic painting on the wall between the stereo speakers. You don't have to open your eyes to know that you are hearing a reproduction rather than the real thing. Stereo provides a picture-window view of the recording locale, but as long as the sound is only projected at listeners from in front, stereo cannot produce the feeling of **being there** in the same acoustic space with the musicians. Better recordings and finer stereo components can improve the quality of the picture-window view but they cannot make the breakthrough to a convincing sense of **"reality"** in the reproduction. The you-are-there illusion in sound, that feeling of hearing the sound in **three** dimensions, can only be achieved by re-creating the enveloping "ambient" sound field which surrounds the listener in any real acoustic space. Critics and reviewers have agreed that there is nothing you can add to a decent stereo system for $1000 which will improve its performance as much as a good time delay ambience system can.

The ambience system you will want to own is the ADS 10 — the most sophisticated and the only complete time delay system now offered to the public. The ADS 10 is a fully optimized, fully integrated third generation digital system containing everything you need to add to your existing stereo (ambience circuitry, amplifier, and speakers) — free of the limitations and compromises of earlier time delay units. Its component parts work at maximum efficiency with each other, with no money wasted on redundant parts or unused capacity. The ADS L10 speakers were developed specifically for this application.

Building the amplifiers into the same chassis as the time delay circuitry, sharing the same power supply and cabinet, allows us to offer a full 100 watt per channel amp at the price of a far smaller separate amplifier. This also simplifies installation in your home by eliminating another piece of gear requiring additional shelf space and interconnecting cables.

As for the ADS 10's time-delay and ambience-producing circuitry, we invite you to compare it with others. We believe you will find it to be the best-sounding, most natural and musical, most flexible and most logically designed ambience system available.

The ADS 10 has more flexibility of control than any other system, but it is simple to operate. Design of the controls has been human-engineered so that you can easily select the size of the hall (from an intimate club to a cathedral), the depth of the stage, the location of your 'seat' and the reverberant qualities of the hall itself. An irritating problem of earlier time delay systems — the unnatural sound of the ambience-enhanced human voice, as in FM listening, for example — is resolved in the ADS 10 by a special circuit. Provision is made for adding ambience to the front channels for 'dry' recordings, as well as to your own tape recordings. An ambience-enhanced headphone outlet provides the most natural, most musical headphone listening you've ever known.

Visit your ADS dealer. Bring your favorite records with you and listen to them through the ADS 10. Experience the difference between fidelity and reality. Change the hall. Deepen the stage. Move your 'seat.' Check the features and the performance of the ADS 10 against any other time delay system.

You'll discover the ADS 10 Acoustic Dimension Synthesizer is the system for which you've been waiting.

ADS

For a comprehensive explanation of ambience reproduction and the ADS 10 Time Delay System, request your free copy of the ADS 10 Brochure. For full information on the scientific basis, design, installation, features and functions of the ADS 10, we invite you to order the ADS 10 Owner's Manual at $5.00 per copy.

ADS, Analog & Digital Systems, Inc., One Progress Way, Wilmington, MA 01887

☐ Please send me a copy of the ADS 10 Owner's Manual. $5.00 is enclosed. AM10

☐ Please send me a copy of the ADS 10 Brochure.

Name _____

Address _____ Zip _____

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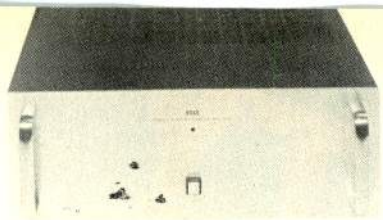
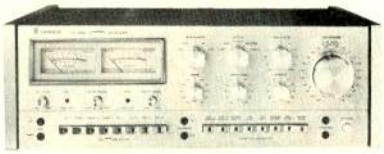
Amplifiers



Stax DA-80

Spectro Acoustics 500

Setton BS-5500

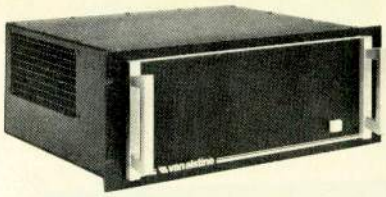


Sherwood HP-2000

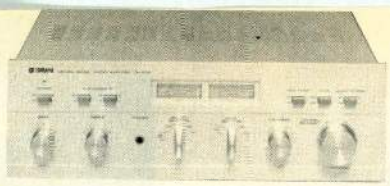
Soundcraftsmen MA5002

Letter Key: K = kit; W = wired; T = tube; P = phone stage only; M = mono.

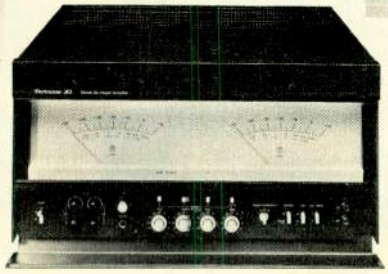
Manufacturer	Model	Type of Unit — Integrated i; Basic B; Kit K; Tube T.	Cont. Ave. Watts per Chan. into 8 ohms	Freq. Resp. at rated power, Hz to kHz	Rated THD, percent	Rated IMF IM, percent	S/N, "A" wtd., Phono re: 5 mV, dB	Phono Sensitivity, mV	Maximum Phono Input, mV	Moving Coil Phono Input	High Level Sensitivity, V	Class of Output Operation	Dynamic Headroom, dB	Dimensions, to nearest quarter inch, W x D x H	Weight, lbs.	Price, $	Notes
SERIES 20	M-22	B	30	10-30	0.01	0.01						A		16½x14½x6	48½	790.00	
	M-25	B	120	5-30	0.01	0.006						AB		16½x14½6	51½	1200.00	3 watts class A.
	A-27	I	120	5-30	0.015	0.006	96/84	2.5	300/30	Yes	0.15	AB		18x18½x6¾	55¾	1250.00	† Re: 0.5mV, 3 watts class A, variable cartridge loading.
SETTON	BS-5500	B	120	20-20	0.03	0.04					1.5	AB		20x6½x11¾	47	799.95	Power meters.
	AS-1100	I	50	20-20	0.06	0.06	85	5/2.5	360/180	No	0.15	AB		20x6½x11¾	36	379.95	Power meters, 3 tone controls.
	AS-3300	I	69	20-20	0.08	0.08	85	5/2.5	360/180	No	0.15	AB		20x6½x11¾	38	459.95	Power meters, 3 tone controls, bass & treble turnovers.
SHERWOOD	S-402CP	I	35	20-20	0.2	0.2	86	2.5	200	No	0.16	AB		17¼ x 12¾x5½	21	225.00	Certificate with each unit for exact power and distortion.
	S-702CP	I	60	20-20	0.2	0.2	86	2.5	200	No	0.16	AB		17¼ x 12¾ x5½	30	325.00	As above.
	HP-1000 CP	I	60	20-20	0.2	0.2	80	2.3	160	No	0.12	AB		20 x 6¾ x 15¼	36	600.00	As above.
	HP-2000 CP	I	120	20-20	0.2	0.2	85	2.2	160	No	0.11	AB		20 x 15¼ x 6¾	42	750.00	As above.
SONY	TA-N88	B	160	5-40	0.5							D		18¾ x 14¼ x 3¼	24¼	1050.00	Pulse width modulation (PWM) circuitry, with V-FET switching stage, rack mount.
	TA-N7B	B	100	d.c.-100	0.01							AB		17 x 13¼ x 6¾	46¼	920.00	All stage d.c. design, V-FET final stage.
	TA-F6B	I	100	d.c.-100	0.03		91	2.5	250	Yes	0.25	AB		17 x 15½ x 6¾	26½	610.00	All stage d.c. design, with pulse lock power supply.
	TA-F5A	I	70	3-70	0.04		91	2.5	250	No	0.25	AB		17 x 14¾ x 5¾	18	350.00	Pulse-lock power supply.
	TA-F3A	I	50	10-60	0.35		81	2.5	250	No	0.25	AB		17 x 14¾ x 5¾	23¼	240.00	
SOUND-CRAFTSMEN	MA5002	B	250	20-20	0.1	0.05					1.28	H		19 x 15 x 7	58	799.00	Meters, Vari-Portional Class H, Auto-Crowbar protection, speaker switching, level control, clipping & overload LEDs.
	PA5001	B	250	20-20	0.1	0.05					1.28	H		19 x 15 x 7	55	649.00	Vari-portional, Class H, Auto-Crowbar protection, speaker switching, power & overload LEDs.
	EA5003	B	250	20-20	0.1	0.05					1.28	H		19x15x7	58	949.00	Same amp as MA5002 but includes stereo 10-band equalizer with zero-gain controls (no meters).
Spectro ACOUSTICS	202	B	100	20-20	0.25	0.25						AB		17x11.5x6	21	375.00	Neon clip indicators.
	202C	B	100	20-20	0.25	0.25						AB		19x11.5x6	21	375.00	
	500	B	250	20-20	0.25	0.25						Ab		17x12x7	40	695.00	8 LED power readout
	500SR	B	250	20-20	0.25	.25						AB		19x12x7	40	695.00	8 LED power readout
	500R	B	250	20-20	0.25	.25						AB		19x12x7	40	595.00	
STAX	DA-80	B	45	D.C.-100	0.007	0.003					0.89	A		17½ x 16½ x 6½	43	1700.00	
	DA-80M	B/M	90	D.C.-100	0.007	0.003					1.26	A		17½ x 16 x 6½	44	1600.00	
	DA 300	B	170	D.C.-60	0.01	0.01					1.7	A		17 x 13½ x 9½	90	3800.00	
SUMO ELECTRIC	The Sumo Amplifier	B	400	20-20	0.01	0.01					2	AB	1			899.00	Full balanced bridge, modular, no limiters.
	The Smaller Sumo Amplifier	B	150	20-20	0.01	0.01					1.4	AB	1			499.00	As above.



Van Alstine Model 2



Yamaha CA-410 II

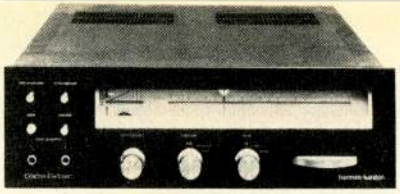


Technics SE-A1

Threshold 4000

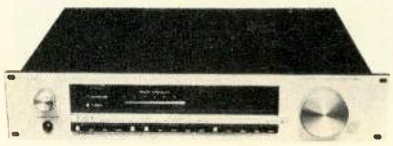
Manufacturer	Model	Type of Unit — integrated i; Basic B; Kit K; Tube T.	Cont. Ave. Watts per Chan. into 8 ohms	Freq. Resp. at rated power, Hz to kHz	Rated THD, percent	Rated IHF IM, percent	S/N, "A" wtd., Phono re: 5 mV, dB	Phono Sensitivity, mV	Maximum Phono Input, mV	Moving Coil Phono Input	High Level Sensitivity, V	Class of Output Operation	Dynamic Headroom, dB	Dimensions, to nearest quarter inch, W X D X H	Weight, lbs.	Price, $	Notes
TECHNICS	SE-A1	B	350	20-20	0.003						A			17⅜ x 21¾ x 10	112	6000.00	Class A-plus, peak reading meters, 4 level-adj. outputs.
	SE-9060	B	70	20-20	0.02						AB			19 x 14¾ x 4	25½	460.00	All d.c. stages, straps for 180 watts mono. Write for complete brochure
	SU-8080	I	72	20-20	0.02	.02	94	2.5	280	Yes	0.2	AB		17¾ x 14½ x 5½	30	460.00	All d.c. stages, separate power supplies, subsonic filter, write for complete brochure
	SU-8600	I	73	20-20	0.08	0.08	81	2.0	200	No	0.15	AB		19¼ x 13½ x 7¼	32	350.00	Six-fold power supply, sharp-cut filters, selectable tone control turnovers. Write for complete brochure
	SU-7700	I	50	20-20	0.08	0.08	84	2.5	150	No	0.15	AB		18x13¼x 5¾	24	280.00	Subsonic filter, power meters, tone control defeat.
	SU-7300	I	41	20-20	0.08	0.08	84	2.5	150	No	0.15	AB		17¾x13¼x 5¾	20	200.00	41-step volume control. Write for complete specs.
	SU-7100	I	35	20.20	0.08	0.08	84	2.5	110	No	0.15	AB		17¼x13x 5¾	16½	170.00	Tone defeat. Write for complete specs.
THRESHOLD	400A	B	100	5-150 ±3	0.1	0.002					0.06	A	7	19 x 12 x 7	53	1215.00	32 output transistors, dynamic bias, peak & ave. display, 40 V/ μ, constant damping factor vs. freq.
	CAS1	B	75	5-150 ±3	0.04	0.02					0.06	AB†	7	19 x 9¾ x 4¼	27	740.00	Cascode operation, dual power supplies, 40 V/ μ, constant damping vs. freq.
	4000	B	200	5-150 ±3	0.03	0.01					0.06	A†	7	19 x 18¼ x 7	83	1825.00	Cascode operation, dynamic bias, bridges to 700 W mono, 50 V/ μ, constant damping vs. freq., 48 output transistors.
TOSHIBA	SB 420	I	42	20-20	0.03	0.03	80	2.5	47k	No	0.15			17¾x13½ 6		229.95	
	SC 335	I	40	20-20	0.1	0.1	95	1	47k					16½x9½x 3	13½	169.95	
UNI-SYNC	50	B	50	20-20	0.03	0.05				No	1.0			19 x 10¼ x 1¾		329.00	Dual power supply.
	100	B	100	20-20	0.03	0.05				No	1.5			19 x 10¼ x 3½		549.00	As above.
	200	B	200	20-20	0.03	0.05								19 x 10¼ x 7½			As above.
	350	B	350	20-20	0.03	0.05								19 x 10¼ x 7½			As above.
VAN ALSTINE	Model Two		225											19x14x 7	46	1000.00	No VI limiting, remote on/off, d.c. relay speaker protection, fan.
	Model Three		125											19x14½x 5¼	35	750.00	Bridgeable, balanced feedback, remote on/off, d.c. speaker protection.
WINTEC	A-2040	I	40	20-20	0.05	0.05	81	2.5	200	Yes	0.15	AB		16½ x 5½		249.95	
	A-2080	I	80	20-20	0.03	0.03	91	2.5	250	Yes	0.15	AB		16½ x 5½		449.95	
	A-2160	I	160	20-20	0.01	0.01	91	2.5	300	Yes	0.15	AB		16½ x 6½		699.95	Variable loudness and filters, LED displays.
YAMAHA	CA-2010	I	125	20-20	0.03		96	2.0		Yes		AB		18¼x14¼x 6¾	44	780.00	
	CA-1010	I	90	20-20	0.03		96	2.0		Yes		AB		18¼x14¼x 6¾	41⅜	630.00	
	CA-810	I	65	20-20	0.03		95	2.5		Yes		A		17¼x13¼x 6¼	26½	390.00	
	CA-610 II	I	45	20-20	0.05		97	2.5		No		A		17¼x13¾x 6¼	20	290.00	

Tuners



Harman/Kardon Citation 18

Fisher FM 2310



Dynaco 2501

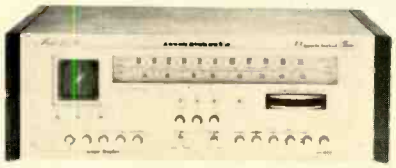
Denon TU-850

Hitachi FT-440B

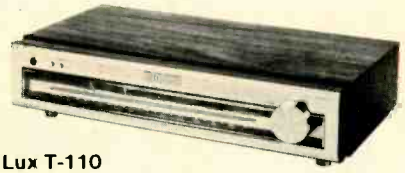
MANUFACTURER	Model	Type of Unit, Use Letter Key	Mono IHF Sensitivity, µV / dBf	Stereo IHF Sensitivity, µV / dBf	Capture Ratio, dB	Alt. Chan. Select., dB	Mono Signal Strength for 50 dB Quieting, µV / dBf	Stereo Signal Strength for 50 dB Quieting, µV / dBf	Separation, dB, 1 kHz	Separation, dB, 10 kHz	THD, mono/stereo, 1 kHz, 100% modulation	S/N, max., dB, Mono/stereo	Switchable De-emphasis	Dimensions, inches WxHxD to nearest ¼ inch	Net Weight, lbs.	Price, $
AKAI AMERICA	AT-2600	F	1.7		1.0	100	10	30	45		0.15/ 0.2	75	No	17.3 x 13.2 x 5.6	16.7	299.95
	AT-2400	F	1.8		1.0	80	10	30	42		0.2/ 0.3	75	No.	17.3 x 13.2 x 5.6	14.5	199.95
	AT-2200	F	1.9		1.3	60	12	30	40		0.3/ 0.5	70	No	15.0 x 10.3 x 4.9	9.2	149.95
ARMSTRONG	624	F	1.0/ 5.0	3.0/ 14.8	1.75	56	2.4/ 12.9	34.0/ 35.9	40	32	0.15/ 0.2	69/65	No	12¼ x 11⅛ x 3¼	7¾	295.00
	623		1.0/ 5.0	3.0/ 14.8	1.75	56	2.4/ 12.9	34.0/ 35.9	40	32	0.15/ 0.2	69/65	No	12¼ x 11⅛ x 3¼	7¾	395.00
CROWN	FM-1	F	—/ 9.8	—/ 28.8	1.5	80	—/ 13.2	—/ 34.8	45	35	0.1/ 0.15	75/72	Yes			
DENON	TV-850	F	1.7	3.5	1.5/ 8	35/ 65	3	40	45	40	0.05 0.08	84	No	17 x 15¾ x 6½	19½	480.00
	TV-501	F	1.8	3.5	1.2	78	3	45	45	40	0.1 0.15	55	No	17 x 11¾ x 5¾	14½	415.00
	TV-500	F	1.7	3.5	1.0	80	3	45	45	40	0.2 0.2	75/ 75	No	17 x 13¾ x 5½	20	340.00
DRACO	Micro CPM 100	F	1.6/ 9.31		0.5	85	2.1/ 11.67	22/ 32.08	55	40	0.07/ 0.07	82/75	Yes	20 x 6½ x 15	34	1000.00
DYNACO	2501	F	1.7/ 9.8	7.0/ 22.0	1.75	80	3.5/ 16	35/ 36	45	30	0.25/ 0.25	70/65	Yes	19 x 13½ x 3½		799.00 wired only
	FM-5	K	1.75/ 10		1.5	65	5.0/ 19.2		40	30	0.5/	65/	No	13½ x 9 x 4¼	11	199.00
FISHER	FM 2110		1.8/ 10.3	4.6/ 18.5	1.0	70	2.8/ 14.2	38/ 36.8	40	30	0.15/ 0.2	72/66		16¾x 13¾x 6	13.6	159.95
	FM 2310		1.7/ 9.8	4.3/ 17.9	0.8	75	2.5/ 13.2	34/ 35.9	46	36	0.1/ 0.15	75/70		17½x 14¼x 6	17.6	249.95
HARMAN KARDON	500		1.9/ 5.0		1.2	75	3.0	30	55	40	0.05/ 0.08	75	Yes			229.00
	Citation 18	F	2.0/ 11.2		1.8	70	3.2	32	45	40	0.2	73	Yes	16 x 13½ x 4¾	23	630.00
HEATH	AJ-1515	K	1.8/	3.5/	1.5	100	2.3/	35/	40	25	0.3/ 0.35	70/60	No	17½ x 14¼ x 6¼	27	379.95
	AJ-1219	K	2.0/		2.0	60	3.5/		35		0.5/	65	No	13 x 11 x 3¾	7¾	119.95
HITACHI	FT-340		1.9/ 10.8	6.3/ 21.0		65	3.9/ 17.0	39/ 37				67/74				179.95
	FT-440B		1.7/ 9.8	5.0/ 19.2	1.0	80	3.5/ 16.1	39/ 37	50		0.2/ 0.3	68/75		17¼ x 15 x 6½	15.4	279.95
	FT-440G		1.7/ 9.8	5.0/ 19.2	1.0	80	3.5/ 16.1	39/ 37	50		0.2/ 0.3	68/75		17¼ x 15 x 6½	15.4	259.95
	FT-8000															449.95

Kenwood KT-8300

JVC T-3030



Marantz 2130



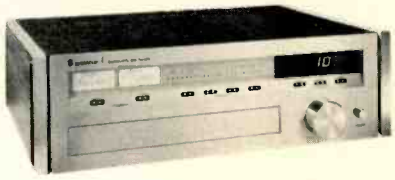
Lux T-110

MANUFACTURER	Model	Type of Unit, Use Letter Key	Mono IHF Sensitivity, µV / dBf	Stereo IHF Sensitivity, µV / dBf	Capture Ratio, dB	Alt. Chan. Select., dB	Mono Signal Strength for 50 dB Quieting, µV / dBf	Stereo Signal Strength for 50 dB Quieting, µV / dBf	Separation, dB, 1 kHz	Separation, dB, 10 kHz	THD, mono/stereo, 1 kHz, 100% modulation	S/N, max., dB, Mono/stereo	Switchable De-emphasis	Dimensions, inches WxHxD to nearest ¼ inch	Net Weight, lbs.	Price, $
KENSONIC	T100		1.8/ 10.3	5.0/ 19.2	1.5	70	4.0/ 17.3	30/ 34.8	50	45	0.1/ 0.2	75/ 80	Yes	17½ x 14 x 6	31	750.00
	T101	F	1.8/ 10.3	5.0/ 19.2		70	4.0/ 17.3	30/ 34.8	50	45	0.1/ 0.2	75/ 80	Yes	18 x 14 x 6	24.5	500.00
JVC	JT-V11G		2.1/ 11.6		1.5	55	4.0/ 17.2	45/ 38.3	35	30	0.25/ 0.45	70/ 65		15½x 13½x 6	11	149.95
	JT-V22		2.0/ 11.2		1.5	70	4.0/ 17.2	45/ 38.3	40	30	0.2/ 0.35	73/ 65		16½x 11¾x 6	10.1	179.95
	JT-V77		1.8/ 10.3		1.0	75	3.8/ 16.8	38/ 36.8	50	40	0.08/ 0.1	78/ 72		17¾ x13½ x6¼	14.3	299.95
	T-3030 Digital	F	1.0/ 11.2		1.0	80	1.9/ 10.8	38/ 36.8	50	45	0.08/ 0.1	75/ 72	Yes	16¾ x13¾ x2½	14.3	599.95
KENWOOD	L-07T	F			1.0	30/100	2.8/ 14.2	38/ 36.8	50	45				19 x 13¼ x 4	15	
	600T				1.4	30/110	2.8/ 14.2	38/ 36.8	45	40				17½ x 15 x 6¼	11½	
	KT-8300				1.0/ 1.5	40/110	2.8/ 14.2	30/ 34.8	50	45				17 x 15 x 6	18.7	450.00
	KT-7500				1.0/ 2.0	30/100	2.8/ 14.1	35/ 36.1	50	43				17 x 15 x 6	16.8	310.00
	KT-6500				1.0	75	3.6/ 16.3	43/ 37.9	50	40				17 x 14¾ x 6	13¼	200.00
	KT-5500				1.0	60	4.0/ 17.2	45/ 38.3	45	35				15 x 11½ x 5½	10	155.00
LUX AUDIO	T-12	F	1.8/ 10.7		0.8/ 2	90/ 30	2.8/ 14.2		50/ 30	45	0.05/ 0.06	80		17¼ x 12¾ x 3	15.4	645.00
	T-4		1.8/ 10.3		2	85/ 40	3/ 14.7		80/50	40	0.08/ 0.15	75				495.00
	T-2		1.8/ 10.3		1.5	60	3/ 14.7		45		0.3	75				345.00
	5T50	F	1.7/ 9.8	4.5/ 18.3	1.1	72	2.5/ 13.2	35/ 36.1	45	40	0.08/ 0.1	70	Yes	17.7 x 16 x 4	19	1595.00
	5T10	F	1.8/ 10.3		0.8/ 2	90/ 30	2.8/ 14.2		50/ 30	45	0.05/ 0.06	80	Yes			795.00
	T-110	F	1.6/ 9.3		1.3	70	2.2/ 12	34/ 35.8	48	38	0.08/ 0.08	78/ 72	Yes	19 x 9½ x 4½	17	545.00
	T-88V		2/ 11.2		1.8	60	2.8/ 14.1		43	30	0.2	72/ 68	No	17¾ x 11¾ x 6¼	15.4	345.00
MARANTZ	2130		1.5/ 9.1		1.5/ 0.8	80/ 45	2.5/ 13.2	25/ 33.2	50	45	0.07/ 0.15; 0.05/ 0.07	82/75	Yes	16½x 9½x 5¾	13½	529.95
	2120		1.8/ 10.3		1.4/ 1.0	80/ 50	2.5/ 13.2	35/ 36.1	50	42	0.15/ 0.2; 0.1/ 0.15	80/70	Yes	16½ x9½ x5¾	13½	319.95
	2110		1.8/ 10.3		1.0	70	2.5/ 13.2	40/ 37.3	45	40	0.15/ 0.3	74/65	Yes	16½ x 9½x5¾	13½	339.95
	2100		1.8/ 10.3		1.0	70	2.5/ 13.2	40/ 37.3	45	40	0.15/ 0.3	74/65	Yes	16½ x 9½x5¾	13½	219.95
	2020		1.8/ 10.3		1.0	65	2.5/ 13.2	42/ 37.7	45		0.15/ 0.3		No	16½ x 9½x5¾	11	179.95

Tuners

Yamaha T-1

Sanyo FMT611K



Sherwood Micro CPU100

Technics ST-9038

Mitsubishi DA-F10

MANUFACTURER	Model	Type of Unit, Use Letter Key	Mono IHF Sensitivity, µV / dBf	Stereo IHF Sensitivity, µV / dBf	Capture Ratio, dB	Alt. Chan. Select., dB	Mono Signal Strength for 50 dB Quieting, µV / dBf	Stereo Signal Strength for 50 dB Quieting, µV / dBf	Separation, dB, 1 kHz	Separation, dB, 10 kHz	THD, mono/stereo, 1 kHz, 100% modulation	S/N, max., dB, Mono/stereo	Switchable De-emphasis	Dimensions, inches WxHxD to nearest ¼ inch	Net Weight, lbs.	Price, $
SANYO	FMT 611K	F	1.9/10.8	4.8/18.0	1.2	70	2.8/ 14.0	38/37	45	35	0.15/ 0.15	75/65	No	16½ x 13¾ x6		159.95
HH SCOTT	590T		1.6/ 9.3		1.0	80	3.0/ 14.8	32/ 35	50		0.08/ 0.15	80/75	Yes	17 x 11¾ x 5¼	13.5	299.95
	570T		1.8/ 10.3		1.0	70	3.5/ 16.1	33/ 35.6	50		0.1/ 0.2	75/70	Yes	17 x 11¾ x 5¼	13	249.95
	530T		1.9/ 10.8		1.5	60	3.8/ 16.8	35/ 36	45		0.15/ 0.3	72/67	Yes	17 x 11¾ x 5¼	11.5	199.95
SERIES 20	F-26	F	1.9/ 10.8		2.0	65/ 80	2.5/ 13.2	33.5/ 35.7	55	40	0.03/ 0.05	87/84	Yes	16½ x 14 x 3¼	16½	1000.00
	F-28	F	1.8/ 10.3		0.8/ 1.5	35/ 70	2.8/ 14.1	35/36	55	50	0.04/ 0.05	84/81	Yes	16½ x 14¾ x 6¼	19¾	690.00
SETTON	TUS-600		/10.3	/18	1.0	80/	/17	/38	50	40	0.1/ 0.15	72/67	No	20x11¾x 6½	28	439.95
SHERWOOD	S-32 CP		1.8/ 10.33		1.0	60	3.3/ 15.6	39/ 37.05	40	30	0.15/ 0.25	70/66	Yes	17¼ x 12¾ x 5½	17	225.00
	HP-5500		1.6/ 9.31		1.0	85	2.5/ 13.8	30/ 34.77	50	40	0.12/ 0.15	70/65	Yes	20 x 13½ x 6	23½	600.00
	MICRO/ CPU 100		1.6/ 9.31		0.5/ 1.0	85/ 18	2.1/ 11.6	22/ 32.08	50	35	0.07/ 0.07	82/75	Yes	20 x 15 x 6½	34	2000.00
SONY	ST-A7B	F	1.5/ 8.8		0.8/ 1.8	120/ 50	2.8/ 14.2	30/ 34.6	55	40	0.04/ 0.08	80/75	Yes	18¼ x 16¾ x 6¾	31¼	900.00
	ST-A6B	F	1.7/ 9.8		1.0/ 1.2	85/ 55	3.4/ 15.9	39/ 37.1	45	40	0.08/ 0.15	79/74	No	17 x 12¾ x 6¾	15½	310.00
	ST-A3A		1.8/ 10.3		1.0	50	3.6/ 16.4	43/ 37.9	40	30	0.2/ 0.5	70/65	No	17¼ x 12¾ x 5¾	12¼	200.00
TECHNICS	ST-9038	F	1.2/ 12.8		1.0	75	2.2/ 18.1	22/ 38.1	45	35	0.1/ 0.15	75/	No	18½ x 11 x 1¾	11	550.00
	ST-9030	F	1.2/ 12.8		0.8/ 2.0	25/ 90	2.2/ 14.8	22/ 38.1	50	40	0.08/ 0.08	80/	No	19 x 14½ x 4	16	460.00
	ST-8600		1.9/ 10.8		1.0	85	2.6/ 13.6	28.4/ 34.3	45	35	0.15/ 0.25	80/72	No	19¼ x 13½ x 7¼	31¾	330.00
	ST-7300		2.0/ 11.2		1.0	75	3.0/ 14.8	45/ 38.3	45	35	0.2/ 0.4	75/ 70	No	17¼ x 12½ x 5¾	14	200.00

Audio Modules

Build your system or make add-on's with SESCOM audio modules.

MIC-4 Low Impedance Microphone Pre-amp

LA-3 Line Amplifier Transformer Balanced 600 ohm output

PS-1 Power Supply 24 volts DC regulated —120/240 VAC input

Pre-amps — Balanced low impedance for microphone, High impedance general purpose, RIAA Phono, NAB tape (1⅞, 3¾, 7½, 151 ips)

Equalizers — Active (bass, mid-range, treble) high pass filter, low pass filter.

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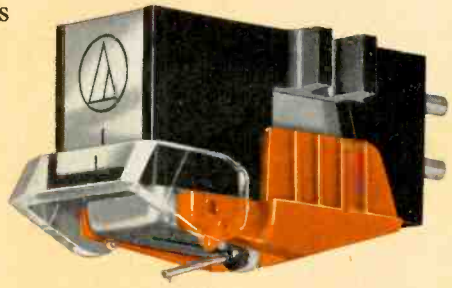

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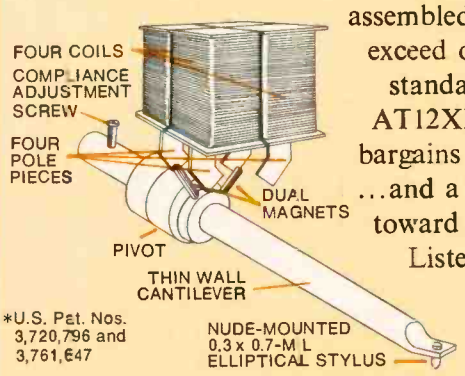

*U.S. Pat. Nos. 3,720,796 and 3,761,647

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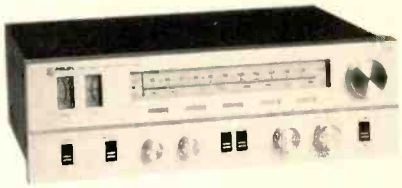
Tuners

McKay-Dymek AM5

Phase Linear 5000 II

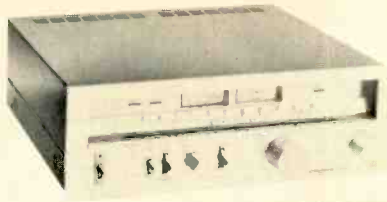


Philips AH 673

Onkyo T-909

Nakamichi 630

MANUFACTURER	Model	Type of Unit, Use Letter Key	Mono IHF Sensitivity, µV / dBf	Stereo IHF Sensitivity, µV / dBf	Capture Ratio, dB	Alt. Chan. Select., dB	Mono Signal Strength for 50 dB Quieting, µV / dBf	Stereo Signal Strength for 50 dB Quieting, µV / dBf	Separation, dB, 1 kHz	Separation, dB, 10 kHz	THD, mono/stereo, 1 kHz, 100% modulation	S/N, max., dB, Mono/stereo	Switchable De-emphasis	Dimensions, Inches WxHxD to nearest ¼ inch	Net Weight, lbs.	Price, $
MCINTOSH	MR 74 MR 77 MR 78														37 39 39	699.00 699.00 899.00
MCKAY-DYMEK	AM 5	AM only												17½x 10x 3½	12	295.00
MITSUBISHI	DA-F20	F	2.0/ 11.2	7.5/ 22.7	0.8	45/75	5.0/ 19.2	50/ 39.2	50	40	0.05/ 0.08	80/75	No	16¾	14½	380.00
	DA-F10		2.5/ 13.2	7.8/ 23	0.8	45/75	5.5/ 20	55/ 40	45	40	0.06/ 0.08	75/70	No	16¾ x 10¼ x 6¾		260.00
	M-F01	F	2.0/ 11.2	7.5/ 22.7	1.0	70	5.0/ 19.2	50/ 39.2	50	40	0.08/ 0.1	80/77	No	10½ x 9¾ x 2¾	7½	320.00
NAKAMICHI	630	F	2.5/ 13	25/ 33	1.0	80/40	5.0/ 19	50/ 39	50	35	0.05/ 0.08	70/68	Yes	15¾ x 9¼ x 6¾	15.5	730.00
	430	F	1.8/ 10.5		1.5	90/60	4.0/ 17.3	40/ 37.3	50	35	0.06/ 0.09	70/68	Yes	15¾ x 9 x 3	11	440.00
NIKKO	Gamma V		1.8/ 10.3		1.0/ 1.5	35/ 80	/14	/34	55/ 45	35	0.04/ 0.06; 0.08/ 0.2	78/ 75	Yes	19x 11¾x 2½		649.95
	Gamma I		1.8/ 10.3		1.0/ 1.5	35/ 85	/14	/34	55/ 45	40	0.04/ 0.06; 0.08/ 0.2	78/ 75	Yes	19x 9x 2½	12.1	370.00
	NT 550		1.9/ 10.8		1.0	55	/16	/34	45	30	0.1/ 0.2	72/68	No	15¾x 13½x 5¾	13.2	180.00
	NT 850		1.8/ 10.3		1.0/ 1.5	65 80	/14	/34	48 /40	35/32	0.08/ 0.15; 0.2/ 0.4	75/70	Yes	15¾ x 13½ x 5¾	13.2	230.00
ONKYO	T-909	F	1.7/ 9.8	4.0/ 17.2	1.5	80	3.0/ 14.7	35/ 36.0	45	40	0.08/ 0.15	80/74	Yes	17¾x14x 3¼	13	949.95
	T-9		1.7/ 9.8	4.0/ 17.2	1.5	80	3.0/ 14.7	35/ 36.0	40	35	0.15/ 0.3	73/65	Yes	17½x15x 6¼	15.4	299.95
	T-4		1.9/ 10.8	4.5/ 18.3	1.5	60	3.5/ 16.1	40/ 37.2	40	30	0.2/ 0.4	70/60	Yes	17½x15x 6¼	13.4	209.95
PHASE LINEAR	5000 Series Two	F	1.9/10.8	6.0/20.8	1.2	75	3.0/ 14.8	30.0/ 34.8	42	32	0.1/ 0.2	74/72	Yes	19 x 10 x 7	17	549.95
PHILIPS HIGH FIDELITY	AH673		1.6/	3.0/	1.0	110/ 83	2.2		50	38	0.09/ 0.1	72/	No	18 x 15 x 8	25	499.95
	AH6731		1.6/	3.0/	1.0	110/ 83	2.2		50	38	0.09/ 0.1	72/	No	18 x 15 x 8	25	519.95
	AH185		1.7/		1.2	70	3.5		50		0.15	70/	No	14 x 14 x 5½		299.95



Pioneer TX-9500II

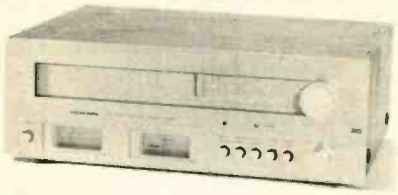
SAE II T3U

Rogers T-75

Sansui TU-717

Quad FM3

Realistic TM-1001



MANUFACTURER	Model	Type of Unit, Use Letter Key	Mono IHF Sensitivity, µV / dBf	Stereo IHF Sensitivity, µV / dBf	Capture Ratio, dB	Alt. Chan. Select., dB	Mono Signal Strength for 50 dB Quieting, µV / dBf	Stereo Signal Strength for 50 dB Quieting, µV / dBf	Separation, dB, 1 kHz	Separation, dB, 10 kHz	THD, mono/stereo, 1 kHz, 100% modulation	S/N, max., dB, mono/stereo	Switchable De-emphasis	Dimensions, inches WxHxD to nearest ¼ inch	Net Weight, lbs.	Price, $
PIONEER	TX-9500II		1.5/ 8.8		0.8	35/85	2.5/ 13.2	35/ 36.1	50	35	0.05/ 0.07	82/77	Yes	16½ x 15½ x 6	21	400.00
	TX-8500II		1.8/ 10.3		0.8	35/80	3.5/ 16.1	40/ 37.2	45	35	0.08/ 0.01	79/75	Yes	16½ x 15½ x 6	18	300.00
	TX6500II		1.9/ 10.7		1.0	60	2.8/ 14	44/ 38.0	40	30	0.15/ 0.3	75/68	Yes	15 x 12¾ x 5½	12½	200.00
	TX-5500II		1.9/ 10.7		1.0	60	2.8/ 14	44/ 38.0	35	30	0.15/ 0.3	72/68	Yes	15 x 10¾ x 5	7¾	150.00
QUAD	FM3	F			3.0	46	5.0/ 13.2	30	40			72/70	No	10¼ x 6½ x 3½	6	320.00
RADIO SHACK	TM-1001		1.7/ 4		1.0	45/ 75	3/ 9		40	32	0.1/ 0.2	70/	Yes	16¼ x 12 x 5¾		179.95
ROGERS	T.75	F	1.5	15.0	1.5	60	3.0	45.0	40	35	0.3/ 0.7	65/70	No	14¼ x 11¼ x 4½	10¼	350
ROTEL	RT2100	F	1.5/ 8.8	/29	0.8	80		/29	50		/0.05	80/	No	19¼ x 13¼ x 5¾	24¼	600.00
	RT2000		1.6/ 9.3	/30	1.0	75		/30	45		/0.1	80/	No	19¼x13¼ x 5¾	22	430.00
	RT725		1.8/ 10.3	4.5/ 18.3	1.5	60	3.0/ 14.7	/38	42	31	0.2/ 0.3	65/70	No	17¼ x 10¾ x 5½	13¼	220.00
	RT425		1.9/ 10.7	4.9/ 19.0	1.5	50	3.1/ 15	/38	40	30	0.2/ 0.3	70/ 65	No	17¼ x 10¾ x5½	11	180.00
SAE	8000 Digital	F	1.6/ 9.3	4/ 17.3	1.5	120	5.0/ 19.2	30/ 34.8	45	35	0.15/ 0.20	70/68	Yes	19 x 11 x 5.25	20	700.00
	3200 Digital	F	1.8/ 10.3	4/ 17.3	1.5	100	6.5/ 21.5	40/ 37	45	35	0.15/ 0.20	70/68	No	19 x 5.25 x 3.5	15	400.00
	T3U Series Two		1.8/ 10.3	4/ 17.3	1.50	80	3.0/ 14.7	40/ 37.3	45	35	0.15/ 0.2	67/69	No	17.4 x 14 x 5.31	14	275.00
SANSUI	TU-9900		1.5/ 8.8	3.9/ 17	1.0	90	2.9/ 14.5	34.7/ 36	50	40	0.06/ 0.08	80/76	Yes	18¼ x 12¼ x 6½	21.2	570.00
	TU-717		1.7/ 9.8	4.9/ 19	1.0	80	2.24/ 12.5	27.5/ 34	48	38	0.06/ 0.07	81/78	Yes	19 x 16½x6¾	20.3	370.00
	TU-517		1.7/ 9.8	4.9/ 19	1.0	80	2.24/ 12.5	27.5/ 34	48	38	0.06/ 0.07	82/78	Yes	19 x 16½ x 6¾	20.3	300.00
	TU-317		1.8/ 10.3	4.9/ 19	1.0	50	2.6/ 13.5	36.5/ 36.5	40	30	0.07/ 0.09	79/73	Yes	19 x 12½ x 4½	12.1	240.00
SANSUI	TU-217		1.85/ 10.6	5.5/ 20	1.0	50	2.7/ 13.8	39.2/ 37	40	30	0.12/ 0.13	71/70	Yes	19x 12½ 4½	11.7	190.00

Tuners

MANUFACTURER	Model	Type of Unit, Use Letter Key	Mono IHF Sensitivity, µV / dBf	Stereo IHF Sensitivity, µV / dBf	Capture Ratio, dB	Alt. Chan. Select., dB	Mono Signal Strength for 50 dB Quieting, µV / dBf	Stereo Signal Strength for 50 dB Quieting, µV / dBf	Separation, dB, 1 kHz	Separation, dB, 10 kHz	THD, mono/stereo, 1 kHz, 100% modulation	S/N, mat., dB, Mono/stereo	Switchable De-emphasis	Dimensions, inches W x H x D to nearest ¼ inch	Net Weight, lbs.	Price, $
TOSHIBA	ST910		1.8/ 10.3		1.0	70			40		0.15/ 0.15	75/65	No	17¾ x 13½ x 6	17¾	1300.00
	ST420		1.9/ 10.7		1.0	70			45		0.2/ 0.3	72/68	No	17¾ x 15 x 6	18¼	229.95
	ST335		2.0/ 11.2		1.0	60			40		0.2/ 0.4	70/65	No	16½ x 10¼ x 3¾	7½	149.95
WINTEC	T-1		1.8/ 10.3	18.0	1.0	80	/17.0	/38.0	40	40	0.1/0.2	72/67	Yes			199.95
	T-2		1.7/ 9.8		1.0	35/ 80	/14.1	36.1	45/ 40	45/ 40	0.08/ 0.15	75/72	Yes			299.95
	T-3	F	1.5/ 11.5	0.8/ 1.5/ 2.0		30/ 50/ 110	/11.5	/35.0	45/ 40/ 35	45/ 40/ 35	0.1/ 0.15	85/80	Yes			349.95
	T-4 AM & TV		20/			40					0.5	60	No			249.95
YAMAHA	CT-1010		1.9/ 10.8	40/ 37.2	1.0	85			50		0.07/ 0.07	80/75		18¼ x 16 x 6¾	17	370.00
	CT-810		1.8/ 10.3	40/ 37.2	1.0	80			50		0.08/ 0.1	80/75		17¼ x 13¾ x 6¼	13	270.00
	CT-610II															210.00
	CT-410II		1.8/ 10.3	40/ 37.2	1.0	82			40	35	0.1/ 0.15	74/69				175.00
	T-1		1.7/ 9.8	35/36	1.0	92			55	45	0.05/ 0.05	80/78		17¼ x 15 x 4	12¾	350.00
	T-2		1.5/ 8.8	28/ 34.2	1.0	100			55	48	0.05/ 0.05	88/85		17¼ x 13¾ x 2¾	15½	700.00

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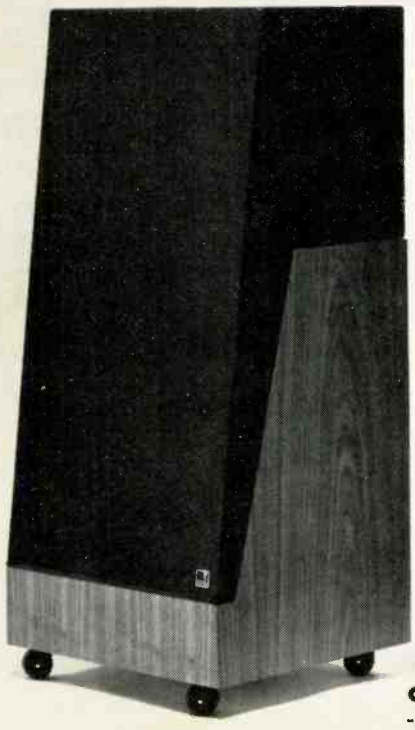
The Speaker Engineers



Onkyo TA-630D Cassette Deck with the Exclusive Accu-Bias System.

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With cassette hardware and software changing constantly, a lot of you have been waiting. Holding off for top technology.

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Onkyo's TA-630D with our exclusive Accu-Bias is here. And it's the only cassette deck with adjustable bias in a two-head configuration. Which right there offers lower distortion, better low frequency response and little or no crosstalk. That's a lot, but there's more.

You know how important it is to have optimum bias when you record. Too low a bias signal and you have distortion. Too high a bias signal and you lose high frequency response.

Other cassette decks have adjustable bias and equalization, set at the factory for average conditions. Onkyo doesn't believe in playing averages. And gives you Accu-Bias.

Accu-Bias is Onkyo's exclusive system. It works with a pair of reference signal generators built into the TA-630D. Feed these signals to your tape, and read the reproduction signal on the meters. If bias is off for that cassette tape, you compensate with continuous, variable settings until you get an absolutely flat frequency response. It's that simple...and you get the best high frequency response, least distortion and lowest signal to noise ratio.

You get all that because the bias signal primes your tape as the recording is made, and every manufacturer's tape is different. Even when equalization is correct, if the bias is incorrect, it results in producing peak or losing the high frequency characteristic. Again, this depends on the tape used...all of which respond differently.

Does it work?

After all the effort Onkyo's gone to so you can have the only two-head continuously variable bias control you might expect fantastic sound.

You've got it.

You've got frequency response of 20-15,000 Hz on normal tape; 20-18,000 Hz with FeCr and CrO_2.

S/N ratio with FeCr is 58dB, goint up to 68dB with built-in Dolby* NR System. Wow and Flutter are negligible at 0.055% WRMS by use of a DC servo motor for constant speed.

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*Dolby is a trademark of Dolby Laboratories, Inc.

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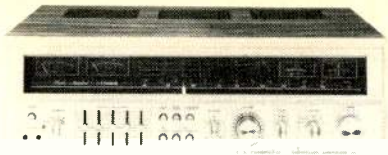
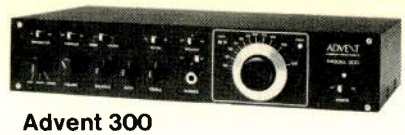
Receivers

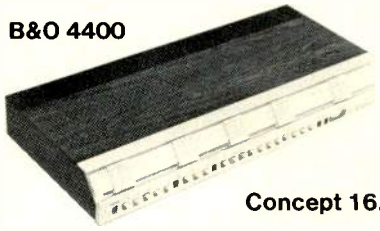


Fisher RS-2015

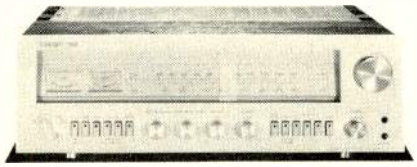


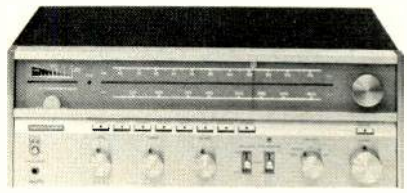
Advent 300

B&O 4400



Concept 16.5





Harman Kardon 670

Letter Key: "F" indicates FM only
"K" indicates Kit

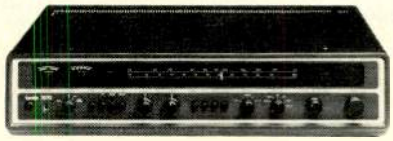
MANUFACTURER	MODEL	Type of Unit, See letter code	Ave. watts/chan., 8 ohms	% THD	% IHF IM	Rated power bandwidth, Hz to kHz	dB S/N, "A" wtd., Phono ref 5mV	Phono overload, mV	Mono IHF Sensitivity, µV/dBf	Stereo IHF Sensitivity, µV/dBf	Mono Signal Strength for 50-dB Quieting µV/dBf	Stereo Signal Strength for 50-dB Quieting µV/dBf	% THD, 100% Modulation, 1 kHz, Mono/Stereo	Alt. Chan. Select., dB	Max. S/N, dB, Mono/Stereo	Dimensions, inches, W:D:H to nearest ¼ inch	Net Weight, lbs.	Suggested Price
ADVENT	300	F	15	0.5	0.3	20-20K +0,-1	74	100	2.5/ 13.2		3.5/ 16.1	35.0/ 36.1	0.15/ 0.2	70		15¾x9¼ x3½	11	279.00
AKAI AMERICA	AA-1200	F	120	0.08		6-50	80		1.7/				0.15/ 0.3	80	65	18.9 x 17.0 x 6.5	40.8	700.00
	AA-1175	F	75	0.08		6-50	80		1.7/				0.15/ 0.3	80	65	18.9 x 17.0 x 6.5	36.3	550.00
	AA-1150	F	50	0.1		6-50	80		1.8/				0.15/ 0.3	70	65	18.9 x 13.6 x 6.1	25.8	425.00
	AA-1135	F	35	0.2		6-50	80		1.8/				0.2/ 0.4	70	65	18.9 x13.6 x 6.1	23.8	325.00
	AA-1125	F	25	0.3		15-40	75		1.9/				0.3/ 0.6	70	65	18.9x10.6 x4.8	15	275.00
	AA-1115	F	15	0.5		15-40	75		1.9/				0.3/ 0.6	60	65	18.9 x 10.6 x 4.8	12.8	210.00
ARMSTRONG	625	F	40	0.18	0.08	15-45	65	150	1.0/ 5.0	3.0/ 14.8	2.4/ 12.9	34.0/ 35.9	0.15 0.2	56	69/ 65	19¾ x 11¼ x 3¼	15	545.00
	626		40	0.18	0.08	15-45	65	150	1.0/ 5.0	3.0/ 14.8	2.4/ 12.9	34.0/ 35.9	0.15 0.2	56	69/ 65	19¾ x 11¼ x 3¼	15½	625.00
BANG & OLUFSEN	Beomaster 1900	F	30 @ 4	0.2	0.15	20-20			2.5/ 19.2	4.4/ 24	2.3/ 18.5	24/ 38.9	0.7/ 0.5	58	70/66	24¼ x 9¾ x 2½	16¾	495.00
	Beomaster 2400	F	30 @ 4	0.2	0.15	20-20			2.5/ 19.2	4.4/ 24	2.3/ 18.5	24/ 38.9	0.7/ 0.5	58	70/66	24¼ x 9¾ x 2½	16¾	595.00
	Beomaster 4400	F	70 @ 4	0.1	0.1	20-20		80	/16.4	/27	/18	/38	0.7/ 0.7	58	70/67	23¾ x 11 x 3¾	22	750.00
CALIBRE	215		16	0.05	0.05	20-20 ±0.5	80	210	1.9/ 10.8	2.5/ 13.2	2.8/ 14.2	39.8/ 37.2	0.05/ 0.25	60/ 66	70/ 68	17¾ x 12¾ 3½	22	220.00
	225		26	0.05	0.05	20-20 ±0.5	80	210	1.9/ 10.8	2.5/ 13.2	2.8/ 14.2	39.8/ 37.2	0.05/ 0.2	60/ 66	74/ 72	17¾ x 12¾ x 3½	22	255.00
	240		42	0.05	0.05	20-20 ±0.5	80	210	1.9/ 10.8	2.5/ 13.2	2.8/ 14.2	39.8/ 37.2	0.05/ 0.2	66/ 72	74/ 72	17¾ x 12¾ x 3½	24.5	335.00
CONCEPT	16.5		165	0.1	0.05	20-20 ±0.25	84	200	1.6/ 9.3	3.0/ 14.8	2.5/ 13.2	36.0/ 36.4	0.08/ 0.1	90	76/ 74	21¼ x 17 x 7	67	845.00
	11.0		110	0.1	0.05	20-20 ±0.25	84	200	1.6/ 9.3	3.0/ 14.8	2.5/ 13.2	38.0/ 36.8	0.1/ 0.1	88	76/ 74	20¼ x 17 x 7	48.6	695.00
	6.5		65	0.1	0.5	20-20 ±0.25	82	200	1.6/ 9.3	3.0/ 14.8	2.5/ 13.2	38/ 36.8	0.1/ 0.1	85	74/ 72	20¼ x 17 x 7	51.6	525.00
	4.5		45	0.1	0.05	20-20 ±0.25	82	200	1.7/ 9.8	3.0/ 14.8	3.0/ 14.8	38/ 36.8	0.1/ 0.1	78	74/ 72	18½ x 15 x 6	31.4	425.00
	2.5		25	0.1	0.05	20-20 ±0.25	82	200	1.7/ 9.8	3.0/ 14.8	3.0/ 14.8	38/ 36.8	0.12/ 0.15	75	72/ 70	18 x 14 x 6	26	325.00
CRAIG	5504		25	0.5	0.15	20-20	64	100	1.9/ 10.8		3.5/ 16.1	40/ 37.27	0.3/ 0.4	60	65/60	18½ x 11¾ x 5¾		
	5505		45	0.3	0.1	20-20	65	120	1.9/ 10.8		3.5/ 16.1	40/ 37.27	0.3/ 0.4	60	65/60	20½ x 14¼ x 6½		
	5506		55	0.1	0.07	20-20	66	150	1.8/ 10.33		3.0/ 14.77	35/ 36.11	0.15/ 0.25	70	75/65	20½ x 14¼ x 6½		
FISHER	RS 1052		50	0.2	0.2	20-20		110	1.9/ 10.8	4.6/ 18.5	2.8/ 14.2	38.0/ 36.8		68	70/66	19¼ x 13¼ x 6	23.8	399.95
	RS 2004		45	0.1	0.1	20-20		150	1.9/ 10.8	4.6/ 18.5	2.8/ 14.2	38.0/ 36.8		68	70/66	19¼ x 15 x 6	28.5	449.95
	RS 2007		75	0.09	0.09	20-20		180	1.9/ 10.8	4.6/ 18.5	2.8/ 14.2	38.0/ 36.8		68	70/66	20½ x 14¼ x 6¾	31	549.95
	RS 1058		90	0.1	0.1	20-20		180	1.7/ 9.8	4.3/ 17.9	2.5 13.2	34.0/ 35.9		75	75/70	20¾ x x 14¼ x 7	32.4	549.95
	MC 2100		10	1.0	0.5	60-20		100	2.8/ 14.1	5.5/ 20.0	5.0/ 19.2	45.0 38.3		50	65/60	17¼ix 11 x 5	11.5	189.95

(Continued)

JVC JR-S501

Kenwood KR-9600

Hitachi SR-804



Handic 7070

Letter Key: "F" indicates FM only
"K" indicates Kit

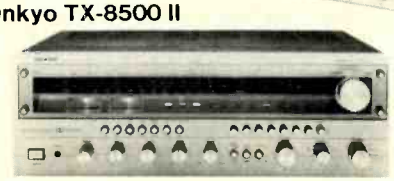
MANUFACTURER	MODEL	Type of Unit, See letter code	Ave. watts/chan., 8 ohms	% THD	% IHF IM	Rated power bandwidth, Hz to kHz	dB S/N, "A" wtd., Phono ref 5mV	Phono overload, mV	Mono IHF Sensitivity, µV/dBf	Stereo IHF Sensitivity, µV/dBf	Mono Signal Strength for 50-dB Quieting µV/dBf	Stereo Signal Strength for 50-dB Quieting µV/dBf	% THD, 100% Modulation, 1 kHz, Mono/Stereo	Alt. Chan. Select., dB	Max. S/N, dB, Mono/Stereo	Dimensions, inches, WxDxH to nearest ¼ inch	Net Weight, lbs.	Suggested Price
FISHER (Continued)	MC 2500		18	1.0	0.5	60-20	100	2.8/ 14.1	5.5/ 20.0	5.0/ 19.2	45.0/ 38.3		50	65/60	20¼ x 10¼ x 5¾	15	249.95
	RS 1022		22	0.5	0.5	20-20	110	1.9/ 10.8	4.6/ 18.5	2.8/ 14.2	38.0/ 36.8		68	70/66	17¼ x 12 x 4¾	17.2	249.95
	RS 1035		35	0.2	0.2	20-20	110	1.9/ 10.8	4.6/ 18.5	2.8/ 14.2	38.0/ 36.8		68	70/66	19¼ x 13¼ x 6¼	22.9	349.95
	RS 2010		100	0.09	0.09	20-20	200	1.7/ 9.8	4.3/ 17.9	2.5/ 13.2	34.0/ 35.9		80	75/70	20½ x 14¼ x 6¾	36	749.95
	RS 2015		150	0.05	0.05	20-20	220	1.7/ 9.8	4.3/ 17.9	2.5/ 13.2	34.0/ 35.9		80	75/70	23 x 17½ x 7¼	52	849.95
	RS 1080		170	0.08	0.08	20-20	300	1.6/ 9.3	3.5/ 16.1	2.2/ 12.0	34.0/ 35.9		75	80/75	23¾ x x 18¾ x 7½	66.7	999.95
HANDIC USA	3030	F	28	0.15	0.2	5-50	65	95						67	18¼ x 12¾ x 4½		289.95
	5050	F	35	0.12	0.15	5-40	65	130						67	22¾ x 12 x 5		399.95
	7070	F	55	0.12	0.15	5-40	65	150						70	22¾ x 14 x 5		479.95
HARMAN KARDON	340		20	0.1	0.1	22-100	85	80	2.5/		3.5/	39.5/	0.2/ 0.35	35	65			249.00
	450		30	0.09	0.09	10-100	88	115	2.0/		3.2/	37.5/	0.1/ 0.15	35	70			319.00
	560		40	0.08	0.05	10-100	88	150	1.9/		3.1/	35/	0.1/ 0.15	35	75			369.00
	670		60	0.06	0.04	8-100	90	225	1.9/		3.0/	30/	0.05/ 0.08	35	75			519.00
HITACHI	SR-504																	259.95
	SR-804		50	0.1	0.1	10-40	75		1.8/ 10.3	5.5/ 20.0	3.9/ 17.0	39/37	0.1	75	74/68	18½ x 14¼ x 5¾	22.3	429.95
	SR-904																	599.95
	SR-2004		200		0.08	10-40	50	500	1.5/ 8.7	15.0	12.5	36/34	0.1/ 0.2	85	75/70	22¾ x 17½ix 7¼	56.2	1095.00
JVC	JR-S61W & JR-S61H		18	0.8			75		2.2/ 12.1		4.0/ 17.2	50/ 39.2	0.2/ 0.4	70	78/ 70	17½ x 13¾ x 6 19 x 14 x 6	17.2 15.5	199.95
	JR-S81W & JR-S81H		35	0.5			75	170	2.2/ 12.1		3.8/ 16.8	45/ 38.3	0.2/ 0.4	70	78/ 70	19¾ x 14 x 6 21¼ x 14 x 6	23 21.2	299.95
	JR-S201		35	0.03	0.01		75	180	1.9/ 10.8		3.0/ 14.8	39.7/ 37.2	0.08/ 0.1	80	78/ 80	19¾ x 15 x 6¾	23.3	359.95
	JR-S301		60	0.03	0.01		75	190	1.9/ 10.8		3.0/ 14.8	39.7/ 37.2	0.08/ 0.1	80	78/ 70	19¾ x 15 x 6¾	27.3	479.95
	JR-S401		85	0.03	0.01		75	200	1.8/ 10.3		3.0/ 14.8	39.7/ 37.2	0.08/ 0.1	80	78/ 70	22¼ x 17 x 6¾	35.4	599.95
	JR-S501		120	0.03	0.01		75	250	1.8/ 10.3		3.0/ 14.8	39.7/ 37.2	0.08/ 0.1	80	78/ 70	22¼ x 17 x 6	46.2	699.95
KENWOOD	KR-9600		160	0.08	0.08	5-50	80				2.8/ 14.1	35/ 36.1		83	75/70	23 x 16¾ x 6¾	53	775.00
	KR-6030		80	0.1	0.1	5-50					2.8/ 14.1	36/ 36.3		85	73/68	19 x 16 x 6	31	525.00
	KR-5030		60	0.1	0.1	10-45					3.0/ 15.0	40/ 37.2		65	73/68	19 x 16 x 6	26½	425.00
	KR-4070		40	0.1	0.1	10-40					3.1/ 15	40/ 37.2		60	72/67	18½ x 15½ x 6	20.7	315.00
	KR-3090		26	0.1	0.1	10-50					3.3/ 15.6	35/ 36.1		54	76/72	18½ x 13¾ x 5½	16½	260.00
	KR-2090		16	0.1	0.1	20-50					3.3/ 15.6	35/ 36.1		54	76/72	18½ x 13¾ x 5½	16	215.00

Receivers

Lux R-1120

Pioneer SX-1980

Marantz 2600



Onkyo TX-8500 II

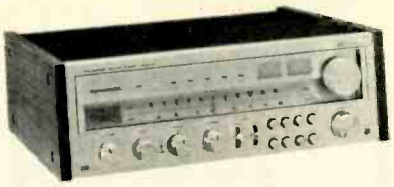
Philips AH-787

Letter Key: "F" indicates FM only
"K" indicates Kit

MANUFACTURER	MODEL	Type of Unit, See letter code	Ave. watts/chan., 8 ohms	% THD	% IHF IM	Rated power bandwidth, Hz to kHz	dB S/N, "A" wtd., Phono ref 5mV	Phono overload, mV	Mono IHF Sensitivity, µV/dBf	Stereo IHF Sensitivity, µV/dBf	Mono Signal Strength for 50-dB Quieting µV/dBf	Stereo Signal Strength for 50-dB Quieting µV/dBf	% THD, 100% Modulation, 1 kHz, Mono/Stereo	Alt. Chan. Select., dB	Max. S/N, dB, Mono/Stereo	Dimensions, inches, WxDxH to nearest ¼ inch	Net Weight, lbs.	Suggested Price
LAFAYETTE	LR-120DB		120	0.09	0.09	15-40 +I,-3	70	150			2.8/ 14.1	38/36.8	0.15/ 0.3	80	80	2½ x 17¼ x 7	40¾	649.99
	LR-9090		90	0.1	0.1		65	180					0.2/ 0.4	80	72/ 67	21 x 15½ x 6½	38	549.99
	LR-5555A		55	0.3			65	150					0.2/ 0.4		72/ 67	20 x 13½ x 6¾	30¾	379.99
	LR-3030A		30	0.5			60	180					0.25/ 0.4		70/ 65	19¾ x 14 x 6½	24	289.99
	Criterion MK I		8	0.6	0.6		70	150					0.4		70/ 63	16¼ x 9½ x 5		149.99
	Criterion MK III		22	0.6	0.6		70	150					0.4		70/ 65	18½ x 11 x 5		259.99
	Criterion MK V		44	0.3	0.3	10-35 ±3	65	180					0.25/ 0.4	70	70/ 65	17¾ x 13¼ x 5¾	22	319.99
	Criterion MK VII		75	0.1	0.1	5-40 ±3	70	150						80	72/ 67	14	26	449.99
	LR-2020A		20	0.6			60						0.25/ 0.4		70/ 65	16½ x 11¼ x 5½	17¼	249.99
	LR-1515A		15	0.7			65						0.5/ 0.8		70/ 63	16½ x 11¼ x 5½	16½	199.99
LEAK	2000		35	0.1	0.1	10-40	80		1.6		0.5/ 0.5				65	18.8 x 11.7 x 5.3	21½	750.00
LUX AUDIO	R-1120		120	0.03	0.03	20-20		160	1.8/ 10.3	4/ 17.2	2.8/ 14.1	38/ 36.8	0.1/ 0.2	80	74/ 70	19¼ x 16¼ x 7¼		995.00
	R-1050		55	0.05	0.05	20-20		150	1.8/ 10.3	4.6/ 18.2	2.8/ 14.1	38/ 36.8	0.1/ 0.2	70	74/ 70	19¼ x 14 x 7¼	29.7	695.00
	R-1040		40	0.05	0.05	20-20		150	2/ 11.2	4.8/ 19	4.5/ 18.2	51/ 39.8	0.2/ 0.3	55	74/ 70	19 x 14 x 7	26.4	495.00
	R-1030		30	0.05	0.1	20-20			2/ 11.2	4.8/ 19	4.5/ 18.2	51/ 39.8	0.2/ 0.3	65	72/ 68			395.00
MARANTZ	2600		300	0.03		20-20 +0	79	200	1.5/ 8.75		2.2/ 12.1	25/ 33.2	0.1/ 0.2	85	82/75	19¼ x 17¼ x 7	60¼	1600.00
	2385		185	0.05		20-20 ±	79	200	1.5 8.75		2.2/ 12.1	25/ 33.2	0.1/ 0.2	85	80/75	19¼ x 17¼ x 7	59½	1099.95
	2330B		130	0.05		20-20 ±0	79	200	1.8/ 10.3		2.5/ 13.2	35.0/ 36	0.1/ 0.25	80	78/70	19¼ x 15 x 5¾	52¾	769.95
	2285B		85	0.05		20-20 ±0	79	200	1.8/ 10.3		2.5/ 13.2	35.0/ 36	0.15/ 0.25	80	78/70	17¼ x 14½ x 5½	41¾	659.95
	2265		65	0.05		20-20 ±0	79	200	1.8/ 10.3		2.5/ 13.2	35.0/ 36	0.15/ 0.25	80	76/70	17¼ x 14½ x 5½	37½	579.95
	2252B		54	0.05		20-20 ±0	79	100	1.9/ 10.8		2.8/ 14.2	40.0 37.3	0.15/ 0.3	70	75/65	17¼ x 14½ x 5½	34¼	459.95
	2238B		40	0.05		20-20 ±0	79	100	1.9/ 10.8		2.8/ 14.2	40.0/ 37.3	0.15/ 0.3	70	75/65	17¼ x 14½ x 5½	30¼	369.95
	2226B		26	0.05		20-20 ±0	79	100	1.9/ 10.8		2.8/ 14.2	40.0/ 37.3	0.15/ 0.3	70	75/65	17¼ x 14½ x 5½	28½	309.95
	2218		18	0.08		20-20 ±0	79	100	1.9/ 10.8		2.8/ 14.2	40.0/ 37.3	0.2/ 0.4	70	75/65	17¼ x 11½ x 5½	22½	249.95
	1550		50	0.05		20-20 ±0		120	1.9/ 10.8		2.9/ 14.5	42/ 37.7	0.2/ 0.35	65		17¼ x 14¼ x 5½		429.95
	1530		30	0.08		20-20 ±0		120	1.9/ 10.8		2.9/ 14.5	42/ 37.7	0.2/ 0.35	60		17¼ x 14¼ x 5½		339.95
	1515		15	0.08		20-20 ±0		100	1.9/ 10.8		2.9/ 14.5	42/ 37.7	0.2/ 0.4	60		17¼ x 14¼ x 5½		229.95

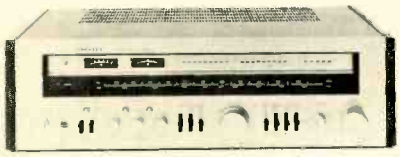
SAE Two R3C

Sherwood S-7650 CP



Radio Shack STA-2000D

Sansui G-33000



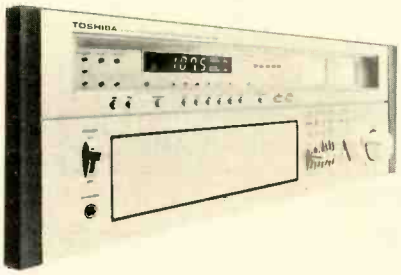
Scott 390R

Letter Key: "F" indicates FM only
"K" indicates Kit

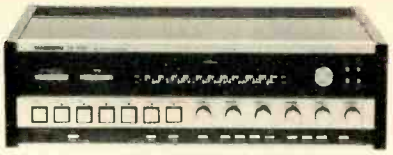
MANUFACTURER	MODEL	Type of Unit, See letter code	Ave. watts/chan., 8 ohms	% THD	% IHF IM	Rated power bandwidth, Hz to kHz	dB S/N, "A" wtd., Phono ref 5mV	Phono overload, mV	Mono IHF Sensitivity, µV/dBf	Stereo IHF Sensitivity, µV/dBf	Mono Signal Strength for 50-dB Quieting µV/dBf	Stereo Signal Strength for 50-dB Quieting µV/dBf	% THD, 100% Modulation, 1 kHz, Mono/Stereo	Alt. Chan. Select., dB	Max. S/N, dB, Mono/Stereo	Dimensions, inches, WxDxH to nearest ¼ inch	Net Weight, lbs.	Suggested Price
MCINTOSH	MAC 1900		55														46	949.00
MCKAY-DYMEK	DR33C	AM	30	0.5												17½ x 15 x 5¼	16	1500.00
	DR22C	AM	30	0.6												17½ x 15 x 5¼	15	1095.00
NAKAMICHI	730	F	105	0.02	004	10-20	91	120	2.2/ 12.0		4.5/ 18.3	45/ 38.3	0.1/ 0.15	70	75/68	19¾ x 15 x 3¾	38	$1200.00††
ONKYO	TX-8500 MKII		160	0.05	0.05	20-20	82	250	1.6/ 9.3	4.0/ 17.2	3.0/ 14.7	35.0/ 36.0	0.15/ 0.25	70	70/65	21¼ x 18¾ x 7½	61.6	999.95
	TX-6500 MKII		100	0.05	0.1	20-20	81	200	1.7/ 9.8	4.0/ 17.2	3.0 14.7	35.0/ 36.0	0.15/ 0.3	70	70/65	21¼ x 17¼ x 7½	45.1	649.95
	TX-4500 MKII		60	0.1	0.3	20-20	80	200	1.8/ 10.3	4.5/ 18.3	4.0/ 17.2	40.0/ 37.2	0.2/ 0.4	70	70/65	21¼ x 16 x 6½	33.0	459.95
	TX-2500 MKII		40	0.1	0.3	20-20	79	150	2.0/ 11.2	5.0/ 19.2	4.0/ 17.2	40.0/ 37.2	0.2/ 0.4	60	65/60	19 x 14¾ x 6¼	25.3	319.95
	TX-1500 MKII		17	0.3	0.3	20-20	79	100	2.3/ 12.4	5.0/ 19.2	4.5/ 18.3	50.0/ 39.2	0.25/ 0.5	60	65/60	17¼ x 12½ x 5¾	16.1	214.95
PHILIPS HIGH FIDELITY	AH784		20	0.1	0.07	20-20	76	150	2.0/	5.0/	3.5/	42.0/	0.15/ 0.3	90/ 70	70/ 65	17¼ x 13¼ x 5½	21	$199.95
	AH785		30	0.08	0.07	20-20	76	150	1.9/	4.7/	3.2/	42.0/	0.15/ 0.3	90/ 70	70/ 65	17¼ x 13¼ x 5½	26	$269.95
	AH786		45	0.05	0.05	20-20	76	210	1.8/	3.5/	2.8/	30.0/	0.15/ 0.25	100/ 75	70/ 65	20¾ x 15½ x 6	30	$349.95
	AH787		60	0.04	0.04	20-20	76	210	1.7/	3.5/	2.8/	30.0/	0.15/ 0.25	100/ 75	70/ 65	20¾ x 15½ x 6	35	$429.95
PIONEER	SX1980		270	0.03	0.03	20-20	93	300	1.5/ 8.75		2.2/ 11.5	34/ 36	0.07/ 0.1	80	83/ 85	22 x 19½ x 8¼	78	1250.00
	SX-1280		185	0.03	0.01	20-20	86	300	1.7/ 9.8		2.8/ 14.2	34/ 36	0.1/ 0.15	80	80/ 74	22 x 18¼ x 7½	63¼	900.00
	SX-1080		120	0.05	0.05	20-20	82	200	1.7/ 9.8		2.8/ 14.2	39/ 37	0.1/ 0.15	80	80/ 74	20¾ x 17¼ x 7	47	700.00
	SX-980		80	0.05	0.05	20-20	82	200	1.7/ 9.8		2.8/ 14.2	39/ 37	0.1/ 0.15	80	80/ 74	20¾ x 17¼ x 7	41½	550.00
	SX-880		60	0.05	0.05	20-20	82	200	1.8/ 10.3		3.6/ 16.2	39/ 37	0.07/ 0.15	75	80/ 72	19 x 12¾ x 5½	27	425.00
	SX-780		45	0.05	0.05	20-20	82	200	1.8/ 10.3		3.6/ 16.2	39/ 37	0.07/ 0.15	75	80/ 72	19 x 12¾ x 5½	24¾	325.00
	SX-680		30	0.1	0.1	20-20	81	200	1.9 10.8		3.8/ 16.7	39/ 37	0.07/ 0.15	60	80/ 70	17¼ x 12½ x 5¾	19¾	275.00
	SX-580		20	0.3	0.3	20-20	79	150	1.9/ 10.8		3.8/ 16.7	39/ 37	0.07/ 0.15	60	80/ 70	17¼ x 12½ x 5¾	18¼	225.00
RADIO SHACK	STA-2100		120	0.1		20-20	70	230	1.6/ 3		2.0/ 12.0		0.05/ 0.1	75	70/ 60	20½ x 17 x 7		599.95
	STA-2000D		75	0.25		20-20	70	200	1.7/ 4		2.0/ 12		0.2/ 0.15	75	70/	19¼ x 16½ x 6¼		499.95
	STA-235B		55	0.3		20-20	65	200	2.0/ 5.5		3.5/ 10		0.2/ 0.5	75	70/	19⅛ x 13½ x 5¼		429.95
	STA-95		45	0.3		20-20	65	150	2.0/ 5.5		3.5/ 10		0.3/ 0.5	50	65/	19¼ x 14½ x 5¾		399.95
	STA-85		35	0.3		20-20	60	120	2.0/ 6		3.5/ 10		0.3/ 0.5	65/		19 x 12¾ x 5½		299.95
	STA-78		22	0.5		20-20	65	120	1.9/ 5.0		2.8/ 8.0		0.1/ 0.5	65/		17 x 12½ x6		269.95

(Continued)

Receivers



Toshiba SA-7150



Tandberg TR-2080

Technics SA-1000

Yamaha CR-2020

Thorens AT-410

Letter Key: "F" indicates FM only
"K" indicates Kit

MANUFACTURER	MODEL	Type of Unit, See letter code	Ave. watts/chan., 8 ohms	% THD	% IHF IM	Rated power bandwidth, Hz to kHz	dB S/N, "A" wtd., Phono ref 5mV	Phono overload, mV	Mono IHF Sensitivity, µV/dBf	Stereo IHF Sensitivity, µV/dBf	Mono Signal Strength for 50-dB Quieting µV/dBf	Stereo Signal Strength for 50-dB Quieting µV/dBf	% THD, 100% Modulation, 1 kHz, Mono/Stereo	Alt. Chan. Select., dB	Max. S/N, dB, Mono/Stereo	Dimensions, inches, WxDxH to nearest ¼ inch	Net Weight, lbs.	Suggested Price
RADIO SHACK (Continued)	STA-64B		18	0.5		20-20	65	95	2.2/6.5				0.5/0.6	65/		18½ x 14 x 5½		259.95
	STA-52B		16	0.8		20-20	65	110	2.5/7.5				0.5/0.8	65/		17¼ x 11¼ x 5¼		199.95
	STA-42		10	0.9		20-20	60	90	2.8/8.0				0.5/0.6	45	60/	16¼ x 11 x 5		149.95
	STA-7		10	0.9		20-20	60	100	2.8/8.0				0.5/0.6	45	60/	16½ x 11½ x 3½		159.95
REFERENCE	180R		18	0.15	0.05	20-20 ±0.5	70	120	1.9/10.8	4.5/18.3	3.0/14.8	38/36.8	0.25/0.5	65	70/68	17 x 11¼ x 6	19¾	219.95
	240R		24	0.1	0.05	20-20 ±0.5	72	120	1.9/10.8	4.5/18.3	2.8/14.2	36/36.4	0.22/0.45	68	70/69	17 x 11¼ x 6	21	259.95
	300R		30	0.1	0.05	20-20 ±0.5	75	125	1.8/10.3	4.3/17.9	2.8/14.2	36/36.4	0.2/0.4	68	72/70	17½ x 12¼ x 6	23	309.95
	450R		45	0.1	0.04	20-20 ±0.5	75	200	1.7/9.8	4.2/17.7	2.6/13.5	34/35.9	0.1/0.15	70	72/70	18¾ x 13¾ x 6	29½	369.95
	650FETR		65	0.1	0.02	20-20 ±0.5	80	200	1.7/9.8	4.2/17.7	2.6/13.5	34/35.9	0.1/0.15	72	72/70	18¾ x 14 x 5½	33	479.95
ROTEL	RX1603		180	0.05	0.06	5-100 ±3	75	350	1.5/			35/	/0.2		80/	24 x 19¼ x 7¼	72½	1100.00
	RX1203		120	0.05	0.06	5-100 ±3	75	200	1.6/			35/	/0.2		80/	24¼ x 20½ x 7¼	50½	840.00
	RX803		75	0.1	0.1	5-70 ±3	75	180	1.8/			42/	/0.3		70/	19½ x 16½ x 5¾	35¼	530.00
	RX603		50	0.1	0.1	10-70 ±5	75	130	1.9/			44/	/0.3		70/	19½ x 14½ x 5¾	26½	420.00
	RX503		35	0.1	0.1	10-70 ±3	75	120	1.9/			44/	/0.3		70/	19½ x 13 x 5¾	22	320.00
	RX403		25	0.2	0.1	20-60 ±3	75	120	2.0/			48/	/0.3		70/	18¾ x 11 x 5½	17½	250.00
	RX203		20	0.5	0.2	20-50 ±3	75	110	2.0/			48/	/0.3		70/	16 x 10 x 5	15½	200.00
SAE	R3C		30	0.09	0.09	20-20	72	125	2.0/11.2	5.0/19.2	5.0/19.2	40/37.3	0.15/0.25	80	68/65	17.4 x 14 x 5.31	20	335.00
SANSUI	G-33000		300	0.009	0.009	5-20	93	350	1.5/8.7	3.1/15	2.24/12.5	27.5/34.0	0.05/0.07	90	82/77	25¼ x 22 x 9	100.1	1,900.00
	G-22000		220	0.009	0.009	5-20	93	350	1.5/8.7	3.1/15	2.44/12.5	27.5/34.0	0.05/0.07	90	82/77	25¼ x 22 x 9	92.8	1,400.00
	G-9000		160	0.02	0.02	20-20	86	330	1.5/8.7	3.1/15	2.24/12.5	27.5/34.0	0.06/0.08	90	80/76	22¼ x 18½ x 8	59.3	1,100.00
	G-8000		120	0.025	0.025	20-20	85	240	1.6/9.3	3.3/15.5	2.47/13.0	31/35.0	0.07/0.09	80	79/75	22¼ x 18½ x 8	54.2	920.00
	G-7000		85	0.025	0.025	20-20	84	240	1.8/10.3	3.9/17	2.77/14	34.7/36	0.13/0.18	75	72/68	20 x 16¾ x 7½	36.6	750.00
	G-6000		65	0.03	0.03	20-20	84	240	1.8/10.3	3.9/17	2.77/14	34.7/36	0.13/0.18	75	72/68	20 x 16¼ x 7½	38.6	630.00
	G-5000		45	0.03	0.03	20-20	84	220	1.9/10.8	4.4/18	3.1/15	39.2/37	0.13/0.18	70	72/68	18½ x 16¼ x 7¼	30.9	470.00
	G-3000		26	0.15	0.15	20-20	81	200	1.95/11.0	4.9/19	3.1/15	44/38	0.15/0.2	50	71/68	17½ x 19 x 6¼	17.6	290.00
	G-2000		16	0.15	0.15	20-20	81	190	1.95/11.0	4.9/19	3.1/15	44/38	0.15/0.2	50	71/68	17¼ x 19 x 6¼	16.1	240.00

This three-component LRS system may bring the ultimate within your reach.

The Laboratory Reference Series was conceived and designed to appeal specifically to those demanding audiophiles who long ago made the transition from receivers to separates, and who are still seeking "the ultimate." We realized that they would be relatively few, especially those able to spend a considerable amount for just the electronic elements of their system.

With the new 5T10 stereo FM tuner, it is now possible to have authentic LRS performance in a complete three-component system that's priced rather moderately. The other two LRS components are the 5L15 integrated amplifier and the 5F70 tone control unit.

The 5T10 has state-of-the-art sensitivity, selectable i.f. bandwidth, audible multipath monitoring, variable interstation noise-muting level and adjustable output signal level. FM distortion in the wide-band position is held to no more than 0.1 percent. And a remarkable new tuning aid, "Accutouch", physically locks the tuning at the point of lowest distortion when each strong-signal station is reached.

The 5F70 tone-control module with its exclusive linear equalizer provides an extraordinary range of tonal adjustment. Bass and treble have four turnover frequencies each, plus a defeat switch. This assures precise compensation for high and low-end deficiencies in program material. The separate acoustic-equalizer circuit has an adjustable center frequency and Q, as well as variable attenuation. It provides precise nulling of bass standing waves in the 75 to 150 Hz range.

The 5L15 is a completely DC direct-coupled integrated amplifier with special LUX-developed IC's that not only achieves remarkably low THD and IM distortion (0.02 percent) at rated output, but also virtually eliminates transient intermodulation distortion. So the purity of sound is purely LRS.

We don't know exactly where you are on your long journey to sonic perfection, but we invite you to make a short stop at one of our very select audiophile/dealers. At the very least, it will be an enlightening and memorable musical experience. And whether or not you go home with the ultimate, you'll at least have met up with it.

LUX Audio of America, Ltd.

160 Dupont Street, Plainview, New York 11803 • In Canada: White Electronics Development Corp., Ontario

Luxman 5T10 Tuner: Features Lux's exclusive "Accutouch" tuning system. Has switchable i.f. bandwidth: wide (normal) and narrow. Signal strength indicator has five LED's. Tuning circuit employs Lux's closed-lock-loop. Audio multipath monitoring through speakers. Output level adjustable from 0 to 1 volt. Usable sensitivity, 10.3 dBf (1.8 uV); 50-dB quieting sensitivity 14.2 dBf (2.8 uV). Capture ratio, 0.8 dB (wide i.f.).

Luxman 5F70 Tone Control: Bass and treble controls, each with four turnover frequencies (125, 250, 500, 1,000 Hz for bass; 1,000, 2,000, 4,000, 8,000 Hz for treble). Unique acoustic equalizer; notch filter with adjustable center frequency, attenuation level, and Q. Attenuation from 0 to -12 dB in 75-to-150 Hz range, with Q adjustable from "wide" to "narrow." Total harmonic and intermodulation distortion under 0.005 percent.

Luxman 5L15 Integrated Amplifier: Direct-coupled, DC integrated amplifier. 80 watts per channel minimum continuous power into 8 ohms, 20-20,000 Hz, with no more than 0.02 percent total harmonic or intermodulation distortion. Protective circuits with warning light sense DC levels in the outputs. Two average-reading VU meters with switchable sensitivity (0 and -10 dB). Also: dual tape monitors with adjustable preset level. Phono signal-to-noise, 80 dB (10mv, IHF-A weighted); input sensitivity, 2.7 mV.

Receivers

Letter Key: "F" indicates FM only
"K" indicates Kit

MANUFACTURER	MODEL	Type of Unit, See letter code	Ave. watts/chan., 8 ohms	% THD	% IHF IM	Rated power bandwidth, Hz to kHz	dB S/N, "A" wtd., Phono ref 5mV	Phono overload, mV	Mono IHF Sensitivity, µV/dBf	Stereo IHF Sensitivity, µV/dBf	Mono Signal Strength for 50-dB Quieting µV/dBf	Stereo Signal Strength for 50-dB Quieting µV/dBf	% THD, 100% Modulation, 1 kHz, Mono/Stereo	Alt. Chan. Select., dB	Max. S/N, dB, Mono/Stereo	Dimensions, inches, WxDxH to nearest ¼ inch	Net Weight, lbs.	Suggested Price
SANYO	JCX2300K		26	0.4	0.4	20-20	70	150	1.9/ 10.8	4.5/18.2	2.8/14.1	35/36	0.3/ 0.4	60	70/67	17½ x 13 x 6		239.95
	JCX2400K		50	0.3	0.3	20-20	70	200	1.8/ 10.3	4.5/18.2	2.8/14.1	35/36	0.17/ 0.2	60	70/67	17½ x 15 x 6		299.95
	JCX2600K		85	0.1	0.1	20-20	70	250	1.8/10.3	4.3/17.9	2.6/13.5	31/35	0.15/ 0.2	80	73/68	21¼ x 15 x 6½		499.95
	JCX2900K		120	0.08	0.08	20-20	70	250	1.8/ 10.3	4.3/17.9	2.6/13.5	31/35	0.1/ 15	80	78/78	21¼ x 16¾ x 6½		599.95
H.H. SCOTT	390R		120	0.03	0.03		84	300/ 600	1.7/ 9.8		3.3/ 15.6	33/ 35.6		80		23 x 15¾ x 6½	49	699.95
	380R		85	0.03	0.03		84	300/ 600	1.7/ 9.8		3.3/ 15..6	33/ 35.6		60		20¾ x 13¾ x 6	38	579.95
	370R		60	0.05	0.05		79	200	1.8/ 10.3		3.5/ 16.1	36/ 36.3		60		20-¾ x12 x 6	35.5	449.95
	350R		40	0.06	0.06		79	200	1.8/ 10.3		3.5/ 16.1	36/ 36.3		60		17¾ x 12 x 5¼	24.5	349.95
	330R		25	0.08	0.08		74	180	1.9/ 10.8		3.8/ 16.7	39/37		50		17-¾ x10¼x5¼	21	264.95
	320R		15	0.1	0.1		74	180	2.0/ 11.2		3.8/ 16.7	39/37		50		17¾ x 10¼ x 5¼	19	219.95
SETTON	RS660		120	0.035	0.035	20-20 ±0.5	85	360	10.3	18.0	16	38	0.15	80	72/67	22½ x 13¾ x 6¾	47	879.95
	RS440		69	0.085	0.085	20-20 ±0.5	85	300	10.3	18	16	38	0.18	70	72/67	21¼ x 12 x 6¾	41	659.95
	RS220		50	0.08	0.08	20-20 ±0.5	85	300	11.2	19	18.3	39	0.2	70	70/65	21¼ x 12 x 6¾	37	559.95
SHERWOOD	S-7150-CP		15	0.2	0.2	20-20	86	140	1.9/ 10.8		3.5/ 16.11		0.15/ 0.25	60	70/ 66	17 x 12½ x 5½	17	200.00
	S-7250-CP		20	0.2	0.2	20-20	86	140	1.9/ 10.8		3.5/ 16.11		0.15/ 0.25	60	70/ 66	17 x 12½ x 5½	18	250.00
	S-7450 CP		30	0.2	0.2	20-20	86	140	1.8/ 10.33		3.3/ 15.80		0.15/ 0.25	60	70/ 66	18 x 14 x 6	22	300.00
	S-7650 CP		45	0.2	0.2	20-20	86	160	1.7/ 9.84		2.7/ 13.86		0.15/ 0.25	70	70/ 66	18 x 14 x 6	24	375.00
	S-75 CP		70	0.2	0.2	20-20	88	200	1.7/ 9.84		2.7/ 13.86		0.1/ 0.2	80	70/65	21¼ x 15¾ x 6	39	550.00
	S-110 CP		100	0.2	0.2	20-20	88	200	1.7/ 9.84		2.4/ 12.8		0.1/ 0.2	80	70/65	21¼ x 15¾ x 6	41	750.00
SONY	STR-V7		150	0.07		10-35	86	250	1.6/ 9.3		2.8/ 14.2	40/ 37.3	0.08/ 0.15	80/ 50	75/ 70	20½ x 17¾ x 7½	48½	820.00
	STR-V6		115	0.07		10-35	81	200	1.6/ 9.3		2.8/ 14.2	40/ 37.3	0.08/ 0.15	80/ 50	75/ 70	20½ x 17¾ x 7½	47¾	650.00
	STR-V5		85	0.07		10-35	81	200	1.7/ 9.8		2.9/ 14.5	40/ 37.3	0.08/ 0.25	75	75/ 70	20½ x 17¾ x 7½	44¾	530.00
	STR-V4		55	0.1		10-35	78	200	1.9/ 10.8		3.6/ 16.4	43/ 37.9	0.15/ 0.25	60	72/ 68	19¾ x 15½ x 5¾	29¾	390.00
	STR-V3		35	0.1		10-35	78	200	1.9/ 10.8		3.6/ 16.4	43/ 37.9	0.15/ 0.25	60	72/ 68	19¾ x 15½ x 5¾	26½	300.00
	STR-V2		25	0.3		10-35	76		1.9/ 10.8		3.6/ 16.4	43/ 37.9	0.2/ 0.3	60	72/ 68	18¼ x 14½ x 5¾	17½	240.00
SYNERGISTICS	R-201		15	0.3	0.3	20-20	75	70	2.2/ 12	18.0/ 30.3	3.5/ 16.1	70/ 42.1	0.2/ 0.4	50	68/65	16½ x 11½ x 5	23	200.00
	R-301		25	0.15	0.15	20-20	80	100	2.2/ 12	18/ 30.3	3.5/ 16.1	40/ 37.2	0.2/ 0.4	60	68/65	18½ x 15¼ x 5¾	25	250.00
TANDBERG	2030	F	30	0.09	0.09		83	110	1.9/ 10.8		3.5/ 16.1	30/ 34.7	0.4/ 0.5	80	76/74			485.00
	2045	F	45	0.09	0.09		83	110	1.9/ 10.8		3.5/ 16.1	30/ 34.7	0.4/ 0.5	80	76/74			585.00
	2060		60	0.09	0.09		83	110	1.9/ 10.8		3.5/ 16.1	30/ 34.7	0.4/ 0.5	80	76/74			685.00
	2080		80	0.05	0.05		85	500	1.8/ 10.3		3.0/ 14.7	30/ 34.7	0.2/ 0.3	80	78/75			1,200.00
TECHNICS	SA-1000		330	0.03	0.03	20-20	91	300	1.8/ 10.3		1.2/ 12.8	17.7/ 36.2	0.1/ 0.1	85	83/80	24¾ x 21¼ x 7½	87	1500.00
	SA-800		125	0.04	0.04	20-20	89	200	1.8/ 10.3		2.5/ 13.2	35.4/ 36.2	0.1/ 0.2	80	77/73	23 x 15½ x 7	42	730.00

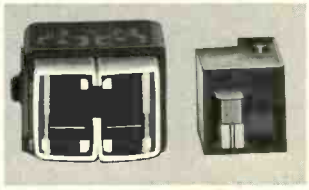
(Continued)

The Realistic SCT-30 tells it like it is:

Why 3 heads are better than 2. Why 2 capstans are better than 1. Why double Dolby* is better than single.

3 Heads.

Two independent record and play heads eliminate the compromises of one combined r/p head, and the head assembly is integrated to eliminate azimuth error. The result: cleaner sound. The third head lets you monitor



your recording an instant after it's made, without interrupting the program. SCT-30 *has* 3 heads!

2 Capstans.

Dual capstans (instead of the usual 1) reduce wow and flutter to an inaudible 0.06% WRMS or less, and extend the audio frequency response. SCT-30 *has* dual capstans!

Double Dolby.

You know the single Dolby system cuts noise and adds dynamic range. But let's examine double Dolby. You get Dolby on *both record and monitor* so you know exactly what your tape will sound like. You get a decoder for recording superb Dolby FM stereo. And you get simultaneous listening enjoyment of the decoded broadcast on receivers with tape monitoring. The Realistic SCT-30 *has* double Dolby! About $380.

P.S. – Supertape®Gold.

To go with 3 heads, 2 capstans and double Dolby, you need a cassette tape that will enhance — not degrade — performance. That's why we design and manufacture Supertape Gold in *our own* Fort Worth factory. Like SCT-30, it's a playmate you can believe in at a price you can afford.

Why Realistic®?

Because Radio Shack has delivered quality audio at sensible prices since 1921, its Realistic tape and recorder line can point to over 5,000,000 customers as living proof of these claims. Add after-sale service that isn't lip service. Add in-house engineering and manufacturing of much of the Realistic line. And add the convenience of neighborhood shopping where you get "sound talk" from a specialist. That's Realistic!

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*TM Dolby Laboratories, Inc.

Radio Shack is a Division of Tandy Corporation, Fort Worth, TX 76102. Over 7000 locations in nine countries.

Receivers

Letter Key: "F" indicates FM only
"K" indicates Kit

MANUFACTURER	MODEL	Type of Unit, See letter code	Ave. watts/chan., 8 ohms	% THD	% IHF IM	Rated power bandwidth, Hz to kHz	dB S/N, "A" wtd., Phono ref 5mV	Phono overload, mV	Mono IHF Sensitivity, µV/dBf	Stereo IHF Sensitivity, µV/dBf	Mono Signal Strength for 50-dB Quieting µV/dBf	Stereo Signal Strength for 50-dB Quieting µV/dBf	% THD, 100% Modulation, 1 kHz, Mono/Stereo	Alt. Chan. Select., dB	Max. S/N, dB, Mono/Stereo	Dimensions, inches, WxDxH to nearest ¼ inch	Net Weight, lbs.	Suggested Price
TECHNICS (Continued)	SA-700		100	0.04	0.04	20-20	89	200	1.8/ 10.3		2.5/ 13.2	35.4/ 36.2	0.1/ 0.2	80	77/73	21¾ x 15½ x 6½	40	620.00
	SA-600		70	0.04	0.04	20-20	84	150	1.9/ 10.8		2.7/ 13.7	39.7/ 37.2	0.15/ 0.3	70	75/70	19¼ x 13 x 6¼	28	480.00
	SA-500		55	0.04	0.04	20-20	84	150	1.9/ 10.8		2.7/ 13.7	39.7/ 37.2	0.15/ 0.3	70	75/70	19¼ x 13 x 6¼	25	390.00
	SA-400		45	0.04	0.04	20-20	84	150	1.9/ 10.8		2.7/ 13.7	39.7/ 37.2	0.15/ 0.3	70	75/70	18¼ x 11¾ x 6	18.7	330.00
	SA-300		35	0.04	0.04	20-20	84	130	1.9/ 10.8		2.7/ 13.7	39.7/ 37.2	0.15/ 0.3	70	75/70	18¼ x 11¾ x 6	17.6	280.00
	SA-200		25	0.04	0.04	20-20	84	130	1.9/ 10.8		2.7/ 13.7	39.7/ 37.2	0.15/ 0.3	70	75/70	18¼ x 11¾ x 6	16½	230.00
THORENS	AT-403	F	35	0.1	0.05	20-20	60		0.9/ 4.0	0.9/ 4.0	32/ 36	30/ 35	0.3/ 0.5	70	62/67	17¾ x 15½ x 6	20.4	895.00
	AT-410		55	0.1	0.05	20-20	60		0.8/ 3.5	0.8/ 3.5	32/ 36	30/ 35	0.3/ 0.5	70	62/70	17¾ x 15½ x 6	27¾	1195.00
TOSHIBA	SA7150		150	0.05	0.05	5-30	80	300	1.7/ 9.8				0.081/ 0.1	80	75/70	21¾ x 19¾ x 7½	57¼	995.00
	SA7100		100	0.05	0.05	5-35	80	350	1.7/ 9.8				0.1/ 0.2	80	75/68	21¾ x 18¼ x 7½	42¾	629.95
	SA775		75	0.05	0.05	5-35	80	350	1.7/ 9.8				0.1/ 0.2	80	75/68	21¾ x 18¼ x 7½	39¾	499.95
	SA750		50	0.08	0.08	10-35	72	200	1.8/ 10.3				0.15/ 0.2	80	75/68	19 x 15¾ x 5¾	28¾	349.95
	SA735		35	0.08	0.08	10-35	72	200	1.9/ 10.8				0.15/ 0.2	65	75/68	19 x 15¾ x 5¾	25½	299.95
	SA725		25	0.08	0.08	10-35	70	200	1.9/ 10.8				0.2/ 0.3	65	70/65	19 x 15¾ x 5¾	21¾	249.95
TRANSAUDIO	7200		12.5	0.15	0.3	30-20 ±1	72	85	2.1/ 12.5	4.8/ 19.2	3.3/ 16.1	45/ 37.8	0.5/ 0.5	50	67/ 64	17¾ x 12½ x 6	14¾	199.95
	6400		8	0.15	0.3	30-20 ±1	70	80	2.3/ 12.5	5.1/ 19.4	3.5/ 16.1	48/ 38.9	0.5/ 0.5	50	65/ 62	17¾ x 12½ x 6	12¾	159.95
TUNGSRAM	T3535		28	0.2		20-35	65	1.5	1.5/	5.0/					72	11¾ x 11½ x 3¾	12	495.00
WINTEC	R-1015		15	0.08	0.08	20-20	76	120	1.9/ 10.7		/15.0	/38.0	0.25/ 0.4	70	70/65	18 x 13½ x 6¼	16.5	229.95
	R-1030		30	0.08	0.08	20-20	76	150	1.9/ 10.7		/15.0	/38.0	0.25/	70	70/65	18 x 13½ x 6¼	18.7	319.95
	R-1060		60	0.05	0.05	20-20	81	150	1.8/ 10.3	18.0	/15.0	/37.0	0.15/ 0.2	70	72/67			599.95
	R-1120		120	0.03	0.03	20-20	81	180	1.7/ 9.8		/14.2	/37	0.1/ 0.2	80	80/71			899.95
YAMAHA	CR-3020		170	0.03	0.02	10-50	96	250	2.0/ 11.2	37.2/ 40			0.07/ 0.07	85	80/75	24¾ x 19½ x 7½	81½	1400.00
	CR-2020		100	0.05	0.05	10-50	95	250	1.8/ 10.3	37.2/ 40			0.08/ 0.1	85	77/73	21¼ x 16½ x 6¾	42½	750.00
	CR-1020		70	0.05	0.05	10-50	95		1.8/ 10.3	37.2/ 40			0.08/ 0.1	85	77/73	21¼ x 16½ x 6¾	41½	580.00
	CR-820		50	0.05	0.05	10-50	92		1.8/ 10.3	37.3/ 40			0.01/ 0.15	82	77/73	20 x 15½ x 6¾	28¾	460.00
	CR-620		35	0.05	0.05	10-50	92		1.8/ 10.3	38/ 43.5			0.15/ 0.25	82	77/73	20 x 15½ x 6¾	25¼	350.00
	CR-420		25	0.05	0.05	10-40	92		1.8/ 10.3	38/ 43.5			0.15/ 0.25	65	77/71	17¾ x 12¾ x 6½	19	280.00
	CR-220		15	0.05	0.05	10-40	90		2.0/ 11	39.2/ 50			0.2/ 0.3	60	70/65	17¼ x 13 x 5¾	16½	220.00
ZENITH	MC7050		40	0.2	0.2	20-20	75	125	1.8/10.3	4.9/19.0	3.0/14.8	40/37.3	0.3/0.5	70	70/65	19½ x 15 x 5½	27.5	329.95
	MC7040		25	0.3	0.3	20-20	70	125	1.9/10.7	6/20.8	4.5/18.3	60/40.1	0.3/0.5	60	70/65	18¼ x 12 x 5½	19.8	279.95
	MC7030		15	0.4	0.4	20-20	65	125	1.9/10.7	6/20.8	4.5/18.3	60/40.1	0.3/0.5	60	70/65	18¼ x 12 x 5½	19.36	229.95

New Scott amps are loaded with extras.

DC Amplification. Improves reliability, expands frequency response, and reduces TH and IM distortion.

Twin logarithmic Op Amp meters. Visually monitor the peak average power amplifier output of each channel in both watts and dBW.

Attenuated volume control calibrated in dB. Makes precise volume level selection and exact duplication of previous volume settings.

Bi-modal electro-sensor relay protection. Protects amplifier as well as speakers from all conceivable malfunctions.

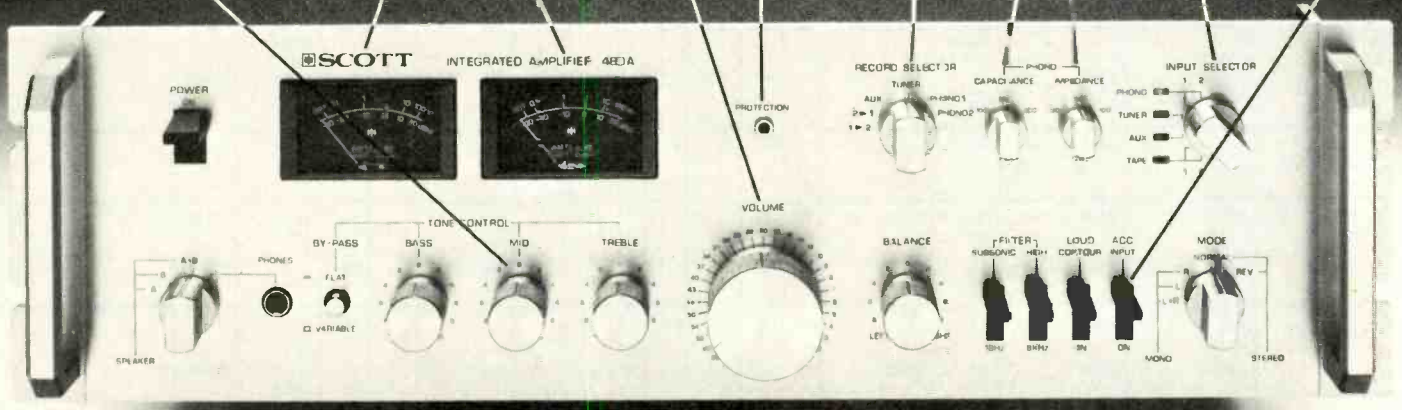
Complete tape monitoring and two-way copy capability. Listen, record, monitor or copy from Tape I, Tape II, Tuner, Aux, or two phono inputs in any combination.

Capacitance and Impedance Adjustments. Maintain accurate frequency response by adjusting for various phono cartridge requirements.

Two independent phono equalizer pre-amps. Use both phono inputs at the same time; listen to one while recording the other, or vice versa. Impossible with other comparably priced amps.

Front Panel Accessory Switch. Control accessory equipment with the flick of a switch.

Mid-range control. In addition to the treble and bass controls, you can adjust the mid frequencies to add extra presence and richness.



At no extra cost.

When you consider separates, you want all the extras you can get for your money. And no one gives you more than Scott.

Just take our new 480A integrated amplifier. 85 watts per channel min. RMS, at 8 ohms from 20-20,000 Hz with no more than 0.03% THD.

It's the only amplifier in its price class that gives you two independent phono preamps. Now you can record one phono while listening to the other. Or vice versa.

All our amps boast dozens of other advantages you simply can't find in comparably priced units. Our state-of-the-art circuitry gives you plenty of power with very low distortion. And our features and functions give you full flexibility in producing the sound you like best.

When you move up to separates, move up to Scott. Where all the extras don't cost extra.

New Scott 460A Integrated Amplifier
70 watts per channel min. RMS, at 8 ohms from 20-20,000 Hz with no more than 0.04% THD

New Scott 440A Integrated Amplifier
55 watts per channel min. RMS, at 8 ohms from 20-20,000 Hz with no more than 0.05% THD

New Scott 420A Integrated Amplifier
40 watts per channel min. RMS, at 8 ohms from 20-20,000 Hz with no more than 0.08% THD

*Shown with optional rack mount handles.
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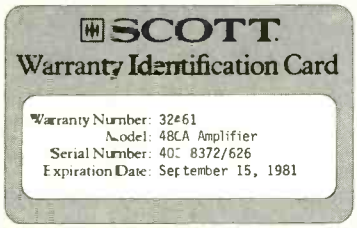
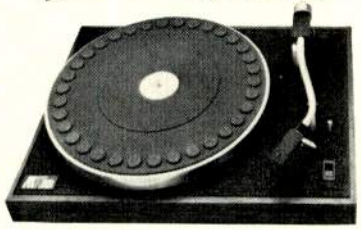
Scott's unique, gold warranty card. Individualized with your warranty, model and serial numbers, and expiration date. Scott's fully transferable, three-year parts and labor-limited warranty is your assurance of lasting pleasure.



For specifications on our complete line of audio components, contact your nearest Scott dealer, or write H.H. Scott, Inc. Corporate Headquarters, 20-J Commerce Way, Woburn, MA 01801.
In Canada: Paco Electronics, Ltd., Quebec, Canada.

SCOTT®
The Name to listen to.®
Makers of high quality high fidelity equipment since 1947.

Turntables



AR-77XB

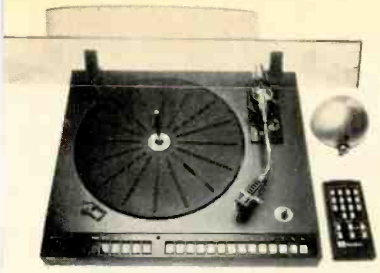
Denon DP-2500

Garrard GT-25

AIWA AP-2200

LETTER CODE FOR SPEEDS
A—33, 45, 78
B—33, 45
C—33, only
D—16, 33, 45, 78
E—16, 33, 45
F—Cont. variable
Manufacturer

MANUFACTURER	Model	Speeds—see code	Wow & Flutter, %, 33-⅓, DIN 45-507	Rumble, - dB, DIN 45-539	Motor type	Drive system	Speed Accuracy, ±%	Speed Adjustment Range, ±%	Built-in strobe light	Overall arm length, inches	Pivot-stylus dist., inches	Multi-Play? If yes, # discs	Auto Cue = C; Auto off = O;	Max. tracks, error, deg./in.	Anti-skate adjustment	Tracking Force Range, gms.	Total Cable Capacitance, pF	Damped cueing	Dimensions, inches	Price	Notes
ADC	Accutrac 4000	B	0.03	-70	d.c. Brush-less	Direct	0.02	2.5	Yes	12	9.3		c/o		Yes	0-4	250	Yes	18½ x 17⅜ x 6	499.95	
	Accutrac 3500RVC (+6)	B	0.04	-66	a.c. Sync.	Belt	0.02	2.5	Yes	12	8.7	6	c/o		Yes	0-4	250	Yes	18 x 16¼ x 6¾	399.95	
	1700DD Quartz	B	0.03	-70	d.c. Quartz Locked	Direct		2.5	Yes	12.32	9.33		c/o		Yes	0-3.5	250	Yes	18½ x 14⅜ x 6⅜	249.95	
	1600DD	B	0.3	-70	d.c. Brush-less	Direct	0.02	2.5	Yes	12.32	9.33		c/o		Yes	0-3.5	250	Yes	18 ½ x 14⅜ x 6⅜	199.95	
	1500FG	B	0.05	-67	f.g. Servo d.c.	Belt	0.02		Yes	12.48	9.33		c/o		Yes	0-3.5	250	Yes	18½ x 14⅜ x 6⅜	129.95	
ACOUSTIC RESEARCH	AR77-XB	B	0.03	-65	Synch.	Belt	0.3		No	11	9	No	0.32	No	0.32	No	135	Yes	17 x 13 x 5½	150.00	
AIWA	AP-2200	B	0.035	-70	d.c. servo	Direct		5.9	Yes				c/o		Yes	0-3		Yes	16¾ x 14¼ x 5	220.00	
	AP-2600	B	0.025	-76	d.c. servo	Direct		5.9	Yes				C		Yes	0-3		Yes		450.00	
AKAI AMERICA	AP-307	B	0.035		d.c.	Direct			Yes	9½	6⅞	No	c/o		Yes			Yes	6¼ 13¾ x 17½	279.95	
	AP-306	B	0.035		d.c.	Direct			Yes	9½	6⅞	No	o		Yes			Yes	6¼ x 17½ x 13¾	239.95	
	AP-207	B	0.035		d.c.	Direct			Yes	9½	6⅞	No	c/o		Yes			Yes	6¼ x 17½ x 13¾	199.95	
	AP-206	B	0.035		d.c.	Direct			Yes	9½	6⅞	No	o		Yes			Yes	6¼ x 17½ x 13¾	159.95	
	AP-100	B	0.05		4-pole Sync	Belt			No	9½	6⅞	No	O	2	Yes			Yes	5¾ x 14 x 17½	119.95	
AUDIONICS	LK-1	C	0.05	-55†	Sync.	Belt	0.05												17½ x 14 x 6	329.00	†Unweighted. 45 rpm opt.
B.I.C.	914	B	0.06	-68	24-Pole Synch	Belt			Yes	11.625	9		c/o	0.27	Yes	0-3	125	Yes	18¾ x 14¾ x 5¾	159.95	
	912C	B	0.06	-68	24-Pole Synch	Belt			Yes	11.625	9	6	c/o	0.27	Yes	0-4	125	Yes	18¾ x 14¾ x 6¾	149.95	
	912	R	0.06	-68	24-Pole Synch	Belt			Yes	11.625	9		c/o	0.27	Yes	0-4	125	Yes	18¾ x 14¾ x 5¾	129.95	
	911	B	0.06	-68	24-Pole Synch	Belt			Yes	11.625	9			0.27	Yes	0-4	125	Yes	18¾ x 14⅜ x 5¾	99.95	
	918MP	B	0.04	-70	24-Pole a.c. Servo	Belt		3	Digit.	11.625	9		c/o	0.27	Yes	0-3	125	Yes	18 ¾ x 15¼ x 5¾	299.95	
	916MPC	B	0.04	-70	24-Pole a.c. Servo	Belt		3	Digit.	11.625	9	6	c/o	0.27	Yes	0-3	125	Yes	18¾ x 15¼ x 6¾	219.95	
	916MP	B	0.04	-70	24-Pole a.c. Servo	Belt		3	Digit.	11.625	9		c/o	0.27	Yes	0-3	125	Yes	18¾ x 15¼ x 5¾	199.95	
	914C	B	0.06	-68	24-Pole Synch.	Belt		3	Yes	11.625	9	6	c/o	0.27	Yes	0-3	125	Yes	18¾ x 14¾ x 6¼	179.95	
	918MPC	B	0.04	-70	24-Pole a.c. Servo	Belt		3	Digit.	11.625	9	6	c/o	0.27	Yes	0-3	125	Yes	18¾ x 15¼ x 6¾	319.95	



ADC Accutrac +6

Environmental Sound EST-6

Harman/Kardon ST-8

Fisher MT-6115

Lafayette T-4000

LETTER CODE FOR SPEEDS
A—33, 45, 78
B—33, 45
C—33, only
D—16, 33, 45, 78
E—16, 33, 45
F—Cont. variable
Manufacturer

MANUFACTURER	Model	Speeds—see code	Wow & Flutter, %, 33-⅓, DIN 45-507	Rumble, - dB, DIN 45-539	Motor type	Drive system	Speed Accuracy, ± %	Speed Adjustment Range, ± %	Built-in strobe light	Overall arm length, inches	Pivot-stylus dist., inches	Multi-Play? If yes, # discs	Auto Cue = C; Auto off = O;	Max. tracks, error, deg./in.	Anti-skate adjustment	Tracking Force Range, gms.	Total Cable Capacitance, pF	Damped cueing	Dimensions, inches	Price	Notes
BSR	Quanta 800	B	0.04	-68	d.c. Quartz Locked	Direct		2.5	Yes	12.48	9.33		c/o	1.5	Yes	0-3.5	250	Yes	8½ x 14⅜ x 6⅜	229.95	
	Quanta 700	B	0.05	-68	d.c. Brush-less	Direct	0.02	2.5	Yes	12.48	9.33		c/o	1.5	Yes	0-3.5	250	Yes	18½ x 14⅜ x 6⅜	179.95	
	Quanta 600	B	0.06	-65	F.G. Servo d.c.	Belt	0.02	2.5	Yes	12.48	9.33		c/o	1.5	Yes	0-3.5	250	Yes	18½ x 14⅜ x 6⅜	129.95	
	Quanta 500	B	0.06	-65	F.G. Servo d.c.	Belt	0.02	3	Yes	11.875	8.875		c/o		Yes	0-3	250	Yes	17¼ x 14¾ x 6	109.95	
	Quanta 400	B	0.08	-62	24-pole a.c. Sync.	Belt	0.02			11.875	8.875		c/o		Yes	0-3	250	Yes	17¼ x 14¾ x 6	89.95	
	Quanta 550SX	B	0.06	-65	F.G. Servo d.c.	Belt	0.02	3	Yes	10⅝	7.875	6	c/o		Yes	0-4	250	Yes	17¼ x 14½ x 6⅝	149.95	
	Quanta 450SX	B	0.08	-62	24-pole a.c. Sync.	Belt	0.02			10⅝	7.875	6	c/o		Yes	0-4	250	Yes	17¼ x 14½ x 6⅝	109.95	
BANG & OLUFSEN	Beogram 2400	B	0.03	-63	Tach d.c.	Belt		3	No	11	9	No	c/o	0.32	Yes	0-2	135	Yes	17¼ x 13 x 3¾	350.00	
	Beogram 4002	B	0.025	-65	Tach d.c.	Belt	0.2	3	No	6¾	6.1	No	c/o			0-2	135	Yes	19 x 14¾ x 4	750.00	
CALIBRE	330	B	0.1	-62	Hys. Sync.	Belt	0.3			11.0	8.4		o	0.2	Yes	0-3	220	Yes	17¾ x 13¾ x 5¼	125.00	
CRAIG	5101	C	0.05	-45	4-Pole Sync.	Belt	0.02	2	No			No	No	1.0	Yes	1-2		Yes	18¼ x 13¾ x 5½		
	5102	C	0.05	-40	4-pole Sync	Belt	0.02	2	No			No	c/o	1.0	Yes	2-3		Yes	19¾ x 14 x 7½		
DENON	DP-790	B	0.018 W.rms	75	A. c. servo	A. c. direct	0.02	3	No	13½	9⅝	No			Yes	0-2.5	105	Yes	19 x 6¾ x 16	$285.00	Available in armless version as DP-755 $300.00
	DP-1200	B	0.018 W.rms	75	A. c. servo	A. c. direct	0.02	3	Yes	13½	9⅝	No	0	2.5	Yes	0-2.5	115	Yes	19 x 6½ x 15⅜	375.00	
	DP-1800	B	0.018 W.rms	75	A. c. servo	A. c. direct	0.02	3	Yes	13½	9⅝	No		2.5	Yes	0-2.5	105	Yes	19 x 6⅞ x 16⅛	480.00	
	DP-2500	B	0.015 W.rms	75	A. c. servo	A. c. Direct	0.02		Yes	13½	9⅝			2.5	Yes	0-2.5	105	Yes	19 x 6⅞ x 16	$525.00	Available in armless version as Dp2550 $475.00
	DP-3500	B	0.015 W.rms	75	A. c. servo	A. c. direct	0.02	3	Yes				No						20⅞ x 17⅜ x 7⅞	600.00	
	DP-6700	B	0.015 W.rms	77	A. c. servo	A. c. direct	0.02	6	Yes	13½	9⅝	No			Yes	0-2.5	60	Yes	20½ x 7½ x 16½	1060.00	
DUAL	CS521	B	0.04	-68	8-pole Sync	Belt	0.1	6	Yes	12	8¾		c/o	1.5	Yes	0-3	150	Yes	16½ x 14½ x 3½	210.00	
	CS604	A	0.03	-70	C-MOS	Direct	0.1	10	Yes	12	8¾		c/o	1.5	Yes	0-3	150	Yes	16½ x 14½ x 3½	270.00	
	CS621	A	0.03	-70	C-MOS	Direct	0.1	10	Yes	12	8¾		c/o	1.5	Yes	0-3	150	Yes	16½ x 14½ x 3½	300.00	
	CS721	B	0.03	-72	d.c. Brush-less	Direct	0.1	10	Yes	12	8¾		c/o	1.5	Yes	0-3	150	Yes	16½ x 14½ x 3½	400.00	
	CS1237	B	0.04	-68	8-pole Sync.	Belt	0.1	6	No	10¾	8¼	6	c/o	1.5	Yes	0-5	150	Yes	16½ x 14½ x 3½	180.00	
	CS1242	B	0.04	-68	8-pole Sync	Belt	0.1	6	No	12	8¾	6	c/o	1.5	Yes	0-3	150	Yes	16½ x 14½ x 3½	225.00	
	CS1246	B	0.04	-68	8-pole Sync	Belt	0.1	6	Yes	12	8¾	6	c/o	1.5	Yes	0-3	150	Yes	16½ x 14½ x 3½	260.00	
	CS504	B	0.04	-68	8-pole Sync	Belt	0.1	6	No	12	8¾		c/o	1.5	Yes	0-3	150	Yes	16½ x 14½ x 3½	180.00	

Turntables

Linn Sondek LP-12

Lenco L-833DD

Pioneer PL-630

Marantz 6370Q

LETTER CODE FOR SPEEDS
A—33, 45, 78
B—33, 45
C—33, only
D—16, 33, 45, 78
E—16, 33, 45
F—Cont. variable

MANUFACTURER	Model	Speeds—see code	Wow & Flutter, %, 33⅓, DIN 45-507	Rumble, - dB, DIN 45-539	Motor type	Drive system	Speed Accuracy, ± %	Speed Adjustment Range, ± %	Built-in strobe light	Overall arm length, inches	Pivot-stylus dist., inches	Multi-Play? If yes, # discs	Auto Cue = C; Auto off = O;	Max. tracks, error, deg. /in.	Anti-skate adjustment	Tracking Force Range, gms.	Total Cable Capacitance, pF	Damped cueing	Dimensions, inches	Price	Notes
EMPIRE	698	B	0.04	-68	Hys. Sync	Belt	0.02	+4, -1.5	No	12	9	No	0	0.5	Yes	0-2.5	100 or 210	Yes	17½ x 15¼ x 8¼	400.00	
ENVIRON-MENTAL SOUND	EST-6	B	0.04	-66		Direct	0.9	5	Yes			No									
FISHER	MT6115	B	0.08	-55	4-Pole a.c. Sync	Belt	1			7.6		No	No	3.0	Yes	0-7		Yes	17¾ x 15¾ x 5¼	119.95	
	MT6211	B	0.05	-60	d.c. Servo	Belt	0.8	3	Yes	8¾		No	No	2.0	Yes	0-6		Yes	17¾ x 14¼ x 5¼	149.95	
	MT6224	B	0.04	-68	120-Pole a.c. Servo	Direct	0.5	3	Yes	8¾		No	No	1.8	Yes	0-6		Yes	17¾ x 14¼ x 6	199.95	
	MT6225A	B	0.03	-70	120-Pole a.c. Servo	Direct	0.5	3	Yes	8¾		No	No	1.5	Yes	0-6		Yes	17¾ x 14¼ x 6	229.95	
	MT6250	B	0.03	-70	120-Pole Linear Quartz	Direct		6	Yes	8¾		No	No	1.5	Yes	0-6		Yes	17¾ x 14¼ x 6½	300.00	
GARRARD	720C	A	0.10	-55	2-pole	Idler			No	8½	8	6	c/o	0.8	No	2-6	110	No	16½ x 15½ x 8½	69.95	
	730M	A	0.10	-55	4-pole	Idler			No	8½	8	6	c/o	0.8	Yes	2-6	110	Yes	16½ x 15 x 8½	89.95	
	SP25 MkVI	B	0.06	-62	Synch.	Belt			No	9	8½		c/o	0.5	Yes	0-4	110	Yes	16¾ x 14⅜ x 6½	119.95	
	GT12	B	0.015	-55	4-pole	Belt			No	8½	8	6	c/o	0.5	Yes	0-6	110	Yes	16¼ x 13½ x 7½	109.95	
	GT15	B	0.012	-60	Synch	Belt			No	8½	8	6	c/o	0.5	Yes	0-4	110	Yes	16¼ x 13½ x 7½	139.95	
	GT25	B	0.08	-65	Synch	Belt			No	10	9¼	6	c/o	0.5	Yes	0-4	110	Yes	17¾ x 13½ x 7¾	189.95	
	GT35	B	0.06	-68	d.c. Servo	Belt		4	Yes	10	9¼	6	c/o	0.5	Yes	0-4	110	Yes	17¾ x 13½ x 7¾	239.95	
	GT25P	B	0.08	-65	Synch	Belt	0.02		No	10	9¼	No	o	0.5	Yes	0-4	110	Yes	17¾ x 13¾ x 5⅝	154.95	
	GT25AP	B	0.08	-65	Synch	Belt	0.02		No	10	9¼	No	c/o	0.5	Yes	0-4	110	Yes	17¾ x 13¾ x 5⅝	164.95	
	GT35P	B	0.06	-68	d.c. Servo	Belt	0.02	4	Yes	10	9¼	No	o	0.5	Yes	0-4	110	Yes	17¾ x 13¾ x 5⅝	199.95	
	GT35AP	B	0.06	-68	d.c. Servo	Belt	0.02	4	Yes	10	9¼	No	c/o	0.5	Yes	0-4	110	Yes	17¾ x 13¾ x 5⅝	209.95	
	GT55	B	0.05	-66	d.c. Servo	Belt		4	Yes	9		6	c/o		Yes	0-4	110	Yes	17½ x 15⅝ x 7½	259.95	
	DD75	B	0.03	-70	d.c. Servo	Direct		4	Yes	9	8½	No	o	0.5	Yes	0-4	110	Yes	17¼ x 14¾ x 6¼	229.95	
	DD130	B	0.03	-70	d.c. Servo	Direct		4	Yes	10	9¼	No		0.5	Yes	0-4	110	Yes	17¾ x 13¾ x 5⅝	159.95	
HANDIC USA	TT30	B	0.05		4-Pole Synch	Belt			No						Yes				17¾ x 4¾ x 13½	119.95	
	TT40	B	0.046		d.c. Servo	Direct	6		No						Yes				17¾ x 4¾ x 13½	219.95	
HARMAN KARDON	ST8	B	0.04	68	d.c. Hall	Belt		5.5	Yes			No	0			0-2.5	115	Yes	16½ x 16¼ x 6¾	499.00	

Sanyo
TP-1030

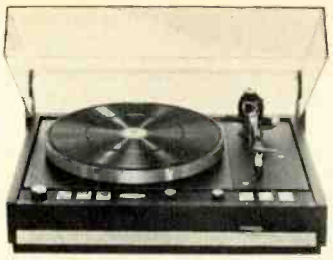
Scott PS97XV

LETTER CODE FOR SPEEDS
A—33, 45, 78 D—16, 33, 45, 78
B—33, 45 E—16, 33, 45
C—33, only F—Cont. variable

MANUFACTURER	Model	Speeds—see code	Wow & Flutter, %, 33⅓, DIN 45-507	Rumble, - dB, DIN 45-539	Motor type	Drive system	Speed Accuracy, ± %	Speed Adjustment Range, ± %	Built-in strobe light	Overall arm length, inches	Pivot-stylus dist., inches	Multi-Play? If yes, # discs	Auto Cue = C; Auto off = O;	Max. tracks, error, deg./in.	Anti-skate adjustment	Tracking Force Range, gms.	Total Cable Capacitance, pF	Damped cueing	Dimensions, Inches	Price	Notes
HITACHI	HT-320	B	0.06		4-pole Sync.	Belt			12	9	No	c/o	2.0	Yes	0-3		Yes	18¾ x 5¼ x 14½	119.95	
	HT-350	B	0.03		Uni-torque	Direct	2	Yes	12	8¾	No	c/o	2.0	Yes	0-3		Yes	18¾ x 5¼ x 14½	159.95	
	HT-460	B	0.03		Uni-torque	Direct		Yes	12	8¾	No	c/o	2.0	Yes	0-3		Yes	17¾ x 14½ x 5¾	199.95	
	HT-550	B	0.025		Uni-torque						No								299.95	
JVC	JL-A20	B	0.08	63	4-Pole Sync	Belt		No	8¾				3.5	Yes	0-3	140		5¼ x 18¼ x 14½	99.95	
	JL-F30	B	0.08	67	4-Pole Sync	Belt		No	8¾				3.5	Yes	0-3	140		5¼ x 18¼ x 14½	149.95	
	QL-A2	B	0.045	72	d.c. Servo	Direct	0.004	Yes	8¾				3.5	Yes	0-3	140		5¾ x 18¼ x 14½	179.95	
	QL-F4	B	0.045	72	d.c. Servo	Direct	0.004	Yes	8¾				3.5	Yes	0-3	80		5¾ x 18¼ x 14¾	219.95	
	QL-50	B	0.045	73	d.c. Servo	Direct	0.004	Yes											229.95	
	QL-5	B	0.045	73	d.c. Servo	Direct	0.004	Yes	9¾				1.5	Yes	0-3	80		6½ x 19 x 16	269.95	
	QL-7	B	0.045	73	d.c. Servo	Direct	0.002	Yes	9¾				1.5	Yes	0-3	80		6½ x 18¾ x 15¾	299.95	
	QL-A7	B	0.045	73	d.c. Servo	Direct	0.002	Yes	9¾				1.5	Yes	0-3	80		6½ x 19 x 16	349.95	
	QL-8	B	0.045	73	d.c. Servo	Direct	0.002	Yes	9¾				1.5	Yes	0-3	80		7¾ x 20¼ x 16½	829.95	
	QL-10	B	0.04	75	d.c. Servo	Direct	0.002	Digital	9¾				1.5	Yes	0-3	80		7¾ x 20¼ x 16	1249.95	
KENWOOD	KD-550	B	0.03	-50	d.c. servo	Direct	8	Yes	9.3				1.5		0-4		Yes	19¾ x 6½ x 15		
	KD-500	B	0.03	-50	d.c. servo	Direct	8	Yes										19¾ x 6½ x 15		
	KD-5070	B	0.025	-53	d.c. Servo	Direct	3	Yes	9				1.5	Yes	0-3		Yes	19 x 6¼ x 14½	260.00	
	KD-3070	B	0.035	-50	d.c. Servo	Direct	3	Yes	9				1.5	Yes	0-3		Yes	19 x 6¼ x 14½	195.00	
	KD-2070	B	0.04	-45	d.c. Servo	Direct	3	Yes	9				1.5	Yes	0-3		Yes	18½ x 5¾ x 14½	165.00	
	KD-2000	B	0.055	-65	4-pole Sync	Belt			9				1.5	Yes	0-3		Yes	18½ x 6 x 14½	145.00	
	KD-1033	B	0.06	-64	4-pole sync.	Belt			8¾					Yes	0-3		Yes	18 x 5¾ x 13¾	110.00	
LAFAYETTE	T-1000	B	0.1	-48	4-pole sync.	Belt					No			Yes	1-3	80	Yes	17¼ x 5¾ x 14½	99.99	
	T-2000	B	0.1	-48	4-pole Sync	Belt					No	0		Yes	1-3	80	Yes	17¼ x 5¾ x 14½	119.99	
	T-3000	B	0.03	-60	d.c. Servo	Direct		Yes			No	0		Yes	½-3½	80	Yes	17¼ x 6 x 14	169.99	
	T-4000	B	0.1	-55	4-pole d.c. Servo	Belt	2.5	Yes			No	0		Yes	1-3	80	Yes	18½ x 6½ x 15¼	149.99	
	T-5000	B	0.03	-65	d.c. Servo	Direct		Yes			No	c/o		Yes	½-3½	80	Yes		219.99	

Turntables

Setton TS-11



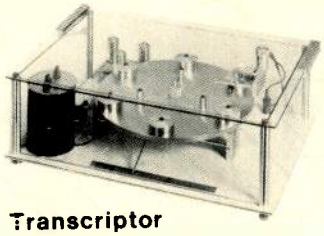
Thorens TD-126 Mk III

Sony PS-X6

LETTER CODE FOR SPEEDS
A—33, 45, 78 D—16, 33, 45, 78
B—33, 45 E—16, 33, 45
C—33, only F—Cont. variable
Manufacturer

MANUFACTURER	Model	Speeds—see code	Wow & Flutter, %, 33⅓, DIN 45-507	Rumble, - dB, DIN 45-539	Motor type	Drive system	Speed Accuracy, ± %	Speed Adjustment Range, ± %	Built-in strobe light	Overall arm length, inches	Pivot-stylus dist., inches	Multi-Play? If yes, # discs	Auto Cue = C; Auto off = O	Max. tracks, error, deg./in.	Anti-skate adjustment	Tracking Force Range, gms.	Total Cable Capacitance, pF	Damped cueing	Dimensions, inches	Price	Notes
LENCO	L-133	B	0.08	62	16-pole Sync	Belt				11½	9	No	c/o		Yes	0.5		Yes	18½ x 14½ x 5¾	119.95	
	L-236	B	0.08	62	16-pole Sync	Belt				11½	9	No	c/o		Yes	0.5		Yes	18½ x 14½ x 5¾	159.95	
	L-246	B	0.08	60	16-pole Sync	Belt		3	Yes	11	8½	No	c/o		Yes	0.5		Yes	18½ x 14½ x 5¾	189.95	
	L-830DD	B	0.06	70	d.c.	Direct		4	Yes	12	9	No			Yes	0.5		Yes	18½ x 14½ x 5¾	199.95	
	L-833DD	B	0.06	70	d.c.	Direct		4	Yes	12	9	No	c/o		Yes	0.5		Yes	18½ x 14½ x 5¾	229.95	
	L-744	B	0.06	70	D.D. Brush-less	Direct		4	Yes	11½	9	No	c/o		Yes	0.5		Yes	18½ x 14½ x 5¾		
	L-55S	F	0.12	60	4-pole Sync				No	11½	9	No			Yes	0.5			18⅛ x 14⅛ x 5¾	185.00	
	L-75S	F	.06	60	4-pole Sync				No	11½	9	No			Yes	0.5			18⅛ x 14⅛ x 5¾	199.95	
	L-78S	F	.06	60	4-pole Sync				No	11½	9	No	0		Yes	0.5			18⅛ x 14⅛ x 5¾	219.50	
LINN	Linn Sondek LP-12	B	0.04	-60†	Sync.	Belt			No										17½ x 13¾ x 5½	549.00	† Unweighted.
LUX AUDIO	PD-444	B			d.c. Servo	Direct	0.002		No			No							26¼ x 15½ x 6¼	795.00	
	PD441	B			d.c. Servo	Direct	0.002		No			No							18¾ x 15½ x 6¼	645.00	
	PD272	B			d.c. Servo	Direct		4	Yes		9.4	No			Yes	0-3		Yes	18½ x 13¾ x 6	345.00	
	PD270	B			d.c. Servo	Direct		4	Yes			No								285.00	
	PD121	B			d.c. Servo	Direct		4	Yes			No			Yes			Yes	18¾ x 14¾ x 5¾	545.00	
MARANTZ	6370Q	B	0.02	-70	d.c. Servo	Direct	0.003	6	No	11¼	9½	No	o	0.41	Yes	0.3	110	Yes	18¼ x 14½ x 5¾	399.95	
	6270Q	B	0.025	-69	d.c. Servo	Direct	0.003		Yes	11¼	8¾	No	o	0.5	Yes	0.3	110	Yes	18¼ x 14½ x 5¾	269.95	
	6170	B	0.03	-67	d.c. Servo	Direct		3	Yes	11¼	8¾	No	o	0.5	Yes	0.3	110	Yes	17¾ x 14¼ x 5½	199.95	
	6110	B	0.07	-65	a.c. Sync.	Belt			No	11¼	8½	No	o	0.5	Yes	0.3	110	Yes	17¾ x 13¾ x 6	139.95	
	6025	B	0.07	-65	a.c. Sync.	Belt			No	11	8¼	No	o	0.5	Yes	0.3	110	Yes	17¾ x 14 x 5¼	129.95	
J.A. MITCHELL	Hydraulic Reference	B	0.03	-51	Hys. Synch	Belt	0	2	Yes	10½	8½	No		1.2	Yes	0-6	125	Yes	17¼ x 16½ x 7¾	with arm 600.00 w/out: 500.00	
	Prisma	B	0.03	-51	d.c. servo	Belt	0	10	Yes	10½	8½	No		1.2	Yes	0-6	125	Yes	20¼ x 14½ x 8¾	with arm 750.00 w/out: 650.00	
MICRO SEIKI	DQX500	B	0.02		Quartz Servo	Direct			No	12⅜	9⅜	No		1.5	Yes	0-3		Yes	16¼ x 13¾ x 5½	550.00	
	DQ-50	B	0.02		Quartz Servo	Direct			No		8⅜	No		1.5	Yes	0-3		Yes	19¾ x 16¼ x 7	550.00	
	DQL120	B	0.02		Quartz Servo	Direct			No										20½ x 16½ x 7	750.00, less arm	

(continued)



Transcriptor
Micro tracer

Toshiba SR-F335

Yamaha YP-D8

LETTER CODE FOR SPEEDS
A—33, 45, 78
B—33, 45
C—33, only
D—16, 33, 45, 78
E—16, 33, 45
F—Cont. variable

MANUFACTURER	Model	Speeds—see code	Wow & Flutter, %, 33-⅓, DIN 45-507	Rumble, - dB, DIN 45-539	Motor type	Drive system	Speed Accuracy, ±%	Speed Adjustment Range, ±%	Built-in strobe light	Overall arm length, inches	Pivot-stylus dist., inches	Multi-Play? If yes, # discs	Auto Cue = C; Auto off = O;	Max. tracks, error, deg.; in.	Anti-skate adjustment	Tracking Force Range, gms.	Total Cable Capacitance, pF	Damped cueing	Dimensions, inches	Price	Notes
MICRO SEIKI (continued)	DQX1000	B	0.02		Quartz Servo	Direct		No											17½ x 17½ x 5	750.00, less arm	
	MB-14	B	0.055		Hys Sync.	Belt		No		8⅝	No		1.5	Yes	0-3		Yes		17½ x 13¾ x 5¾	140.00	
	DD-24	B	0.03		Servo	Direct	5	Yes		8⅝	No		1.5	Yes	0-3		Yes		17½ x 13¾ x 5	200.00	
	DD-33	B	0.03		Servo	Direct	6	Yes	12⅝	9⅝	No	o	1.5	Yes	0-3		Yes		18½ x 14¾ x 6¼	400.00	
	DD-35	B	0.03		Servo	Direct	6	Yes		8¾	No	o	1.5	Yes	0-3		Yes		17¼ x 15¼ x 6¼	350.00	
	DQ-43	B	0.025		Quartz Servo	Direct		No	12⅝	9⅝	No	o	1.5	Yes	0-3		Yes		18½ x 14¾ x 6¼	500.00	
MITSUBISHI	DP-EC1	B	0.025	-73	12-pole d.c. servo	Direct	3	Yes	12⅝	9	No	c/o	2.9	Yes			Yes		18¾ x 6 x 14½	590.00	
	DP-EC2	B	0.025		12-pole d.c. servo	Direct	3	Yes	12⅝	9	No	c/o	2.9	Yes			Yes		18¾ x 6 x 14½	400.00	
PHILIPS HIGH FIDELITY	AF877	B	0.05	-70	d.c.	Belt	3	No	10⅞	8½	No	o	0.4	Yes	0-3	100	Yes		16½ x 13¾ x 5½	239.95	
	AF867	B	0.08	-65	d.c.	Belt	3	No	10⅞	8½	No	o	0.4	Yes	0-3	100	Yes		16½ x 13¾ x 5½	199.95	
	AF777	B	0.08	-65	d.c.	Belt	3	No	10⅞	8½	No	c/o	0.4	Yes	0-3	100	Yes		16½ x 13¾ x 5½	179.95	
	GA222	B	0.08	-62	d.c.	Belt	3	No	10⅞	8½	No	c/o	0.4	Yes	0-3	100	Yes		15¼ x 5¾ x 12¾	229.95	
	GA312	B	0.1	-62	d.c.	Belt	3	No	10⅞	8½	No	o	0.4	Yes	0-4	100	Yes		15½ x 6¼ x 13¼	179.95	
	GA437	B	0.12	-60	Sync	Belt		No	11½	8½	No	o		Yes	0-4	100	Yes		16½ x 5¾ x 13½	119.95	
	GA406	B	0.1	-60	d.c.	Belt	3	No	11½	8½	5	c/o	0.4	Yes	0-4	100	Yes		16½ x 5¾ x 13½	169.95	
PIONEER	PL-630	B	0.025	75	d.c.	Direct	0.002	6			9⅝	No	c/o		Yes	0-3	50	Yes	18½ x 16½ x 5¾	400.00	
	PL-610	B	0.025	75	d.c.	Direct	0.002	6			9⅝	No	o		Yes	0-3	50	Yes	18½ x 16½ x 5¾	350.00	
	PL-560	B	0.025	73	d.c.	Direct		6	Yes		8¾	No	c/o		Yes	0-4	50	Yes	17¼ x 14½ x 5¾	275.00	
	PL-540	B	0.025	73	d.c.	Direct			Yes		8¾	No	o		Yes	0-4	50	Yes	17¼ x 14½ x 5¾	225.00	
	PL-518	B	0.03	73	d.c. Servo	Direct		2	Yes		8¾	No	o		Yes	0-4	50	Yes	17½ x 14½ x 5¾	175.00	
	PL-516	B	0.045	68	d.c. Servo	Belt		2	Yes		8¾	No	o		Yes	0-4	50	Yes	17½ x 14½ x 5½	150.00	
	PL-514	B	0.055	65	4-Pole Sync.	Belt			No		8¾	No	o		Yes	0-4	50	Yes	17½ x 14½ x 5½	125.00	
	PL-512	B	0.055	65	4-Pole Sync.	Belt			No		8¾	No	o		Yes	0-3	50	Yes	17¼ x 14½ x 5¼	100.00	
QUADRAFLEX	QL410	B	0.12	-64	Hys. Sync.	Belt	0.25			10½	8¾		0	0.2	Yes	0-3	220	Yes	17¼ x 14¾ x 6	129.00	

Turntables

LETTER CODE FOR SPEEDS
A—33, 45, 78 D—16, 33, 45, 78
B—33, 45 E—16, 33, 45
C—33, only F—Cont. variable

MANUFACTURER	Model	Speeds—see code	Wow & Flutter, %, 33⅓, DIN 45-507	Rumble, - dB, DIN 45-539	Motor type	Drive system	Speed Accuracy, ± %	Speed Adjustment Range, ± %	Built-in strobe light	Overall arm length, inches	Pivot-stylus dist., inches	Multi-Play? If yes, # discs	Auto Cue = C; Auto off = O;	Max. tracks, error, deg./in.	Anti-skate adjustment	Tracking Force Range, gms.	Total Cable Capacitance, pF	Damped cueing	Dimensions, inches	Price	Notes
RADIO SHACK	LAB-500	B	0.04†	-70	12-pole d.c. Servo	Direct	0.001		No	11½	8⅝		c/o		Yes	0-3	130	Yes	19 x 6¼ x 15¼	259.95	†Weighted rms.
	LAB-400	B	0.03†	-68	16-pole d.c. Servo	Direct		4	Yes	11⅝	8⅝		c/o		Yes	0-4	175	Yes	17¾ x 5¾ x 14	199.95	
	LAB-250	B	0.06†	-67	4-pole Sync.	Belt	1.0		No	11⅛	8½		c/o		Yes	0-3	275	Yes	17½ x 6 x 14¼	129.95	
REFERENCE	610T	B	0.03	-70	20-pole d.c. Servo	Direct		3	Yes	11.5	8.6		o	0.2	Yes	0-3	210	Yes	18 x 13.2 x6.1	229.00	
ROTEL	RP 6300	B	0.04	-68	Brush-less d.c. Servo	Direct		4	Yes				c/o		Yes	¾ -3		Yes	17½ x 14½ x 5¾	225.00	
	RP 5300	B	0.04	-67	Brush-less d.c. Servo	Direct		5	Yes	11¾	8½		o		Yes	¾ -3		Yes	17½ x 14½ x 5¾	180.00	
	RP 3000	B	0.05	-70	a.c. pulse	Direct		5	Yes	12¼	9¼				Yes	1½-3		Yes	18¾ x 14 x 7½	225.00	
	RP 2500	B	0.05	-64	f.g. d.c. Servo	Belt		5	Yes	11¼	8½		o		Yes	1½-3		Yes	17½ x 13¾ x 7½	190.00	
	RP 2300	B	0.06	-59	4-pole Sync.	Belt			No	12	9		o		Yes	1-3		Yes	17½ x 14½ x 5¾	145.00	
SANSUI	SR-929	B	0.022	75	d.c. Servo	Direct		3.5	Yes	12.8	9½				Yes	0-3	53	Yes	19½ x 15 x 7	530.00	
	SR-838	B	0.025	75	d.c. Servo	Direct		2.5	Yes	12.1	9⅛				Yes	0-3	83	Yes	19½ x 15½ x 6¾	440.00	
	SR-737	B	0.025	73	d.c. Servo	Direct		2.5	Yes	11.2	8¾		c/o		Yes	0-3	83	Yes	18¼ x 14¾ x 6¼	360.00	
	SR-636	B	0.025	75	d.c. Servo	Direct		2.5	Yes	11.8	9⅛				Yes	0-3	83	Yes	19½ x 15½ x 6¾	320.00	
	SR-5090	B	0.025	73	Hys. Sync	Direct		3.5	Yes	11.4	8¾		c/o		Yes	0-3	83	Yes	18¼ x 14¾ x 6¼	280.00	
	SR-535	B	0.025	73	Hys. Sync	Direct		3.5	Yes	11.4	8¾		c/o		Yes	0-3	83	Yes	18¼ x 14¾ x 6¼	270.00	
	SR-333	B	0.025	73	Hys. Sync	Direct		3.5	Yes	11.7	8¾				Yes	0-3	83	Yes	18¼ x 14¾ x 6¼	210.00	
	SR-232	B	0.07	58	Hys. Sync	Belt				11.7	8½		o		Yes	0-3	135	Yes	17 x 14 x 15¾	150.00	
	SR-222	B	0.07	60	Hys. Sync	Belt				11.7	8¾				Yes	0-3	88	Yes	18 x 14¾ 5½	110.00	
SANYO	TP1010C	B	0.05	-70	d.c.	Belt		3	Yes				c/o	1.5	Yes	1-3		Yes	17½ x 14 x 5½	109.95	
	TP1012	B	0.04	-70	d.c.	Direct		3	Yes				c/o	1.5	Yes	1-3		Yes	17½ x 14 x 5½	139.95	
	TP1020	B	0.05	-60	d.c.	Direct		3	Yes				c/o	1.5	Yes	1-3		Yes	17¾ x 14½ x 5	129.95	
	TP1030	B	0.03	-70	d.c. (2)	Direct		3	Yes				c/o	1.5	Yes	1-3		Yes	18¾ x 15 x 6½	169.95	
	TP636C	B	0.06	-55	a.c.	Belt			No				c/o	3	Yes	1-3		Yes	18 x 14 x 5½	99.95	
	TP728	B	0.05	-60	d.c.	Belt		3	Yes				c/o	1.5	Yes	1-3		Yes	18 x 14 x 5½	109.95	
H. H. SCOTT	PS97XV	B	0.03		72-pole F.G. a.c.	Direct		3	Yes		8¾	No	c/o		Yes	1-4	120	Yes		249.95	
	PS87A	B	0.03		72-pole F.G. a.c.	Direct		3	Yes		8¾	No	c/o		Yes	1-4	120	Yes		189.95	
	PS77XV	B	0.03		72-pole F.G. a.c.	Direct		3	Yes		8¾	No	c/o		Yes	1-4	120	Yes		219.95	
	PS67A	B	0.03		72-pole F.G. a.c.	Direct		3	Yes		8¾	No	c/o		Yes	1-4	120	Yes		159.95	

(continued)

LETTER CODE FOR SPEEDS
A—33, 45, 78
B—33, 45
C—33, only
D—16, 33, 45, 78
E—16, 33, 45
F—Cont. variable
Manufacturer

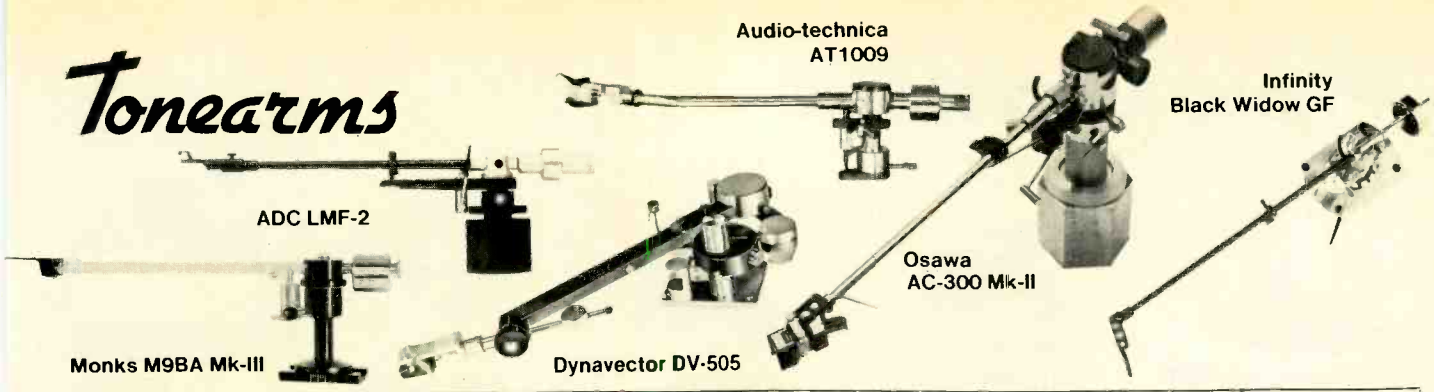
MANUFACTURER	Model	Speeds—see code	Wow & Flutter, %, 33⅓, DIN 45-507	Rumble, - dB, DIN 45-539	Motor type	Drive system	Speed Accuracy, ± %	Speed Adjustment Range, ± %	Built-in strobe light	Overall arm length, inches	Pivot-stylus dist., inches	Multi-Play? If yes, # discs	Auto Cue = C; Auto off = O	Max. tracks, error, deg./in.	Anti-skate adjustment	Tracking Force Range, gms.	Total Cable Capacitance, pF	Damped cueing	Dimensions, inches	Price	Notes
H. H. SCOTT (continued)	PS47A	B	0.05		F.G. d.c. Servo	Belt		3	Yes		8¾	No	c/o		Yes	1½-4	120	Yes		139.95	
	PS17A	B	0.07		4-pole Servo	Belt		3	No		8¾	No	c/o		Yes	1½-4	120	Yes	17¾ x 13¾ x 5½	109.95	
SERIES 20	PLC-590	B	0.025	75	Quartz PLL d.c. Hall	Direct	0.002	6											19¼ x 7¼ x 16	550.00	
SETTON	TS-11	B	0.08	-60	Hys. Sync	Belt	+1.5, -1.0		No	11	9¾	No	o		Yes		600	Yes	19¼ x 15 x 6	199.95	
SONY	PS-X7	B	0.025	-73	d.c. Servo	Direct	0.003		Yes	11⅞	8½	No	c/o	+3° -1°	Yes	0-3	70	Yes	17½ x x 14¾ x 5¾	350.00	
	PS-X6	B	0.025	-73	d.c. Servo	Direct	0.003		Yes	11⅞	8½	No	c/o	+3° -1°	Yes	0-3	70	Yes	17½ x 14¾ x 5¾	290.00	
	PS-X5	B	0.025	-73	d.c. Servo	Direct	0.003		Yes	11⅞	8½	No	c/o	+3° -1°	Yes	0-3	70	Yes	17½ x 14¾ x 5¾	240.00	
	PS-T3	B	0.03	-70	d.c. Servo	Direct		4	Yes	11¾	8½	No	c/o	+3° -1°	Yes	0-3	128	Yes	17½ x 14¾ x 5½	190.00	
	PS-T2	B	0.03	-70	d.c. Servo	Direct		4	Yes	11¾	8½	No	o	+3° -1°	Yes	0-3	128	Yes	17½ x 14¾ x 5½	150.00	
	PS-T1	B	0.04	-68	d.c. Servo	Direct		4	Yes	11⅞	8½	No	o	+3° -1°	Yes	0-3	80	Yes	17½ x 14¾ x 5½	130.00	
STANTON	8005	B	0.07	-55	24-pole sync.	Belt	0.3							1.2	Yes	0-4		Yes	14¼ x 16¾ x 6		
STRATHCLYDE TRANSCRIPTION	Std 305D	A	0.06	-70	d.c. Servo	Belt	0.01	40	Yes			No							18½ x 14¾ x 6¼	589.00 less arm	
TECHNICS	SL-1000 Mk II	A	0.025	-78	d.c. servo	Direct	0.002		Yes	12¾ to 13¾	9¾	No		0.35	Yes	0-3	80	Yes	22¼ x 18¼ x 6¾	1400.00	All wow & flutter weighted rms. Ultra-high torque motor. Dual braking system. Adjustable dynamic damping.
	SP-10 Mk II	A	0.025	-78	d.c. servo	Direct	0.002		Yes										14½ x 14½ x 4	800.00	Same as SL-1000 but without base & arm.
	SL-1500 Mk II	B	0.025	-73	d.c. servo	Direct	0.002	9.9	Yes		9¼			0.4	Yes	0-3	80	Yes	17¾ x 15¼ x 5¾	390.00	Quartz control, high torque motor, dual suspension system.
	SL-150 Mk II	B	0.025	-73	d.c. servo	Direct	0.002	9.9	Yes											370.00	Same as above but without tonearm.
	SL-1400 Mk II	B	0.025	-78	d.c. servo	Direct	0.002	9.9	Yes		9¼		0	0.4	Yes	0-3	80	Yes	17¾ x 15¼ x 5¾	440.00	As above plus repeat & auto off.
	SL-1300 Mk II	B	0.025	-78	d.c. servo	Direct	0.002	9.9	Yes		9¼		c/o	0.4	Yes	0-3	80	Yes	17¾ x 15¼ x 5¾	490.00	Auto start & repeat play of single disc.
	SL-1401	B	0.025	-78	d.c. servo	Direct	0.002		Yes		9¼		0	0.4	Yes	0-3	80	Yes	17¾ x 14½ x 5	290.00	Double isolated suspension system.
	SL-1301	B	0.025	-78	d.c. servo	Direct	0.002		Yes		9¼		c/o	0.4	Yes	0-3	80	Yes	17¾ x 14½ x 5	320.00	As above w/memory repeat play.
	SL-1800	B	0.025	-78	d.c. servo	Direct		10	Yes		9¼			0.4	Yes	0-3	80	Yes	17¾ x 14½ x 5	200.00	High torque motor, double-isolated suspension.
	SL-1700	B	0.025	-78	d.c. servo	Direct		10	Yes		9¼		0	0.4	Yes	0-3	80	Yes	17¾ x 14½ x 5	230.00	As above.
	SL-1600	B	0.025	-78	d.c. servo	Direct		10	Yes		9¼		c/o	0.4	Yes	0-3	80	Yes	17¾ x 14½ x 5	280.00	As above, plus memory repeat.
	SL-1650	B	0.03	-75	d.c. servo	Direct		10	Yes		9¼	6	c/o	0.4	Yes	0-3	80	Yes	17¾ x 14½ x 7	300.00	
	SL-3200	B	0.03	-75	d.c. servo	Direct		10	Yes		9¼		0	0.4	Yes	0-2½	80	Yes	17 x 14¾ x 5¼	150.00	
	SL-3300	B	0.03	-75	d.c. servo	Direct		10	Yes		9¼		c/o	0.4	Yes	0-2½	80	Yes	17 x 14¾ x 5¼	180.00	Memory repeat play.
	SL-3350	B	0.03	-75	d.c. servo	Direct		10	Yes		9¼	6	c/o	0.4	Yes	0-2½	80	Yes	17 x 14¾ x 7¼	200.00	
(continued)	SL-210	B	0.045	-70	d.c. servo	Belt		6	Yes		9¼			0.4	Yes	0-3	80	Yes	17 x 14¾ x 5	100.00	

Turntables

LETTER CODE FOR SPEEDS
A—33, 45, 78
B—33, 45
C—33, only
D—16, 33, 45, 78
E—16, 33, 45
F—Cont. variable

MANUFACTURER	Model	Speeds—see code	Wow & Flutter, %, 33-⅓, DIN 45-507	Rumble, - dB, DIN 45-539	Motor type	Drive system	Speed Accuracy, ± %	Speed Adjustment Range, ± %	Built-in strobe light	Overall arm length, inches	Pivot-stylus dist., inches	Multi-Play? If yes, # discs	Auto Cue = C; Auto off = O.	Max. tracks, error, deg./in.	Anti-skate adjustment	Tracking Force Range, gms.	Total Cable Capacitance, pF	Damped cueing	Dimensions, inches	Price	Notes
TECHNICS (continued)	SL-220	B	0.045	-70	d.c. servo	Belt		6	Yes		9¼		o	0.4	Yes	0-3	80	Yes	17 x 14¾ x 5	130.00	As above with auto off.
	SL-230	B	0.045	-70	d.c. servo	Belt		6	Yes		9¼		c/o	0.4	Yes	0-3	80	Yes	17 x 14¾ x 5	150.00	As above with full auto & memory repeat.
	SL-235	B	0.045	-70	d.c. servo	Belt		6	Yes		9¼	6	c/o	0.4	Yes	0-3	80	Yes	17 x 14¾ x 5	180.00	As above but with changer function.
THORENS	TDC-126C Mk III	A	0.04	-51	72-pole d.c.	Belt	0.01	6	Yes	12.0	9		c/o	0.18	Yes	0-3	275	Yes	20 x 15½ x 6¾	750.00	
	TD-115C Mk III	B	0.005	-48	72-pole d.c.	Belt	0.01	6	Yes	12.0	8¾		c/o	0.18	Yes	0-3	275	Yes	17¼ x 16 x 5	390.00	
	TD-110C Mk III	B	0.005	-48	72-pole d.c.	Belt	0.01	6	Yes	12.0	8¾			0.18	Yes	0-3	275	Yes	17¼ x 16 x 5	330.00	
TOSHIBA	SR F335	B	0.03		Servo	Direct		2	Yes	8¾		6	c/o	+3 -1	Yes			Yes	17½ x 6¼ x 14¼	189.95	
	SR 230	B	0.09		Sync.	Belt				8¾			c/o		Yes			Yes	17¾ x 5¾ x 14	119.95	
TRANSAUDIO	1800	B	0.1	-62	Hys. Sync.	Belt	0.5			11¾	8¾		o	0.3	Yes	0-3	250	Yes	17½ x 15 x 7½	139.95	
	1600	B	0.1	-60	Hys. Sync.	Belt	0.5			11¾	8¾			0.3	Yes	0-3	250	Yes	17½ x 14¾ x 5¼	99.95	
TRANSCRIPTOR	Micro-Tracer	B	0.05		Hys. Sync.	Belt		0	No	2.0	1½			0.1	Yes	0-3	117		21½ X 14½ X 7	690.00	
	Skeleton	B	0.05		Hys. Sync.	Belt		0	No	9	1¼			2.5	Yes	0-3	117		19 X 15½ X 7	475.00	
VISONIK	BD-2200	B	0.1	-62	Hys. Sync.	Belt					8½					0-4		Yes	18¼ x 13¼ x 5½	125.00	
	BD-3200	B	0.09	-64	Hys. Sync.	Belt					8½		c/o			0-4			18¼ x 13¼ x 5½	150.00	
	BD-3300	B	0.09	-65	Hys. Sync.	Belt					8½		c/o			0-3		Yes	18 x 13½ x 5¼	150.00	
	BD-4200	B	0.09	-64	Hys. Sync.	Belt					8½		c/o			0-4			18¼ x 13¼ x 5½	175.00	
	BD-5200	B	0.07	-66	d.c. Servo	belt		3	Yes		8¾		c/o			0-4		Yes	18¼ x 13¼ x 5½	200.00	
	BD-5300	B	0.08	-67	d.c. Servo	Belt		4	Yes		8¾		c/o		Yes	0-3		Yes	18 x 13½ x 5¼	200.00	
	BD-8200	B	0.05	-70	d.c Servo	Direct		3.5	Yes		8½		c/o			0-2½		Yes	18 x 14 x 6¼	250.00	
WIN LABORATORIES	LS-10	B	0.05†	-65	d.c. Servo	Belt	0.01	5												750.00	†Weighted rms.
YAMAHA	YP-D10	B	0.03		Hall d.c. Servo			3	Yes	9⅛		No			Yes			Yes	e18½ x 15 x 6½	650.00	
	YP-D6	B	0.035		d.c. Servo	Direct			Yes	8¾		No			Yes	0-3		Yes	18½ x 14¼ x 6¼	260.00	
	YP-B4	B	0.07		Hys. Sync.	Belt						No			Yes	0-3			17½ x 14½ x 5¼	180.00	
	YP-211	B	0.08		Hys. Sync.	Belt						No			Yes	0-3			17¼ x 14¼ x 6	140.00	
	YP-D8	B	0.03		FG Servo	Direct			Yes			No			Yes	0-3		Yes	18½ x 15 x 6½	395.00	
ZENITH RADIO	MC9040	B	0.06	-60	4-pole sync.	Belt	0.3	No	No	11⅜	8½	Yes	c/o		Yes	1	100	Yes	17¾ x 13¾ x 7¾	249.95	
	MC9030	B	0.2	-55	4-pole induc.	Belt	0.3	No	No	10	7¾	Yes	c/o		Yes	1.5	100	Yes	16 x 13½ x 6¼	149.95	
	MC9020	A	0.28	-48	2-pole induction	Rim	0.7	No	No	10	7⅛	Yes	c/o		Yes	2		No	15¼ x 16¼ x 7¾	99.95	

Tonearms



MANUFACTURERS	Model	Overall Length, inches	Pivot-Stylus Distance, inches	Cueing	Damped Cueing	Maximum Tracking Error, degrees/inch	Anti-Skating Adjustment	Tracking Force Range, gms.	Total Cable Capacitance, pF.	Cartridge Weight Range, gms.	Vertical Bearing Type	Lateral Bearing Type	Price, $	Notes
ADC	LMF-1 LMF-2	12¼ 12¼	9¼ 9¼	Yes Yes	Yes Yes	½ ½	Yes Yes	0-1½ 0-1½	238 238	4-11 3-11			205.00 215.00	Integrated head, carbon-fibre construction. Removable head, carbon-fibre construction.
AUDIO-TECHNICA	AT1005 AT1009	12¾ 13	9½ 9½	Yes	Yes	1½ 1½	Yes Yes	0-3 0-2½	80 80	4-14 4-14	Ball Ball	Ball Ball	85.00 175.00	Damped cueing opt.
BREUER	5A	9	8¼	Yes	Yes	1.25	Yes	0-4	70	4-13	Pivot	Pivot	800.00	
DECCA	Decca International		9½	No			Yes	0-3½	120	4-13	Uni-pivot	Uni-pivot	139.50	Magnetic susp.
DYNAVECTOR	DV 505	13.2	9½			1.1	Yes	0-3		9-35			600.00	
FIDELITY RESEARCH	FR-12	11½	9¾	Yes	Yes	3	Yes	0-3		4-12	Ball	Ball	275.00	
GRACE (Sumiko)	G-707 Mk 11 G-707 Mk 11/B G-704 G-714 G-945	11¼ 11¼ 11¼ 11¼ 11¼	9½ 9½ 9½ 9½ 9½	Yes Yes Yes Yes Yes	Yes Yes Yes Yes Yes	1.5 1.5 1.4 1.4 1.5	Yes Yes No No Yes	0-3 0-3 0-3 0-3 0-3	100 100 100 100 100	4-12 4-12 4-13 4-13 3-17	Pivot Pivot Uni-pivot Uni-pivot Uni-pivot	Pivot Pivot	180.00 200.00 265.00 265.00 325.00	
INFINITY SYSTEMS	Black Widow GF	11¾	9⅓	Yes	Yes		Yes		60	4-8.5	Knife	Ball	245.00	Graphite/fiber arm tube.
KEITH MONKS AUDIO	M9BA Mk3	11½	9	Yes	Yes		Pre-set	½-2½	80	4-8	Uni-pivot	Uni-pivot	179.95	No wires at pivot point.
LUSTRE SUMIKO	GST-1	11¼	9½	Yes	Yes	1.5	Yes	0-3	100	5-30	Pivot	Pivot	175.00	
LUX AUDIO	TA-1			Yes	Yes		Yes						125.00	
MAYWARE	Formula 4 Mk III PLS4/D1	11½	9	Yes	Yes		Yes	½-3	115 Pf	2½-11	uni-pivot	uni-pivot	179.95	
J A MICHELL	Fluid Arm	10½	8½	Yes	Yes	1.2	Yes	0-6	125	0-16	Damped uni-pivot	Damped uni-picot	147.00	Detachable arm tube.
MICRO SEIKI	MA 505 MA 707	12⅜ 12⅜	9⅜ 9⅜	Yes Yes	Yes Yes	1.5	Yes Yes	0-3 0-3		4-10, 9½-16, 16-23 4-12			175.00 200.00	
SERIES 20	PA-1000		9⅜	Yes	Yes		Yes	0-3	60	4-15	Ball	Ball	150.00	Carbon fiber.
SHURE	SME 3009 Series III SME 3009 Series II SME 3009 Series II		9 9 9	Yes Yes Yes	Yes Yes Yes	1.5 1.5 1.5	Yes Yes Yes	0-2½ .0-1½ 0-1½	293 127 127	1/10-13 2-8 2-8	Ball Ball Ball	Knife Knife Knife	294.00 174.00 162.00	Inc. fluid damper. Has removable shell. Non-removable shell.
SYRINX	Syrinx	11½	9½	Yes	Yes	1¼	Yes	⅜-3		3-12	Jeweled gimbal	Jeweled gimbal	450.00	
TRANSCRIPTOR	Vestigial	9	1¼	No		2.5	Yes	0-3	117	1-10	Jeweled Pivots	Jeweled Pivots	150.00	
ULTRACRAFT	AC-300 Mk II		9½	Yes	Yes	2½	Yes	0-2			Uni-pivot	Uni-pivot	325.00	

Phono Cartridges

Audio-technica AT-20SS

B&O MMC 6000

ADC XLM III

Denon DL-103D

AKG P8ES

Letter Code

C = Conical
S = Spherical
E = Elliptical
Q = For CD-4 use (Shibata, etc.)

MANUFACTURER	Model	Frequency response Hz to kHz ± dB	Channel separ., 1kHz, dB	Channel separ., 1kHz, dB	mV output, 1 kHz, 5 cm/Sec. rms Lateral Velocity	Recommended tracking force range, gms.	Recommended load resistance, ohms	Recommended load capacitance, pF	Stylus type—use code	Stylus radius (radii), mils	Is stylus user or factory replaced	Weight, gms.	Price, $	Replacement stylus price, $	Notes
AKG	P8ES	10-28	30	25	3.75	¾-1¼	47k	470	E	0.2 x 0.7	User	5.8	135.00	78.00	Transversal suspension system, individual graph.
	P8E	10-23	30	20	4.0	¾-1¼	47k	470	E	0.2 x 0.7	User	5.8	100.00	55.00	As above.
	P7E	10-21.5	25	18	4.5	1¼-2½	47k	470	E	0.3 x 0.7	User	5.8	70.00	30.00	T5-System.
	P6E	20-20	25	15	6.25	1½-3	47k	470	E	0.4 x 0.8	User	5.8	50.00	20.00	As above.
	P6R	20-20	25	15	6.25	2-4				0.7	User	5.8	40.00	15.00	As above.
ACUTEX	320III-STR	20-45	33	29	4.0	0.8-1.8	30-100k	50-500	Q	0.3 x 0.5	User	6.2	175.00		
	315III-STR	20-40	32	28	4.0	0.9-1.9	30-100k	50-500	Q	0.3 x 0.6	User	6.2	135.00		
	312III-STR	20-35	30	27	4.0	1¼-2½	30-100k	50-500	Q	0.3 x 0.6	User	6.2	95.00		
	310IIE	20-25	28	25	4.0	1½-2.8	30-100k	50-500	E	0.3 x 0.7	User	6.2	75.00		
	307IIE	20-20	27	25	4.0	1.8-2.8	30-100k	50-500	E	0.3 x 0.7	User	6.2	55.00		
	306II	20-20	27	25	4.0	2-3	30-100k	50-500	C	0.65	User	6.2	45.00		
ADC	ZLM	10-20 ±1	30	20	5.5	½-1¼	47k	275	A†		User	5.75	135.00	79.95	† Aliptic ® 20kHz to 26kHz ±1½ dB
	XLM MKIII	10-20 ±1	28	18	5.5	¾-1½	47k	275	E	0.2 x 0.7	User	5.75	110.00	54.95	20kHz to 24kHz ±1½ dB
	QLM36 MKIII	15-22 ±2	26	15	5.5	¾-1½	47k	275	E	0.3 x 0.7	User	5.75	79.95	44.95	
	QLM34 MKIII	20-20 ±2	24	15	9	1-3	47k	275	E	0.3 x 0.7	User	5.75	64.95	39.95	
	QLM32 MKIII	20-18 ±2	20		7.5	2-4	47k	275	E	0.4 x 0.7	User	5.75	49.95	24.95	
	QLM30 MKIII	20-18 ±3	18		7.5	3-5	47k	275	S	0.7	User	5.75	34.95	19.95	
ANDANTE (SUMIKO)	E	12-30 ± 3	30	23	4.0	1.0-1.9	47k	250	E	0.2 x 0.8	User	6	75.00	39.95	
	S	18-27 ± 3	28	20	4.0	1.0-2.5	47k	250	C	0.5	User	6	60.00	24.95	
	H	18-20 ± 3	27	20	8.0	1.0-2.5	47k	250	C	0.5	User	6	50.00	20.95	
AUDIO-TECHNICA	AT10	20-20	25	15	4.8	2-3	47k	100-200	S	0.7	User	5½	25.00	13.00	
	AT11	15-22	26	16	4.8	1½ - 2½	47k	100-200	S	0.7	User	5½	35.00	18.00	
	AT11E	15-25	26	17	4.8	1½ - 2½	47k	100-200	E	0.4 x 0.7	User	5½	45.00	25.00	
	AT12E	15-26	27	18	4.2	1 - 2	47k	100-200	E	0.4 x 0.7	User	5½	55.00	30.00	
	AT12XE	15-28	28	19	4.2	1 - 2	47k	100-200	E	0.3 x 0.7	User	5½	65.00	35.00	
	AT12Sa	15-45	30	20	2.7	¾ - 1¾	47k	100-200	Q	†	User	5½	80.00	45.00	†Shibata.
	AT13Ea	10-30	29	20	4.2	¾ - 1¾	47k	100-200	E	0.2 x 0.7	User	5½	70.00	38.00	
	AT14Sa	5-45	31	21	2.7	¾ - 1¾	47k	100-200	Q	†	User	5½	95.00	45.00	†Shibata.
	AT15XE	5-30	32	22	2.7	¾ - 1¾	47k	100-200	E	0.2 x 0.7	User	8½	125.00	60.00	
	AT15SS	5-45	33	23	2.7	¾ - 1¾	47k	100-200	Q	†	User	8½	150.00	75.00	†Shibata.
	AT20SS	5-50	35	25	2.7	¾ - 1¾	47k	100-200	Q	†	User	8½	195.00	95.00	†Shibata.
BANG & OLUFSEN	MMC-3000	20-20+2, -3	20	15	4.25	1.2	47k	200	S	0.6	Fact.	4	60.00	42.00†	† Exchange price for new cartridge.
	MMC-4000	20-20 ±1.5	25	20	4.25	1	47k	200	E	0.2 x 0.6	Fact.	4	95.00	67.00†	† As above.
	MMC-6000	20-45	25	20	4.25	1	47k	100	††	††	Fact.	4	145.00	102.00†	† As above. †† Pramanik stylus, ETM=0.22 mg.
DECCA	MkVI Gold	20-20	20		5.0	1.5	50k	250-300	E	0.3 x 0.6	Fact.	4	159.50	80.00	"Positive Scanning" System.
	MkVI Plum	20-20	20		7.5	2.0	50k	250-300	S	0.6	Fact.	4	139.50	70.00	As above.

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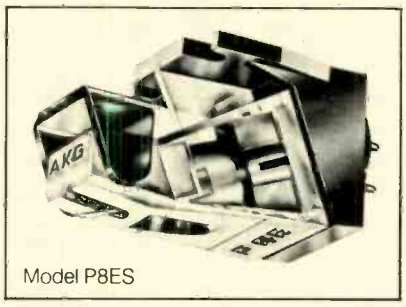

Model P8ES

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Models: P8ES, P8E, P7E, P6E and P6R.

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*Transversal Suspension System U.S. Patent No. 4054758

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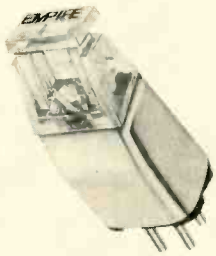
Micro Acoustics 282e

Nagatronics HV-9100



Empire 2000

Nakamichi MC-1000

Letter Code

C = Conical
S = Spherical
E = Elliptical
Q = For CD-4 use (Shibata, etc.)

MANUFACTURER	Model	Frequency response Hz to kHz ± dB	Channel separ., 1kHz, dB	Channel separ., 1kHz, dB	mV output, 1 kHz, 5 cm/Sec. rms Lateral Velocity	Recommended tracking force range, gms.	Recommended load resistance, ohms		Recommended load capacitance, pF	Stylus type—use code	Stylus radius (radii), mils	Is stylus user or factory replaced	Weight, gms.	Price, $	Replacement stylus price, $	Notes
DENON	DL-103	20-45	25	25	0.3	2.2-2.8	100		C	0.65		Fact.	8.5	140.00	70.00	Moving Coil.
	DL-103S	20-60	25	25	0.3	1.8	100		E	Shib.		Fact.	7.8	186.00	93.00	Moving coil.
	DL103D	20-65	28	28	0.25	1.5	100		E	Mod. Ellip.		Fact.	7.5	267.00	134.00	Moving coil.
DYNAVECTOR	10 x	20-20 ±2	20		1.8	1.5 ±0.13	47k	270	E			Fact.	9.5	120.00	66.00	
	10 A	20-30 ±2	20		2	2.5 ±0.2	47k	270	C	0.6		Fact.	9.5	160.00	88.00	
	20 A	20-20 ±2	20		2	1.5 ±0.3	47k	270	Q			Fact.	9.5	190.00	104.50	
	20 B	20-30 ±2	20		2	1.5 ±0.3	47k	270	Q			Fact.	9.5	250.00	137.50	
	20 C	20-40 ±3	20		0.18	1.5 ±0.3	47k	270	Q			Fact.	9.5	350.00	192.50	
ELECTRO RESEARCH	EKI	20-20 ±1	42	35		2			Q			User	3.9			Usable only with EKI pre-amp.
EMPIRE SCIENTIFIC	2000Z	20-20 ±1	30	30	4.24	¾-1¼	47k	300	E	0.2 x 0.7		User	7	125.00	50.00	Nude tip.
	4000III	10-50 kHz ±3	28	23	4.24	¾-1¼	47k or 100k	100	Q	0.2 x 0.2		User	7	150.00	75.00	BiRadial, nude tip.
	2000T	20-20 ±1.5	27	27	4.24	¾-1¼	47k	300	E	0.2 x 0.7		User	7	90.00	45.00	Nude tip.
	4000DI	15-45 ±3	24	20	4.24	1-1¾	47k or 100k	100	Q	0.2 x 0.2		User	7	85.00	43.00	Bi-Radial nude tip.
	2000EIII	20-20 ±2	28	28	6.36	¾-1½	47k	500	E	0.2 x 0.7		User	7	70.00	35.00	Nude tip.
	2000EII	20-20 ±2	25	25	6.36	¾-1½	47k	500	E	0.2 x 0.7		User	7	55.00	28.00	Nude tip.
	2000EI	20-20 ±3	23	23	9.89	1-2	47k	500	E	0.2 x 0.7		User	7	45.00	23.00	Nude tip.
	2000E	20-20 ±3	23	23	9.89	1.25-2.5	47k	500	E	0.3 x 0.7		User	7	40.00	20.00	Nude tip.
	2000	20-20 ±3	21	21	9.89	1.5-3	47k	500	C	0.7		User	7	30.00	15.00	Nude tip.
	Broadcast One	20-20 ±1.5	25	15	6.36	2.0-3.5	47k	300	C	0.7		User	7	30.00	15.00	Nude tip.
FULTON ELECTRONICS	Fulton	5-65 ±0.5	35	30	0.3	1.5 -1.7	4.5	30	C	0.65		Fact.	4	295.00	70.00	Moving coil type.
GRACE (SUMIKO)	SF-90	10-40 ±2	30	25	5.5	1.0-2.0	47k	250	E†	0.2 x 0.8		User	15†	250.00	95.00	† Luminal trace. Integrated w. headshell.
	F9-L	10-40 ±2	30	25	5.5	1.0-2.0	47k	250	E†	0.2 x 0.8		User	6	140.00	70.00	† As above.
	F8-L	20-20 ±2	30	23	5.0	1.0-2.0	47k	250	E†	0.2 x 0.8		User	6.5	95.00	47.50	† As above.
	F9-F	10-60 ±2	30	27	3.5	1.0-2.0	100k	80	Q			User	6	175.00	87.50	Nude Shibata CD-4.
	F9-U	10-50 ±2	30	27	3.5	1.0-2.0	100k	80	Q†			User	6	115.00	57.50	† Bonded Shibata CD-4.
	F9-D	10-35 ±2	30	23	3.5	1.0-2.0	47k	250	C	0.65		User	6	110.00	55.00	
	F8-C	15-25 ±3	30	25	5.0	1.0-2.5	47k	250	E	0.2 x 0.8		User	6.5	110.00	55.00	
GREAT AMERICAN SOUND	Sleeping Beauty Super-Elliptical	5-40 ±2.0	34	20	0.27	1.8-2.1	50-1k	To 10k	E	0.3 x 0.6		Fact.	5.5	200.00	100.00	Calibrated. All models moving coil.
	Sleeping Beauty Elliptical	10-35 ±2.5	27	20	0.3	1.8-2.1	50-1k	To 10k	E	0.3 x 0.6		Fact.	5.5	180.00	90.00	
	Sleeping Beauty Spherical	10-30 ±2.5	25	20	0.3	1.8-2.1	50-1k	To 10k	S	0.6		Fact.	5.5	160.00	80.00	
	Sleeping Beauty Shibata	5-40 ±2.0	34	20	0.27	1.8-2.1	50-1k	To 10k	Q			Fact.	5.5	240.00	120.00	Calibrated.
JVC	MC-1	10-50	27		0.2	0.15-1.5	30		Q			Fact.	8.7	299.95		Moving coil.
MICRO-ACOUSTICS	530-mp	5-20 ±1.25	30	15	3.5	0.7-1.4		100-1.5k		†		User	4	200.00	100.00	† Micro-Point stylus. All Models direct coupled electret types.
	2002-e	5-20 ±1.25	30	15	3.5	0.7-1.4		100-1.5k	E	0.2 x 0.7		User	4	120.00	45.00	
	282-e	5-20 ±2	25	15	3.5	¾-1½		100-1.5k	E	0.2 x 0.7		User	5.2	90.00	41.00	

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You won't need a golden ear to hear the difference between a good stereo cartridge and the best stereo cartridge you can get—Acutex.

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And Acutex cuts down on the hiss and scratch of surface noise. So you hear more of what you do want to hear, and less of what you don't.

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How does Acutex do it? With a new tri-pole induced-magnet design. This unique, patented design not only minimizes channel "crosstalk" and enhances separation, it also delivers superior trackability.

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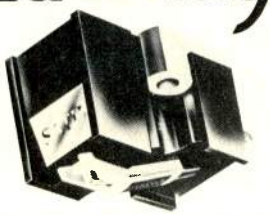
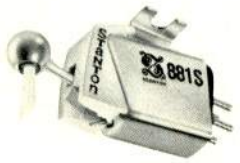


Satin M-18

Sonus Silver P

Ortofon MC-20



Stanton 881S

Letter Code

C Conical
S Spherical
E Elliptical
Q For CD-4 use (Shibata, etc.)

MANUFACTURER	Model	Frequency response Hz, to kHz ± dB	Channel separ., 1kHz, dB	Channel separ., 1kHz, dB	mV output, 1 kHz, 5 cm/Sec. rms Lateral Velocity	Recommended tracking force range, gms.	Recommended load resistance, ohms	Recommended load capacitance, pF	Stylus type—use code	Stylus radius (radii), mils	Is stylus user or factory replaced	Weight, gms.	Price, $	Replacement stylus price, $	Notes
NAGATRONICS	165S	20-20	24		4.0	1.8	50k	350	S	0.5	User	5.1	28.00	12.00	
	185E	20-25	24		4.0	1.75	50k	350	E	0.3 x 0.7	User	5.1	38.00	20.00	
	175IS	20-20	24		4.0	1.8	50k	350	S	0.5	User	8.5	35.00	12.00	With integral head shell.
	195IE	20-25	24		4.0	1.75	50k	350	E	0.3 x 0.7	User	8.5	45.00	20.00	As above.
	200S	10-25 ±3	25		4.0	1.75	50k	350	S	0.5	User	5.9	38.00	19.00	
	210E	10-25 ±3	25		4.0	1.75	50k	350	E	0.3 x 0.7	User	5.9	60.00	34.00	Nude stylus.
	220CE	10-25 ±2.5	25		4.0	1.70	50k	350	E	0.3 x 0.7	User	5.9	80.00	42.00	As above.
	340S	10-25 ±3	25		4.0	1.75	50k	350	S	0.5	User	6.1	48.00	20.00	
	350E	10-25 ±3	25		4.0	1.75	50k	350	E	0.3 x 0.7	User	6.1	70.00	39.00	Nude stylus.
	360CE	10-25 ±2.5	25		4.0	1.70	50k	350	E	0.3 x 0.7	User	6.1	95.00	48.00	Nude stylus.
	360CEX	10-25 ±2.5	25		4.0	1.70	50k	350	E	0.3 x 0.7	User	6.1	125.00	48.00	Nude stylus.
	HV-9100	20-30 ±1.8	25	19	0.04	1.6-2.0	10-30		E	0.4 x 0.8	User	19	220.00	95.00	Ribbon type w. nude stylus in integral head shell.
NAKAMICHI	MC-1000	10-65	27		0.2	1.5-2.1	200		S	0.3 x 0.8	†	8.2	305.00	183.00	Low-output moving coil. † Non-repl. stylus, trade-in available.
	MC-500	20-35	25		0.9	1.9-2.5	50k		E	0.3 x 0.8	†	8.2	135.00	81.00	High-output moving coil. † As above.

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The Satin Moving Coil Cartridge by Osawa.

A small number of music lovers have tuned their hearing to such a degree that they can appreciate the fine differences a top-quality moving coil cartridge makes. For those fortunate few, nothing but a Satin will do.

"Light." "Airy." "Open." "Spacious." That's how Satin owners and product reviewers describe this masterpiece of the audio art. Here's why:

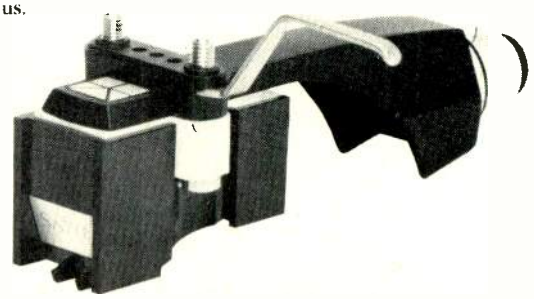
Superb stereo imaging is achieved by a single-point suspension. Extremely high output is ensured by Satin's flat 10 micron thick light-weight aluminum ribbon coil and a super high-energy magnet 1.8 times more powerful than conventional magnets.

In addition to its beautifully realistic sound, Satin has important advantages over other moving coil cartridges. The high output level, fully compatible with all pre-amps, integrated amps and receivers, eliminates the need for a noise-prone transformer or pre-preamplifier.

And since we feel that anyone who loves music enough to buy a Satin shouldn't have to suffer in silence when a stylus wears out, we've built the Satin line with user-replaceable styli. You don't have to send the cartridge back to the factory; simply replace the stylus yourself.

Your Osawa dealer has four Satin cartridges, priced from about $175.00 to $350.00. The prices may seem high, but once you've heard a Satin perform, you'll know it's worth the money.

To select the Satin cartridge that's ideal for you, ask your Satin dealer for a free copy of Osawa's "Consumer Guide to Phono Cartridges" or write directly to us.



OSAWA

OSAWA & CO. (USA) INC./521 Fifth Avenue
New York, N.Y. 10017/(212) 687-5535-9/TELEX: 236593

Letter Code

C = Conical
S = Spherical
E = Elliptical
Q = For CD-4 use (Shibata, etc.)

MANUFACTURER	Model	Frequency response Hz to kHz ± dB	Channel separ., 1kHz, dB	Channel separ., 1kHz, dB	mV output, 1 kHz, 5 cm/Sec. rms Lateral Velocity	Recommended tracking force range, gms.	Recommended load resistance, ohms	Recommended load capacitance, pF	Stylus type—use code	Stylus radius (radii), mils	Is stylus user or factory replaced	Weight, gms.	Price, $	Replacement stylus price, $	Notes
ORTOFON	M20FL Super	10-25	27		4.0	1¼-1¾	47k	400	†	0.3	User	5	145.00	90.00	† Fine line.
	M20E Super	10-25	25		5.0	¾-1¼	47k	400	E	0.3 x 0.7	User	5	145.00	90.00	
	VMS20E Mk II	20-20	25		5.0	¾-1½	47k	400	E	0.3 x 0.7	User	5	100.00	65.00	
	F15E Mk II	20-20	25		5.0	1-2	47k	400	E	0.3 x 0.7	User	5	80.00	40.00	
	FF15E Mk II	20-20	20		5.0	1-3	47k	400	E	0.3 x 0.7	User	5	60.00	25.00	
	FF15XE Mk II	20-20	20		6.5	1½-3	47k	400	E	0.3 x 0.7	User		40.00	15.00	
	MC20	5-60	25			1½-2	47k		†	0.3	Fact.	7	185.00	100.00	† Fine Line. Retipping on exchange.
	MC10	10-50	22			1.7-2.3	47k		E	0.3 x 0.7	Fact.	7	125.00	70.00	As above.
OSAWA	300MP	20-22	25		4.0	1½-2	47k		E	0.3 x 0.7	User	5½	100.00		
	200MP	20-20	25		4.0	1½-2	47k		E	0.3 x 0.7	User	5½	65.00		
	100MP	20-20	25		4.0	1½-2	47k		C	0.6	User	5½	35.00		
PICKERING	XUV/4500Q	10-50	35		4.0	1 ±½	100k	100	Q		User	5.5	139.95	56.00	
	XSV/3000	10-30	35		4.6	1 ±½	47k	275	Q		User	5½	99.95	39.95	
	UV-15/ 2400-Q	10-50	35		3.3	2 ±½	100k	100	Q		User	5½	124.95	50.00	
	UV-15/ 2000-Q	20-45	30		3.3	2 ±½	100k	100	Q		User	5½	69.90	35.00	
	XV-15/ 1200E	10-30	35		4.0	¾ ±¼ -½	47k	275	E	0.2 x 0.7	User	5½	79.45	35.00	
	XV-15/ 750E	10-25	35		4.0	1 ±½	47k	275	E	0.3 x 0.7	User	5½	65.00	31.50	
	XV-15/ 625E	10-25	35		4.0	1 +¼ -½	47k	275	E	0.3 x 0.7	User	5½	59.95	30.00	
	XV-15/ 400E	10-25	35		5.0	1½ ±½	47k	275	E	0.4 x 0.7	User	5½	54.95	28.50	
	XV-15/350	10-25	35		5.5	2 ±1	47k	275	S	0.7	User	5½	49.95	26.25	
	XV-15 200E	10-25	35		7.3	3 ±1	47k	275	E	0.4 x 0.7	User	5½	34.95	23.95	
	XV-15/150	10-20	35		7.3	3 ±1	47k	275	S	0.7	User	5½	39.95	23.95	
	XV-15/140E	10-20	35		7.3	4 ±1	47k	275	E	0.5 x 0.7	User	5½	34.95	19.22	
	XV-15/100	10-20	35		7.3	4 ±1	47k	275	S	0.7	User	5½	29.95	16.47	
	V-15 Micro IV AME	20-20	30		5.0	1½ ±½	47k	275	E	0.4 x 0.7	User	6½	49.95	26.25	

(Continued)

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Introducing the new MP cartridge by Osawa.

With innovative engineering, Osawa has made superior cartridge performance affordable.

In the new MP cartridges, Osawa uses Permalloy to modulate the magnetic field generated by a cobalt magnet. This unique, lightweight, high-output combination ensures high signal-to-noise ratio and a freely moving stylus for perfect tracking of highly modulated grooves. You get clarity, frequency response and a dynamic range that only the most expensive cartridges can match.

The cantilever is perfectly formed (and made of carbon fiber in our top 300MP model) for high strength, low mass and uniform frequency transmission. It's supported in a special "Butyl" synthetic rubber damper to provide just enough restraint to keep the tip in the groove. Butyl is virtually unaffected by temperature and humidity, so your music won't change with the seasons.

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Be sure to ask your dealer for a free copy of Osawa's "Consumer Guide to Phono Cartridges." Or write directly to us.

OSAWA

OSAWA & CO. (USA) INC./521 Fifth Avenue
New York, N.Y. 10017/(212) 687-5535-9/TELEX: 236593

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Phono Cartridges

Letter Code

C = Conical
S = Spherical
E = Elliptical
Q = For CD-4 use (Shibata, etc.)

MANUFACTURER	Model	Frequency response Hz to kHz ± dB	Channel separ., 1kHz, dB	Channel separ., 1kHz, dB	mV output, 1 kHz, 5 cm/Sec. rms Lateral Velocity	Recommended tracking force range, gms.	Recommended load resistance, ohms	Recommended load capacitance, pF	Stylus type—use code	Stylus radius (radii), mils	Is stylus user or factory replaced	Weight, gms.	Price, $	Replacement stylus price, $	Notes
PICKERING (Continued)	V-15 Micro IV AM	20-20	30		5.5	2 ±1	47k	275	S	0.7	User	6½	34.95	19.22	
	V-15 Micro IV ATE	20-18	28		6.0	3 ±1	47k	275	E	0.4 x 0.7	User	6½	39.95	23.95	
	V-15 Micro IV AT	20-18	28		7.3	3 ±1	47k	275	S	0.7	User	6½	29.95	16.47	
	V-15 Micro IV ACE	20-17	26		7.3	4 ±1	47k	275	E	0.5 x 0.7	User	6½	29.95	16.47	
	V-15 Micro IV AC	20-17	26		7.3	5 ±2	47k	275	S	0.7	User	6½	24.95	13.72	
SATIN	M-18BX	10-40 ±2	30		2.5	0.5-1.5	30		Q	0.1 x 2.5	User	9.5	325.00	190.00	Moving coil.
	M-18X	10-35 ±2	30		2.5	0.5-1.5	30		Q	0.1 x 2.5	User	9.5	240.00	130.00	As above.
	M-18E	10-30 ±2	30		2.5	0.5-1.5	30		E	0.2 x 0.8	User	9.5	195.00	110.00	As above.
	M-117G	20-25 ±2	25		3.0	0.5-1.5	30		E	0.2 x 0.8	User	9.0	155.00	80.00	As above.
SHURE	V15 Type IV	10-25	25	15	4.0	¾-1¼	47k	250	H	†	User	6.4	150.00	60.00	† Symmetrical contact hyperelliptical.
	V15 Type III	10-25	25	15	3.5	¾-1¼	47k	450	E	0.2 x 0.7	User	6.3	90.00	33.00	
	M24H	20-50	22		3.0	1-1½		100	Q	†	User	5.8	84.95	33.00	† Long contact hyperbolic.
	M95ED	20-20	25		4.7	¾-1½	47k	450	E	0.2 x 0.7	User	6.3	74.95	30.85	
	M95EJ	20-20	20		4.7	1½-3	47k	450	E	0.4 x 0.7	User	6.3	59.95	25.55	
	M91ED	20-20	25		5.0	¾-1½	47k	450	E	0.2 x 0.7	User	5.8	64.95	27.90	
	M75ED Type II	20-20	25		5.0	¾-1½	47k	450	E	0.2 x 0.7	User	6.2	64.95	27.90	
	M93E	20-20	20		6.2	1½-3	47k	450	E	0.4 x 0.7	User	5.7	49.95	21.40	
	M70EJ	20-20	20		6.2	1½-3	47k	450	E	0.4 x 0.7	User	5.8	44.95	15.45	
	M70B	20-20	20		6.2	1½-3	47k	450	S	0.6	User	5.8	39.95	12.05	
SONIC RESEARCH	Sonus Gold-Blue	5-20 +2, -1	30	20	4	¾-1¼	47k	400	Q		User	5½	140.00	74.00	
	Sonus Gold-Red	5-20 +2, -1	30	20	4	¾-1¼	47k	400	E		User	5½	125.00	59.00	
	Sonus Gold-Green	5-20 +2, -1	30	20	4	¾-1¼	47k	400	C		User	5½	110.00	44.00	
	Sonus Silver-P	20-20 ±2	30	20	5	1-1½	47k	400	Q		User	5½	80.00	45.00	
	Sonus Silver-E	20-20 ±2	30	20	5	1-1½	47k	400	E		User	5½	70.00	35.00	
	Sonus Blue	5-20 +2, -1	30	20	4	¾-1¼	47k	400	Q		User	5½	125.00	62.00	
	Sonus Red	10-20	30	20	4	¾-1½	47k	400	E		User	5½	104.00	41.00	
	Sonus Green	10-20	30	20	4	¾-1¼	47k	400	C		User	5½	88.00	24.00	
	Standard Silver P	20-20 ±2	30	20	5.0	¾-1½	47k	400	Q		User	5½	70.00	36.00	
	Standard Silver E	20-20 ±2	30	20	5.0	¾-1½	47k	400	E		User	5½	60.00	27.00	
STANTON	600EE	20-20 ±2.5	35		5.0	1-2	47k	275	E	0.3 x 0.7	User	5	55.00	27.75	
	600E	20-20 ±2	35		5.0	1½-3	47k	275	E	0.4 x 0.7	User	5	50.00	25.00	
	600A	20-20 ±2	35		5.0	2-4	47k	275	S	0.7	User	5	45.00	20.25	
	500EE	10-20 ±3	35		5.0	1-2	47k	275	E	0.3 x 0.7	User	5	40.00	25.00	
	500E	10-20 ±2	35		5.0	2-5	47k	275	E	0.4 x 0.7	User	5	35.00	20.00	
	500A	10-20 ±2	35		5.0	2-5	47k	275	S	0.7	User	5	30.00	12.00	
	500AA	10-20 ±2	35		5.0	1-2½	47k	275	S	0.5	User	5	35.00	18.00	
	500AL	20-17 ±2.5	28		5.0	3-7	47k	275	S	0.7	User	5	30.00	12.00	
	780/4DQ	10-50	35		3.0	2 ±½	100k	100	Q		User	5½	125.00	45.00	
	780/Q	10-45	30		3.0	2 ±½	100k	100	Q		User	5½	75.00	33.00	
	681EEE	10-12 ±½	35		3.5	¾-1½	47k	275	E	0.2 x 0.7	User	5½	82.00	41.00	
	681EE	10-10 ±½	35		4.1	¾-1½	47k	275	E	0.2 x 0.7	User	5½	72.00	36.00	
	681A	10-10 ±½	35		5.5	1½-3	47k	275	S	0.7	User	5½	66.00	30.00	
	681SE	10-10 ±½	35		5.5	2-4	47k	275	E	0.4 x 0.7	User	5½	66.00	30.00	
	680EE	20-20	35		4.1	¾-1½	47k	275	E	0.3 x 0.7	User	5½	59.95	31.25	
	881S	10-25	35		0.9	1 ±¼	47k	275	S		User	5.7	150.00	75.00	Stereohedron
STAX	CP-Y/ ECP-1	10-30K	20		240	0.9-1.6	20K	300	E	0.3x0.8	User		560.00	150.00	Integral demodulator box, ECP-1, drives line level inputs, RIAA built-in.
SUMO ELECTRIC	SUMO	20-20 ±2	30	20	3.54	1.25	47k		E	0.2 x 0.5	User	5.5	175.00	75.00	
THORENS	TMC63	20-20 ±2	25	25	0.75	2-3	22		S	0.32	Fact.		425.00	212.50	Moving coil, use only w. Thorens Isotrack I.
	TMC70	20-20 ±2	25	25	0.75	2-3	22		S	0.32	Fact.		425.00	212.50	Moving coil, use only w. Thorens Isotrack II.
WIN LABORATORIES	SDT-10 Type II	5-25	28	22	1V	2			Q	0.2 x 0.5	User	3	360.00	55.00	Solid state/semiconductor with source module.
	Lab Standard	5-25	28	25	1.5V	2			Q		User	3	500.00	100.00	Solid state/semiconductor with source module.

While others are reaching for this technology, Sony brings it within your reach.

It takes a sharpened technical sense to deliver innovation at sensible prices.

Who else but Sony could manage it? We know turntables backwards and forwards. As far back as 1966, we were breaking ground: in that year, we applied a slow-speed, servo-controlled motor to turntables.

Today, we present the PS-X7, X6 and X5. Three fully automatic, direct drive turntables that are a direct challenge to the competition.

And the competition will soon find that we've got the features they don't want to face.

The X-tal Lock. X-act speed accuracy.

A traditional servo system doesn't serve you well enough. It can heat up, creating speed drift.

More critically, increased friction between the stylus and record during loud passages can slow the speed into a range where a conventional servo isn't sensitive enough to read. But your conventional ears can.

Sony's X-tal Lock system cannot be accused of the above. A quartz generator perfectly regulates the servo, locking in speed *electronically*. It's impervious to temperature, load, or voltage changes.

Our brushless and slot-less is matchless.

Sony's new motor gives brushes the brush. The ring shaped permanent magnet rotor and fixed coil eliminate cogging. The torque is high. The rotation smooth. The start-up, quick.

Sony's Speed Monitoring System. Like millions of tiny State Troopers.

The X-tal Lock system is worth x-actly nothing, unless the right information is relayed to it. Our system uses a precise magnetic pulse signal, recorded on the platter's outer rim.

Sony PS-X7

An 8-pole magnetic pick-up head receives it. Then transmits it to the servo electronics.

Most systems use only one pole. By using 8—and averaging them—we get above average accuracy.

Want functional controls? The case is closed!

Our dust cover lives down to its name. It remains closed, protecting record and machine, allowing immediate access to controls without lifting the cover. (On the X7 and X6, the controls are touch sensitive.)

Underneath the cover, you'll find a safety clutch mechanism to protect the tone arm, should it accidentally be grabbed while in motion.

And on the X7 and X6, an optical sensing system—to automatically return the arm at record's end. (In the X7, a carbon fiber tone arm.)

These turntables are even worth more dead, than alive. Because their cabinets are made from an acoustically dead material. They won't vibrate.

Vibration is also cut by our thick rubber mat, heavy aluminum platter and viscous filled rubber feet. (The X7's mat is filled with the same damping material).

Much has been engineered into these turntables that we haven't mentioned, including lightweight tone arms with a cast aluminum alloy headshell.

So tightly built are they that we didn't even have room for bigger prices.

Cartridges are not included

SONY®

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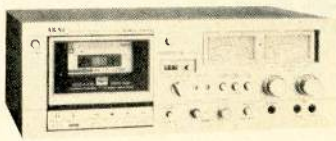
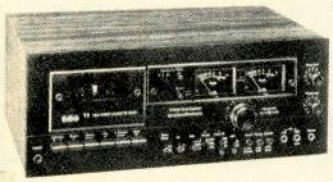
Cassette & Cartridge Tape Decks



Akai GXC-750D

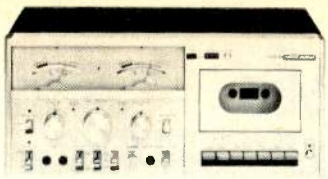


B+K T-3

Denon DR-750

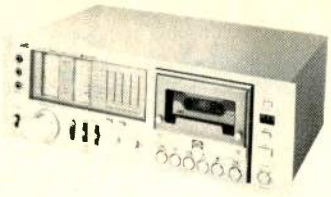
Eumig Metropolitan

MANUFACTURER	Model	X = cassette; 8 = 8-track cartridge; E = Elcaset	Auto Off	Frequency response, Hz-kHz ±dB with best tape	Number of Heads	% wow & flutter, W rms	S/N, dB, without Dolby	S/N, dB, with Dolby	Number of bias & EQ settings	Mike mixing if yes, no. inputs	Locking pause control	Limiter	Memory rewind	Peak level indicator(s)	Dimensions, inches W X D X H.	Net weight, lbs.	Price, $	Notes
AIWA	AD-1250	X	Yes	30-16 ±3	2	0.09	50	60	3		Yes	No	No	Yes	15½ x 6 x 11	10.2	240.00	
	AD-6300	X	Yes	30-16 ±3	2	0.09	50	60	3		Yes	No	No	Yes	16½ x 6½ x 13¼	14.6	260.00	
	AD-6350	X	Yes	25-17 ±3	2	0.08	55	65	3		Yes	No	No	Yes			320.00	
	AD-6400	X	Yes	20-17 ±3	2	0.05	55	65	3		Yes	No	No	Yes			380.00	
	AD-6550	X	Yes	20-17 ±3	2	0.05	55	65	3		Yes	No	No	Yes	17¾ x 6 x 13	18.5	430.00	
	AD-6600	X	Yes		2	0.04			3		Yes	No	Yes	Yes			480.00	
	AD-6800	X	Yes	20-19 ±3	3	0.05	55	65	3		Yes	Yes	Yes	Yes	18½ x 6½ x 13¼	24.3	650.00	
	AD-6900	X	Yes	20-20 ±3	3	0.04	58	68	3	2	Yes		Yes	Yes			800.00	
AKAI AMERICA	GXC-570D	X		30-19 ±3	3	0.06	56	66	3	2	Yes	Yes	Yes	Yes	17.3 x 9 x 10	29	900.00	
	GXC-750D	X		35-18 ±3	3	0.06	56	66	4	2	Yes		Yes	Yes	17.3 x 12.5 x 6.2	21	725.00	
	GXC-730D	X		30-17 ±3	3	0.08	55	65	3	2	Yes	Yes	Yes	Yes	17.3 x 11.9 x 6.9	27	599.95	Two Direction Rec/PB.
	GXC-725D	X		35-17 ±3	3	0.06	55	65	4	2	Yes	Yes	Yes	Yes	17.3 x 11.2 x 6.5	15	399.95	
	GXC-709D	X		35-16 ±3	2	0.06	55	65	4	2	Yes	Yes	Yes	Yes	17.3 x 11.2 x 6.5	14	375.00	
	GXC-706D	X		35-15 ±3	2	0.06	55	65	4	2	Yes	Yes	No	Yes	17.3 x 11.4 x 5.9	14.4	299.95	
	CS-702DII	X		40-15 ±3	2	0.08	54	64	2	2	Yes	Yes	No	Yes	15 x 11.3 x 6.2	15	199.95	
	CR-83D	8	Yes	60-14 ±3	1	0.15	53		1	2	Yes	No	No	No	16.5 x 9.6 x 4.3	12	225.00	
BANG & OLUFSEN	Beocord 5000	X	Yes	30-15	2	0.05	57	65	2	No	Yes	No	No	Yes	18½ x 11 x 3¼	19¼	595.00	Auto. head demagnetization, PPM meters.
B+K	T-1	X	Yes	35-20 ±3	2	0.04	55	63	6	No	Yes	No	No	Yes	15½ x 9¼ x 6	11.7	279.95	All units two speed — 1⅞ & 3¾; specs for response, wow & lutter, & S/N are for 3¾.
	T-2	X	Yes	30-21 ±3	2	0.04	57	66	6	No	Yes	No	Yes	Yes	16¾ x 9¼ x 6	12.8	329.95	
	T-3	X	Yes	25-22 ±3	3	0.035	58	67	6	No	Yes	No	Yes	Yes	18 x 10 x 6½	14.8	499.95	
CONCEPT	ELC	X	Yes	30-16 ±3	2	0.05	56	62	3	2	Yes	Yes	YQES	Yes	19¼ x 11½ x 5½	30	495.00	Auto repeat.
CRAIG	5201	X	Yes	30-16		2	0.1	50	60	3	2	Yes		Yes	Yes	17 x 6¼ x 11¾	12¾	
	H221	X	Yes	40-15		2	0.15	44	50	2		Yes		No	Yes	16x16x 10½	8¼	
DENON	DR-350	X	Yes	35-15.5	2	0.058	64	64	†2	2	Yes	No	Yes	Yes	17 x 6¼ x 11½	17½	450.00	†W. variable bias control. timer rec. & PB. possible, built-in Dolby
	DR-750	X	Yes	35-18 ±3	2	0.045	65	65	†4	2	Yes	No	Yes	Yes	16¼ x 12 x 8¾	27½	1400.00	Servo capstan control, full-logic function.
DUAL	939	X		20-17 ±3	3	0.04	60	69	3	2	Yes	Yes	Yes	Yes	17¼ x 11 ¾ x 4¼	20	580.00	Auto reverse, fade/edit.
	819	X		20-17 ±3	2	0.05	59	67	3	2	Yes	Yes	Yes	Yes	17¼ x 13¼ x 5¾	20	430.00	Fade/edit
	809	X		20-16.5 ±3	2	0.06	57	65	3		Yes	No	Yes	No	17¼ x 13½ x 5¾	18	300.00	

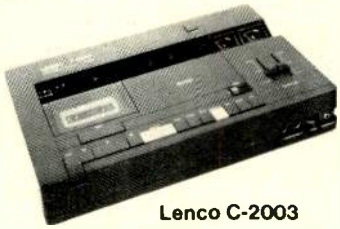


Harman/Kardon HK-3500

Nakamichi 1000 II



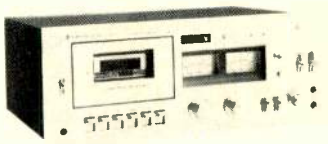
JVC KD-85



Kenwood KX-1030

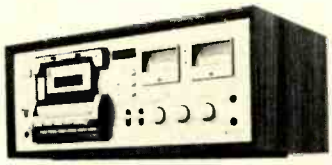
Marantz 5030B

Lenco C-2003

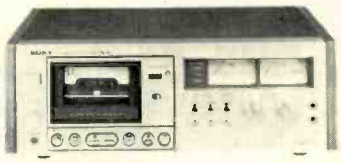


MANUFACTURER	Model	X = cassette; 8 = 8 track cartridge; E = Elcaset.	Auto Off	Frequency response, Hz-kHz ±dB with best tape	Number of Heads	% wow & flutter, W rms	S/N, dB without Dolby	S/N, dB with Dolby	Number of bias & EQ settings	Mike mixing if yes, no. inputs	Locking pause control	Limiter	Memory rewind	Peak level indicator(s)	Dimensions, inches W x D x H.	Net weight, lbs.	Price, $	Notes
EUMIG	CCD	X	Yes	20-20 ±3	3	0.05	64	72	3	2	Yes		Yes	Yes	17¼ x 5½ x 12	16	1300.00	Remote control, solenoids, opto-electronic capstan.
FISHER	CD 4011	X	No	40-13 ±3	2	0.09	50			2	Yes	No	No	No	15 x 8¼ x 5¾	12	129.95	
	CD 4015	X	No	40-13 ±3	2	0.09	50	56		2	Yes	No	No	No	15 x 8¼ x 5¾	12	169.95	
	CR 4025	X	No	40-14 ±3	2	0.09	50	56		2	Yes	No	No	No	15¼ x 12 x 6	13	249.95	
	CR 5115	X	No	30-16 ±3	3	0.07	52	60	3	2	Yes	Yes	No	No	16⅜ x 11¾ x 6⅜	13	299.95	
	CR 5120	X	No	30-17 ±3	3	0.05	53	62	3	2	Yes	Yes	No	Yes	17⅛ x 12½ x 6⅜	22.5	399.95	
	CR 5125	X	No	30-18 ±3	3	0.04	55	64	3	2	Yes	Yes	No	Yes	17⅜ x 12¼ x 4¾	22.5	599.95	With wireless remote control
	CR 5150	X	No	30-18 ±3	3	0.04	55	64	3	2	Yes	Yes	No	Yes	14⅜ x 11⅞ x 5⅜	22.5	699.95	With wireless remote control
	ER 8110	8		35-11		0.15	44			2	Yes	Yes	No	Yes	12⅝ x 10½ x 5	8.2	129.95	
	ER 8120	8		35-11		0.15	44			2	Yes	Yes	No	Yes	12⅝ x 10¼ x 5	8.2	169.96	
	ER 8125	8		32-12		0.15	44	52		1	Yes	Yes	No	Yes	13⅜ x 10 x 5	8.2	199.95	
	ER 8130	8		35-12.5		0.15	44	52		2	Yes	Yes	No	Yes	14⅜ x 10 x 5	8.5	249.95	
	ER 8150	8		40-12		0.15	46	52		2	Yes	Yes	No	Yes	20 x 10¾ x 6	14.5	349.95	8 track & cassette deck
	ER 8150	X		40-12		0.09	50	56		2	Yes	Yes	No	Yes	20 x 10¾ x 6	14.5	349.95	8-track & cassette deck.
HANDIC USA	999	X		30-15		0.1	58	65		2	Yes		Yes	Yes	18½ x 4½ x 9½		209.95	
HARMAN KARDAN	1500	X	Yes	30-15.5	2	0.06	55	63	2		Yes			Yes			259.00	
	2000	X	Yes		2	0.07	54	62	2		Yes			Yes	15 x 10¾ x 5⅜	18	429.00	
	2500	X	Yes		2	0.06	55	63	3		Yes		Yes	Yes			319.00	
	3500	X	Yes		3	0.05	57	65	3	2	Yes		Yes	Yes			479.00	
JVC	KD-10	X	Yes	40-15 ±3	2	0.06	56	66	2		Yes	No		Yes	16¾ x 6 x 10½	9.9	199.96	5 Peak LED Ind.
	KD-25	X	Yes	40-15 ±3	2	0.06	56	66	3		Yes	No		Yes	16¾ x 6 x 10½	11.0	259.95	5 Peak LED Ind.
	KD-55	X	Yes	30-16 ±3	2	0.06	56	66	3		Yes	No		Yes	16¾ x 6 x 10½	12.3	299.95	5 Peak LED Ind.
	KD-65	X	Yes	30-16 ±3	2	0.06	56	66	3		Yes	No		Yes	17¾ x 6¼ x 13	17.6	399.95	Spectro Peak Ind.
	KD-85	X	Yes	30-16 ±3	2	0.05	56	66	3		Yes	No	Yes	Yes	17¾ x 6¼ x 13	21.8	499.95	Spectro Peak Ind.
	KD-3030	X	Yes	30-16 ±3	2	0.05	56	66	3		Yes	No	Yes	Yes	19 x 8½ x 13¼	25.3	529.95	5 Peak LED Ind.
	KD-201	X	Yes	30-16 ±3	2	0.06	56	66	2		Yes	No		Yes	19¾ x 6¾ x 14¼	20.5	369.95	5 Peak LED Ind.
	KD-1770II	X	Yes	30-16 ±3	2	0.05	56	66	3		Yes	No		Yes	16¾ x 5 x 11	12.1	369.95	10 Peak LED Ind.
	KD-2	X	Yes	30-16 ±3	2		57	67	2		Yes	No		Yes	11 x 3⅜ x 11½	8.8	329.95	
	KD-1636II	X	Yes	30-16 ±3	2	0.08	57	67	2		Yes	No		Yes	14¾ x 4 x 9¾	11.7	369.95	
KENWOOD	KX-1030	X	Y	35-15 ±3	3	0.06	55	65	3	Yes					17 x 6¾ x 13¼	16½	425.00	
	KX-830	X	Y	35-13 ±3	2	0.06	52	62	3						17 x 6¾ x 13¼	16½	315.00	

Cassette & Cartridge Tape Decks



Sansui SC-3100

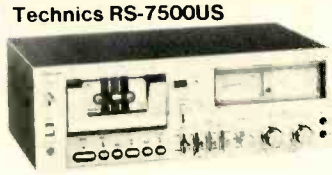


Sony TC-K6

Technics RS-7500US

SAE Two C3D

Superscope CD-310



Toshiba PC-5460

MANUFACTURER	Model	X = cassette, 8 = 8-track cartridge, E = Elcaset.	Auto Off	Frequency response, Hz*kHz ±dB with best tape	Number of Heads	% wow & flutter, W rms	S/N, dB, without Dolby	S/N, dB, with Dolby	Number of bias & EQ settings	Mike mixing (if yes, no. inputs)	Locking pause control	Limiter	Memory rewind	Peak level indicator(s)	Dimensions, inches W x D x H.	Net weight, lbs.	Price, $	Notes
LAFAYETTE	RK-715	X	yes	60-10	2	0.4	40				yes			yes	5½ x 3¼ x 8½	6	69.99	
	RK-735	X	yes	50-13	2	0.25	45		2	2	yes				13 x 3½ x 9¼	9	99.99	
	RKD-150	X	yes	40-12	2	1.5	50	60	2		yes		yes	yes	17¼ x 6 x 12	18	199.99	FM Dolby N/R.
	RKD-225	X	yes	30-13	2	0.08	50	60	3	2	yes		yes	yes	17 x 6½ x 11½	12	149.99	
	RKD-600	X	yes	40-16	3	0.06	53	62	3	2	yes		yes	yes	16½ x 5 x 11¾	15	299.99	FM Dolby N/R.
	RKD-899	8	—	40-10	2	0.3	40			2	yes				16½ x 4¼ x 8¼	13	159.99	
LENCO	C-1202	X	Yes	30-15 ±3	2	0.15	56	68	9	2	Yes	Yes	Yes	Yes	18½ x 13 x 5¼	17½	349.95	
	C-2003	X	Yes	30-18 ±3	3	0.07	56	65	4	2	Yes	Yes	Yes	Yes	18½ x 11½ x 3½	14	195.95	
	RAC-10	X	Yes	30-10 ±3	1	0.2	50								20 x 10 x 8½	19	695.95	10 cassette changer, playback only.
MARANTZ	5030B	X	Yes	35-17 ±3	3	0.05	56	66	3	2	Yes	Yes	Yes	Yes	16½ x 11 x 5¾	14¾	430.95	FM Dolby N/R
	5025B	X	Yes	35-17 ±3	2	0.05	56	66	3	2	Yes	Yes	Yes	yes	16½ x 11 x 5¾	14¾	329.95	
	5010B	X	Yes	35-16 ±3	2	0.07	56	66	3	No	Yes	Yes	No	No	16½ x 11 x5¾	14¾	269.95	
	5000	X	Yes	35-16 ±3	2	0.08	55	64	3	No	Yes	Yes	No	No	16½ x 9 x 5¾	13	219.95	
	1810	X	Yes	35-16 ±3	2	0.1	55	63	3	No	Yes	No	No	No	16½ 9 x 5¾	12¾	189.95	
MITSUBISHI	DT30	X	Yes	30-20 ±3	3	0.05	58	66	3	2	Yes	No	Yes	Yes	16¾ x 14¾ x 6¾	28½	600.00	
	DT10	X	Yes	30-17 ±3	2	0.06	56	64	2	2	Yes	No	Yes	Yes	16¾ x 14¾ x 6¾	23	350.00	
	M-T01	X	Yes	30-17 ±3	2	0.05	56	64	3	2	Yes	No	Yes	Yes	10½ x 9½ x 5½	17½	520.00	
NAKAMICHI	1000 II	X	Yes	35-20 ±3	3	0.05	58	65	2	3	†	No	Yes	Yes	21 x 8½ x 12	38	1650.00	†IC logic control, two capstans, rec. hd. azimuth align. beacon
	700 II	X	Yes	35-20 ±3	3	0.05	58	65	2	3	†	No	Yes	Yes	21 x 5 x 11	28	1140.00	† as above less auto rewind and DNL
	600 II	X	Yes	35-20 ±3	2	0.08	56	63	2	No	Yes	No	Yes	Yes	15¾ x 9 x 7	14.3	655.00	$680.00 in matte black.
	550	X	Yes	40-17 ±3	2	0.08	56	63	2	3	Yes	Yes	No	Yes	12 x 3½ x 14	11.3	630.00	Battery or a.c. power.
	500	X	Yes	40-17 ±3	2	0.08	56	63	3	3	Yes	Yes	Yes	Yes	15 x 4½ x 10	15.5	480.00	
	350	X	Yes	40-15 ±3	2	0.08	51	58	2	3	Yes	No	No	Yes	7½ x 3½ x 9½	6.6	440.00	Incl car bracket & a.c. power pack; Opt case w/rech batt. $125
	250	X	Yes	40-17 ±3	2	0.08	55	62	2	No	No	No	No	No	7½ x 3½ x 9½	6.4	310.00	Inc. car bracket & a.c. power pack; preamp out w tone & bal controls, mates w/ ADS 2002 spkrs.
ONKYO	TA-630D	X	Yes	20-18	2	0.055	58	68	3†		Yes	No	Yes	2	16½ x 11½ x 6¼	13.2	340.00	†Accu-Bias.
	TA-680D	X	Yes	20-20	3	0.05	58	68	3†		Yes	No	Yes	10	17¼ x 14½ x 6¼	23.4	700.00	†Full auto Accu-Bias.

The Eumig CCD. Opto-electronically engineered for absolute recording excellence.

Eumig, one of the world's leaders in electro-mechanical research and development, has introduced a revolutionary new technology to cassette recording. It's the OPTO-ELECTRONIC SERVO CAPSTAN DRIVE SYSTEM incorporated in the unique Eumig CCD. This technology offers so many advantages that the Eumig CCD will out-perform every other cassette transport.

Ultra-Precision: The unique Eumig photo disc

Other decks use old-fashioned belts and flywheels to control the capstan. In the Eumig design these are replaced by a lightweight disc, photo-etched with 2500 radii, spaced precisely 1/50mm apart. When rotated, these radii create 15,000 pulses per second for instantaneous optically-sensed speed corrections. Wow and flutter is a mere 0.05% WRMS, and speed accuracy is ±1%.

The Eumig photo disc weighs about 1/70th as much as a typical flywheel. When combined with an almost inertia-free, coreless drive motor, the CCD offers a startup time of less than 0.04 seconds, which means you never hear the wowing sound after a pause in recording. And the CCD boasts the fastest rewind time in the world—an astonishingly low 40 sec. (C-60).

Rugged reliability

The Opto-Electronic Servo System is only one among many dramatic advantages of the Eumig CCD. It offers three precision heads of our own design, mounted in a die-cast aluminum carrier made at our own facilities (as are virtually all parts of the CCD), for greatest precision. The Eumig CCD is engineered with circuit boards rather than wires, for utmost reliability.

Advanced technology features

The comprehensive features of the CCD reflect Eumig's innovative technological approach. Two parallel LED displays allow simultaneous monitoring of both channel levels. Full solenoid/MOS logic is operated by feather-touch controls with logic-programmed LED indicators, and the flexible two-input mixing facilities use strictly DC controlled circuitry.

Perfect recording every time

Perfect performance is guaranteed with every type of tape because the Eumig CCD offers virtually flat frequency response to 20,000Hz (chrome); Dolby calibration adjustment for different tape sensitivities; and an azimuth adjustment to optimize high frequency performance with each and every tape.

The Eumig CCD, probably the finest deck in the world, is now available for $1300, including full-function remote control, at select audio outlets throughout the country. Write to us for the name of the dealer nearest you. Then listen and compare. We believe you'll agree—it's incomparable.

eumig

Eumig (USA) Inc., Lake Success Business Park, 225 Community Drive, Great Neck, New York 11020, (516) 466-6533

Enter No. 40 on Reader Service Card

Cassette & Cartridge Tape Decks

MANUFACTURER	Model	X = cassette; 8 = 8-track cartridge; E = Elcaset.	Auto Off	Frequency response, Hz-kHz ±dB with best tape	Number of Heads	% wow & flutter, W rms	S/N, dB, without Dolby	S/N, dB, with Dolby	Number of bias & EQ settings	Mike mixing († yes, no. inputs.	Locking pause control	Limiter	Memory rewind	Peak level indicator(s)	Dimensions, inches W X D X H.	Net weight, lbs.	Price, $	Notes
PHILIPS HIGH FIDELITY	N2535	X	Yes	40-14 ±3	2	0.1	56	65	3	No	Yes	No	No	Yes	19 x 10½ x 6	11	199.95	
PIONEER	CT-F1000	X	Yes	30-17 ±3	3	0.05	54	64	3	2	Yes	Yes	Yes	Yes	16½ x 14¼ x 7½	26	600.00	
	CT-F900	X	Yes	30-17 ±3	3	0.04	54	64	3	No	Yes	No	Yes	Yes	16½ x 14¼ x 7½	24¼	475.00	
	CT-F700	X	Yes	30-16 ±3	2	0.05	54	64	3	No	Yes	No	Yes	Yes	16½ x 12 x 7½	18¾	375.00	
	CT-F6262	X	Yes	40-15 ±3	2	0.08	52	62	3	No	Yes	No	No	Yes	16¼ x 12½ x 7	18½	300.00	
	CT-F4242	X	Yes	40-15 ±3	2	0.08	52	62	3	No	Yes	No	No	No	15 x 12½ x 6	15¾	225.00	
	CT-F500	X	Yes	40-15 ±3	2	0.05	54	64	3	No	Yes	No	No	No	15 x 10¼ x 5½	11	175.00	
QUADRAFLEX	PCD388	X	Yes	30-14 ±3	2	0.09	51	61	3		Yes			Yes	16½ x 5½ x 12	18	229.95	
	PCD488	X	Yes	30-15 ±3	2	0.07	52	62	3	2	Yes		Yes	Yes	17 x 5¾ x 11¾	18.6	349.95	MPX Filter Switch.
RADIO SHACK	SCT-30	X	Yes	30-16 ±3	3	0.06		61	3	2	Yes	No	No	Yes	18 x 10 x 5½		379.95	Dolby FM.
	SCT-16	X	Yes	30-15 ±3	2	0.07		60	3	2	Yes	No	No	No	15½ x 5½ x10		259.95	As above.
	SCT-18	X	Yes	30-14 ±3	2	0.12		59	3	2	Yes	No	No	No	15½ x6 x 9½		199.95	As above.
	SCT-17	X	Yes	30-13 ±3	2	0.19		54	3	2	Yes	No	No	No	11½ x 3½ x 9		139.95	
	TR-802	8	Yes	50-13 ±3	2	0.15		55		2	Yes	No		No	16½ x 5 x 10¼		179.95	
	TR-883	8	Yes	50-13 ±3	2	0.15	48			2	Yes	No		No	14¼ x 4 x 8		129.95	
	TR-884	8	Yes	50-10 ±3	2	0.2	45			2	No	No		No	13 x 4¼ x 8¾		89.95	
REFERENCE	712D	X	Yes	30-16 ±3	2	0.06	56	62	3	2	Yes	No	Yes	2	17¼ x 5¾ x 10¼	13½	379.95	FM Dolby N/R.
ROTEL	RD 2200	X	Yes	22-16 ±3	2	0.05	55	64	†3	2	Yes	No	Yes	Yes	19¼ x 12x 6	22	390.00	†Variable bias w. ferric tape. Bar-type LEDs.
	RD 15F	X	No	30-15 ±3	2	0.08	53	62	2	2	Yes	No	No	Yes	17¼ x 10½ x 5¾	17½	240.00	
SAE	C3D	X	Yes	30-18 ±3	2	0.06	56	64	3	No	Yes	No	Yes	No	17.4 x 14 x 5.3	18	400.00	Full logic control, opt. remote control.
SANSUI	SC 5100	X	Yes	30-14 ±3	2	0.05	57	67	3	2	Yes	Yes	Yes	Yes	19¾ x 13 x 8¼	29.8	690.00	Solenoid-logic control.
	SC 3100	X	Yes	30-14 ±3	2	0.06	57	67	3	2	Yes		Yes	Yes	18x12¾ x 8	18.3	480.00	
	SC 2100	X	Yes	30-14 ±3	2	0.08	57	67	3	2	Yes				18 x 12¾ x 8	18.3	480.00	
	SC 1100	X	Yes	35-13 ±3	2	0.08	54	64	3		Yes				17¾ x 12 x 6¾	14.1	280.00	
	SC 5110	X	Yes	30-14 ±3	2	0.05	57	67	3	2	Yes	Yes	Yes	Yes	19 x 12¾ x 7¾	27.6	690.00	Solenoid logic control.
	SC 3110	X	Yes	30-14 ±3	2	0.06	57	67	3	2	Yes		Yes	Yes	19 x 13½ x 6¾	18.3	500.00	Rack mountable with detachable handles.
	SC 2110	X	Yes	30-14 ±3	2	0.08	57	67	3		Yes				19 x 12 x 6½	18.3	410.00	As above.
	SC 1110	X	Yes	35-13 ±3	2	0.08	54	64	3		Yes				19 x 12 x 6½	15	270.00	As above.
SANYO	RD5030	X	Yes	30-16 ±3	2	0.08		62	3	2	Yes	Yes	No	No	5¼ x 16½ x 11¼		139.95	
	RD 5250	X	Yes	30-16 ±3	2	0.05		64	3	2	Yes	Yes	No	No	6 x 16¼ x 11½		169.95	
	RD 5300	X	Yes	30-16 ±3	2	0.05		63	3	2	Yes	Yes	No	No	6 x 16½ x 11½		189.95	
	RD 5350	X	Yes	30-17 ±3	2	0.04		64	3	2	Yes	Yes	No	Yes	6 x 16½ x 11½		219.95	
H.H. SCOTT	630 D	X	Yes	30-16	2	0.075	56	64	3	2	Yes	No	Yes	Yes			199.95	
SONY	TC-K8B	X	Yes	30-16 ±3	2	0.045	60	70	3	2	Yes	Yes	Yes	Yes	18¼ x 6¾ x 12¾	24	850.00	Opt. remote control, solenoid switches.
	TC-K7II	X	Yes	30-16 ±3	2	0.045	60	70	3	2	Yes	Yes	Yes	Yes	17 x 6¾ x 12¾	23¼	540.00	As above.
	TC-K6	X	Yes	30-16 ±3	2	0.05	59	69	3	2	Yes	No	Yes	Yes	18¼ x 6¾ x 12¼	21	400.00	Solenoid switches.
	TC-K5	X	Yes	30-16 ±3	2	0.05	59	69	3	No	Yes	No	Yes	Yes	17¼ x 5¾ x 11½	15¼	300.00	
	TC-K2A	X	Yes	40-14 ±3	2	0.06	57	67	3	No	Yes	No	No	No	17¼ x 5¾ x 10¾	10½	200.00	
	EL-7	E†	Yes	25-22 ±3	3	0.04	62	72	3	Yes	Yes	No	Yes	No	17 x 6¾ x 12¾	28¾	900.00	†Elcaset.
	EL-4	E†	Yes	25-20 ±3	2	0.06	62	72	Auto	No	Yes	No	Yes	No	17 x 6¾ x 12¾	22¾	500.00	†Elcaset.
	TC-158SD	X	Yes	30-15 ±3	2	0.08	59	69	3	No	Yes	Yes	No	Yes	13¾ x 4 x 9½	10½	380.00	4-way power.

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One of these cassettes can reproduce up to 4,000,000 hertz with extreme linearity. Its tape surface is mirror-smooth, because the slightest variation would severely limit its remarkable response and dramatically increase noise. The millions of magnetic particles on its surface are incredibly uniform in size, orientation and distribution. To increase output and dynamic range. Minimize distortion. And reduce noise even further.

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Now, with high-bias Fuji FX-I, our engineers have brought the benefits of Beridox video technology to audiocassettes. Delivering linear response, low noise and wide dynamic range to fully utilize all the performance built into today's cassette tape equipment.

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FUJI

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Cassette & Cartridge Tape Decks

MANUFACTURER	Model	X = cassette; 8 = 8-track cartridge; E = Elcaset	Auto Off	Frequency response, Hz-kHz ±dB with best tape	Number of Heads	% wow & flutter, W rms	S/N, dB, without Dolby	S/N, dB, with Dolby	Number of bias & EQ settings	Mike mixing († yes, no. inputs)	Locking pause control	Limiter	Memory rewind	Peak level indicator(s)	Dimensions, inches W X D X H	Net weight, lbs.	Price, $	Notes
SUPERSCOPE	CD-303	X	Yes	40-14 ±3.5	2	0.15	48		2	No	Yes	Yes	No	No	13¾ x 9¼ x 3¼	6¾	99.95	Separate l/r-record meters.
	CD-304	X	Yes	40-14 ±3.5	2	0.15	48	54	2	No	Yes	Yes	No	No	13¾ x 9¼ x 3¼	6¾	109.95	Dolby system, separate l/r-record level meters.
	CD-310	X	Yes	35-14 ±3	2	0.1	48	58	3	No	Yes	Yes	No	No	14¼ x 11¼ x 4¾	11	149.95	As above.
	TDR-820	8	Yes	50-10 ±3	2	0.15	48		1	No	Yes	Yes	No	No	14¼ x 11¼ x 4¾	12½	144.95	Fast Forward, tape counter.
	TDR-830	8	Yes	50-10 ±3	2	0.15	48	54	1	No	Yes	Yes	No	No	14¼ x 11¼ x 4¾	12½	179.95	Dolby system, fast forward, & tape counter.
TANDBERG	TCD320	X	Yes	40-17 ±3	2	0.09	56	66	2	No	Yes	No	No	Yes	18½ x 4¼ x 9	15	650.00	3 Motors, dual capstan.
	TCD340A	X	Yes	40-18 ±3	3	0.08	56	66	2	No	No	No	Yes	Yes	18½ x 4¼ x 9	15	1,150.00	Actillinear recording system, 3 motors, dual capstan.
	TCD340AM	X	Yes	40-20 ±3	3	0.08	60	70	3	No	No	No	No	Yes	18½ x 4¼ x 9	15	1300.00	Adjusted for metal particle tape.
TEAC	A103	X	Yes	30-14 ±3	2	0.10	53	63	4	No	Yes	No	No	No	16¾ x 11½ x 6¼	11	250.00	
	A105	X	Yes	30-15 ±3	2	0.09	53	63	4	No	Yes	No	No	No	16¾ x 11½ x 6¼	11	300.00	
	A303	X	Yes	30-16 ±3	2	0.07	55	65	4	No	Yes	No	Yes	Yes	16¾ x 11½ x 6¼	18	400.00	
	A601R	X	Yes	30-16 ±3	2	0.07	55	65	9	2	Yes	No	Yes	No	17½ x 12½ x 7	26½	600.00	
	A700	X	Yes	30-16 ±3	2	0.05	57	67	9	No	Yes	No	No	Yes	17½ x 12½ x 7	24	550.00	
	A800	X	Yes	30-18 ±3	3	0.05	58	68	9	2	Yes	No	Yes	Yes	17½ x 12½ x 7	30½	725.00	
	C-1	X	Yes	30-18 ±3	3	0.04	58	68	9	No	Yes	No	Yes	Yes	19 x 14 x 6½	32	1300.00	
TECHNICS	RS-9900US	X	Yes	25-20 ±3	3	0.04	57	67	3	2	Yes	No	Yes	Yes	19 x 14¾ x 7¾	43	1600.00	Two chassis construction, var. & fixed bias & EQ settings.
	RS-M85	X	Yes	20-18 ±3	2	0.035	59	69	3†	No	Yes		Yes	Yes	19 x 16 x 4	23	650.00	† Variable & fixed bias & EQ settings.
	RS-631	X	Yes	30-17	2	0.06	57	67	9	2	Yes	No	Yes	Yes	18 x 10½ x 6	17¼	300.00	Memory replay.
	RS-630TUS	X	Yes	30-17	2	0.09	53	63	4	No	Yes	No	No	Yes	16¼ x 12 x 5½	13¼	260.00	
	RS-616	X	Yes	30-15	2	0.07	56	66	9	No	Yes	No	Yes	No	17 x 10¾ x 5¾	11	200.00	Rewind autoplay.
	RS-646DS	X	Yes	50-14	2	0.10	55	65	4	No	Yes	Yes	No	No	14¼ x 11 x 4¼	12½	330.00	A.c./d.c. battery portable.
	RS-686DS	X	Yes	50-16 ±3	3	0.07	53	63	4	No	Yes	Yes	No	Yes	9½ x 8 x 3	6¼	650.00	A.c./d.c. battery port. w/ monitor speaker.
	RS-7500US	E	Yes	25-22 ±3	3	0.06	60		3	2	Yes	No	Yes	No	19 x 13¾ x 10	30.8	680.00	Elcaset. Separate input/output level controls, auto bias & eq. adj.
TOSHIBA	PC5460	X	No	20-18	2	0.05		69	3	2	Yes	No	No	Yes	16½ x 6 x 11	12¼	339.95	
	PC4460	X	No	30-16.5	2	0.05		69	3		Yes	No	No	Yes	16½ x 6 x 11	11¾	269.95	
	PC3460	X	No	30-16.5	2	0.06		67	3		Yes	No	No	Yes	16½ x 5¾ x 11	11¾	199.95	
	PC2460	X	No	30-14	2	0.1		65	2		Yes	No	No	Yes	16½ x 6½ x 11	9¾	149.95	
TRANSAUDIO	4000	X	Yes	40-13.5 ±3	2	0.14	48	53	2		Yes				13¾ x 9 x 2	11½	159.95	
	4500	X	Yes	40-14 ±2	2	0.12	49	54	2		Yes			Yes	16 x 10 x 3	14½	199.95	
	5500	X	Yes	40-14.5 ±2	2	0.1	50	56	3		Yes			Yes	15¼ x 5½ x 10	8½	199.95	
	3850	8	Yes	40-10 ±2	2	0.15	48				Yes				15¼ x 6 x 8¾	14	149.95	
YAMAHA	TC-1000	X		30-18 ±3	2	0.05	60	69	†	2	Yes	No	Yes	Yes	18¼ x 13 x 6¾	22	595.00	† Variable bias & pitch adjust.
	TC-520	X		30-15 ±3	2	0.07	57	66	†	2	Yes	No	No	Yes	17¼ x 13 x 6¼	16½	295.00	† Variable bias adjustment.
	TC-800GL	X		30-15 ±3	2	0.06	50	58		2	Yes	Yes	Yes	Yes	12¼ x 12¼ x 3¾		390.00	
	TC-800D	X		30-15 ±3	2	0.06	50	58			Yes	No	Yes	Yes	12¼ x 12¼ x 3¾		310.00	
	TC-320	X		40-16 ±3	2	0.07	57	65	2	2	Yes	No	No	No	17¼ x 11¼ x 4½	14	225.00	
ZENITH RADIO	MC9070	X	YES	40-15 ±3	2	0.08	52	62	3	No	Yes	No	No	Yes	16¾ x 9½ x 6	10¾	249.95	

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Only the B77 delivers the "ruler-flat" frequency response you get from Willi Studer's legendary head design. Only the B77 combines the convenience of push-button digital logic control of tape motion, professional VU meters with built-in peak level indicators, and a self-contained tape cutter/splicer.

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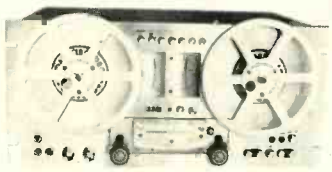
Open-Reel Tape Decks

Tandberg 20A



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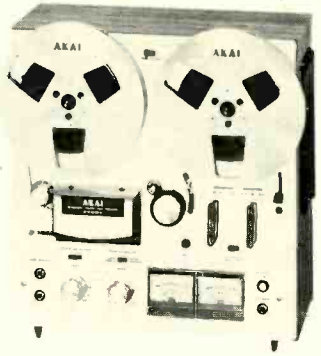
Technics RS-1520US



Akai 1722 II

MANUFACTURER	Model	Speeds — See letter code	Maximum reel size, inches	Number of heads	Number of tracks	Number of channels	Number of motors	Drive motor type	Drive to capstan	Freq. resp., Hz-kHz ±dB with best tape at highest machine speed	Wow & Flutter, DIN 45-507, %	S/N, db	Output level at 0 VU, mV	Dolby N/R included	Mike mixing	Mike input Z, ohms	Record level indicator(s), Type and quantity	Dimensions, inches, W X H X D	Weight, lbs.	Price, $	Letter Code For Speeds (A B C D E F G H)	Notes
AKAI AMERICA	Pro-1000		10½	4	2/4	2	3	a.c. Servo	Dual Capstan Belt	†30-25 ±3	0.025	60	775	No	Yes	5k	2 mtrs.	Mech-18 x 16¼x8 / Amp-18 x 9 x9	mech-62.5 / Amp-22.5	1995.00		†Freq. Resp. 50-20 k ±1 dB at 0 VU. / Amp Mech separated.
	GX-630DSS	B	10½	4	4	4/2	3	a.c. Servo	Direct	30-21 ±3	0.06	54	775	No		5K	4 mtrs.	17.4x20.7 x9.4	45	1225.00		
	GX-270DSS	B	7	4	4	4/2	3	a.c. Servo	Direct	30-21 ±3	0.07	54	775	No		5K	4 mtrs.	17.3 x 18.3x7.5	40	1050.00		
	GX-650D	E	10½	3	4	2	3	a.c. Servo	Dual Capstan Belt	30-30 ±3	0.04	60	775	No		5K	2 mtrs.	17.4 x 20.6x10	58	1295.00		
	GX-630DB	B	10½	3	4	2	3	a.c. Servo	Direct	30-25 ±3	0.06	60	775	No		5k	2 mtrs	17.4x18.3 x9.4	41.8	1000.00		GX-630D, without Dolby, $900.00.
	GX-270D	B	7	3	4	2	3	a.c. Servo	Direct	30-23 ±3	0.07	60	775	No		5k	2 mtrs	17.4x15.9 x8.3	35	775.00		2-way PB.
	GX-267D	B	7	6	4	2	2	a.c. Servo	d.c.	30-25 ±3	0.06	60	775	No		5k	2 mtrs.	17.3 x 18.5x9.8	45.5	850.00		2-way rec/PB.
	GX-230D	B	7	3	4	2	3	a.c. Servo	Direct	30-23 ±3	0.07	60	775	No		5k	2 mtrs.	17.4x15.9 x8.3	34	675.00		2-way PB
	GX-4000DB	B	7	3	4	2	1	Induc. Mtr.	Belt	30-24 ±3	0.08	60	775	Yes		5k	2 mtrs.	17.3x12.4 x9.1	29.1	499.95		GX-4000D, without dolby, $399.95.
	1722II	B	7	2	4	2	1	2-speed Induc. Motor	Belt	30-21 ±3	0.14	56		No	No	5k	2 mtrs.	14x14.1 x9.8	29	475.00		
AMPEX	ATR 102	E & 30 †	14	3	2	2	3	d.c. Servo	Direct	35-28 ±2	0.03	76	1230	No	No		2 mtrs.	21 x 23x34	155	6740.00		¼" Tape Version
	AG 440C-2		10½	3 or 4	2 or 4	2	3	d.c. Servo	Direct	50-20 ±2	0.04	69	1230	No	No		2 mtrs.	24 x 43½x27½	192	5445.00		¼-In. version. † Speeds opt., B,E, or 15 & 30
	ATR 700	B or F	10½	3 or 4	2 or 4	2	3	d.c. Servo	Direct	40-18 ±2	0.08	60	1230	No	Yes		2 mtrs.	17½ x 21¾x9¾	62	1895.00		
PHILIPS HIGH FIDELITY	N4504	A	7	3	4	2	3	d.c.	Direct	35-26	0.05	60	250	NO	No	2K	2 Mtrs.	16 ⅜ x 16 ¾ x7¼	22	449.95		Tacho control capstan motor
	N4506	A	7	3	4	2	3	d.c.	Direct	35-26	0.05	60	250	No	Yes	2K	2 Mtrs. 1 LED	21 ¾ x17 x8¼	25	649.95		Sound on sound, built-in preamp, cueing
PIONEER	RT-2044	F	10½	3	4	4	3	Hys. Sync	Belt	30-28 ±3	0.04	55	450	No	Yes	27k	4 mtrs.	18-⅛ x 27⅜ x 10⅞	95	1,625.00		
	RT-2022	F	10½	3	2	2	3	Hys. Sync	Belt	30-28 ±3	0.04	57	450	No	Yes	27k	2 mtrs.	18⅛ x 21⅜ x 10⅞	78	1,250.00		
	RT-1050	F	10½	3	2	2	3	Hys. Sync	Belt	30-22 ±3	0.04	57	316	No	Yes	20k	2 mtrs.	18¼ x 9½ x 17¾	49¾	800.00		
	RT-1020L	B	10½	3	4	2	3	Hys. Sync	Belt	40-20 ±3	0.08	55	316	No	Yes	20k	2 mtrs.	17¼ x 9x17	46¼	750.00		
	RT-1011L	B	10½	3	4	2	3	Hys. Sync	Belt	40-20 ±3	0.08	55	316	No	Yes	20k	2 mtrs.	17x9 x 17	41	675.00		
	RT-707	B	7	4	4	2	3	A.C. FG Servo	Direct	30-24 ±3	0.05	58	450	No	Yes	27k	2 mtrs.	19x14 x9	44	600.00		
	RT-701	B	7	3	4	2	3	A.C. FG Servo	Direct	30-24 ±3	0.05	58	450	No	Yes	27k	2 mtrs.	19x14 x9	43	525.00		
TANDBERG	T20A	E	10½	3	2 & 4	2	4	phase lock	Belt	20-26 ±2	0.04	69	1500	No	Yes	50-700	2 mtrs.	17¼ x 17½x6	38	1300.00		
TEAC	A2300SX	B	7	3	4	2	3	Hys Sync	Belt	40-20 ±3	0.08	65	300	No	Yes	600	2 Mtrs.	17½x15½ x8½	50	700.00		
	A2300SD	B	7	3	4	2	3	Hys Sync	Belt	40-20 ±3	0.08	65/74	300	Yes	Yes	600	2 Mtrs.	17½x15½ x8½	50	800.00		
	A2300SR	B	7	3	4	2	3	Hys Sync	Belt	30-20 ±3	0.08	65	300	No	Yes	600	2 Mtrs.	17½x15½ x8½	50	800.00		

(continued)

Introducing the new TDK necessities.

A complete selection of unique, high quality recording accessories.

Even today's sophisticated cassette decks are only as good as the tape you put into them. But once you realize just how good cassette high fidelity can be, regular maintenance and proper set-up become as necessary to your ears as having the right cassette and deck.

So we've developed a line of accessories which are unique in features, engineered to TDK's precision standards, and are just plain useful:

- Instant Head Demagnetizer: battery operated in a compact cassette shell for one-second, hazard-free discharge of magnetic build-up on even the most out-of-the-way heads on virtually any deck; home, auto or portable.
- Level Adjust Test Tape: customized from our professional line, for sure-fire channel balance when recording or playing back.
- Endless Cassettes: exclusive TDK engineering for repeated messages or environmental sound tapestries, etc.
- Quality Index Cards and Cassette Labels: thoughtfully designed to help you maintain order in your library.
- Head Cleaning Kit: specially-engineered for more occasional, full-scale maintenance, featuring non-toxic aerosol cleaning agent, and brush, inspection mirror and cleaning probes.

Plus of course, our elegant CP-36 Deluxe Cassette Storage Cabinet, 7 and 10-inch metal and 10-inch plastic take-up reels, and head cleaner cassette. We've offered the state of the art in cassettes for 10 years. The new TDK necessities will help you get the high level of performance and enjoyment from your tape, deck and music that you've come to expect over that time... for some time to come.

TDK Electronics Corporation, Garden City, New York 11530.

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The Machine for your Machine©

Enter No. 79 on Reader Service Card

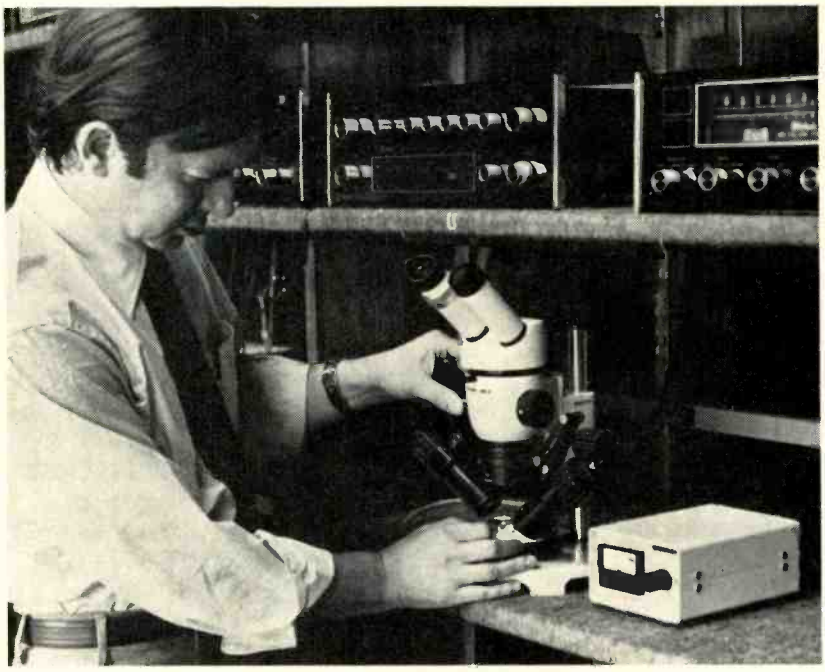
Open-Reel Tape Decks

MANUFACTURER	Model	Speeds — See letter code	Maximum reel size, inches	Number of heads	Number of tracks	Number of channels	Number of motors	Drive motor type	Drive to capstan	Freq. resp. Hz-kHz ±dB with best tape at highest machine speed	Wow & Flutter, DIN 45-507, %	S/N, db	Output level at 0 VU, mV	Dolby N/R included	Mike mixing	Mike input Z, ohms	Record level indicator(s), Type and quantity	Dimensions, inches, W X H X D	Weight, lbs.	Price, $	Notes
TEAC (continued)	A3300SX	B	10½	3	4	2	3	Hys Sync	Belt	40-24 ±3	0.06	65	300	No	Yes	600	2 Mtrs.	17½x17½ x8½	60	900.00	
	A3300SR	B	10½	3	4	2	3	Hys Sync	Belt	30-24 ±3	0.06	65	300	No	Yes	600	2 Mtrs.	17½x17½ x8½	60	1,050.00	
	A3300SX 2T	F	10½	3	2	2	3	Hys Sync	Belt	30-26 ±3	0.04	65	300	No	Yes	600	2 Mtrs.	17½x17½ x8½	60	1,000.00	
	A4300SX	B	7	3	4	2	3	Hys. Sync	Belt	40-24 ±3	0.05	65	300	No	Yes	600	2 Mtrs.	17½x19¼ x8½	63	1,400.00	
	A6100 MK II	F	10½	4	2	2	3	Hys Sync	Belt	40-22 ±3	0.03	67	300/ 775	No	Yes	600	2 Mtrs.	17½x20½ x8½	63	1,350.00	2 Track Play/Rec., ¼ Track Play
	A6600	B	10½	4	4	2	3	d.c. Servo	Belt	30-24 ±3	0.05	65	300	No	Yes	600	2 Mtrs.	18¾x 21¼x10½	70	1,400.00	Continuous Rev & Fwd Play-back
	A2340SX	B	7	3	4	4	3	Hys Sync	Belt	30-22 ±3	0.08	62	300	No	Yes	600	4 Mtrs.	17½x13¾ x8¾	60	1,125.00	Simul. Sync.
	A3440	F	10½	3	4	4	3	d.c. Servo	Belt	30-22 ±3	0.04	65	300	No	No	600	4 Mtrs.	20½x17½ x9¼	68	1,500.00	Simul. Sync.
TECHNICS	RS-1500US	E	10½	4	2	2	3	d.c. Direct		30-30 ±3	0.018	60	550	No	Yes	200-10k	2 Mtrs.	19½x17½ x10¼	55	1600.00	
	RS-1520	E	10½	4	2	2	3	d.c. Direct		30-30 ±3	0.018	58		No	Yes		2 Mtrs.			2000.00	Same as RS- 1500 US, but pro version.
	RS-1506US	E	10½	4	4	2	3	d.c. Direct		30-30 ±3	0.018	56	550	No	Yes	200-10k	2 Mtrs.	18x17½ x10¼	55	2000.00	Quarter-track version of RS-1500US.
	RS-1700	E	10½	6	4	2	3	d.c. Direct		30-30 ±3	0.018	56	550	No	Yes	200-10k	2 Mtrs.	18x17½ x10¼	56½	2000.00	2-way rec/PB.
TELEX	1422	E	8¼	4	2	2	3	d.c. Servo	Belt	35-22 ±2	0.17	60	1200	No	Yes	150	2 mtrs.	19x12¾ x11½	47	1950.00	Optional remote control.
UHER	4400IC	C	5	2	4	2	1	servo	idler	35-20 ±2	0.15	62	1000	No	No	low	peak 2	11x3½ x9	8	799.00	
	5000	†	5¾	2	2	1	1	hys sync	idler	40-16 ±3	0.2	60	900	No	No	low	peak 1	13x6x13	19	725.00	†3¾, 1⅞, 15/16 ips.
	4000IC	C	5	2	2	1	1	servo	idler	35-20 ±2	0.15	64	1000	No	No	low	peak 1	11x3½ x9	8	675.00	

Letter Code For Speeds

	A	B	C	D	E	F	G	H
15					x	x	x	
7½	x	x	x		x	x	x	
3¾	x	x	x		x		x	x
1⅞	x		x	x			x	x
15/16			x					

Signet dealers are a breed apart.



Simon Zreczny, Pres., *Audio Consultants*, Libertyville and Evanston, IL

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For instance, to hold a Signet franchise, each dealer must have—and know how to use—a powerful microscope. Like the $5,500 Wild-Heerbrugg stereo Model AT-M5A we helped to develop. It reveals in intimate 3-dimensional detail the construction and condition of any phono stylus.

We think it's important that your dealer be able to check your stylus for wear, tip geometry, tip polish, damage or dirt. Signet dealers agree.

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The "better than" equalizer

crown EQ-2

The Crown EQ-2 is a ½-octave equalizer on octave centers with two channels, eleven bands per channel. ±15dB of boost/cut is available for each band. That's one reason why the EQ-2 is a better choice. But there's much more.

Adjustable center frequencies – The Crown EQ-2 is better than a parametric because you can control boost and cut for eleven bands per channel with adjustable center frequency for all 22-bands. It cures many more room problems.

Simple set-up – The Crown EQ-2 is better than a ⅓-octave graphic because it's simpler to set up, yet provides full-range control. The EQ-2 can also be cascaded to create a 22-band, ½-octave mono equalizer.

Unique tone control – The Crown EQ-2 is better than other equalizers because of its unique tone control section. Shelving-type bass and treble controls with selectable hinge points reduce phase shift problems, since low and high frequency problems can be resolved before equalizing begins. This feature also permits quick reshaping of the response curve for different room populations without altering basic equalization.

Superb specifications – The Crown EQ-2 is "better than" because of a signal-to-noise ratio 90dB below rated output, and THD less than .01% at rated output.

Reliability – It's "better than" because it's Crown. That means reliability, ruggedness, and better value.

New RTA – It's also "better than" because Crown now manufactures a real time analyzer which used in conjunction with EQ-2, makes the job of equalizing even easier.

To hear the EQ-2 and see the RTA-2 in action, schedule a trip to a nearby Crown dealer. If you can't locate one quickly, write us. We'll tell you where they are, and send you EQ-2 literature.

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Headphones


AKG K-140


Autio-Technica ATH-7


Beyer ET-1000


Infinity ES-1

MANUFACTURER	Model	Operating principle (dynamic, electrostatic,)	Frequency Range, HZ to kHz	Impedance, ohms	Sensitivity, dB SPL for 1 mW input	Maximum input, mV	Cord Length, feet	% THD at 95 dB SPL	Cord Style Flat—F Coiled—C	Weight, ounces	Price	Notes
ACUTEX	HTS	Dyn.	40-18	8	96	1000	12	6.3	C	10	85.00	
AKG	K-240	D	16-20	600	96.5	400	10	1	F	10½	79.00	six passive diaphragms in each ear cup.
	K-141	D	20-20	600	97.5	400	10	1	F	6¼	64.00	
	K-140S	D	20-20	600	97.5	400	10	1	F	6¼	49.00	
	K-40	D	50-15	200	94	400	10	1	F	6	24.00	
AUDIO-TECHNICA	AT701	Dyn	30-20	4-16	94		11½	0.8	F	10½	39.95	
	AT702	Dyn	25-20	4-16	97		11½	0.5	F	10½	59.95	
	AT703	Dyn	20-20	4-16	97		11½	0.4	F	10½	79.95	
	AT705	ES	20-22	4-16	98		6	0.35	F	9	99.95	With impedance matching adapter.
	AT706	ES	10-22	4-16	98		6	0.25	F	9	149.95	With impedance matching adapter.
	ATH-1	Dyn	30-20	4-16	93		8¼	0.8	F	4¾	29.95	
	ATH-3	Dyn	25-20	4-16	94		11½	0.5	F	7	59.95	
	ATH-5	Dyn	20-20	4-16	96		11½	0.4	F	7¼	79.95	
	ATH-6	ES	20-22	4-16	98		8¼	0.35	F	7½	99.95	With impedance matching adapter.
	ATH-7	ES	10-22	4-16	98		8¼	0.25	F	7½	149.95	With impedance matching adapter, LED program level indicators.
AUDIOTEX	30-5205	Dynamic	20-20	4-16			6		F	14	32.55	
	30-5207	Dynamic	30-20	8-16			10		C	24	40.60	
	30-5203	Dynamic	20-25	8			10		C	24	36.35	
	30-5201	Dynamic	20-25	8			10		C	19	34.30	
BANG & OLUFSEN	U-70	Ortho-dyn.	16-20	140		2000	10	1.0	F	10.6	85.00	Semi-open design.
BEYER DYNAMIC	DT302	Dyn.	20-20	600	94		10	1.0	F	2.3	29.95	
	DT220	Dyn.	20-20	400	102	6400	10	1.0	F	9	64.95	
	DT440	Dyn.	20-20	600	100	5000	10	1.0	F	9	64.95	
	DT100	Dyn.	30-20	†	110	††	10	1.0	F/C	12½	90.00	† Avail. 8,100,200, 400,600, & 1000 ohms. †† 20 V.
	DT480	Dyn.	20-20	†	115	††	10	1.0	F/C	17½	115.00	†Avail. 8,25, & 200 ohms. †† 14 V.
	DT48	Dyn.	16-20	†	112	6300	10	1.0	F/C	14	190.00	† Avail. 8, 25, & 200 ohms.
	ET1000N	ES	10-25	†	110	8000	8	1.0	F	13	280.00	† Includes power supply to work off amplifier outputs of 4-8 ohms.
CALECTRO	Q4-133	Dynamic	50-15	4-16			10		C	10.5	8.00	
	Q4-134	Dynamic	20-18	4-16			10		C	12.0	13.40	
	Q4-135	Dynamic	20-20	4-16			10		C	13.0	20.15	
CONCEPT	CE-H	Ortho	20-25	150	96	†	12	0.25	F & C	10.5	85.00	† 3 W.
GLI	HS-3	dynamic	40-15	50	96	1300	9	0.5	F	5	40.00	Two-way design.
HANDY	96-1017	Dynamic	50-15	4-16			10		C		27.05	
	96-1016	Dynamic	20-18	4-16			10		C		17.95	
	96-1015	Dynamic	20-20	4-16			10		C		10.75	
	96-1014	Dynamic	20-20	4-16			6		C		37.95	
INFINITY SYSTEMS	ES1	ES	20-20 ‡2	4-16	†	††	8	0.1	F	9	275.00	†96 dB SPL @ 2 V input @ 1 kHz. ††50 W @ 100 Hz.
JVC	HM-200E	Dyn.	20-20	8	94	500	6.6		F	24	99.95	With binural mikes
KLH/BURWEN	PMB 8	Ortho-dynamic	15-26	150	79	†	10	††	F	12	115.00	†17 volt. ††0.3 @ 100 dB
	PMB 6	Ortho-dynamic	16-23	140	91.5	†	10	††	F	9	95.00	†As above. ††As above.
	PMB 4	Dynamic	20-20	400	94	†	10	††	F	7.5	85.00	†6.3 volt. ††As above.
	PMB 40	Dynamic	20-20	400	107	†	10	††	F	7.5	70.00	†As above. ††As above.
	PMB 20	Dynamic	20-20	400	97	†	10	††	F	3.9	49.95	†As above. ††As above.
KOSS	K/145	Dynamic	20-20	87	†		10	0.5	C	13.6	49.95	† 0.25 V-rms, sine wave, at 1 kHz
	K/135	Dynamic	10-18	98	†		10	1	C	13.4	39.95	† 0.09 V-rms, sine wave, at 1 kHz
	K/125	Dynamic	10-16	100	†		8	1	C	12.8	29.95	† 0.14 V-rms, sine wave, at 1 kHz
	HV/1LC	High Veloc.	15-30	132.5	†		10	0.5	C	10.8	59.95	† 1.1 V-rms, sine wave, at 1 kHz
	HV/1A	High Veloc.	15-30	157	†		10	0.5	C	10.1	54.95	† 0.9 V-rms, sine wave, at 1 kHz
	HV/1	High Veloc.	20-20	168	†		10	0.5	C	10.1	44.95	† 0.8 V-rms, sine wave, at 1 kHz
	Technician /VFR®	Dynamic	10-22	245	†		10	0.3	C	16.8	80.00	† 0.6 V-rms, sine wave, at 1 kHz
	PRO/4 Triple A	Dynamic	10-22	220	†		10	0.5	C	15.5	75.00	† 0.70 V-rms, sine wave at 1 kHz
	KO/727B	Dynamic	10-18	100	†		10	1	C	16.5	39.95	† .08 V-rms, sine wave, at 1 kHz
	K/6ALC	Dynamic	10-16	94	†		10	1	C	14	34.95	† 0.14 V-rms, sine wave, at 1 kHz
	K/6A	Dynamic	10-16	100	†		10	1	C	13	24.95	† 0.15 V-rms, sine wave, at 1 kHz
	K/7	Dynamic	20-16	100	†			1	C	10.3	17.95	† 0.039 V-rms, sine wave, at 1 kHz
	Phase/ 2+2	Quad	20-20	310	†		12.5	0.4	C	17.3	155.00	† FRONT: 5.4 V-rms, sine wave, at 1 kHz, BACK: 9.5V-rms, sine wave at 1 kHz

(continued)

THE TUNE UP KIT FOR YOUR CAR STEREO. IT'LL GIVE YOU A BETTER HIGH END.

With a Scotch® Master III™ Cassette and a minor change in your recording routine, you can noticeably boost the highs you get from your car stereo.

You see, our Master III Cassette was engineered for use with the ferri-chrome switch position on your cassette recorder. Normally, you'd record and play back in this position, enjoying strong response across the entire frequency spectrum.

But most hi-fi buffs seem to agree it's the high frequency response in particular that adds the details to your sound and makes high fidelity truly high. And this high frequency response is especially critical in car cassette players.

You can boost those highs simply by recording on a Master III ferri-chrome cassette in the normal switch position. Master III records with more highs than standard tapes, so you'll be getting stronger highs on playback than were really there to begin with.

Give it a try. You might just get hooked on the highs you get with a Master III Cassette.

3M COMPANY

SCOTCH® RECORDING TAPE. THE TRUTH COMES OUT.

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Headphones


Yamaha HP-3

Sansui SS-80


Technics EAH-830

Pickering OA-7


STAX SRD-7/SR-X III

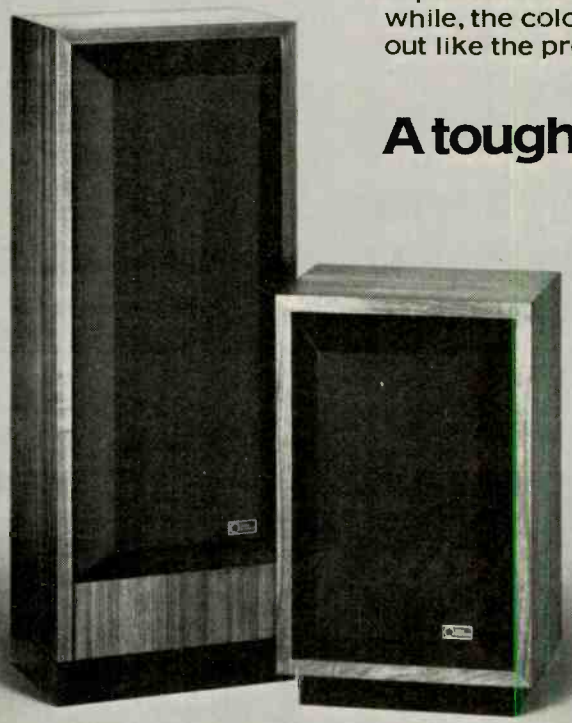
MANUFACTURER	Model	Operating principle (dynamic, electrostatic.)	Frequency Range, HZ to kHz	Impedance, ohms	Sensitivity, dB SPL for 1 mW input	Maximum input, mV	Cord Length, feet	% THD at 95 dB SPL	Cord Style Flat—F Coiled—C	Weight, ounces	Price	Notes
KOSS (continued)	K/6LCQ	Quad	10-22	94	†		10	0.5	C	21.6	59.95	† 0.65V-rms, sine wave at 1 kHz, front or back
	ESP/10	Electro-stat.	10-22	180	†		10	0.5	C	15.9	300.00	† 1.9V-rms at 1 kHz into E/10 energizer.
	K/6A	Dynamic	10-16	100	†		10	1	C	13	24.95	† 0.15 V-rms, sine wave, at 1 kHz
	K/7	Dynamic	20-16	100	†			1	C	10.3	17.95	† 0.039 V-rms, sine wave, at 1 kHz
	Phase/ 2+2	Quad	20-20	310	†		12.5	0.4	C	17.3	155.00	† FRONT: 5.4 V-rms, sine wave, at 1 kHz, BACK: 9.5V-rms, sine wave at 1 kHz
	K/6LCQ	Quad	10-22	94	†		10	0.5	C	21.6	59.95	† 0.65V-rms, sine wave at 1 kHz, front or back
	ESP/10	Electro-stat.	10-22	180	†		10	0.5	C	15.9	300.00	† 1.9V-rms at 1 kHz into E/10 energizer.
LAFAYETTE	SP-77	D	20-18	8					C	2.0	16.99	
	SP-78	D	18-25	8			15		C	2.0	34.99	
	F-700	D	18-22	8					C	2.0	39.99	
	F-780	D	20-20	8		105			C	2.0	49.00	Separate woofer and tweeter.
MURA	SP-94	Dynamic	40-15	8			8		F	9	7.95	
	SP-500	Dynamic	35-15	8			8		F	12	10.95	
	SP-502	Dynamic	30-18	8			10		C	14	14.95	
	SP-503	Dynamic	30-18	8			10		C	14	19.95	Stereo-mono switch
	SP-504	Dynamic	30-18	8			10		C	15	24.95	As above.
	SP-205	Dynamic	20-20	8			15		C	18	69.95	As above, w. padded zipper case.
	HV-230	Dynamic	20-20	8			10		C	11	39.95	
	HB-1500	Dynamic	18-22	50		3200	10		C	5	29.95	
NAKAMICHI	HF-100	Dynamic	20-20	8	90	500†	8	0.8††	C	14	55.00	† mW for 117 dB Spl. †† 100Hz, 110 dB SPL.
PEARL (Ercona)	D-42	Dyn.	30-20	200	0.3		8		F	9½	44.95	Mono or stereo. Washable ear pieces.
	Deluxe RD224	Dyn.	20-18	8	1.0	100	8		C	12	30.00	Mono/stereo switch
PIONEER	SE-700	HPM	20-20	4-16	100†	30k	10		F	10	80.00	† For 3V Input
	SE-500	HPM	20-20	4-16	100†	30k	10		F	11	50.00	As above
	Monitor 10	Dyn.	20-20	22	100	3.7k	16½		C	19	70.00	
	SE-4	Dyn.	20-20	250	96	7k	10		F	7.6	50.00	
	SE-505	2-Way Dynamic	20-20	4-16	98	2k	16½		C	24	65.00	
	SE-405	Dynamic	20-20	4-16	103	2k	16½		C	17	45.00	
	SE-305	Dynamic	20-20	4-16	98	2k	16½		C	15	35.00	
	SE-205	Dynamic	20-20	4-16		500	8¼		F	15	25.00	
QUADRAFLEX	Q-12	Dyn.	50-14 ±4	50	90	850	10	2.5	C	8	17.95	
	Q-25	Dyn.	20-18.5 ±3.5	34.5	96	1250	10	2.0	C	10	29.95	
	Q-35	Dyn.	20-20 ±3.5	122	93	1500	10	1.5	C	13	44.95	
	Q-45	Dyn.	20-20 ±2	80	95	1800	10	1.0	C	10	54.95	
RADIO SHACK	PRO-II	Dynamic	10-22	4-16			10		C		49.95	
	LV-10	Dynamic	20-20	4-16			10	0.5	C	10	39.95	
	PRO-10	Dynamic	20-20	4-16			10		C	10	39.95	
	NOVA-PRO	Dynamic	20-20	8			10		C		34.95	
	PRO-20	Dynamic	10-16	8			10		C		24.95	
	NOVA-30	Dynamic	30-18	8			10		C		21.95	
SAE	7000	Dynamic	30-19	400	90	1000	10	2.0	F	10	50.00	
SANSUI	SS-100	DYN	20-20	60	94	250	6.5		F	13.2	118.00	
	SS-80	DYN	20-20	200	108	500	12.2		C	17.3	72.00	
	SS-60	DYN	20-20	25	108	500	6.6		F	15	54.00	
	SS-40	DYN	20-20	25	108	500	6.6		F	13.1	42.00	
	SS-30	DYN	20-20	8	108	500	6.6		F	11.5	30.00	
SENNHEISER	HD 44	DYN.	40-15	640	94	8000	10	1.5	F	1.2	35.80	open air design
	HD 414	DYN.	20-20	2000	102	18000	10	1.0	F	4.8	67.00	
	HD 424	DYN.	16-20	2000	102	18000	10	1.0	F	6.7	101.00	
	HD 4004	DYN.	100-6	17	82	5000	25	1.5	F	0.6	28.80	
	HD 224	DYN.	16-20	200	94	8500	10	1.0	F	9	121.00	
	2000	Electret ES	16-22	8	103†	25V		0.1			335.00	† For 6 watts.
	HDI 434	Dyn.	40-15					2	none		234.00	Wireless, infrared, includes transmitter.
SONY	ECR-500	Electret	20-20	30	91	12,000	8	0.03	F	24	150.00	
SPEEDEX	31-607	Dynamic	50-15	4-16			10		C	10.5	11.88	
	31-605	Dynamic	20-18	4-16			10		C	12	7.88	
	31-603	Dynamic	20-20	4-16			10		C	13	5.16	
	31-609	Dynamic	20-25	8			10		C	19	17.01	
SUPEREX	PEP-81	ES	15-19 ±1.8	4-16	†		15	0.2	C	10	150.00	† 5 watts min input, Self protect circuitry, console handles two phones, dual polarization (A.C. & self)
	PEP-79E	ES	15-18 ±2	4-16	†		15	0.2	C	10	90.00	† as above

(continued)

MANUFACTURER	Model	Operating principle (dynamic, electrostatic,)	Frequency Range, HZ to kHz	Impedance, ohms	Sensitivity, dB SPL for 1 mW input	Maximum input, mV	Cord Length, feet	% THD at 95 dB SPL	Cord Style Flat—F Coiled—C	Weight, ounces	Price	Notes
SUPEREX (continued)	Studio Master SM-1000	Dyn	10-20 ±3	4-35			15	0.2	†† C		70.00	†† With clothing clip
	Studio Master SM-700	Dyn.	10-20 ±3	4-35	†		15	0.2	†† C	10	65.00	† 110 dB SPL for 10 mV. †† With clothing clip
	Classic CL-1	Dyn	10-20 ±4	4-35	†		15	0.3	†† C	10	55.00	† 110 dB SPL for 10 mV. ††With clothing clip
	TRL-99	Dyn	15-20 ±4	4-35	†		15	0.3	†† C	10	50.00	† 110dB SPL for 10mV. †† With clothing clip
	TRL-88	Dyn.	20-22	4-35			15		†† C	5½	45.00	†† With clothing clip
	TRL-3	Dyn.	40-20	4-80	†		15	0.5	†† C	10	40.00	† 100dB for 6 mV. ††With clothing clip
	TRL-77	Dyn	45-20	4-80	†		7	1.0	F	11.5	30.00	† 100dB for 6 mV.
	Pro B VI	Dyn.	15-22 ±5	4-16			10		C	16	65.00	
	TRL-66	Dyn	40-15	4-16			7		F	11	19.95	
	DP-901	Dyn.	20-19				7		F	19	45.00	
	DP-902	Dyn.	20-19	180			7		F	14	20.00	
	Edit-Phone D—903	Dyn.	20-19	180			7		F	6.5	20.00	
STAX	SR-44	Elect.	20 – 25 ±1.5	35			8	0.3	F	8	110.00	
	SR-5/ SRD-6	E.S.	30 – 25 ±1.5	35			8	0.3	F	14	170.00	
	SR-X MK3/ SRD-7	E.S.	20 – 25 ±1.5	35			8	0.1	F	14	290.00	
	SR-SIGMA	E.S.	30 – 25 +2	35			8	0.09	F	16	459.00	Front facing elements.
TECHNICS	EAH-810	D	20-25		91	1000	10	0.5	F	11	40.00	Linear drive, double cavity and phase correction
	EAH-820	D	15-30		93	3000	10	0.3	C	12	60.00	As above
	EAH-830	D	15-35		96	3000	10	0.3	C	13	80.00	As above.
TOSHIBA	HR Xi	†	20-20		††			0.5	F	5¾	64.95	† Complementary back electret. †† 101 @ 3V.
	HR 811	†	20-30		††			0.5	F	6	79.95	† As above. †† 95 @ 3 V.
YAMAHA	HP-1	Ortho-dynamic	20-20	150	96	1000	8	0.3	F	10.5	65.00	
	HP-2	Ortho-dynamic	20-20	150	93	1000	8	0.3	F	8	50.00	
	HP-3	Ortho-dynamic	20-20	150	93	1000	8	0.3	F	8	35.00	

"In our simulated live-vs-recorded listening test, the D-6 (with controls in the up position) was 100 per cent perfect at any point in our listening room! The D-6 is the only speaker in our experience to achieve this!"... "After listening to the D-6 for a while, the colorations heard from many other speakers stand out like the proverbial sore thumb!"

—Hirsch-Houck Laboratories in Stereo Review—



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Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB		dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
AAL	Apollo 830	Air Sus	8			3	Cone		35-20		5	4k	8		23 x 12 x 8	Wal. Vin	Cloth Brn.	15	40.00	
	Apollo 2712	Ported	12	5	Cone	2	Phen. Ring		25-22		5	1 & 5k	8		27 x 16 x 11	Wal. Vin	Cloth Brn.	36	90.00	
	Apollo 2915	Ported	15	(2) 5	Cone	2	Phen. Ring		20-22		5	1 & 5k	8		30 x 18 x 11	Wal. Vin	Cloth Brn.	44	140.00	
	Apollo 8853	Ported	(2) 8	5	Cone	2	Phen. Ring		35-20		5	1 & 5k	16		37 x 13 x 11	Wal. Vin	Cloth Brn.	50	130.00	
	Studio I	Air Sus	8				Phen. Ring		35-20		5	4k	8		22 x 11 x 10	Wal. Vin	Cloth Brn.	24	90.00	
	Studio 2	Air Sus	10	2	Phen. Ring	3	Pz		27-25		10	4 & 7k	8		25 x 13½ x 10½	Wal. Vin	Cloth Brn.	32	150.00	
	Studio 3	Air Sus	12	4 x 10	Horn	3	Pz	M,T	25-20		10	1 & 7k	8		26 x 15 x 13	Wal. Vin	Cloth Brn.	48	200.00	
	Studio 4	Air Sus	15	4 x 10	Horn	(3) 3	Pz	M,T	20-25		10	1 & 7k	8		31 x 24 x 15¾	Wal. Vin	Cloth Brn.	80	300.00	
	Studio 6	Air Sus	(4) 10	4 x 10	Horn	(3) 3	Pz	M,T	18-25		20	1 & 7k	8		38 x 24 x 15¾	Wal. Vin	Cloth Brn.	90	430.00	
	2001	Ported	10, 8	2	Phen. Ring	3	Pz	ST	25-40		10	600,2 & 5k	8		37 x 13 x 11	Wal. Vin	Cloth Brn.	50	220.00	
	Disco One	Ported	15	4 x 10	Horn	(4) 3	Pz		30-40		20	1.5 & 7k	8		29 x 21 x 16		Cloth Blk.	100	300.00	
	Disco Tower	Ported	(2) 15	4 x 10	Horn	(4) 3	Pz		18-40		20	1.5 & 7k	16		46¾ x 21 x 16		Cloth Blk.	125	400.00	
	Disco Monster	Horn Labrynth	(2) 12			(14) 3	Pz		18-40		20	7k	8		50 x 30 x 25		Cloth Blk.	150	800.00	
	Super Jock	Horn Labyrinth	15	8 x 18	rad. Horn	(4) 3	Pz	M,T	30-40		20	1.2 & 7k	8		57 x24 x 28		Cloth Blk.	165	600.00	
	Classic C108	Air Sus	8			3	Cone	T	35-20		5	4k	8		20 x 11½ x 10	Oil. Wal.	Cloth Blk.	26		
	Classic C110	Air Sus	10	5	Cone	3	Cone	M,T	30-20		10	4 & 7k	8		23 x 14 x 11	Oil. Wal.	Cloth Blk.	34		
	Classic C112	Air Sus	12	5	Cone	3	Cone	M,T	25-20		10	1 & 7k	8		28½ x 16 x 15	Oil. Wal.	Cloth Blk.	54		
	Classic C120	Air Sus	(2) 10	5	Cone	3	Cone	M,T	25-20		10	1 & 7k	8		35 x 14 x 11	Oil. Wal.	Cloth Blk.	58		
ADS	L200 Series II	Ac Sus	¾			1	dome		55-22 ±5	90	10	2.5k	4		6¾ x 4¼ x 4⅜	Blk./ Alum	brsh. alum	5	113.00	
	L200C Series II	Ac Sus	4			1	dome		55-22 ±5	90	10	2.5k	4		6¾ x 4¼ x 4⅜	Alum.	brsh. alum	5	118.00	
	L300 Series II	Ac Sus	5¼			1	dome		40-20 ±5	90	5	2.5k	4		8½ x 5¾ x 5¼	Blk./ Alum	brsh. alum	7	145.00	
	L300C Series II	Ac Sus	5¼			1	dome		40-20 ±5	90	5	2.5k	4		8½ x 5¾ x 5¼	Alum.	brsh. alum.	7	150.00	
	L420	Ac Sus	7			1	dome		30-22 ±5	91	15	1.5k	8/6		20 x 11¼ x 8½	Wal. vin.	blk.	24	110.00	
	L520	Ac Sus	8			1	dome		26-22 ±5	92	10	1.5k	8/6		21¾ x 12¼ x 10¼	Wal. vin.	blk.	30	150.00	
	L620	Ac Sus	10			1	dome		22-22 ±5	93	15	1.5k	8/6		25⅝ x 4¼ x 12	Wal. Vin.	blk.	40	190.00	
	L710 Series II	Ac Sus	(2) 7	2	dome	¾	dome		25-30 ±5	92	15	550, 4k	6/4		21⅛ x 12¼ x 10½	Nat. wal.	blk.	35	275.00	
	L810 Series II	Ac Sus	(2) 8	2	dome	¾	dome		20-30 ±5	93	20	550, 4k	6/4		25½ x 14⅛ x 11¾	Nat. wal.	blk.	46½	360.00	

(continued)

At Audio Research our only business is providing the highest definition in music reproduction.

On the following 11 pages you will find our 9 major products, followed by our authorized dealer listing. Each of these products represents a serious effort to provide quality of two kinds — construction and sound — we do not offer one or two "state-of-the-art products" in order to merchandise some less costly products. No, at Audio Research, quality is our only business, and each of these products is constructed without compromise with quality, each offering different features and/or application.

4 Power Amplifiers: D-52, D-100A, D-110, D-350

1 Electronic Crossover: EC-5

3 Preamplifier/Stereo Control Units: SP-4A, SP-5, SP-6

1 Moving coil pre-preamplifier

Note: The wood cabinets shown on some of the products on the following pages are optional extra cost accessories.

If you desire more information about any of these products a detailed specification sheet is available upon request.

Write:

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Minneapolis, MN 55406

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MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms: Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
ADS (continued)	L910 Series II	Ac Sus	(2) 10	2	dome	¾	dome	M,T	18-25 ±5	93	15	550 4k	6/4	33½ x 19 x 15¼	Nat. wal.	blk.	100	660.00	
	2002 Series II	Ac Sus	4			1	dome	T	55-22 ±5	103	25	2.5k		5½ x 4¼ x 6¾	blk. Al	Blk. Al	5	450.00 pair	w. 80W bi-amp.
	2001 series II	Ac Sus	4			1	dome	T	50-22 ±5	106	60	2.5k		4¼ x 6¾ x 4½	blk Al	blk Al	4	570.00 pair	w. 160W bi-amp.
ACCULAB	220	Ac Sus	10		Cone	2¾	Cone		40-18.5 ±4.5	89.9	4	6.5k	8	13 x 10½ x 22½	Vin	Cloth, brown		150.00	
	320	Ac Sus	10	3⅜	Cone	2¾	Cone		40-18.5 ±4.0	91	4	3.3 & 7.5k	8	13 x 10½ x 22½	Vin	Cloth, brown		175.00	
	340	Ac Sus	12	3⅜	Cone	2¾	Cone		33-18.5 ±4	91	4	3.3 & 7.5k	8	14¼ x 11 x 25½	Vin	Cloth, brown		220.00	
	440	Ac Sus	12	3⅜	Cone	2¾ 3½	Cone PZ		33-30 ±4	91	5	3.3, 7.5 & 10k	8	14¼ x 11 x 25½	Vin	Cloth, brown		250.00	
ACOUSTAT	Acoustat-X	E.S. Dipole							30-20 ±3	100				28 x 19 x 48	Oak/ Wal.	cloth wht/blk	80	2200.00 pair	Amp included, Tapered cabinet.
	Acoustat Monitor	E.S. Dipole							30-20 ±3	105				32 x 19 x 62	Oak/ Moh.	cloth wht/blk	110	3000.00 pair	As above.
ACOUSTIC RESEARCH	AR9	Ac Sus	(2) 12	8 1½	Ac Sus dome	¾	dome	M,T	28-25 ±2	87	40	200, 1.2 & 7k	4	53 x 15 x 16	Oil. Wal	cloth black	130	750.00	
	AR10π	Ac Sus	12	1½	dome	¾	dome	W,M, T	34-25 ±2	86	25	525, 5k	4/8	14 x 25 x 11	Oil Wal	Foam black	55	450.00	
	AR11	Ac Sus	12	1½	dome	¾	dome	M, T	35-25 ±2	86	25	525, 5k	4	14 x 25 x 11	Oil Wal	Foam black	50	350.00	
	AR 12	Ac Sus	10	2¼	cone	¾	dome	M,T	43-25 ±2	86	25	700, 4k	8	14 x 25 x 11	Oil Wal	Foam black	37½	250.00	
	AR 14	Ac Sus	10			1	dome	T	43-24 ±2	86	15	1.3k	8	14 x 25 x 11	Oil Wal	Foam Black	35	180.00	
	AR 15	Ac Sus	8			1	dome	T	48-24 ±2	85	15	1.7k	8	12 x 21½ x 8	Oil Wal.	Foam black	24	130.00	
	AR 17	Ac Sus	8			1¼	pressure	T	48-21 ±2	86	15	2k	8	10 x 18½ x 9	Oil Wal.	Foam black	17	95.00	Sold only in pairs.
	AR 18	Ac Sus	8			1¼	pressure	T	58-21 ±2	86	15	2k	8	10 x 16½ x 6	Wal. Vin	Foam black	13½	70.00	Sold only in pairs.
ACOUSTIQUE 3A	SB 800	ac. pres. FB.	(2) 11						30-100 ±1.5	Adj.	†	100		30 x 27 x 12	Maple	brass/ alum.	180	1,000.00	†150 W built-in amp.
	SB 1000	ac. pres. FB.	(3) 11						30-100 ±1.5	Adj.	†	100		48 x 27 x 12	Maple	brass/ alum.	220	1400.00	†As above.
	SB 1200	ac. pres. FB.	(4) 11						30-100 ±1.5	Adj.	†	100		35 x 30 x 14	WaL.	Cloth blk.	200	1200.00	†As above.
	Satellite Atom 2	P.L.D.		7	cone	4	Ribbon		100-40 ±2	93	15	5k	8	9 x 3 x 19	Wal.	Cloth blk.	10	499.00 pair	Satellite for sub-bass.
	Satellite Atom 3	P.L.D.	7	2	Dome	⅝	Dome		100-30 ±2	90	25	2 & 8k	8/4	10 x 7 x 17	Wal.	Cloth blk.	12	499.00 pair	As above.
	Andante "Linear"	ac. pres. FB.	11	2	Dome	⅝	Dome	B	30-30 ±3		5	400, 5k	15/8	12 x 8 x 18	Wal.	cloth blk.		499.00	Built-in 120 W amp.
	Andante "Master"	ac. pres. FB.	10	2	Dome	4	Rib-bon	B	25-40 ±3		15	400, 5k	15/8	12 x 8 x 18	Wal.	cloth blk.		799.00	Built-in 125 W amp.
	Alphase	P.L.D.	8			⅝	Dome		55-30 ±3		5	5k	8/6	10 x 10 x 20	Wal.	cloth blk.	21	149.00	
	Apogee	bass ref.	10			⅝	Dome		55-30 ±3		5	4.5k	8/6	12 x 10 x 25	Wal.	Cloth blk.	32	199.00	
	Apogee Monitor	P.L.D.	11	1½	Dome	⅝	Dome		45-30 ±3		15	700, 6k	8/8	13 x 13 x 29	Wal.	Cloth blk.	45	325.00	
	Allegretto	bass ref.	10		Horn		Horn	M	55-20 ±3		10	200, 10k	8	12 x 10 x 25	Wal.	Cloth blk.	35	319.00	
	Adagio	inf. ac. load	11	2	Dome	⅝	Dome	M	35-30 ±3		30	500, 5k	8/8	12 x 12 x 31	Wal.	cloth blk.	67	399.00	
	Arioso Monitor	bass ref.	15	5	Cone		Horn	B, M, T	45-20 ±3		10	300, 5k	8/8	18 x 15 x 27	Wal.	cloth blk.	90	569.00	

The High Definition™ Approach

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Our smallest wattage amplifier — but of the very highest sound quality for music systems where its power is adequate. Recommended especially for multiway speakers with bi-amplification as well as for the many small high quality speaker systems available.

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Near "Class A" performance
80 joule energy storage power supply

D-52

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Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms: Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
ACUTEX	ACT 3.1	PR[tm]	8	4½	PR[tm]	3	Cone Dome	T	45-18 ±3	96	20	2.5k	8/2	11 x 9 x 22	Oil. Rose.	Cloth brn/wh	27	139.00	
	ACT 4.2	PR[tm]	10	4½ 4½	PR[tm] Cone	3	Cone Dome	M,T	35-20 ±3	96	20	1.8 & 7k	8/2	13 x 11 x 24	Oil. Rose.	Cloth brn/wh	35	199.00	
	ACT 6.3	PR[tm]	12	4½ 4½	PR[tm] Cone	2¾	Cone Dome	M,T	25-22 ±3	96	20	1.6,7 & 15k	8/2	15 x 13 x 26	Oil. Rose.	Cloth brn/wh	43	249.00	
	MTS Mini	Ac Sus.	4			1	Dome		50-18 ±3	89	20	2.5k	8/2	4 x 4 x 7	Met.	Met.	7	159.00 pair	
ADVANCE SPEAKER	A-II	Pas. Rad.	8				Dome	T	30-20 ±3	90	15	2k	8/6	14½ x 10½ x 26½	Wal. Vin.	Blk. & Brn.	44	149.95	Add $10.00 for Walnut.
	D-II	Ported	8			4½			30-20 ±5	92	10	2.5k	8/6	12 x 7 x 17½	Vin.	Brn.	20	125.00 pair	
	VII		8				Dome		30-20 ±4	90	15	1.8k	8/6	11½ x 9½ x 20	Wal. Vin	Blk. & Brn.	24	99.95	Add $5.00 for Walnut.
	A+	Pas. Rad.	(2) 8				Dome		30-20 ±2.5	90	90	2k	6/4	14½ x 10½ x 52¼	Wal.	Brn.	80	400.00	
ADVENT	New Advent	Ac. sus.	10			1¼	Oone	T		89	15	1.5k	8/ 5.6	14¼ x 11½ x 26	Oil Wal.	Cloth	47	159.00	In vinyl $139.00
	Advent/1	Ac sus	10			1¼	Dome			89	15	1.5k	8/ 5.6	13¼ x 9¼ x 22	Oil. Wal.	Cloth	30	99.95	
	Advent/2	Ac. sus.	9			(2) 1½	Cone			88	12	1.5k	8/88 5.6	11¼ x 7½ x 19½	Wal. vin.	Cloth	10.6	57.00	
	Powered Advent	Ac. sus.	10			1¼	Dome	B,T				1.5k		14¼ x 13 x 28½	Oil. Wal.	Cloth	79	450.00	Biamplified w/tone contered.
ACUSTA CRAFT	6	Ac. sus.	5			1	Dome	T		84	5	2.5k	8	7 x 5¾ x 11¾	Oil Wal.	Cloth, Var.	10	150.00	$118.00/ kit.
	10	Ac. sus.	8			1	Oome	T		84	5	1.7k	8	11¾ x 9½ x 18¾	Oil Wal.	Cloth Var.	30	190.00	$144.00 / kit.
	12	Ac. sus.	10			1	Dome	T		83	15	1.7k	8	15½ x 12 x 23¾	Oil Wal.	Cloth, Var.	49	310.00	$198.00/ kit.
	14	Ac. sus.	10	5	Cone	1	Dome	M,T		82	15	500, 3.6k	8	15¼ x 12 x 23¾	Oil Wal.	Cloth, Var.	55	310.00	$260.00/ kit.
	16	Ac. sus.	12	5	Cone	1	Dome	M,T		82	20	400, 3.6k	8	16½ x 12 x28	Oil Wal.	Cloth, Var.	65	400.00	$340.00/ kit.
	12-EV	Bass ref.	8			1	Horn	T		87	10	3.6k	8	15¼ x 12 x 23¾	Oil Wal.	Cloth, Var.	55	370.00	$320.00/ kit.
	16-EV	Bass ref.	12			1	Horn	T		88	10	3.6k	8	16½ x 12 x 28	Oil Wal.	Cloth, Var.	65	440.00	$380.00/ kit.
	17-EV	Bass ref.	12	1	Horn	1	Horn	M,T		88	10	800, 3.6k	8	18 x 15¾ x 34	Oil Wal.	Cloth, Var.	100	698.00	$598.00/ kit.
	Power Tower	Bass ref.	12	1	Horn	1	Horn	M,T		88	10	800, 3.6k	8	18 x 15¾ x 47¾	Oil Wal.	Cloth, Var.	130	890.00	$770.00/ kit.
AKAI AMERICA	SW-177	Closed	15	5¼	Cone	(2) 1¾	Cone	M,T	25-20 ±3	94	100	700, 5k	8	17.3 x 12.2 x 27.3	Wal.	Cloth, brn.	46.3	275.00	
	SW-157	Bass Ref.	12	5	Cone	1¾	Cone	M,T	30-20 ±3	92	60	1.2, 5k	8	15.7 x 11.8 x 26.9	Wal.	Cloth, brn.	36.1	210.00	
	SW-137	Bass ref.	10	5	Cone	1¾	Cone	M,T	40-20 ±3	92	40	1.2 &5k	8	13.5 x 11.8 x 23.3	Wal.	Cloth brn.	25.8	140.00	
	SW-127	Bass ref.	8			1¾	Cone	T	40-20 ±3	92	30	4k	8	12.2 x 9.0 x 20.4	Wal.	Cloth, brn.	16.3	95.00	

(continued)

The Quality Approach

Audio Research products are built FOR perfectionists, BY perfectionists. Basic to the nature of a perfectionist is a love for quality, whether it be in fine automobiles, cameras, or music systems. Simple appreciation of a quality built product can be very satisfying. The extra measure of enjoyment in ownership of an Audio Research product comes from the knowledge that you own a component that not only represents the "state-of-the-art" in music reproduction, but also the "state-of-the-art" in construction quality.

D-100A High Definition™ Power Amplifier

Rated 100 watts RMS per channel
(360 watts mono mode - 8 ohms)

75 joule energy storage power supply

The D-100A shares with all Audio Research amplifiers total stability to drive any kind of load — from electrostatic speaker to induction motor — with complete stability. Built to continuous commercial service standards. Second generation Analog Module™ Technology.

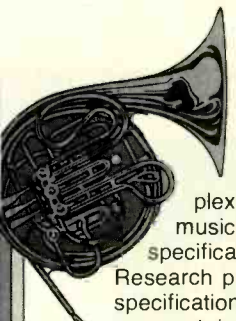
D-100A

audio research

2843-26th AVE. SO.
MINNEAPOLIS, MINN. 55406

Enter No. 11 on Reader Service Card

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer, M=midrange, T=tweeter, ST=supertweeter	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
AKAI AMERICA (continued)	SW-7	Closed	5		Horn	2			55-22	92	40	10k	4	5.4 x 8.7 x 5.5			10.6 pr.	140.00 pair	
	S-82	Ac. Sus.	8		Cone	3	Cone		60-17 ±5		15	4k	8	11 x 6⅝ x 19	Vinyl	Cloth	9 pr.	75.00 pair	
ALLISON ACOUSTICS	One	ac. sus.†	(2) 10	(2) 3½	††	(2) 1	††	M,T †††		86	30	350, 3,750	8/7	19 x 10⅜ x 40	Oil Wal.	ABS blk	67	420.00	†stabilized radiation loading design. ††convex diaphragm. ††† single three-position switch.
	Two	ac. sus.†	(2) 8	(2) 3½	††	(2) 1	††	M,T †††		86	30	350, 3,750	8/7	16 x 9½ x 36	Oil Wal.	ABS blk	57	350.00	
	Three	ac. sus.†	10	3½	††	1	††	M,T †††		86	30	350, 3,750	4/3½	15½ x 10 x 40	Oil Wal.	ABS blk	45	290.00	
	Four	ac. sus.†	8			(2) 1	††	W,T †††		86	30	2k	8/6½	19½ x 10 x 11	Oil Wal.	ABS blk	23½	195.00	
AUDIOANALYST	M2	Sealed	5			1	Dome		46-20 ±4	89	10	2k	4/3.5	6x7 x9¾	Laq. Wal.	Cloth Blk	7½	139.00	
	M4X	Sealed	10			1	Dome		33-20 ±4	89	10	2k	8/6.3	13¾ x12 x24½	Vin.	Cloth blk.	41	159.00	
	M6	Sealed	10	4½	Cone	1	Dome		30-20 ±3	88	15	700, 2k	8/6.5	13¾x11¾ x24½	Laq. Wal.	Cloth Blk.	47	269.00	
	M8	Sealed	12	4½	Cone	1, ½	Dome Dome		27-25 ±3	88	15	600, 2& 15k	8/6.8	15½x11¾ x27½	Laq. Wal.	Cloth Blk.	57	359.00	
	A-100X	Sealed	10	2	Cone	1½	Dome	M,T	40-20 ±3	90	10	1.5 & 7.5k		13¾x 12 x24½	Vin.	Cloth Wht	41	169.00	
ALTEC LANSING	1 II	Sealed	8			4	cone		50-20	89	10	3.5k	8	12 x 11 x 22½	Oil. Wal.	Knit, Black	26	129.00	
	3 II	Vented	10			4	cone		50-20	90.5	10	1.5k	8	12½ x 11½ x 24	Oil. Oak	Knit, Black	26¼	149.00	
	5 II	Vented	(2) 12			(2) 4	cone		45-20	91.5	12	1.5k	8	14½ x 12 x 25½	Oil. Wal.	Knit, Black	32	189.00	
	7 II	Vented	12	6½	cone	4	cone		45-20	90	15	850, 8k	8	16 x 14⅛ x 25	Oil. Wal.	Foam Choice	43¾	259.99	
	9 II	Vented	12	6½	cone	5	cone		40-20	93	12	800, 7k	8	17½ x 15 x 26½	Oil. Oak	Foam Choice	56	329.00	
	Santana II	Vented	12			5	cone		40-20	90	12	2.5k	8	19 x 16 x 25⅝	Oil Wal.	knit black	57	279.00	
	15	Vented	12					M,T	30-20	92	12	1700	8	22 x 15½ x 27	Oil. wal. or oak	foam blk./ brwn.	76	479.00	
	19	vented	15					M,T	30-20		10	1200	8	30 x 21 x 39	oil. wal. or oak.	knit. blk./ brwn.	143	749.00	
AMERICAN MONITOR	6	Ac Sus	8			2½	Cone		50-18.5	89	5	2.5k	8	9⅞ x 8⅛ x 17¾	Vin	Cloth, brown	15	99.95	
	8x	Ac Sus	8			2	Cone	T	35-20	91.5	10	2.5k	8	12 x 9½ x 23	Vin	Cloth, brown	30	149.95	
	10x	Helmholtz port	10			2	Cone	T	30-20	92	10	2.5k	8	14¼ x 11½x25½	Vin	Cloth, brown	43	199.95	
	12x	Helmholtz port	12	4½	cone	2	Cone	M,T	35-20	93.5	10	1.5 7.5k	8	14¼ x 11½x25½	Vin	Cloth, brown	44	249.95	
	14	Helmholtz port	12	4½	cone	2	Cone	M,T	30-20	93.5	10	1.5 7.5k	8	14½ x 12½x37½	Oil Wal.	Cloth, brown	73	329.95	
	16x	Helmholtz port	12	4½	Cone	3 2	Pz Cone	M,T	32-30	93.5	10	1.5, 7.5, 12k	8	15 x 13⅛ x 26½	Oil Wal.	Cloth, Brown	46	399.95	
	18xp	Helmholtz port	15	(2) 4½	cone	(2) 3 (2) 2	PZ Cone	M,T	27-30	94	10	1.5, 7.5, 12k	4	20 x 16½ x 32	Oil Wal.	Cloth, brown	78	599.95	



The Musical Approach

High Definition™ music reproduction is accomplished by a design approach that considers, first and foremost, the complex, constantly changing phenomena of musical waveforms. The musical approach requires designs which go beyond good "static" specifications to perform in actual use — music reproduction. Audio Research products have good "static" specifications which exceed the specifications of many competitive products. However, it is the musical approach in Audio Research products that sets them apart. The musical approach gives Audio Research products a hard-to-define, elusive, musical quality which is difficult to measure but easy to hear.

D-110 High Definition™ Power Amplifier

Rated 100 watts RMS per channel
(360 watts mono mode — 8 ohms)

300 joule energy storage power supply

The D-110 — a combination of the D-100A circuitry with the D-350 power supply — rebiased to higher operating current and fan cooled, provides the highest possible measure of musical quality.

D-110

audio research

2843-26th AVE. SO.
MINNEAPOLIS, MINN. 55406

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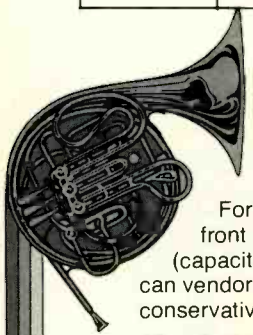
Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter, ST=supertweeter	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
ARMSTRONG	602	Resistive Loading	8	2	Dome	1	Dome		25-25 ±3	86	20	400, 4k	8/5	24 x 12 x 10	Wal., Teak, Rose	Foam, blk.	30	300.00	$325.00 teak, $350.000 rose.
AUDIOALLEY	AS-4	Inf. Baf.	12	5	Cone	3, 2	Cone Dome	M,T	30-20 ±5	97	10	700, 1.3 10K	8	24 x 15 x 10½	Oil Wal.	Cloth, brown	35	400.00 pair	
	AS-3	Inf. Baf.	10	4½	Cone	3	Cone		35-20 ±5	97	5	1 5K	8	22 x 13 x 8	Oil Wal.	Cloth, brown	24	230.00 pair	
	AS-2	Inf. Baf.	8	4½	Cone	3	Cone		40-20 ±5	97	5	1 5K	8	22 x 13 x 6	Oil Wal.	Cloth, brown	20	190.00 pair	
	AS-1	Inf. Baf.	8			3	Cone		40-20 ±5	97	5	4K	8	22 x 13 x 6	Oil Wal.	Cloth, brown	20	160.00 pair	
AUDIO ARTS	Othello	Inf Baffle	12	5	cone	3½ 2½	cone cone		32-28 ±3	86	25	390, 1.9, & 18k	8/3	14½ x 12½ x 24½	vinyl	Cloth, beige	44	425.00	Stage monitor.
AUDIO ILLUSIONS	Master Illusionist I	open air w/air sus. bass	(2) 12		Bi-pole		Bi-pole		40-20 ±3	92	50	500, 5k	4/3.5	16 x 16 x 42	Oil. Ash.	Cloth, black.	97	1850.00 pair	
AUDIONICS	T-52	Vented	10	6	Cone	1	Dome	M,T	32-20 ±1.5	90	40	320 2.8K	4	12 x 16 x 48	Oil. Wal.	Cloth, bge, blk.	85	499.50	
	Vanishing Point	Closed	6			1	Dome	T	75-20 ±1.5	88	70	3K	8/5.5	9 x 8 x 12	Oil. Wal.	Foam, black.	20	299.50	
	Foundation Bass	Vented	(2) 10						30-400 -3	88	70	125	4	18 x 28 x 27	Oil. Wal.	Cloth, bge, blk.	120		
AUDIOTEX	94-400	Air Sus.	12	4½	Cone	1¾	cone		35-22		10		8	15 x 10 x 24	Vinyl Wal.	foam brown	29	101.00	
	94-300	Air Sus.	10		Cone	2¾	cone		40-22		10		8	12 x 10 x 20	Vinyl Wal.	foam brown	20	72.30	
	94-200	Air Sus.	8		Cone	1¾	cone		35-22		2		8	11½ x 7½ x 18½	Vinyl Wal.	foam brown	14	54.00	
	94-100	Air Sus.	6		Cone	3	cone		50-20		1		8	10 x 6 x 17	Vinyl Wal.	foam brown	11½	45.00	
	30-5120	Air. Sus.	4		Cone	1	dome		110-20 ±6		1		4	7¼ x 4⅜ x 4½	Black Alum.	Blk Alum	5	119.90 pair	
AUDIO-VISUAL CONCEPTS	Cabasse Sampan 311	Ac. sus.	12	2¼	Dome	1	Dome		40-20 ±3	95	10	700, 5.5k	8	15¾x25¼ x 12¼	Wal.	Cloth brn.	50	850.00	
	Cabasse Brick 235	Ac. sus.	8¼			1	Dome		60-20 ±4	93	10	6.5k	8	12 x 25¼ x 10¼	Wal.	Cloth brn.	20	395.00	
AURATONE	Super-Sound® Cube	Sealed	5†						50-15	90	3		8	6½ x 6½ x 5¾	wal. vin.	black foam	4½	59.95 pair	†Full-Range.
	Super-Road® Cube	Sealed	5†						50-15	90	3		8	6½ x 6½ x 5½	black vin.	black plastic	5	89.95 pair	†As above.
	Super-Sound® Wedge	Sealed	5†						50-15	90	3		8	7½ x 7½ x 5 x 3	black vin.	black plastic	5¼	69.95 pair	†As above.
	Super-Sound System	Sealed	5†						50-15	90	3		8	6½ x 10½ x 4¾	wal. vin.	black foam	5½	54.95 pair	†As above.



The Common Approach

All Audio Research components share a number of things in common.

For example, all have heavy gauge two color anodized aluminum front panels for lasting durability and beauty. Most small parts (capacitors, resistors, transistors, etc.) are selected from quality American vendors for availability and reliability — and of course, all are used at conservative levels to assure long life.

The D-350 High Definition™ Power Amplifier

Rated 350 watts RMS per channel — 8 ohms
(about 1 KW total into 4 ohms)

300 joule energy storage power supply

Speaker line fuses

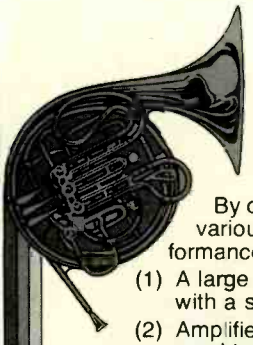
Logic circuitry with relay for added protection against subsonic or DC output.

D-350

audio research

2843-26th AVE. SO.
MINNEAPOLIS, MINN. 55406

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
AVID	80a		8			1¾	Cone		66-17 ±3	88	8	3k	8/3	12 x 8½ x 19½	Wal. vin.	cloth brn.	17	85.00	
	100a		8			1¾	Cone	T	48-18 ±3	85	15	2.5k	8/6	13½ x 9½ x 23½	Wal. vin.	cloth brn.	28	115.00	
	101		8			1¾ (2) 2	Cone		30-18 ±3	85	15	2.5k	8/3	13 x 29 x 13	Oil. Wal.	cloth brn.	40	175.00	
	102a		10			1	Dome		44-18 ±3	85	15	2.2k	8/3	15 x 10 x 25	Wal. vin.	cloth brn.	36	150.00	
	230		10	4½	Cone	1	Dome	M,T	42-20 ±3	88	15	475, 4k	8/3	15 x 10 x 25	Wal. Vin	cloth brn.	40	215.00	
	330		12	2	Dome	1	Dome	M,T	35-20 ±3	88	15	500, 6k	8/3	17 x 10¼ x 30¼	Oil. Wal.	cloth brn.	66	375.00	
B+C	11	Loaded Venturi	8			2	Dome			85	15	2k	8	18½ x 11 x 9	Wal. Vin.	Cloth, brn.	19	85.00	
	22	Loaded Venturi	8	5	Cone	1½	Dome	M		87	15	400, 10k	6	22 x 13 x 10	Wal. Vin.	Cloth brn.	25	135.00	
	44	Loaded Venturi	10	5	Cone	1½	Dome	M		89	15	400, 10k	6	25½ x 14½ x 10½	Wal. Vin.	Cloth brn.	35	179.95	
	66	Loaded Venturi	12	5	Cone	1½	Dome	M		91	10	400, 10k	6	26¼ x 15¾ x 13½	Oil. Wal.	Cloth Brn.	44½	269.00	
BML ELECTRONICS	Sound Odyssey	Planar Col.	8	5½	(2) †	1½	Horn		35-20 ±3	93	25	450, 1.5 & 4.5k	5/4	26½ x 8 x 64	Oil. Wal.	Cloth Blk.	150	1399.00 pair	†CEMF coupled ABRs.
	Sound Window	Planar Col.	6	5½	†	1½	Horn		48-20 ±5	94	20	1.5 & 4.5k	6/4	22 x 5 x 32	Oil. Wal.	Cloth Blk.	40	679.00 pair	†CEMF coupled ABR.
	Model Ten	Tuned Port	8			1½	Horn		53-20 ±5	94	5	3.5k	6/5	11 x 8 x 22	Oil. Wal.	Cloth Brn.	24	239.90 pair	
	Model Eleven	Pas. Rad.	10, 8			1¼	Dome		40-20 ±5	92	12	64, 3.5k	8/6	15 x 12 x 25	Oil. Wal.	Cloth Brn.	44	379.90 pair	
B.E.S.	U-50		†	†		†			50-20	103	15	3k	4	14 x 3¾ x 21½	Alum. Oak	Cloth Brn.	15	139.00	†2 drivers, 530 sq. in.
	U-60		†	†		†			42-18	105	20	800	8/4.1	17⅜ x 3¾ x 25¾	Alum. Oak	Cloth Brn.	20	199.00	†2 drivers, 850 sq. in.
	D-60w		†	†		†		M,T	40-20	107	25	800, 10k	8/4.1	20 x 3¾ x 28	Alum. Oak	Cloth Brn.	25	299.00	†3 drivers, 850 sq. in.
	D-75w		†	†		†		M,T	38-20	109	25	1 & 9k	4	21¾ x 3¾ x 31½	Alum. Oak	Cloth Brn.	35	449.00	†4 drivers, 1060 sq. in.
	D-190w		†	†		†		M,T	35-20	109	30	1, 4 & 10k	4	26 x 3¾ x 40½	Alum. Oak	Cloth Brn.	60	649.00	†5 drivers. 1700 sq. in.
	D-280w		†	†		†		M,T	30-20	113	30	1, 4 & 10k	8/5	26 x 3¾ x 76	Alum. Oak	Cloth Blk.	110	997.00	†7 drivers, 3400 sq. in.
B&W	DM2/II	Vented Port	8	4	Cone	1		M,T	50-18 ±3		25	400, 3k	8	10¾ x 13 x 28	Wal. Teak	cloth brn/blk		395.00	
	DM5	Ac. sus.	5			0.8	Dome		100-18 ±5	85	15	4.5k	8/3	8x18x18	Wal.	foam blk.	17	149.00	
	DM4	Vented	7	1½	Dome	1½	Dome		20-20 ±5	90	10	2.5 & 14k	8/3	10 x 10 x 21	Wal., teak	cloth brn, blk	24½	230.00	
	DM2A	Trans. Line	7	1½	Dome	1½	Dome	T	60-20 ±4	85	25	3 & 14k	8/3.5	14 x 13½ x 25½	Wal. teak	cloth brn, blk	49	350.00	
	DM6	Ac. sus.	9	5	Cone	0.8	Dome	B,M T	50-20 ±3	85	25	500, 5k	8/2	16 x 15 x 37	Wal.	cloth blk.	80	595.00	
	DM7							M,T	30-25	95	50		8	35½ x 10¾x 14½			66		



How to Make the Best Speaker Systems Even Better

Many of the current state-of-the-art speakers have provision for using more than one amplifier.

By dividing the audio spectrum in two or more sections, various combinations of improved speaker/amplifier performance become possible. For example:

(1) A large amplifier can be used for bass response, together with a smaller high quality amplifier for the treble.
(2) Amplifiers of different gain/power specifications can be used together.
(3) Speakers of different efficiencies can be used together.
(4) Higher SPL's can be achieved.
(5) Lower system distortion can be possible from both the improved amplifier performance as well as possible speaker network reduction.

The EC-5 Electronic Crossover

The EC-5 is a two-way fixed frequency electronic crossover featuring two (2) switch selectable crossover slopes, field changeable crossover frequency with optional "network parts cards" and variable channel gain.

The crossover slopes or rolloff (transfer) characteristics are front panel selectable 6 dB or 18 dB (1st and 3rd order) Butterworth for minimum "summed" channel gain error within the frequency cutoff region.

EC-5

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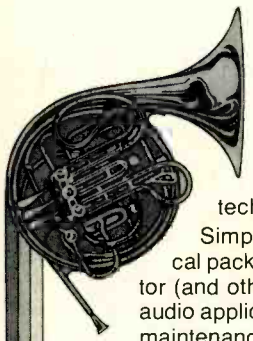
2843-26th AVE. SO.
MINNEAPOLIS, MINN. 55406

Enter No. 14 on Reader Service Card

Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
BANG OLUFSEN	M-100	Vented	12	4 2.5	†P.L. dome	1.5, 0.75	Dome, dome		35-22 ±4			550 2.5, 8k	4	15¾ x 12 x 29¾	Rose	Cloth, black	60.5	980.00 pair	†Phase-Link®
	M-75	Ac. Sus.	10	5 2.5	†P.L. dome	1	Dome		38-20 ±4			500, 4.5k	4	14 x 10¾ x 25¾	Rose	Cloth, black	37.4	850.00 pair	†As above.
	S-75	Ac. Sus.	10	5 2	†P.L. dome	1	Dome		42-20 ±4			700, 4k	4	12½ x 9¾ x 23¾	Rose	Cloth, black	24.2	500.00 pair	†As above.
	P-45	Ac. Sus.	(2) 5	3.5	†P.L.	1	Dome		55-20 ±4			2k	4	13¾ x 5½ x 25¾	Rose	Cloth, black	17.6	400.00 pair	†As above.
	S-45-2	Ac. Sus.	8	3.5	†P.L.	1	dome		49-20 ±4			2k	4	10¼ x 8 x 18¾	Rose	Cloth, black	15.4	300.00 pair	†As above.
	S-35	Ac. Sus.	8			1	Dome		58-20 ±4			3k	4	10¼ x 7¾ x 18¾	Rose	Cloth, black	13.2	240.00 pair	
	P-30	Ac. Sus.	6.5			1	Dome		58-20 ±4			3k	4	11½ x 4¼ x 21½	Rose	Cloth, black	11	300.00 pair	
	S-25	Ac. Sus.	6.5			2	cone		80-16 ±4			3k	4	8¾ x 6 x 16½	Rose- wood	Cloth, black	8.8	190.00 pair	
BETA SOUND	045	Bass Ref	12	10¾	Horn	3	Horn	M	45-18.5 ±3	88	15	800, 5.5k	10/ 5.5	17¼ x 14¾ x 25¼	Oil. Wal.	Foam, Blk	70	680.00 pair	
	050	Bass Ref	12	10¾	Horn	3	Horn	M	45-18.5 ±3	88	15	800, 5.5k	10/ 5.5	17¼ x 17½ x 40	Oil Wal.	Foam, Blk	98	880.00 Pair	Phase aligned.
	075	Ported ac Lab	12	10¾	Horn	3	Horn	M	40-18.5 ±3	90	15	600, 5.5k	8/ 6	20¾ x 16½ x 38¼	Oil Wal.	Foam, Blk.	100	1090.00 Pair	
	1001B	Ported ac Lab	15	10¾	Horn	3	Horn	M	38-18.5 ±3	92	15	600, 5.5k	8/ 5	25½ x 21½ x 41	Oil Wal.	Foam, Blk	150	1360.00 Pair	Phase Aligned.
BLACKMAX SYSTEMS	B50	Pas. Rad	10	5	Cone	1	Dome	None	40-20 ±3	89	10	65, 1.25, 4.5k	8/5	12 x 12 x 50	Wal. Ven.	Cloth, Black	68	299.95	
	B40	Vented	10	5	Cone	1	Dome	None	50-20 ±3	88	10	1.25& 4.5k	8/5	12 x 12 x 38	Wal. Ven.	Cloth. Black	54	229.95	
	B30	Vented	10			1	Dome	None	60-20 ±4	89	10	2.8k	8/6	12 x 12 x 26	Wal. Ven.	Cloth, Black	40	159.95	
BOLIVAR	125	Ducted Port	8			2				86	10	2k	4	12½ x 11 x 23	Hick.	cloth brn.	34	115.00	
	18	Ducted Port	8	5		2		M,T		87	10	1 & 3k	4	12½ x 11 x 23	Hick.	cloth brn.	36	145.00	
	64	Ducted Port	8	5		2		M,T		89	10	800, 3k	4	14 x 12½ x 26½	Hick.	cloth brn.	44	190.00	
BOSE	901-111†	ac. matrix		(9) 4½							10		8	12½ x 13 x 21	Wal.	cloth brn.	35	765.00 pair	†Direct reflecting.
	601†	ported	(2) 8			(4) 3					15	2k	8	25½ x 15 x 13	Wal.	cloth brn.	36	599.00 pair	†As above.
	501†	Ac. sus.	10			(2) 3½					15	1.5k	4	14 x 14½ x 24	Wal. vin.	cloth brn.	42	398.00 pair	†As above.
	301†	ported	8			3					10	1.2 & 3k	8	14½ x 9½ x 10½	Wal. vin.	Foam blk/mar	18	218.00 pair	†As above.
BRAUN	Output C	Ac. sus.	4			1	dome		50-25		10	1.5k	4	4¼ x 4¼ x 6¾	blk. Alum.	perf. Alum.	7	230.00 pair	
	LVP-100	Ac. sus.	4			1	dome		50-25		10	1.5k	4	4¼ x 4¼ x 6¾	blk. Alum.	perf. Alum.	7½	260.00 pair	

(continued)



The Analog Module™ Approach

All of Audio Research's products (except the vacuum-tube SP-6) share in common our exclusive Analog Module™ technology.

Simply stated the Analog Module™ is nothing more than the practical packaging of our proprietary circuitry to employ the bi-polar transistor (and other discreet components) in a linear fashion for low distortion audio applications. The end results include straight-forward designs, easy maintenance, high performance audio products from these basic building blocks.

The SP-4A High Definition™ Stereo Control Preamplifier

The SP-4A is our most deluxe control unit, with ample features to satisfy the most involved "audiophile".

Frequency Response: -3 dB, 5 Hz and 100kHz

Distortion: Less than .005% THD or IMD @ 2V RMS output.

2 dB stepped controls — programmable magnetic inputs

SP-4A

audio research

2843-26th AVE. SO.
MINNEAPOLIS, MINN. 55406

Enter No. 15 on Reader Service Card

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB		dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
BRAUN (continued)	L-200	Ac. sus.	5			1	dome		40-25		10	1.5k	4	6¼ x 5¾ x 10	blk. alum.	perf. alum.	10½	270.00 pair	
	L-300	Ac. sus.	5	2	dome	¾	dome		35-25		10	600, 3k	4	6¼ x 6¾ x 10	blk.	perf. alum.	15½	400.00 pair	
	L-1030	Ac. sus.	10	2	dome	¾	dome		20-25		25	500, 3k	8/4	12¼ x 10¼ x 27½	Wal.	perf. alum.	39¾	840.00 pair	
CSI	MDM-4	ported	(2) 6½			2½			60-17 ±3		30	1.5k	8/6	19 x 13 x 9¾	Rose	Cloth brn.	25		Near-Field Monitor
	CSM-4	Ported†	(2) 6½			1½			48-18 ±3		30	1.2k	8/6	22 x 15 x 11¾	Rose	Cloth, brn.	32		†Time Aligned.
	BE-4	Pas. rad.	10						32-300 ±2		30	300	8/5	35 x 19 x 9¾	Rose.	Cloth, brn.	60		Bass xtender w/crossover.
CANNON-TLS	1020	pas. rad	10			2x5	horn	T	30-20 ±5	96	10	3k	8/6	12¼ x 13½ x 22	Wal. vin	cloth, brn	35	199.00	
	1030	pas. rad	10	5½	cone	2x5	horn	M,T	25-25 ±5	96	12	400, 3k	8/6	14 x 14¼ x 25	Wal. vin	cloth, brn	45	299.95	
	1230	pas. rad	12	5½	cone	2x5	horn	M,T	25-30 ±5	96	15	400, 3k	8/6	14 x 14½ x 25	Wal. vin	cloth. brn.	50	399.00	
	1230T	pas. rrad	12	5½	cone	2x5	horn	M,T	20-30 ±5	96	18	400, 3k	8/6	14 x 14½ x 39	Wal. vin	cloth. brn.	65	499.95	
CANTON	HC-100	Ac. sus.	4½			¾	Dome		48-30		5	1.7k	4/8	7½ x 5¾ x 4¾	Blk.	perf. alum.	5	190.00 pair	
	GLE-40	Ac. sus.	6¼			¾	Dome		42-30		9	1.4k	4	10½ x 6 x 7¼	wal.	metal	7¼	125.00	
	GLE-40F	Ac. sus.	6¼			¾	Dome		48-30		9	1.7k	4	12¾ x 3½ x 8¾	wal.	metal	6¾	139.00	
	GLE-45	Ac. sus.	8			¾	Dome		38-30		7½	1.7k	4	12¾ x 7½ x 8¾	wal.	metal	12	165.00	
	GLE-50	Ac. sus.	8	1¼	Dome	¾	Dome		36-30		7¼	800, 2.2k	4	12¾ x 7¼ x 8¾	wal.	metal	13¾	195.00	
	GLE-60	Ac. sus.	8¾	1¼	Dome	¾	Dome		28-30		6½	800, 2.2k	4	14¾ x 8½ x 9¾	wal.	metal	15½	259.00	
	GLE-70	Ac. sus.	10¼	1¼	Dome	¾	Dome		25-30		5¾	800, 2.2k	4	17½ x 9¼ x 11½	wal.	metal	20¼	319.00	
	Gamma 800	Ac. sus.	8	1¼	Dome	¾	Dome		23-30		25	750, 2.2k	4/8	11 x 11 x 11	blk.	metal blk.	22	299.00	
	LE-900	Ac. sus.							18-25		40	700, 2.1k	4/8	23x10¾ x 12½	wal.	metal	34	379.00	
CELESTION	Ditton 66	Pas. rad.	12	2	Dome	1	Dome		50-25 ±4	87	10	500, 5k	8/4	40 x 15 x 11½	Wal./ Teak	cloth blk.	66	529.00	
	Ditton 25	Pas. rad.	12	(2) 1¼	Dome	1	Dome		60-25 ±4	88	10	2&9k	8/4	32 x 14 x 11	Wal.	cloth blk.	42	349.50	
	Ditton 44	Ac. sus.	12	6	Cone	1	Dome		60-25 ±4	88	10	500, 5k	8/4	30 x 14½ x 10	Wal./ Teak	cloth blk.	45	309.50	
	Ditton 33	Ac. sus.	10	5	Cone	1	Dome		60-25 ±5	87	10	500, 2.5k	8/4	24 x 14 x 10½	Wal./ Teak	cloth blk.	34	259.50	
	Ditton 15XP	Pas. rad.	8			1	Dome		60-20 ±4	88.5	10	2.4k	8/6	21 x 9½ x 9½	Wal/ Teak	cloth blk.	17	169.50	
	UL6	Pas. rad.	6			1	Dome		80-28 ±3.5	85	20	2.5k	8/4	11½ x 6 x 8¾	Wal./ Teak	cloth blk.	17¼	179.50	

The Simple Approach

In Audio, perhaps more so than in any other electronic discipline, the concept of "simpler is better" proves true. The SP-5, although elegant, is such a product. By eliminating all but essential features, a basic stereo control of the highest quality becomes available at a modest cost.

The SP-5 High Definition™ Stereo Control Preamplifier

Frequency Response: -3 dB, 5 Hz and 100kHz
Distortion: Less than .005% THD or IMD
Segmented controls, 2 dB steps

SP-5

audio research
2843-26th AVE. SO.
MINNEAPOLIS, MINN. 55406

Enter No. 16 on Reader Service Card

Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
CERWIN-VEGA	H-10	ported ref	10			1	dhorm	T	38-20 ±4.0	92	25	2k	8/6	14½ x 11½ x 25	Durotex	foam beige	33	140.00	
	W-10	ported ref	10			1	dhorm	T	38-20 ±4.0	92	25	2k	8/6	14½ x 11½ x 25	oil walnut	foam black	39	170.00	
	H-12	ported ref	12			1	dhorm	T	38-20 ±4.0	97	25	2k	8/6	14½ x11½ x 25	Durotex	foam beige	33	150.00	
	W-12	ported ref	12			1	dhorm	T	38-20 ±4.0	97	40	2k	8/6	14½ x 11½ x 25	oil wal	foam black	42	180.00	
	H-15	ported ref	15			(2) 1	horn	T	38-17 ±4.0	103	40	2k	8/5	18¼ x 17½ x 29¼	Durotex	foam black	63	275.00	
	R-10	ported ref	10			1	dhorm	T	38-20 ±4.0	93	25	1.2k	8/4	13 x 11½ x 24	oil wal	cloth var.	39	170.00	
	R-12	ported ref	12			1	dhorm	T	38-20 ±4.0	98	40	2k	8/4	14½ x 11½ x 25	oil wal	cloth var.	43	200.00	
	RR-123	ported ref	12	6	cone	1	dhorm	M,T	38-20 ±4.0	96	40	500, 5k	8/4	14½ x 11½ x 25	oil wal	cloth var.	50	280.00	
	212	ported ref	12			1	horn	T	30-17 ±4.0	100	40	2k	8/4	15½ x 15½ x 26	oil wal	cloth brown	61	250.00	
	312	ported ref	12	6	cone	1	horn	M,T	30-17 ±4.0	100	40	300, 3.5k	8/4	15½ x 15½ x 26	oil wal	cloth brown	63	300.00	
	417R	ported ref	15	6	cone	1	horn	M,T	30-20 ±4.0	103	40	300, 3.5, 12k	8/4	18½ x 17½ x 29¼	oil wal	cloth brown	82	400.00	
	S-1	ported ref	12	6	cone	1	dhorm	M,T	28-20 ±4.0	98	40	300, 4k	8/4	14½ x 14 x 25	oil wal	cloth brown	55	400.00	Gas-filled susp.
	12TRR	ported ref	12	6	cone	1	dhorm	M,T	28-20 ±4.0	100	40	250, 4k	8/4	13½ x 13½ x 40	oil wal	cloth black	79	400.00	
CHAPMAN	310	Air Sus	10	5½	Cone	1	Dome	T	35-20 ±1	88	20	400, 4K	4	14 x 11 x 21½	Wal.	Cloth Black	40	590.00 Pair	
	SCJI	Air Sus	12	5½	Cone	1	Dome	T	30-20 ±1	90	20	350, 4K	4	18 x 13 x 28	Wal.	Cloth Black	65	750.00 Pair	
CHARTWELL (OSAWA)	L53/5A	Bass ref.	4½				Dome		60-20 ±4		10		8	12 x 7½ x 6½				225.00	
	PM-10C	Bass ref.	6½			1.9	Dome		50-20 ±3		12		8	18¼ x 9½ x 8¼	Var.			280.00	
	PM-700	Bass ref.	8				Dome		45-22 ±3		15		8	26 x 13½ x 11¼	Var.			400.00	
	PM-400	Bass ref.	12	5¾	Cone	1	Dome		45-22 ±3		20		8	35¼ x 13 x 19	Var.			650.00	
	PM-450	Bass ref.	12			1	Dome		45-20 ±3		100		8	30 x 18¼ x 16¼	Var.			2100.00 pair	Avail. w/ built-in EQ & amp, $3000.00.
CIZEK	1	ac sus	10			1	dome	T	35-17 ±1½-2	88	15	1500	†	15½ x 9½ x 25	oil wal.	foam brn	43	198.00	† 4 or 8 switchable.
(continued)	2	ac sus	8			1	dome	T	38-17 ±2	88	15	1500	†	13 x 9 x 21	oak vinyl	foam brn	32	134.00	† 4 or 8 switchable.

Listen Through the Music System

It is very easy, these days, to talk of sophisticated signal processing equipment that purports to do this or that, but the real measure of audio equipment is not what it does, but what it *does not do*. Simply to amplify, without adding to, or taking from the musical signal is *very* difficult, and this is always achieved only in measure. Interestingly enough, you cannot learn that measure of performance from the "specifications" because they relate only to static test conditions, and so we invite you to listen to our only vacuum tube product,

The SP-6 High Definition™ Preamplifier/Stereo Control

Some of the specifications:

Response -3 dB @ .05 Hz and 250kHz

Output: 75 V RMS (Hi Z) at less than ½% THD at 1kHz

Maximum Input Magnetic Phono without overload: 1 kHz — 700 mV RMS
100kHz — 2 V RMS

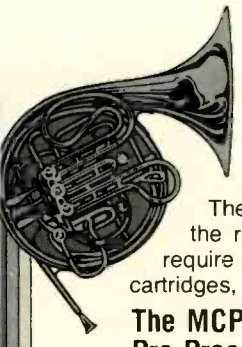
SP-6

audio research

2843-26th AVE. SO.
MINNEAPOLIS, MINN. 55406

Enter No. 17 on Reader Service Card

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal)/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
CIZEK (continued)	3	ac sus	8			1	dome	T	42-17 ±2	88	15	1500	†	11¾ x 7½ x 19	hickory vin	foam brn	22	97.00	† 4 or 8 switchable.
	MG-27	ac sus	(2) 10							86	25	200	4	17¾ x 12½ x 29	oil wal	foam brn	85	295.00	sub-woofer.
CONCEPT	CE-1	Pass. Rad.	10				Heil	M,T	30-23 ±3	91	20	1.4k	6	40 x 15¾ x 15	Oil Wal.	Cloth, Brown	91	445.00	12 in. passive rad.
	CE-2	Pas. Rad.	10				Heil	M,T	35-23 ±3	91	20	1.5k	6	25¼ x 14 x 14¼	Oil Wal.	Cloth, Brown	54	345.00	LED power indicators.
	CE-M	Pas. Rad.	12				Heil	W, M,T	25-23 ±3	91	25	1.3k	6	45 x 18 x 15.5	Oil Wal.	Cloth, Brown	102	595.00	15 in. passive rad.
CONTRARA (Jennings)	Rectangle	Sealed Box	8			1	Dome			88.5	10	2.5k	8/6	9 x 12 x 18	Oil Wal.	Cloth Blk	30	135.00	
	Tower	Sealed box	10			1	Dome	T		89	15	2.5k	8/6	28½ x 11½ x 11½	Oil. Wal.	Cloth Brn.	35	200.00	
	Pedestal	Sealed Box	(2) 8			1	Dome			92	10	200, 2.5k	8/6	33 x 11½ x11½	Oil. Wal.	Cloth Blk.	40	250.00	
	Elan	Sealed box	(2) 8	1½	Dome	1	Dome	M,T		86	30	500, 1.2 &5k	8/6	37 x 12½ x12½	Oil. Wal.	Cloth Brn.	50	380.00	
	Piccola Two	Reflex	6½			1	Dome			92	15	2.5k	8/6	6¾ x 9 x 14¾	Oil. Wal.	Cloth Brn.	12	100.00	
	Piccola Three	Sealed box	6½	1½	Dome	1	Dome	M,T		92	15	1.2& 5k	8/6	6¾ x 11½ x 14¾	Oil. Wal.	Cloth Brn.	15	145.00	
	Piccola Bass	Sealed box	12							92	30	80	8	18 x 18 x 21½	Oil. Wal.	Cloth Brn.	40	225.00	Subwoofer.
	Vector One	Pas. rad.	8			1	Dome	T		88.5	15	2.5k	8/6	23 x 10¾ x 14	Oil. Wal.	Cloth Brn.	35	180.00	
	Vector One A	Pas. rad.	8	1½	Dome	1	Dome	M,T		89	15	1.2& 5k	8/6	23 x 10¾ x 14	Oil. Wal.	Cloth Blu.	40	230.00	
	Vector Two B	Pas. rad.	10			1	Dome	T		89	15	2.5k	8/6	24¾ x 14¾ x 11¾	Oil. Wal.	Cloth Brn.	40	210.00	
	Vector Two	Pas. rad.	10	1½	Dome	1	Dome	M,T		89	15	1.2& 2.5k	8/6	24¾ x 14¾ x 11⅜	Oil. Wal.	Cloth Brn.	40	260.00	
	Vector Four	Pas. rad.	10	5	Cone	1	Dome	M,T		89	15	300, 5k	8/6	13 x 16 x 27½	Oil. Wal.	Cloth Brn.	40	300.00	
CRAIG	5704		(2) 8	3	Cone	†	Cone		50-16	92		12k	8	13 x 22 x 11⅜	Wal.	Knit	25		† Combined midrange/ tweeter in isolated sub-enclosure
	5705		10			2	Cone		45-17	94		2.5k	8	16¼ x 24 x 13½	Wal.	Knit	36		
	5706		12	4½	Cone	2	Cone	M,T	40-20 ±5	94		800, 5k	8	19¼ x 27 x 14½	Wal.	Knit	46		
	H722		8						75-12	91			8	12 x 6½ x 22	Wal.	Cloth	12	49.95	
	H723		8			2	Cone		70-15	91			8	12 x 8 x 22	Wal.	Cloth	14¼	59.95	
	H700		6½						100-13	90			8	10¾ x 4¾ x 15¾	Wal.	Cloth	9	29.95	
CRISMAN	DS 8	Bass ref.	8			1½	Cone		40-20k ±5	81	10	3.5k	8/3	11½ x 9 x 19	Wal. Vin.	Cloth Vin.	17	50.00	
	DS 10	Bass ref.	10			1½	Cone		40-20k ±5	81	10	3.5k	8/3	12½ x 11 x 19	Wal. Vin.	Cloth Vin.	26	100.00	
(continued)	DS 12	Bass ref.	12	1½	Cone	1½	Cone		30-20 ±3	79	10	800, 3.5k	8/3	25½ x 11 x 14	Wal. Vin.	Cloth Vin.	40	200.00	



The Specialized Approach Products to Meet a Need

The very best phonograph pickup cartridges include several technologies. One of these is the "moving coil" cartridge. These cartridges tend to have very small signal output because of the requirement for low moving mass. Most music systems will require a special "step-up" system to obtain the benefits of these cartridges, and for these we offer

The MCP-2 High Definition™ Moving Coil Phono Cartridge Pre-Preamplifier

Features include adjustable gain, adjustable input impedance, selectable inputs and outputs, a muting switch and vanishingly low distortion.

MCP-2

audio research

2843-26th AVE. SO.
MINNEAPOLIS, MINN. 55406

Enter No. 18 on Reader Service Card

Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms: Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
CRISMAN (continued)	CL 10	Ac sus	8			1½	Dome	T	30-20 ±3	77	15	2.8k	8/4	12½ x 11 x 19	Wal. Vin.	Cloth Brown	21	89.00	
	CL 20	Ac. sus	10			1½	Dome	T	35-20 ±5	77	15	2.8k	8/4	17½ x 12 x 21	Wal. Vin.	Cloth Brn.	30	139.00	
	CL 30	Ac. sus.	12	1½	Dome	1½	Dome	M,T	30-20 ±3	76	15	500, 2.8k	8/4	25½ x 13 x 16	Oil Wal.	Cloth Brn.	44	199.00	
DCM	Time Window	Hybrid Trans. Line									10		8/6	14¾ x 11¾ x 36	Wal.	Foam Blk.	32	660.00 pair	Isotropic/ isophasic
	QED	Hybrid Trans. Line									10		12/8	11¾ x 9¾ x 36	Wal.	Foam Blk.	35	480.00 pair	Isophasic
DAHLQUIST	DQ-10	Phased Array	10	2	dome	¾	dome	T& ST	37-27 ±3		60	400, 1K, 6K, 12.5K	8/5.5	30.5 x 9 x 31.5	Wal.	Blk or Wh.	55	425.00	5-way with 5 S=in. midwoofer & Piezo ST. Subwoofer.
	DQ-1W	ac. sus.	13						20-100		60		8	18.5 x 15 x 26	oil wal.	Blk. or wh.	70	275.00	
DAYTON WRIGHT	XG8 Mk III	E.S.					pz	T	32-24 ±4	83	40	10k	2.4	41½ x 39 x 9½	Wal.	cloth blk/wh	95	3295.00	
DECCA	London Ribbon Speaker	Horn-Coupled Tweeter					Ribbon		1k-30k			1k†	8	12¾ x 9 x 7½	Black		9	139.50	†Or above. 1-KHz crossover, $25.00.
	London Super Tweeter	Ribbon Tweeter In Encl. w/o Horn					Rib-bon		7k-30k			7k	8		Grey			129.50	
DESIGN ACOUSTICS	D-12AR	Ac. (or Sus. vent)	(2) 8	(3) 5, 1½	Cone Dome	(5) 1, 1½	Cone Dome	W, M,T	30-18 ±2	89	25	650, 2k	4	22 Dia 26 H.	Rose	Cloth Black	70	850.00	
	D-12A	Ac. (or Sus vent)	(2) 8	(3) 5, 1½	Cone Dome	(5) 1, 1½	Cone Dome	W, M,T	30-18 ±2	89	25	650, 2k	4	22 Dia. 26 H.	Oil. Wal.	Cloth Black	70	675.00	
	D-8	Pas. Rad.	(2) 10	5	Cone	(5)	Dome Piezo	W,M, T	30-17 ±2	94.5	15	600, 1.5k	8	44 x 16½ x 12¾	Oil. Wal.	Cloth Black	70	499.00	
	D-6	Vented	10	5	Cone	(5) 2½	Cone	W,T	30-15 ±2	92	20	800, 2k	8	24½ x 16½ x 13¾	Oil. Wal.	Cloth Black	50	329.00	
	D-4	AC. Sus.	10	5	Cone	1½	Cone	W,T	40-15 ±3	90.5	25	800, 2k	8	38 x 9½ x 17½	Oil. Wal.	Cloth Brown	60	249.00	
	D-3	Vented	10	5	Cone	1	Dome		40-20 ±3.5	90	30	500, 2k	8	25 x 12 x 11½	Oil. Wal.	Cloth Brown	40	200.00	
	D-2	Vented	10			1	Dome	T	40-18 ±3.5	88	20	1.5k	8	34 x 12½ x 12¾	Oil. Wal.	Cloth Black	35	185.00	
	D-1W	Vented	8			1½	Cone		50-15 ±3.5	87.5	15	1.5k	6	21½ x 12 x 8	Oil. Wal.	Cloth Black	19	120.00	
	D-1A	Vented	8			1½	Cone		50-15 ±3.5	87.5	15	1.5k	6	21½ x 12 x 8	Oil. Wal.	Cloth Black	12	110.00	
DYNACO	D20XL	Aper.	8			2	Dome		40-18 ±3	94	5	2k	8/6	18 x 10½ x 8½	Vin.	Cloth Blk.		74.00	
	A-25 II	Aper.	10			1	Dome	T	38-18 ±3	94	12	1.6k	8/6	12 x 10 x 19¾	Oil. Wal.	Cloth Brn.		119.00	
	A-30XL	Aper.	10	5	Cone	1	Dome	M,T	30-20 ±3	94	12	1& 4.5k	8/6	13¼ x 10 x 22½	Oil. Wal.	Cloth Brn.		149.00	
	A-100	Pass. Rad.	8 10	5	Cone	1	Dome	M,T	20-30 ±3	94	12	1& 4.5k	8/6		Oil. Wal.	Cloth Blk.	65	249.00	

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MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, kHz	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
EPI	70	Ac. Sus.	6			1	air spring		60-20 ±3	86.5	10	1.8k	8/4	16 x 10.5 x 7.25	wal. vinyl	foam black	17.5	150.00 pair	
	100	Ac. Sus.	8			1	air spring		48-20 ±3	87	12	1.8k	8/4	21 x 11 x 9	oil wal.	cloth black	25	210.00 pair	
	120B	Ac. Sus.	10			1	air spring		38-20 ±3	88	25	1.8k	8/4	25 x 15 x 11	wal vin.	foam black	42	298.00 pair	
	200B	Pas. Rad.	8			1	air spring		34-20 ±3	90	15	1.8k	8/4	32.75 x 17 x 11	oil wal.	cloth black	60	510.00 pair	
EPS	210	Ac. Sus.	10			3	Cone		40-15		3.5	1.5k	8	13 x 10¼ x 23	Wal. Vin.	Cloth Brown	20¼	69.95	
	180	Ac. Sus.	8			3	Cone		50-15		3.5	1.65k	8	11½ x 8½ x 8	Wal. Vin.	Cloth Brown	13	39.95	
ESS	Performance Model 8	Pass. Rad.	8				†		50-20 ±3	94		2.4k	6	12¼x10¾ x 22	vin. wal.	cloth brn.	30	172.00	† Air-motion trnsformer
	Performance Model 5	Pass. Rad.	10				†		50-20 ±3	95		2.4k	6	14x14 x 24¼	vin.. Wal.	cloth. brn.	36	234.00	† As above
	Performance Model 4	Pass. Rad.	10				†		35-24 ±3	96		2.4k	6	12x12½ x35	vin. wal	cloth brn.	48	322.00	† As above
	Tempest LS 8	Pass. Rad.	8				†		50-20 ±3	94		2.4k	6	10¾x12½ x22	oak ven	cloth brn	30	179.00	† As above
	Tempest LS 5	Pass. Rad.	10				†		40-20 ±3	95		2.4k	6	14x14 x24¼	oak ven	cloth brn	36	241.00	† As above
	Tempest LS 4	Pass. Rad.	10				†		35-24 ±3	96		2.4k	6	12¼x12½ x35	oak ven	cloth brn	48	348.00	† As above
	AMT 1B	Pass. Rad	12				†	M,T	35-23 ±3	90		1k	6	16¼x15¼ x35¼	oil wal.	cloth brn.	85	488.00	† As above
	AMT Monitor	Pass. Rad.	12				†	T	30-23 ±3	90		1k	5	16x16 x39¼	oil wal.	cloth brn.	103.5	608.00	†As above
	AMT 1B bookshelf	Pass. Rad	12				†	M,T	40-23 ±3	90		1k	6	14x14 x 24	oil wal.	cloth brn.	65	416.00	† As above
	AMT 10B	Pass. Rad	10				†	T	40-22 ±3	90		1.4k	6	14x14 x25	oil wal	cloth brn.	55	334.00	† As above.
EASTMAN SOUND	Gamma Magnificat	Ac sus.	(2) 12	5		(2) 1½	Dome	M,T	26-22 ±5†	93	50	500, 4k	4	18 x 14 x 37½	Wal.	Knit Brn.	90	429.00	† Write for test method.
	Gamma Soundtower	Ac. sus.	(4) 8	5		(4) 1	Horn	M,T	38-18 ±5 †	95	50	1&5k	8	16¼ x 9¾ x 52	Wal.	Knit Brn.	90	449.00	
	Gamma 315S	Ac. sus.	15	5	Cone	1	Horn	M,T	30-20 ±4 †	92	40	750, 4k	8	16 x 11¾ x 25¼	Wal.	Knit Brn.	48	289.00	
	Gamma 210S	Ac. sus.	10			1½	Ring	T	40-18 ±4 †	90	30	1k	8	12¾ x 10¼ x 21½	Wal.	Knit Brn.	35	139.00	
	Gamma 204S	Ac. sus.	5			1½	Ring	T	67-18 ±4 †	88	20	1.5k	8	5½ x 4¼ x 10¼	Wal.	Knit Brn.	8	79.00	
	Gamma 208S	Ac. sus.	8			1½	Ring	T	50-18 ±5 †	91	20	1k	8	10¾ x 10¼ x 18¼	Wal.	Cloth Brn.	26	99.00	
	Gamma 308S	Ac. sus.	8	5	Cone	1½	Ring	M,T	45-18 ±5	91	25	1&4k	8	12¾ x 7½ x 21½	Wal.	Cloth Brn.	26	119.00	
	Gamma 310S	Ac. sus.	10	5		1	Horn	M,T	38-18 ±5	92	30	750, 3k	8	12¾ x 10¼ x 21½	Wal.	Cloth Brn.	35	179.00	
	Gamma SSS	Ac. sus.	(2) 8	5	Cone	1	Horn	M,T	36-18 ±5	92	35	1&5k	4	15 x 12¼ x 25½	Wal.	Cloth Brn.	48	229.00	
	Gamma 412	Ac. sus.	12	5		(2) 1	Horn	M,T	32-20 ±4	91	40	500, 3k	8	15 x 12¼ x 25½	Wal.	Cloth Brn.	51	269.00	
	Gamma 1200M	Ac. sus.	12	5		1½	Dome	M,T	30-20 ±3	89	40	350, 4k	8	15 x 12¼ x 29	Wal.	Cloth Brn.	58	339.00	
	Gamma 1500S	Ac. sus.	15	5		(4) 1	Horn	M,T	30-20 ±4	90	40	350, 4k	8	18 x 14 x 28½	Wal.	Cloth Brn.	63	379.00	

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Open Reel: The format

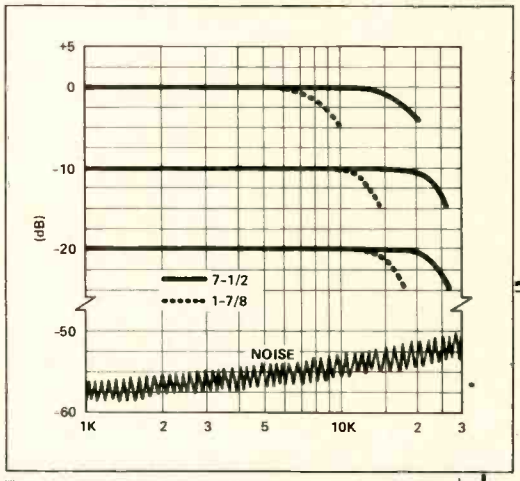
You're looking for a tape recorder. You've heard from friends and salesmen that cassette is the answer. At TEAC we make both cassette and reel-to-reel tape recorders. Because we make each for a specific person and application, you should depend on fact, not hearsay, before spending your money.

IT'S A MATTER OF PHYSICS

There are immutable reasons why cassettes can't match open reel fidelity.

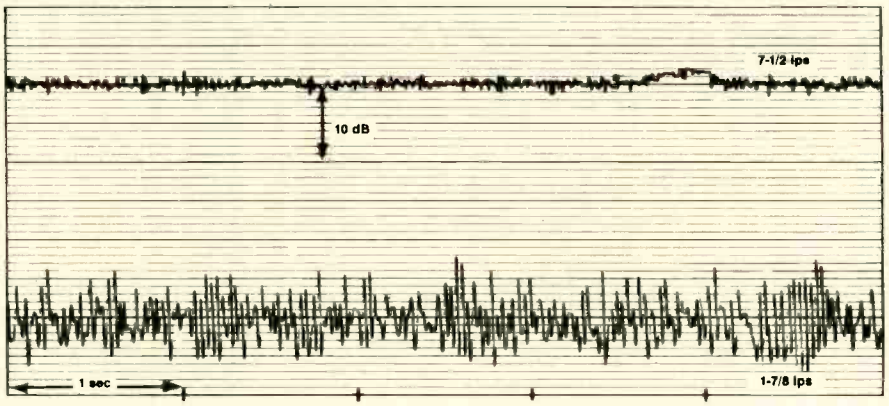
Take tape speed. Open reel tape running at 7½ ips is running four times faster than a cassette. And speed has more to do with the relationship between frequency response and signal-to-noise than anything else by far.

At 7½ ips all audio frequencies can be recorded at full level without tape saturation. Recording at 1⅞ ips forces you to make drastic compromises in record levels. The more you have to back off on recording levels, the more you hurt the ratio of signal-to-noise.



Tape saturation vs. level at 7½ ips and 1⅞ ips.

In short, with a cassette deck you cannot have high frequency response and good signal-to-noise. So a cassette deck is always operating on the ragged edge of disaster. It's so much easier to get into trouble than out of it because there's a difficulty for every solution.



Comparative dropouts between 7½ ips and 1⅞ ips at 15kHz.

MORE IS MORE

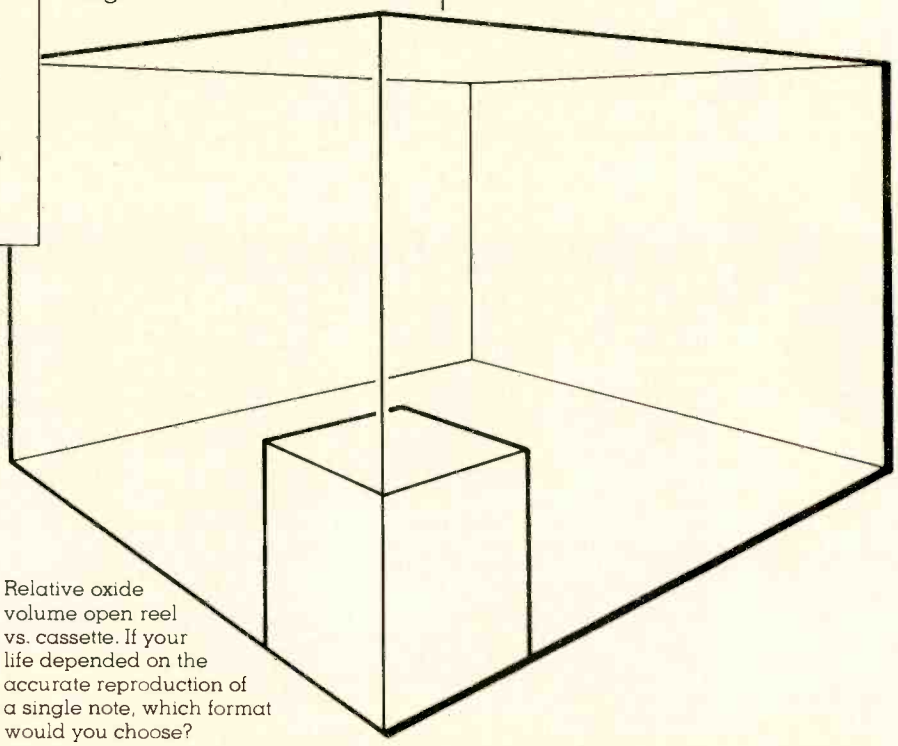
The faster the speed the longer the wavelength, the longer the wavelength the more protection you have against dropouts. You also have an easier job of editing.

Now take track width. Open reel gives you twice the track width of cassettes. The wider the track width the higher the output, the higher the output the better the signal-to-noise ratio. A wider track is also less sensitive to dropouts and, obviously, a wider track retains more magnetism.

And while we're on the subject of magnetism, an open reel tape has twice the oxide coating of a cassette.

Upshot: A total tape volume 16 times greater than a cassette, which means 16 times more magnetic particles to store and remember music.

If that sounds better to you, if we've convinced you the cassette format is a high price to pay for convenience, then you ought to look at the TEAC line-up of open reel tape recorders.


Relative oxide volume open reel vs. cassette. If your life depended on the accurate reproduction of a single note, which format would you choose?

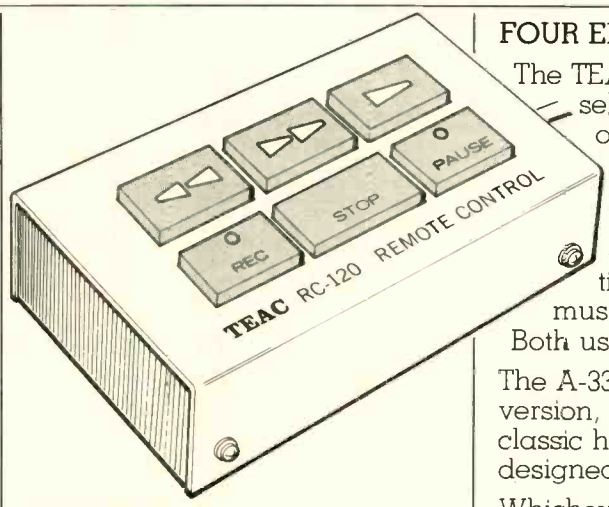
for the informed.

INSIDE INFORMATION

TEAC is a leading designer and manufacturer of computer and instrumentation recorders. In medical centers, for example, physicians depend on special TEAC units to record vital data in life-or-death situations; in remote wilderness areas, scientists depend on TEAC to monitor now-or-never phenomena like earthquakes.

From that experience we've learned that the quality of the transport mechanism is the single most important consideration in a tape recorder. For the computer industry, and for you. That's why many of the same engineers have designed the tape recorders we make for both.

Our entire reel-to-reel line has three motors and micro-switched solenoid operated transport systems, a blend of computer age sophistication and brute strength that nothing else can equal. Ask anyone whose opinion you respect.



OPTIONAL REMOTE CONTROL

Unlike some reel-to-reel machines, TEAC decks have full-function remote capability. Our optional remote units are the perfect answer for recording sessions where you can't be next to the recorder, or for operational access to a recorder in a custom installation.

TEAC®

First. Because they last.

FOUR EXAMPLES

The TEAC A-2300SX is the best selling, most successful open reel machine ever. Over 300,000 have been sold. The SR version of the A-2300 features an auto-reverse function so you can play music in two directions. Both use 7" reels.

The A-3300SX and its reversing version, the A-3300SR, are classic heavy-duty machines designed for 10" reels.

Whichever TEAC open reel recorder you choose, you can be sure it will last a long, long time. It was designed and built that way.

FACE IT

In the end, the cassette recorder is for those who are fonder of convenience than fidelity. If you want fidelity you can't ignore open reel.

In all crucial specifications, open reel tape recorders are better than cassette decks. And that message comes from the people who make the best of both. TEAC.

TEAC Corporation of America • 7733 Telegraph Road • Montebello, CA 90640

Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
ELECTRO RESEARCH	340	Vented	(2) 12	8, 5	Cones	2½, 1	Dome Cone	MB,M T,ST	20-19 ±2		100	150 500, 3k, 6.5k	4/2			100			Bi-amp-ble
ELECTRO-VOICE	Interface 1	Vented	8			2½	Cone	T	54-18 ±4	92	3.6	1.5k	8/5	11½ x 10½ x 21¼	Wal. Vin.	Cloth Brn,	23	110.00	
	Interface 2	Vented	8			2½	Cone	T	47-18 ±4	92	3.6	1.5k	8/5	13¾ x 11¼ x 24½	Wal. Vin.	Cloth Brn.	25	150.00	W/10-in. pas. red.
	Interface 3	Vented	8			2½	Cone	T	40-18 ±4	92	3.6	1.5k	8/5	14¾ x 12½ x 26½	Wal. Vin.	Cloth Brn.	33	190.00	W/12-in low pas. red.
	Interface A	Vented	8			(2) 2½	Cone		35-18 ±3	92	3.6	1.5& 8k	8/5	14¼ x 8¼ x 23¼	Wal.	Cloth Brn.	30	500.00 pair	W/12-in. pas. red.
	Interface B	Vented	8			(2) 2½	Cone		30-18 ±3	92	3.6	1.5& 8k	8/5	16 x 10½ x 29¼	Wal.	Cloth Brn.	42	675.00 pair	As above w/ equalizer.
	Interface C	Vented	10				Rad. Horn		30-18 ±3	96	2.8	2k	6/4	21½ x 11¾ x 30	Wal.	Cloth Brn.	60	900.00 pair	W/equaliz-er.
	Interface D	Vented	12	6½	Cone		Rad. Horn	T	28-18 ±3	97	1.5	350, 3k	8/5	21¾ x 15½ x 32	Wal.	Cloth Brn.	114	1500.00 pair	W/equaliz-er.
	Sentry V	Vented	10				Rad. Horn.	T	45-18 ±3	96	2.8	2k	6/4	20 x 11¾ x 28½	Oak	Cloth Blk.	52	306.00	Opt. SEQ eq.
	Sentry III	Vented	15		Rad. Horn		Rad. Horn	T	40-18 ±3	97	1.5	600, 3.5k	8/5	28½ x 20½ x 34½	Wal.	Cloth Brn.	156	849.00	
	Sentry VI	Vented	12	6½	Cone		Rad. Horn	T	40-18 ±3	97	1.5	350, 3k	8/5	21¾ x 15½ x 32	Wal.	Cloth Brn.	114	699.00	
EPICURE	5	Ac. Sus.	6			1	air spring		50-20 ±3	84	12	1.8k	8/4	11x 8x15	Wal vin.	cloth brn.	18	170.00 pair	
	10	Ac. Sus.	8			1	air spring	T	43-20 ±3	86	12	1.8k	8/4	12 x 10 x 22	wal. vin.	cloth brn.	33	250.00 pair	
	11	Vent	6			1	air spring	T	36-20 ±3	84	15	1.8k	8/4	9½ x 13½ x 21½	oil. wal.	cloth brn.	36	298.00 pair	
	14	Pas. Rad.	6			1	air spring	T	28-20 ±3	84	15	1.8k	8/4	24 x 13½ x 9	oil. wal.	cloth brn.	40	390.00 pair	
	20+	Ac. Sus.	8			1	air spring	T	38-20 ±3	86	20	1.8k	8/4	12 x 18¼ x 29	oil. wal.	cloth brn.	64	550.00 pair	
	400+	Ac. Sus.	6			1	air spring	T	32-20 ±3	85	30	1.8k	8/4	14 x 14 x 38	oil. wal.	cloth blk.	90	900.00 pair	
	3.0	Ac. Sus.	10	6	Cone	1	air spring	T	32-20 ±3	86	30	400, 2600	4/4	16½ x 14½ x 41	oil. wal.	foam blk.	60	1150.00 pair	
	1000	Ac. Sus.	8			1	air spring		23-20 ±3	87	60	1.8k	8/4	18 x 18 x 76	oil. wal.	cloth blk.	180	2000.00 pair	
EZEKIEL	F.R.L.II	inf. baf.	10	6		2	Dome	M,T	27-19 ±2,-4	87	75	300. 3.5k	8/7	15 x 10 x 44	Wal.	Cloth brn, blk	53	980.00 pair	
	M.T.M.	inf. baf.	8			2	Dome	T	36-19 ±4	89	25	2.2k	8/6	14 x 8 x 40	Wal.	Cloth brn, blk	37	550.00 pair	
	W.R.L.	inf. baf.	8			2	Dome	T	38-19 ±4	89	25	2.2k	8/6	15 x 10 x 25	Vin. Wal.	Cloth brn, blk	37	300.00 pair	
FABER AUDIO	System I	slot load	10	5	Cone	2½	Cone	M,T	35-18		10	250	8/3	15½ x 15½ x 13	wal.	black	38	375.00	Consists of two satel-lites an-d one sub unit.
	System II	air sus.	10	5	Cone	1½	Dome	M,T	30-20		20	250, 2.5k	8/2.7	13½ x 13½ x 13½	wal.	black	47	450.00	As above.
	System III	corner loaded	(2) 10	5	Cone	1½	Dome		25-20		20	250, 2.5k	8/3	22½ x 18 x 18	wal.	black	67	550.00	As above.
	TAS	air sus.	12	5	Cone	1½	Dome	M,T	25-20		20	250, 2.5k	8/3	17½ x 16½ x 25	wal.	black	58	450.00	
	F100	ported	10	5	Cone	2½	Cone	M	30-18		10	500, 1.5k	8/3	13 x 12½ x 24	wal. vin.	black	24	169.00	
FISHER	MS 115A	Passive	6½						80-12 ±10	90	1	8k	8	13¾ x 9 x 22	Wal. vin.	Cloth brn.	14	79.95	
	MS 125A	Passive	8			2	Cone		70-14 ±10	91	4	6k	8	13¾ x 9 x 22	Wal. vin.	Cloth brn.	15	89.95	
	MS 135A	Passive	8	3	Cone	2	Cone		70-16 ±10	91	5	6, & 8k	8	14¾ x 9 x 22	Wal. vin.	Cloth brn.	19	99.95	
	XP 320	Ported	8			2	Cole		70-15 ±10		8.5	5k	8	11¼ x 7½ x 22	Wal. vin.	Cloth brn.	12	79.95	
	XP 325	Ported	10	5	Cone	3	Cone		65-18 ±10		12	1.5 & 5k	8	13⅜ x 8½ x 21⅞	Wal. vin.	Cloth brn.	18.5	139.95	
	XP 330	Ported	12	5	Cone	3	Cone		60-18 ±10		17	1.5 & 5k	8	14⅜ x 11¼ x 23½	Wal. vin.	Cloth brn.	27	159.95	
	XP 335	Ported	12	5	Cone	3	Cone		55-18 ±10		17	1.5 & 5k	8	16 x 11⅝ x 25½	Wal. vin.	Cloth brn.	30	179.95	
	XP 95B		15	(2) 5	Cone	3	Dome	M,T	40-20 ±10		25	1.5 & 5k	8	17½ x 13 x 28	Wal. vin.	Cloth brn.	44	249.95	
	ST 420	Pas. Rad.	8			3	Cone		50-16 ±10	90	3.5	5k	8	13⅜ x 9⅜ x 21⅞	Wal. vin.	Cloth brn.	19	119.95	
	ST 430	Pas. Rad.	10	5	Cone	3	Cone		50-17 ±10	90	6.5	1 & 5k	8	16 x 12¾ x 25½	Wal. vin.	Cloth brn.	34	179.95	
	ST 440	Ac. Sus	12	5	Cone	3	Dome	M,T	45-18 ±10	90	12	1 & 5k	8	16 x 12¾ x 25½	Wal. vin.	Cloth brn.	36	219.95	
	ST 441	Ac. Sus	12	5	Cone	3	Dome	M,T	45-18 ±10	90	12	1 & 5k	8	16 x 12¾ x 25½	Wal.	Cloth brn.	36	239.95	
	ST 450	Ac. Sus	12	(2) 5	Cone	3	Dome	M,T	45-20 ±10	91	20	1 & 5k	8	17 x 14⅝ x 29¼	Wal. vin.	Cloth brn.	44	269.95	

(continued)

So you're thinking about a subwoofer!

To obtain superior overall listening characteristics from a loudspeaker system, it is critical for the sound to progress smoothly from bass to midrange to treble. In order to achieve the smoothest possible transition, most designers have purposefully limited ultra-low bass response.

That's why supplementary subwoofers are becoming increasingly popular. And that's why you're thinking about a subwoofer.

The no-holds-barred way to extend the range of your system is to bi-amplify the low end with an electronic crossover and an additional amplifier.

The problem

The problem has been that this required routing the signal through circuits which produce electronic distortion, degrading listening quality.

This problem no longer exists.

The solution

The Dahlquist DQ-LP1 crossover is a simple but elegant solution. It combines an electronic circuit for the low bass output and a passive circuit for the frequencies above the crossover point. Thus, the upper range emerges pure and undistorted, with no alteration whatever of clarity and depth imaging.

How has the DQ-LP1 been received? Without exception, the reviews haven't simply been good — they've been enthusiastic.

The DQ-LP1 delivers utterly clean performance through variable frequency electronic low-bass sections with 18dB/octave slopes; 3 cascaded stages, with staggered time-constants for non-ringing, low phase-shift curves at any frequency setting; completely passive high-pass sections easily adjustable to give you any desired bass rolloff frequency, but with no effect on midrange and high frequency quality. The DQ-LP1 features independent adjustments in each channel to compensate for room placement; separate output circuits for stereo and mixed center-channel bass modules, level controls and instantaneous AB comparison switches. Write to us. We'll send technical information about the DQ-LP1 and the less expensive DQ-MX1, a fully passive crossover. We'll also tell you about the supplementary subwoofer you ought to be thinking about — our own DQ-1W.

DAHLQUIST

27 Hanse Avenue, Freeport, New York 11520

Enter No. 34 on Reader Service Card

Loudspeakers

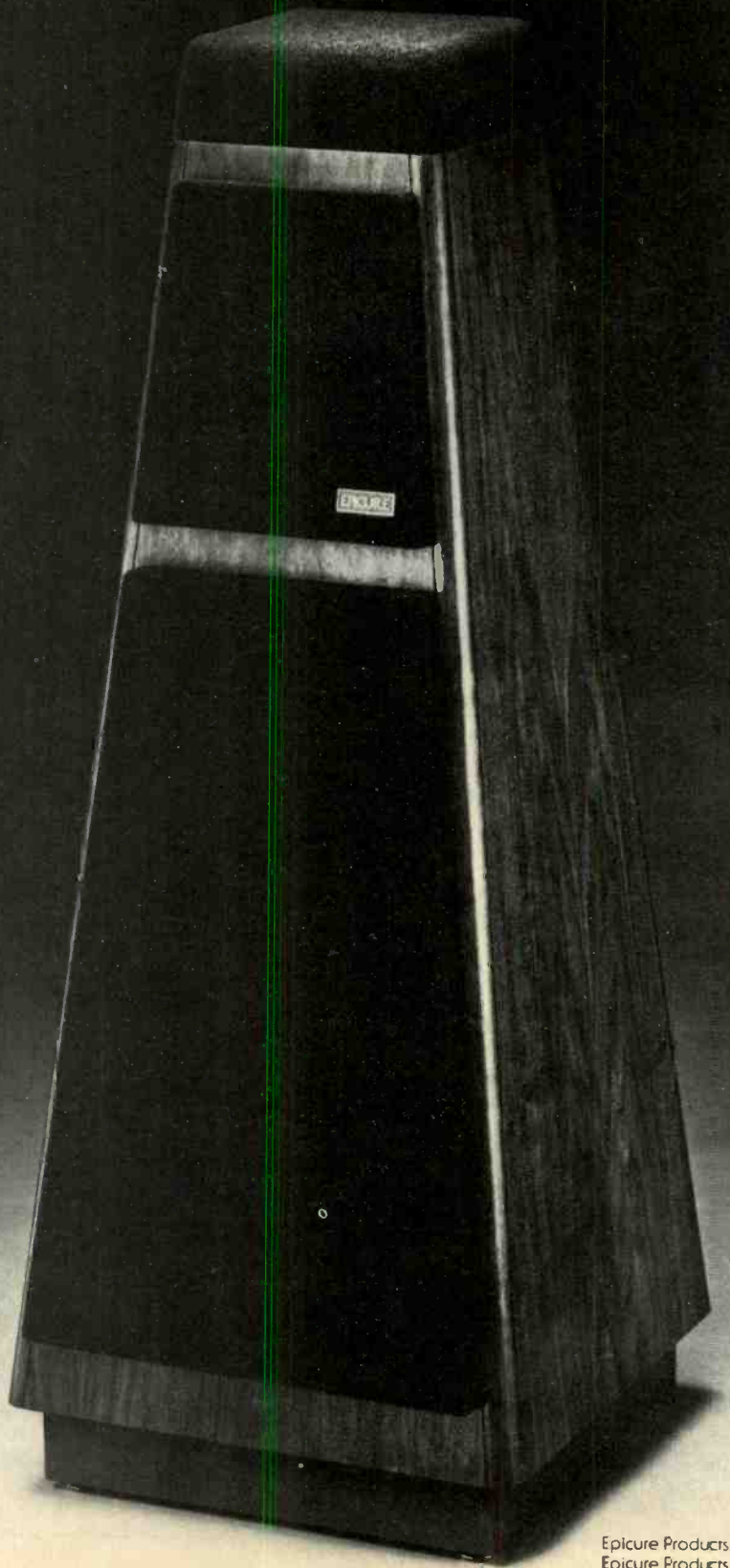
MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
FISHER (continued)	ST 451	Ac. Sus	12	(2) 5	Cone	3	Dome	M,T	45-20 ±10	91	20	1 &5k	8	17 x 14⅝ x 29¼	Wal.	Cloth brn.	44	289.95	
	ST 460	Ac. Sus	15	(2) 5	Cone	3	Horn	M,T	40-20 ±10	92	25	1 &5k	8	18¼x14⅜ x¼	Wal. vin.	Cloth brn.	53	329.95	
	ST 461	Ac. Sus.	15	(2) 5	Cone	3	Horn	M,T	40-20 ±10	92	25	1 & 5k	8	18¼x14¾ x29¼	Wal.	Cloth brn.	53	369.95	
	ST 640A	Ac. Sus.	10	1	Dome	(2) 3	Dome	M,T,	40-20 ±5	92	30	700, 7k	8	16½ x 12 x 26½	Wal. vin.	Cloth brn.	37	249.95	
	ST 641A	Ac. Sus.	10	1	Dome	(2) 3	Dome	M,T	40-20 ±5	92	30	700, 7k	8	16½ x 12 x 26½	Wal.	Cloth brn.	37	289.95	
	ST 660A	Ac. Sus.	12	1	Dome	(2) 1	Dome	M,T	39-22 ±5	94	40	700, 7k	8	18¼x12⅞ x29¼	Wal. vin.	Cloth brn.	45	299.95	
	ST 661A	Ac. Sus.	12	1	Dome	(2) 1	Dome	M,T	39-22 ±5	94	40	700, 7k	8	18¼x12⅞ x29¼	Wal.	Cloth brn.	45	339.95	
FRANKMANN RESEARCH	Frankmann (improved)	inf. baf	(8) 12	(8) 6	Cone	†		T	18-22 ±4	98	10	200. 4k, 10k	8/4	††	wal., oak, or brch	Cloth brn.	250 net.	1295.00 set	† one dlftra. horn tweeter & one 2 in.
	Mini-Frank	inf. baf.	(4) 12	(4) 6	Cone	†		T	30-22 ±4	95	10	200, 4k, 10k	8/4	††	wal., oak, or brch	Cloth brn.	105 net	895.00 set	†† Set is one common-bass module, two mid-tweeter satellites.
FRAZIER	Super Midget	Tuned slot	4						50-12k ±5	89	5		8	15¾ x 6¾ x 9½	Oil. Wal.	Cloth, Black	14	65.00	
	CAD-1	Tuned slot	8			3	Cone		45-15k ±5	96	5	3k	8	19 x 10½ x 10½	Wal. Vin.	Cloth, Black	21	100.00	
	Monte Carlo	Tuned slot	8			3¼	PZ		45-25k ±5	95	5	4k	8	19 x 10½ x 12	Oil. Wal.	Cloth, Black	31	125.00	
	Mark IV-A	Tuned Slot	10			3x7	Comp. Horn	T	40-20k ±5	93	5	2k	8	24 x 14 x 12	Oil. Wal.	Foam, var.	44	250.00	
	Concerto	Tuned slot	10	¾	Comp. Horn	3⅛	PZ	T	35-25k ±5	93	5	2k, 4k	8	21½ x 16 x 16	Oil. Wal.	Foam, var.	56	300.00	
	Mark V	Tuned slot	12	(2) 4	Cone	3⅛	PZ	M,T	30-25k ±5	96	5	500, 4k	8	25¾ x 14 x 12	Oil. Wal.	Cloth, Black	55	375.00	
	Seven	Tuned slot	12	(2) 4	Cone	(2) 3½	PZ	M,T	25-25k ±5	99	5	400, 4k	8	29 x 19 x 16	Oil. Wal.	Cloth, Black	100	495.00	
	Frazier's Thing	Tuned slot	(2) 10 12	3x 14	Horn	(2) 3⅜	PZ horn	M,T	22-25k ±5	99	5	800, 4k	4	48 x 24 x 18½	Oil. Oak	Cloth, Black	146	1000.00	
	Eleven	Tuned slot	(2) 12 15	(4) 4	Cone	(2) 3¼	PZ horn	M,T	15-25k ±5	104	5	400. 4k	4	55 x 30 x 18	Oil. Wal.	Foam. Black	250	1300.00	
FRIED	H/2	Trans. line	(2) 10	5	Cone	1	Dome		20-20 ±3	86	25	100, 3.2k	8/6	††	Oil. Wal.	Foam, blk.	200	1900.† system	†Kit $800.00. ††See 8/2 + T.
	M/2	Trans. line	8	5	Cone	1	Dome		20-20 ±3	86	25	100, 3.2k	8/6	22½ x 12 x 43	Oil. Wal.	Foam, blk.	95	850.00	
	T	Trans. line	(2) 10						20-200Hz	86	25	††	8	44 x 25 x 21	Oil. Wal.	Foam, blk.	175	1400.†	††2-Channel subwoofer section of H/2 system. †Kit $500.00.
	B/2	Inf. baf.	5			1	Dome		60-20 ±3	86	25	3.2k	8/6	8¼ x 7 x 12½	Oil. Wal.	Foam, blk.	14	250.00†	Satellite of H/2 system. †Kit pair $300.00.
	R/III	Line tunnel	10	5	Cone	1	Dome	M	25-20 ±3	89	25	350, 3.5k	8/6	16 x 15 x 28	Oil. Wal.	Cloth, blk.	60	400.00	
	W	Line tunnel	8	4	Cone	1	Dome	M	35-20 ±3	87	25	750, 3.5k	8/6	15 x 11 x 24	Oil. Wal.	Cloth, blk.	40	290.00	
	Q	Line tunnel	8			1	Dome	T	40-20 ±3	85	35	2k	8/6	11½ x 9¼ x 19½	Wd.grn. vinyl	Foam blk.	23	140.00	
FULTON ELECTRONICS	FMI 80	Inf Baf.	8			(2) 2¼	Cone		55-22 ±2	88	10	1.6k	8	9¾ x 8½ x 17¾	Oil. Wal.	Cloth, blk.	17	199.00	
	FMI 100	Inf Baf.	10			(4) 2¼	Cole	T	40-22 ±2	85	15	1.1k	8	14 x 9¼ x 22	Oil. Wal.	Cloth, blk.	31	269.00	
	FMI Nuance I	Inf Baf.	10	5	Cone	2¼	Cone	M,T	40-42 ±1.5	84	25	490, 6.5k	8	14 x 9¼ x 22	Oil. Wal.	Cloth, blk.	42	359.00	
	FMI E Modular	Inf Baf.	12	8	Cone	(2) 2¼	Cone	M,T	32-25 ±1.5	83	45	82, 2.8k	8	17¾ x 14 x 49	Wal. vinyl	Cloth, blk.	117	594.00	Woofer available separately, $395.00.
	Fulton B Modular	Special	(2) 8	8	Cone	(2) 2¼	Cone	M,T	36-25 ±1.5	86	25	68, 390, 2.1k	8	12¾ x 10 x 48	Oil. Wal.	Cloth, blk.	85	694.00	Woofer available separately, $495.00.
	Fulton Atlanta	Special	(2) 12	5 8	Cone			ST, M,T	22-48 ±1	83	60		8	21 x 18 x 50	Wal.	Cloth, brn.	175	1950.00 pair	
	Fulton J Modular	Special	(2) 12 10	5 8	Cone			ST, M,T	13-80 ±1	82	75		8/6	25 x 22 x 60	Wal.	Cloth, blk.	298	3495.00 pair	
FUNDAMENTAL RESEARCH	"Low Frequencies"	Sealed	(2) 10								75		4/3	15 x 16 x 38	Var.	Cloth, blk.	80	$450.00	
	"The Smaller Low Freq."	Sealed	10								75		8/6	13.5 x 15.7 x 28	Var.	Cloth, blk.	55	$299.00	
GLI	FRA-1	Pas.Rad.	(8) 5			(4) 3	Horn		55-20	95.5	50	7k	4	21 x 19 x 10		Alum. blk.	37	387.50	
	Monolith	Pas.Rad.	15	14 x5	Horn	(2) 3	Horn		38-20	96	50	875. 7k	8	36 x 21 x 16		Alum. blk.	92	497.50	
	Model I	Vented	(2) 15	14 x5	Horn	(3) 3	Horn		35-20	98	100	875, 7k	8	36 x 21 x 20		Alum. blk.	110	597.50	
	Model 2	Vented	(2) 15	(8) 5	Cone	(4) 3	Horn		35-20	100	100	380, 7k	8	36 x 21 x 20		Alum. blk.	153	697.50	

(continued)

3.0

The last word in the ongoing dialogue between musical art and the state of the art. A loudspeaker creation from Epicure representing over 2½ years of development that will significantly influence the design of dynamic loudspeakers for years to come. The 3.0 is priced at about $600 per speaker and can now be experienced at select audio stores everywhere

EPICURE®



Epicure Products, Inc., Newburyport, MA 01950
Epicure Products (Europa) GmbH, Munich, Germany

Enter No. 39 on Reader Service Card

(The SoundSpace™ Control by Advent.)

Another Step Closer To Hearing It All.

The last real frontier in sound reproduction is the ability to change your living room, electronically, into the kind of space where music sounds best—a good-sized space where music has room to expand and reverberate, and where the right spatial proportions and right combination of sound reflection and sound absorption produce rich, warm, and clear acoustics.

The SoundSpace™ control by Advent is a new electronic product, using the most sophisticated technology ever applied to home audio, that allows you to convert your living room into a whole range of good listening spaces of varying sizes and acoustics. It lets you experience music much as it sounds in concert halls, theaters, night clubs, cathedrals and public listening spaces.

The idea of bringing home concert-hall-and-other acoustics isn't new, and many products—from reflective speaker systems to analog and digital time-delay products—have attempted to imitate the way in which sound is shaped in live listening experiences. But Advent's SoundSpace control is the first product to allow the listener to accomplish, easily and repeatably, what really needs to be done.

The SoundSpace control makes a dramatic audible difference in the way music sounds in a living room, a far greater and more realistic difference than anything you can experience by changing or improving conventional stereo components. It provides a three-dimensional "presence" that can't be achieved with tone controls, equalizers, reflective speakers, or added amplifier power. It expands and enlivens the sound of all kinds of recorded and on-the-air music—including the many rock and other recordings where the only original listening space you can bring home is the one in the heads of the musicians, producer, and engineers.

What It Does.

The SoundSpace control is a 32,000-bit computer that uses the equivalent of more than 43,000 transistors. (One good indication of the sophistication of the SoundSpace control's memory and logic circuits is that in the days of vacuum tubes their hardware would have filled an auditorium—and required enough power to light up a city block.)

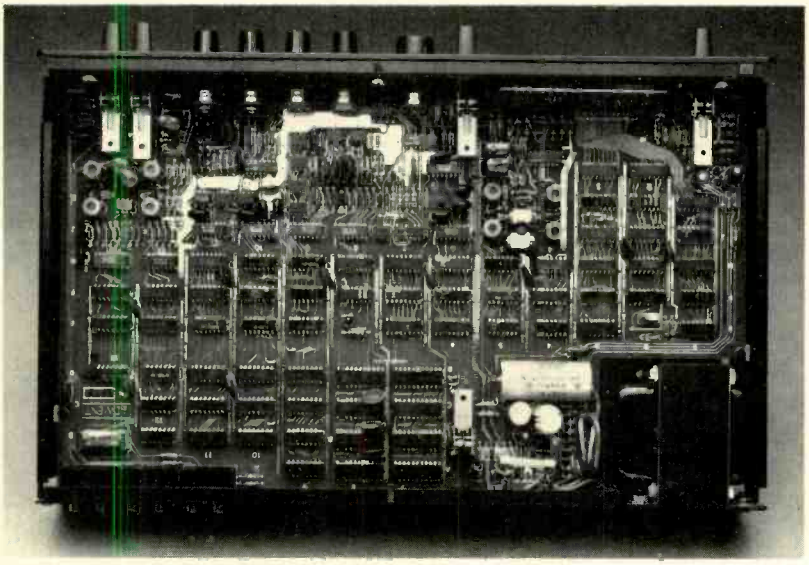
The SoundSpace control converts analog musical waveforms from a preamp, integrated amplifier or receiver to digital pulses for processing by its memory and logic circuits, and adds time-delays that are multiply mixed and recirculated to model the ways in which sound is delayed, reflected and absorbed in good public listening spaces. The delayed signals

it creates – from standard stereo recordings and broadcasts – are reconverted to analog signals after processing, and are meant to be fed to a second amplifier (which needs no controls) and heard over a second set of two or more speakers placed at the sides and/or rear of a home listening room.

Taking over all the complexities of modeling acoustic space, the SoundSpace control leaves you to make the two basic, desirable choices for creating the kind of listening space you want.

First you choose the audible size of the space you want to create, from a small club to a vast cathedral. You make the choice with the help of a digital "Size Index" readout.

After choosing how big a space you want, you can then adjust the Reverberation control to select any of a whole range of acoustic environments—from very "dry" to very "live" in reverberation. You can, in effect, fill the hall with sound-absorbing surfaces and people, or empty it for sound that resounds dramatically.



The computer-grade construction of the SoundSpace control is the most advanced in home audio equipment.

As you make these choices, the SoundSpace control automatically makes countless other choices for you. It puts you, for instance, in the theoretical "best seat" in any space you create, and sets a "stage depth" appropriate to the size of the listening space. And in the process, it makes the many thousands of choices related to basic acoustics (including matters like coefficients of reflection and delay amplitudes) with no need for computations by the listener.

Instead of having to make a series of complex and largely unknowable choices on your own, you simply choose how big and how reverberant a space you want to create in your listening room.

The Difference From Everything Else.

In order to bring home the kind of sound people can enjoy in public listening spaces, you have to do more than simply offer the listener some kind of "delayed sound" to mimic the ways in which time-delays produce big-hall acoustics. Reflective speaker systems, for instance, don't produce enough of a time-delay to model the public listening experience, and their effect can't be varied to produce different conditions to suit different kinds of music. Analog "bucket-brigade" time-delay products also don't have the flexibility needed to reproduce actual listening conditions, and have audibly limited dynamic range and bandwidth. And earlier generations of digital time-delay devices have suffered from noise and distortion, difficult-to-use controls, and a model of acoustic space that was so limited that it tended to produce sound a lot closer to what you might hear in an underground parking garage than in a good concert hall or theater.

The SoundSpace control accurately models the characteristics of *good* acoustic spaces, employing parameters based on intensive study and computer analysis of actual auditoriums. It operates with vanishingly low noise and distortion (less than 0.1%), 80 dB of dynamic range, and controls that are both effective and easy to use. It sounds like the highest-fidelity product it is.

Whether you want the closest possible approach to "live" sound or the biggest, widest-screen presentation of what a George Martin or Peter Asher has in mind when producing a recording in a studio, we think you will find Advent's SoundSpace control a tremendously enjoyable product to own.

The suggested price of the SoundSpace control is $595.* For more information and a list of Advent dealers, please send us the coupon.

Thank you.

A-10/78

To: Advent Corporation, 195 Albany Street, Cambridge, Massachusetts 02139.

Please send information on Advent's SoundSpace™ control, and a list of your dealers.

Name_____

Address_____

City_____

State_____ Zip_____

*Subject to change without notice.

Advent Corporation, 195 Albany Street, Cambridge, Massachusetts 02139.

Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
GLI (continued)	Model 3	Horn	(2) 15	25 x5	Horn	(7) 3	Horn		35-20	103	100	875, 7k	8	36 x 30 x 50		Alum. blk.	240	897.50	
	Model 4	Horn	(2) 15	25x 10	Horn	(2)6x 18	Horn		30-20	106	200	775, 7k	8	36 x 30 x 50		Alum. blk.	195	1700.00	
GALE	GS401A	Ac. Sus.	(2) 8	4	Cone	¾	Dome	M,T	35-20 ±5	82	40	475, 5k	8/- 3½	13 x 10¾ x 23¾	Chrome	Cloth, blk.	48	525.00	Optional Chrome Base.
	GS401C	Ac.Sus.	(2) 8	4	Cone	¾	Dome	M,T	35-20 ±5	82	40	475, 5k	8/ 3½	13¼ x 12 x 23¼	Oil. Wal.	Cloth, brn.	46	495.00	
GENESIS	Genesis 1+	Ac. Sus.	8			1	Dome pheno	T	35-20 ±4	88.5	12	1.8k	8/4	12½x9½ x 22	Wal. vin.	Knit brn.	33	109.00	$125.00 in oak
	Gen 6	Ac. Sus	8			1	dome pheno		60-20 ±5	88	12	1.8k	8/4	10½x7x 18	Wal. vin.	Knit brn.	20	$150.00 pair	
	Genesis 2	Pas. Rad.	8			1	dome pheno	T	32-20 ±4	88.5	15	45, 1.8k	8/4	11½x14½ x16½	Wal. vin	Knit, brn	45	159.00	Oak, $185, 10-in. passive radiator
	Gen 2+	Pas. Rad	8			1	dome pheno	T	32-20 ±4	88.5	15	45, 1.8k	8/4	14½x10½ x 33	Wal.	Knit, brn	50	219.00	Oak, $229; 10-in passive radiator
	Gen 3	Pass. Rad.	8	4½	cone	1	dome pheno	M,T,	32-20 ±4	88	20	45, 800, 3k	8/ 3.5	14½x12 x 37½	Wal	Knit brn.	65	$325.00	Oak, $340; 10-in passive radiator.
GRAFYX AUDIO	Grafyx SP-10	Tuned Port	10			1	Dome		35-18 ±3	88	10	2k	8/ 6.3	15 x 13½ x 26½	Wal. vin.	Cloth, brn.	48	318.00 pair	
	Grafyx SP-8	Tuned Port	8			1	Dome		39-18 ±3	87	10	2k	8/ 6.3	14 x 10 x 25	Wal. vin.	Cloth, brn.	39	258.00 pair	
	Grafyx SP-7	Ac. Sus.	8			1	Dome		43-19 ±3	86	10	2k	8/ 6.3	13 x 8½ x 23	Wal. vin.	Cloth, brn.	32	218.00 pair	
	Grafyx SP-6	Tuned Port	6			2	Cone		48-18 ±3	85	10	2k	8/ 6.3	10 x 7½ x 16	Wal. vin.	Cloth, brn.	16	138.00 pair	
HANDIC USA	HL30		8			1			50-20		30	5k	8/3	10 x 19 x 8	Black	Cloth, blk.		199.00 pair	
	HL50		9			3½			30-22		60	3k	8/3	12 x 21½ x 10	Black	Cloth, blk.		239.00 pair	
HARTLEY	Zodiac Jr.	Inf. baf.	8			2	Cone		50-18		5	2.5k	8	19 x 11½ x 7½	Oil. Wal.	Cloth Brn.	25		
	Zodiac 1A	Inf. baf.	10			1	Dome		40-25		5	2k	8	21¾ x 14¾ x 8¾	Oil. Wal.	Cloth Brn.	35		
	Zodiac '77	Inf. baf.	10			1	Dome		35-25		5	2k	8	30 x 15 x 11¾	Oil. Wal.	Cloth Brn.	50		
	Zodiac 300	Inf. baf.	(2) 10			1	Dome		30-25		5	2k	4	25 x 23½ x 11¾	Oil. Wal.	Cloth Brn.	65		
	Holton Tower	Inf. baf.	(2) 10			1	Dome		20-25		15	3k	4	49½ x 20 x 14	Oil. Wal.	Cloth Brn.	105		
	Concert-Master	Inf. baf.	18	10	Cone,	7, 1	Cone Dome		16-25		25	250, 3 &7k	5/8	41½ x 29 x 18	Oil. Wal.	Cloth Brn.	150		
	Reference	Inf. baf.	24	10	Cone	7, 1	Cone, Dome		16-25		25	250, 3 &7k	5/8	50¼ x 36 x 24	Oil. Wal.	Cloth Brn.	300		
HEATH	AS-1373	Ac.Sus.	10	4½	Cone	1	Dome	T	40-20 ±3		11	500, 3k	8/	14½ x 12 x 26	Wal.	Foam, blk.	47	159.95	All models Kits.
	AS-1348	Ac.Sus.	15	(2) 4½	Cone	(3) 1	Dome	M,T	28-20 ±3		8	500, 3k	8/ 5.5	24 x 15 x 38	Wal.& Oak	Cloth, brn.	93	289.95	
	AS-1344	Ac.Sus.	(2) 6½			(2) 1	Dome	T	55-20 ±3		6	4k	/4	11 x 11 x 40	Wal. vin.	Foam, blk.	45	129.95	
	AS-1363	Ac.Sus.	10	4½	Cone	1	Dome	M,T	45-18 ±3		5	750, 4k	8/6	14¼ x 11½ x 23¾	Pecan	Cloth, brn.	40	119.95	
	AS-1352	Ac.Sus.	10			1¾	Cone	T	45-18 ±3		6	2.8k	8/	13½ x 11 x 24	Wal.	Foam, Orange blk.	38	99.95	
	AS-1342	Bass Ref.	8			2x 6	Horn	T	60-14 ±3		4	2.5k	8/6	12 x 10½ x 22¼	Wal. vin.		20	69.95	
	AS-1332	Ac.Sus.	8			1¾	Cone		50-18 ±3		9	3.4k	8/	10½ x 8 x 19	Wal. vin.		15	54.95	
HITACHI	HS-1		4¾			1	Dome			85		3.5k	8	4½ x 7 x 4½	Blk. Metal	Blk.	5½	199.95 pair	
	HS-323R	Air Sus.	10			1	Dome			90		3k	8	12½ x 21½ x11¾	Wal. vin.	Cloth, brn.	35.2	139.95	
	HS-371	Air Sus.	12	6	Cone	1	Dome			90		1.5& 6k	8	14½ x 23¾ x 12½	Wal. vin.	Cloth, blk.	35.2	199.95	
	HS-330	Air Sus.	10	2½	Cone	1½	Cone			92		900, 4k	6	12½ x 22½ x 12½	Wal. vin.	Cloth, blk.	32	249.95	
	HS-530	Air Sus.	10	2½	Cone	1	Dome			92		900, 3k	6	14 x 25 x 11	Wal. vin.	Cloth, blk.	37½	349.95	
IMF ELECTRONICS	Compact II	Bass Ref.	6½				Dome		35-20		15	4k		9½ x 9 x 15	Wal.	Cloth, blk.	13	160.00	
	Super Compact	Bass Ref.	8	4	Cone		Dome		30-20		20	375, 3k		11¾ x 13 x 18	Wal.	Cloth, blk.	20	245.00	
	Studio ALS40 II	Active Line	8	4	Cone		Dome		28-20		25	150, 375, & 3k		13½ x 13½ x 26½	Wal.	Cloth, blk.	40	425.00	
	Studio TLS50 II	Trans. Line	8	4			Dome				30	375, 3 & 15k		15 x 14 x 36	Wal.	Cloth, blk.	60	550.00	
	Monitor TLS80 II	Trans. Line	11¾ x8¼	6	Cone	1¾					40	350, 3 & 13k		18 x 16 x 38½	Wal.	Cloth, blk.	97	925.00	W.Stands.
	RSPM Mark IV	Trans. Line	11¾ x8¼	6	Cone	1¾					50	350, 3 & 13k		19¾ x 16¾ x 39¾	Wal.	Cloth	119	1250.00	W.Stands.

FOR ANYONE WHO CAN AFFORD PERFECTION THIS IS THE PERFECT SPEAKER. THE NEW AR9.

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151

The search for perfection never ends. Maybe next year we'll be able to build something even more to your liking than the AR9.

But right now, by present standards, there simply isn't anything that looks better on paper or sounds better at home than an AR9.

The AR9 is a 4-way floor standing speaker, which incorporates a kind of electronic automatic transmission to improve bass response. From bass notes below the audible range, to over 20,000 Hz, its frequency response curve looks flat as a Kansas wheatfield.

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The AR9 is capable of painful sound pressure levels. You can pump 400 watts per channel through it (with the usual cautions—driven to clipping 10% of the time; normal source material).

AR

Truth In Listening

But most of all, the sound of it is simply staggering. Beyond description really, with beautiful dispersion and precise stereo imagery. Words and notes emerge from your own records you may never have heard before.

At about $750 each, the AR9 is an expensive speaker.

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Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter, ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
IMAGE ACOUSTICS	3	Ac.Sus.	(2) 10	(2) 5	Cone	(2) 1	Dome	T	35-18 ±3		25	800, 3.3k	4/3	16 x 16 x 36	Oil. Wal.	Cloth, blk.	75	480.00	
	8	Ac.Sus.	(2) 8	(2) 5	Cone	(2) 1	Dome	T	40-18 ±3		20	800, 3.3k	4/3	15 x 15 x 30	Oil. Wal.	Cloth, blk.	50	360.00	
	2A	(2) 8 Pas.Rad.	(2) 6½			(2) 1	Dome		45-17 ±3		20	2.5k	4/3	14 x 14 x 28	Lam. Wal.	Cloth, blk.	45	300.00	
	7	Ac.Sus.	(2) 8			(2) 1	Dome		50-17 ±3		15	1.8k	4/3	14x 14 x 28	Lam. Wal.	Cloth, blk.	45	240.00	
	6	Ac.Sus.	(2) 6½			(2) 1	Dome		55-17 ±3		15	2.5k	4/3	13 x 13 x 24	Lam. Wal.	Cloth, blk.	35	180.00	
	5	Ac.Sus.	(2) 5			(2) 1	Dome		60-17 ±3		10	2.5k	4/3	12 x 12 x 20	Lam. Wal.	Cloth, blk.	25	132.00	
INFINITY SYSTEMS	Qe	Ac.Sus.	8			2x 5	EMIT rib.		47-32 ±3		10	2.5k	4 or 8	18 x 12 x 10	Birch vin.	Cloth, brn.	24	105.00	
	Qa	Ac.Sus.	10			2x 5	EMIT rib.		42-32 ±3		15	2.5k	4	25 x 14 x 12	Birch vin.	Cloth, brn.	40	149.00	Opt. pedestals $40.00.
	Qb	Ac.Sus.	10	4	Cone	2x 5	EMIT rib.		42-32 ±3		15	600, 4k	4	25 x 14½ x 12	Birch vin.	Cloth, brn.	43	192.00	As above.
	3000B	Bass Ref.	12	4½	Cone	2½	Cone	M,T	35-20 ±4.5		10	500, 5k	8	24¾ x 14½ x 12	Birch vin.	Cloth, blk.	45	216.00	
	Column II	Slot Loaded	(2) 10	4½	Cone	(2) 1½	Pz	M,T	35-20 ±3.5		15	750, 5k	8	39¾ x 14 x 12½	Wal.	Cloth, blk.	75	349.00	
	Quantum Junior	Ac.Sus.	12	1½	Dome	2x ½	EMIT rib.	M,T	40-32 ±3		25	600, 4k	4	25 x 14½ x 12	Wal.	Cloth, blk.	50	275.00	As above.
	Quantum 5	Ac.Sus.	12	1½	Dome	2x ½	EMIT rib.	M,T	38-32 ±3		30	600, 4k	4	26½ x 15 x 12	Wal.	Cloth, blk.	55	340.00	As above.
	Quantum 4	Ac.Sus.	12	1½	Dome	2x ½	EMIT rib.	M,T	35-32 ±3		30	600, 4k	4	36 x 15 x 12	Wal.	Cloth, blk.	90	425.00	Mirror-imaged.
	Quantum 3	Ac.Sus.	12, 4	1½	Dome	(2) 3x½	EMIT rib.	MB, M,T	28-32 ±3		35	200, 600, 4k	4	40 x 18 x 13	Wal.	Cloth, blk.	110	525.00	As above.
	Quantum 2	Ac.Sus.	12, 4	(2) 1½	Dome	(3) 3x½	EMIT rib.	MB, M,T	24-32 ±3		45	200, 600, 4k	4	49 x 18 x 13	Wal.	Cloth, blk.	138	750.00	As above.
	Quantum Line Source 1	Ac.Sus.	12, 4	(6) 1½	Dome	(6) 3x½	EMIT rib.	MB, M,T	18-32 ±2		100	200, 600, 4k	4	66 x 15 x 18	Wal.	Cloth, blk.	190	1250.00	Line source mid/treble.
	QRS	Ac.Sus.	15	(3) 22 x¾	EMIT rib.	(3) 3x½	EMIT rib.	B,M, T	18-32 ±2		150	100, 4k	4	76 x 48 x 24	Wal.	Cloth, blk.		6500.00 pair	Must bi-amp.
INNOTECH	D24	Trans. Line	(2) 5	1½	Dome	¾	Dome		35-21 +½,-3	86	35	3.5 & 11K	5	10½ x 15½ x 36½	Wal. Rose.	Foam Black	60	854.00 Pair	
INNOVATIVE	SW-1	Sealed Box	10						33-250 ±3	87	50		6/5	15½ x 13½ x 26½	Oil. Wal.	Foam Black	40	139.00	Subwoofer.
	SW-2	Trans. Line	12						22-250 ±3	90	50		8/7	16 x 19 x 87	Form.	Cloth Blk.	200	800.00	Subwoofer.
	SW-3	Bass ref.	15						18-250 ±3	98	50		8/7	62 x 32 x 24	Form.	Cloth Blk.	200	1000.00	Subwoofer.
	SW-1X	Sealed Box	10						33-100 ±3	87	50	100	6/5	15½ x 13½ x 26½	Oil. Wal.	Foam Blk.	42	199.75	SW-1 w/matrix crossover.
ISOPHON (ODEMER)	Diamant 2000	Mini	3¾			1½	Dome			84	20	3k	4	5 x 5½ x 7¾	Antra-cit	Foam Blk		244.95	
	SK9004	Bass. Ref.	12			2	Horn	M	32-20 ±1.5	97	15	3k	4	18½ x 11 x 24½	Laq	Metal Blk	53	733.50	
	TS60		8	3	Cone	1½	Dome		40-20 ±1.5	85	10	2 & 9k	8/4	10 x 8 x 17½	Oil. Wal.	Cloth Blk	18	377.50	
	TS50		8			1½	Dome		48-20 ±1.5	89	7	3k	8/4	9 x 8 x 16	Oil. Wal.	Cloth Blk	16.5	272.00	
	Auto Isonetta	Ball	1½						200-20		1		4	Round 3x4	Plast. Ball	Metal	3/4	44.30	Comes with base.
ITONE AUDIO	VMPS 101b	Pres. vent	8			1¾	phen		55-17 ±3	94	10	4k	8/8	12 x 10 x 16	Wal. vinyl	Cloth, blk.	18	72.00	All models are minimum phase over specified freq. range.
	404b	Pres. vent	8			1	Dome	T	50-20 ±3	95	10	4k	8/8	11 x 10 x 23	Wal. vinyl	Cloth, blk.	26	109.00	
	606b	Pres. vent	10			1	Dome	T	45-20 ±3	96	10	2.5k	8/8	12 x 13 x 23	Oil. Wal.	Cloth, blk.	35	159.00	
	707	Pres. vent	10	4	Cone	1	Dome	M,T	40-20 ±3	95	10	600, 5k	8/8	14½ x 11 x 25	Oil. Wal.	Cloth, blk.	42	219.00	
	808b	Pres. vent	12	5		1	Dome	M,T	35-20 ±3	96	10	500, 8k	8/8	14½ x 11 x 25	Oil. Wal.	Cloth, blk.	50	279.00	
	Tower II	Triple pres.vent	(2) 12	5		(3) 1	Dome, PZ	M,T	25-20 ±2	98	20	200, 900, 8k	8/4	15 x 16 x 43	Oil. Wal.	Cloth, blk.	90	529.00	Biampable w/o ext. xover.
	Super Tower	Triple pres.vent	(2) 12& 15	(2) 5		(4) 1	Dome	M,T	18-20 +1,-4	98	20	200, 800, 8k	8/4	18 x 18 x 50	Oil. Wal.	Cloth, blk.	120	899.00	Biampable w/o ext. xover.
JBL	L300	Bass Ref.	15				Ring Rad.	M,T		93	10	800, 8.5k	8	31½ x 23 x 22½	Oil. Wal.	Blu,Blk. Brn.Tan	145	1098.00	
	L212	Ac.Sus.	8	5	Cone	1	Dome	M,T		91	10	70, 800, 3k	8	38¾ x 17 x 13	Oil. Wal.	Blk.	225	1740.00	
	L65	Bass Ref.	12	5	Cone		Ring Rad.	M,T		89	10	1 & 6.5k	8	24½ x 17½x13¼	Oil. Wal.	Blu,Brn. Red	67	543.00	
	L166	Bass Ref.	12	5	Cone	1	Dome	M,T		89	10	1 & 6k	8	14¼ x 23½ x 13	Oil. Wal.	Blk, Orange	55	438.00	

(continued)

Now Available:

The Historic First Digital U.S. Symphonic Ensemble Recording from TELARC!

TELARC

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The place: Severance Hall in Cleveland, Ohio, highly respected for its superb acoustics. The date: April 4 and 5, 1978. Fifty nine musicians, including the entire reed, brass, and percussion sections of the Cleveland Orchestra, gathered to participate in a unique and significant first symphonic ensemble recording using a sophisticated new method of *digital* recording.

The music, by Bach, Handel, and Holst, was symphonic band music at its most exciting. The Cleveland Symphonic Winds were conducted by the leading figure in wind music today, Frederick Fennell. His early recordings on Mercury with the Eastman Symphonic Wind Ensemble helped launch the hi-fi era, and are still treasured by collectors. But the consummate artistry of the Cleveland Symphonic Winds under Fennell's direction in this session must be heard to be believed.

From the gleaming sound of the piccolo to the solid impact of the concert bass drum...from *pianissimo* to *triple forte*...this recording is a major milestone for both music and recording. The reaction by the musicians themselves, on hearing the playback, was best summed up by Frederick Fennell himself (as quoted in *High Fidelity*): "I'm glad to have lived long enough to have recorded *that* kind of sound!"

It was the Soundstream digital recorder that gave special importance to this major musical event. It was installed under the guidance of its inventor, Dr. Thomas Stockham, and Bruce Rothaar. Three Studer microphones and a Studer console were controlled by Telarc Producer Robert Woods and Engineer Jack Renner. Even the engineer from the JVC Cutting Center in California, Stan Ricker, was on hand as a consultant to assure that the master tape would be fully compatible with the half-speed Neumann mastering equipment on which the final disc master would be cut.

Unlike ordinary tape recorders, the Soundstream digital process samples the console output 50,000 times per second, then converts each sample into a 16-bit digital number. This number is then recorded on a Honeywell data recorder at 30 inches-per-second along with a "clock" reference time signal.

On playback the numbers are reconverted to the original analog signal precisely in step with the "clock" to eliminate all flutter and wow speed variations. Problems of noise, distortion, tape saturation, and dynamic range are simply left by the wayside with the use of digital numbers rather than the original electronic waveforms for signal storage. Proof is in the measured performance of the Soundstream equipment, with Frequency Response flat from 0 Hz to 21 kHz, Total Harmonic Distortion of less than 0.004% at "0" VU, 90 dB RMS Signal-to-Noise Ratio, and 90 dB Dynamic Range.

Because digital recordings such as this can be edited with greater finesse than ordinary tapes, and because the potential for wide dynamic range, extended frequency response, and low distortion approach the state of the art in *any* recording medium, this new disc is an important milestone for both music and audio technology.

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Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms: Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	
JBL (continued)	L110	Bass Ref.	10	5	Cone	1	Dome	M,T		89	10	800, 4k	8	24½ x 14½x11¼	Oil. Wal.	Blk.	50	351.00	
	L40	Bass Ref.	10			1	Dome	T		88	10	1.8k	8	23 x 15 x 12	Oil. Wal.	Brn, Tan	44	213.00	
	L220	Pas.Rad.	14	5	Cone		Ring Rad.	M,T		90	10	800, 5k	8	48¼ x 20¼x15½	Oil. Wal.	Brown	121	750.00	15-in. pas. rad.
	L19	Bass Ref.	8			1.4	Dome	T		87	10	2500	8	21 x 13 x 10	Oil. Wal.	Brown, Black	29	150.00	
	L50	Bass Ref.	10	5	Cone	1.5	Dome	M,T		88	10	800, 3k	8	24½ x 14¼x12½	Oil. Wal.	Bl, Brn Rust	47	279.00	
JVC	SK-500	Bass Ref	10			2½	Cone			91		2k	8	9⅝ x 12½ x 11¼	Wal.	Cloth, brn.	23.2	199.95 pair	
	SK-700	Bass Ref	10	5	Cone	1	Dome	M,T		92		1k, 10k	8	22¼ x 13½ x 12⅜	Wal.	Cloth, brn.	37.5	169.95	
	SK-1000	Bass Ref	12	5	Cone	1	Dome	M,T		93		1k, 10k	8	25⅝ x 15¾ x 12¾	Wal.	Cloth, brn.	53.4	259.95	
	SK-500S	Bass Ref	10			2½	Cone			91		2k	8	9⅝ x 12½ x 11¼	Sil.	Cloth, blk.	23.2	199.95 pair	
	SK-700S	Bass Ref	10	5	Cone	1	Dome	M,T		92		1k, 10k	8	22¼ x 13½ x 12⅜	Sil.	Cloth, blk.	37.5	169.95	
	SK-1000S	Bass Ref	12	5	Cone	1	Dome	M,T		93		1k, 10k	8	25⅝ x 15¾ x 12¾	Sil.	Cloth, blk.	53.4	259.95	
	SM-3		4			1	Dome			85		0.5k	8	7¾ x 4½ x 4½		Metal Grill	4.9	159.90 pair	
JANIS AUDIO	W1	Slot load.	15						30-100 ±1	85	60	100	8	22 x 22 x 17.5	Oil. Wal.	Wood fretwrk	90	675.00	Subwoofer w. ind. calib. report.
	W2	Slot load.	15						33-100 ±1	85	60	100	8	22 x 22 x 17.5	Oil. Wal.	Wood fretwrk	82	450.00	Subwoofer.
JANSZEN ELECTROSTATIC	Z-210a	E.S. ac.sus.	10			32 sq. in.	E.S.	T	40-20 ±3	86	20	1.8k	4	12½ x 12¾ x 17½	Wal. vin.	Foam, blk.	25	300.00 pair	
	Z-10X	E.S. ac.sus.	10			32 sq. in.	E.S.	T	35-20 ±3	86	20	1.8k	4	13¼ x 11 x 24	Wal. vin.	Cloth, blk.	41	468.00 pair	
	Z-10	E.S. ac.sus.	10			32 sq. in.	E.S.	T	35-20 ±3	82	20	800	4	13¼ x 11 x 24	Wal. vin.	Cloth, blk.	41	500.00 pair	
	Z-20X	E.S. ac.sus.	12			32 sq. in.	E.S.	T	33-20 ±3	86	20	1.8k	4	14½ x 11¾ x 27¼	Wal. ven.	Cloth, blk.	44	550.00 pair	
	Z-20	E.S. ac.sus.	12			32 sq. in.	E.S.	T	30-20 ±3	82	20	800	4	14½ x 11¾ x 27¼	Wal. ven.	Cloth, blk.	48	600.00 pair	
	Z-30	E.S. ac.sus.	10			64 sq. in.	E.S.	T,B	45-20 ±3	86	15	800	4	13¼ x 13¼ x 37	Wal.		49	680.00 pair	Bi-polar radiation.
	Z-40	E.S. pas.rad.	(2) 10	64 sq. in.	E.S.	64 sq. in.	E.S.	M,T	33-20 ±3	86	20	800, 4k	4	13¼ x 13¼ x 49½	Wal.		64	940.00 pair	Bi-polar radiation of mids & highs.
JENSEN SOUND LABS	20	Ac.Sus.	8			2	Cone		70-18 ±3	91	10	4k	8/6	11 x 8⅜ x 18⅛	Wal. vin.	Cloth, brown formed	18	59.95	
	LS-2	Ac.Sus.	8			2	Cone		65-18 ±3	91	10	4k	8/6	11 x 9⅜ x 18¾	Wal. vin.	Cloth, brown knit	18	79.95	
	LS-3	Ac.Sus.	10			2	Cone	T	60-18 ±3	92	10	3.5k	8/6	12⅞ x 10¼ x 23	Wal. vin.	Cloth, brown knit	28	119.95	
	LS-4	Ac.Sus.	10	3½	Cone	2	Cone	M,T	55-18 ±3	93	10	1 & 4k	8/6	13½ x 12⅛ x 24½	Wal. vin.	Cloth, brown knit	40	169.95	
	LS-5	Ac.Sus.	12	(2) 3½	Cone	1½	Dome	M,T	50-20 ±3	95	10	1 & 4k	8/6	15¾ x 13⅝ x 26	Wal. vin.	Cloth brown knit	50	219.95	
	LS-6	Ac.Sus.	15	(2) 3½	Cone	1½	Dome	M,T	45-20 ±3	96	10	1 & 4k	8/6	18¾ x 16¼ x 30¾	Wal. ven.	Cloth, brown knit	70	289.95	
KEF ELECTRONICS	105		12	5	Cone	1½	Dome	M,T	30-25 ±2	86	40	400, 2.5k	8	16.3 x 17.9 x 38	Wal.	Cloth, blk.	105	875.00	
	104aB		(2) 13x 9,8			¾	Dome	M	50-20 ±2	96	15	45, 3k	8	13 x 10.2 x 24.8	Wal. teak	Foam, blk.	45	375.00	
	Cantata		13 x9	5	Cone	1½	Dome	M,T	35-20 ±3	96	15	250, 3k	8	13.4 x 15.4 x 32.1	Wal/ teak	Cloth, brn.	70	575.00	
	Calinda		(2) 13x 9,8			¾	Dome		40-30 ±3	96	15	45, 3.5k	8	11 x 13.8 x 27.5	Wal/ teak	Cloth, brn.	50	325.00	
	Corelli		8			¾	Dome		50-30 ±3	96	25	3.5k	8	11 x 8.6 x 18.5	Wal/ teak	Cloth, brn.	22	195.00	

"at their price, they are simply a steal!"

THE AUDIO ADVISOR

AUDIOGRAM

Volume 1, Number 7

This is the full text of the review of the Polk 10's which appeared in the AUDIOGRAM, a discerning and independent audiophile journal which is entirely supported by its readers and accepts no manufacturer's advertisements. Subscriptions are available for $15.00 per year.

POLK MODEL 10 LOUDSPEAKER

POLK AUDIO
1205 South Carey Street
Baltimore, MD 21230

When we heard the Polk speakers at Summer CES we knew we had to test them. We were so impressed that we could not believe the prices. But first let us say that there are a few factors that might make us prejudiced in their favor. The Polk people use the Spendor as a reference. They like the sound of ARC tubes. They are the East coast distributors of the Formula 4 tone arm. We, at AUDIOGRAM, share so many likes with the folks at Polk that it is hard for us not to like their speakers. And the company is a local one that has made good — the pride of Baltimore and Washington.

Nonetheless, the sound coming forth from the Model 10 "monitors" is something really special. It is a sound that is open, well defined and very low in coloration. One does not generally expect such low coloration in a modestly priced box speaker, and certainly not anything like the definition exhibited by these speakers. How does Polk do it? We think it is mostly execution. They hear very well and they care.

The Model 10 uses a 1-inch soft dome tweeter, two 6 1/2-inch plasticized midrange drivers and one 10-inch sub-bass radiator (which is really a passive radiator). Polk calls the crossover between the bass and midrange drivers "fluid-coupling". It occurs at 60 Hz and provides fourth order Butterworth loading for the energizing cones.

We auditioned the speaker on the optional stand which Polk sells. The stand, or one like it, is highly recommended. It tilts the front of the speaker slightly back from the listener, providing better phasing between drivers and reducing undesirable floor-coupled resonant effects. We would say that the sound of most bookshelf speakers currently placed on the floor would certainly be improved by such a stand.

Inasmuch as Polk had indicated that they use the Spendor as a reference and inasmuch as we had one on hand, we compared the Model 10 to this speaker. In fact, we have compared many speakers to the Spendor and most of them have sounded extremely colored by comparison. (The only speaker systems that have been able to make the Spendor sound colored have been a well-tuned Fulton J and the Rogers LS3/5A's.) Although the Spendor did manage to make the Model 10 sound a trifle nasal, we were amazed at the similarity of sound — and that's good.!

But the Spendors cost upwards from $700 a pair (if one can find them), will not handle much power and cannot reproduce the bass of the Polks. It really isn't fair to compare the Model 10 to a reference monitor. It should be compared with other modestly priced speakers. However such a comparison is no fairer than the Spendor comparison. Other $200 speakers simply do not come close to the standards set by the Model 10. In fact the Polks compare very favorably with the Magnepan and Dahlquist DQ 10's. Bass response of the Model 10 surpasses that of the DQ 10. Definition is almost on the par with the Magnepan (stereo imaging is better). Driver blending is excellent, the midrange is open and exceptionally clear, and there is much less hint of boxiness than that which is found in most box speakers.

If we had to fault the Model 10's, we would say that they are slightly bright and just a little fat in the low end. However, they are extremely neutral throughout most of their range. Only in comparison with some of the world's best speaker systems do they sound the least bit colored. They are a high definition speaker system deserving the very best associated electronics. And at their price, they are simply a steal.

AUDIOGRAM is published by
The Audio Advisor, Box 27406
St. Louis, Missouri 63141

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Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
KLH	355 Baron	Tuned phase invert.	11	1¾	Dome	1	Dome	M,T	32.5-22	91	20	900, 3k	8/5	35½ x 14 x 12¾	Oil. Wal.	Cloth, blk.	80	399.00	
	345 Little Baron	Ac.Sus.	11			1	Dome	T	39-22	90.5	20	1.2k	8/6	29¼ x 13 x 11¾	Oil. Wal.	Cloth, blk.	50	299.00	
	335 Baroness	Ac.Sus.	10			1	Dome	T	52-22	91.5	15	1.2k	8/6	23 x 12 x 11	Oil. Wal.	Cloth, blk.	32	249.00	
	CT 44	Ac.Sus.	(2) 10			1 2	Dome Cone		45-22		15		4	41 x 12 x 12	Oil. Oak	Cloth, blk.	65	349.00	
	Classic Five	Ac.Sus.	12	1¾	Dome	1	Dome	M,T			20		8	26 x 14 x 12¾	Oil. Oak	Cloth, blk.	60	299.00	
	CT 38	Ac.Sus.	(2) 8¼			(2) 2½					10		4	41 x 11 x 11	Oil. Oak	Cloth, blk.	60	259.00	
	Classic One	Ac.Sus.	10			1	Dome	T			15		8	24 x 12 x 12	Oil. Oak	Cloth, blk.	40	199.00	
	319B	Tuned phase invert.	12	5¼	Cone	1 1	Dome Cone	M,T	52.5-22	95	10	1.1 & 3k	4/3	24½ x 14½ x 11¼	Vin. Wal.	Cloth, blk.	40	230.00	
	337	Ac.Sus.	12	4	Cone	2½	Cone	M,T	51-18	92.5	20	900, 3.3k	8/6	24½ x 14½ x 11¼	Vin. Wal.	Cloth, blk.	40	199.00	
	327	Ac.Sus.	10	4	Cone	2½	Cone	M,T	55-18	90.5	20	900, 3.6k	8/5	23¼ x 14 x 10¾	Vin. Wal.	Cloth, blk.	29	179.00	
	317B	Ac.Sus.	10			1	Dome		52-22	91.5	15	1.2k	8/6	23 x 12 x 9¾	Vin. Wal.	Cloth, blk.	29	130.00	
	331B	Ac.Sus.	8			2½	Cone		64-18	90.5	8	3k	8/7	21 x 12 x 8¾	Vin. Wal.	Cloth, blk.	41/ pr.	200.00 pair	
	300	Ac.Sus.	8			2½	Cone		75-18	91	8	2200 2.2k	8/6	17½ x 10½ x 7¼	Vin. Wal.	Cloth/ foam;blk.	26/ pr.	158.00 pair	
	CL 2	Ac.Sus.	10			1	Dome	T	52-22	91.5	15	1.2k	8/6	23 x 12 x 9¾	Vin. Oak	Cloth, blk.	29	135.00	
	CL 1W	Ac.Sus.	8			2½	Cone	T	64-18	90.5	8	3k	8/7	21 x 12 x 8¾	Vin. Oak	Cloth, blk.	20½	230.00 pair	
	CL Jr.	Ac.Sus.	8			2½	Cone		75-18	91	8	2.2k	8/6	17½ x 10½ x 7¼	Vin. Oak	Cloth, blk.	13	150.00 pair	
KENWOOD	LS-890	Bass ref.	13	4¾	Cone	1¾	Cone		30-20	92		1.3& 5k	8	15 x 25¾ x 13	Wal.	Cloth brn.	48½	350.00	
	LS-408B	ported	12	4½	Cone	1¾	Cone		40-20	92	20	2&5k	8	16½ x 29 x 14¼	Wal.		50	300.00	
	LS-407B	ported	10	4½		1¾			40-20	93	20	2&5k	8	15 x 25¾ x 13¾	Wal. vin.		40½	235.00	
	LS-405B	ported	10			1¾			50-20	93	10	2.5k	8	13½ x 23¼ x 12¾	Wal. vin.		30	170.00	
	LS-403B	ported	8			1¾			60-20	92	10	2.5k	8	12 x 17¾ x 10	Wal. vin.		20½	235.00 pair	
KLIPSCH	Heresey	Dir.Rad.	12		Horn		Horn			96	4	700, 6k	8	15½ x 13⅜ x 21⅜	Var.	Cloth, var.	55	285.00	
	Cornwall	Ducted Port	15		Horn		Horn			98.5	2	600, 6k	8	25½ x 15½ x 35¾	Var.	Cloth, var.	108	459.00	
	La Scala	Horn Loaded	15		Horn		Horn			104	1	400, 4k	8	23¾ x 24½ x 35¼	Var.	Cloth, var.	110	618.00	
	Belle Klipsch	Horn Loaded	15		Horn		Horn			104	1	400, 6k	8	30⅛ x 18¾ x 35⅝	Var.	Cloth, var.	125	959.00	
	Klipschorn	Horn Loaded	15		Horn		Horn			104	1	400, 6k	8	31¼ x 28½ x 52	Var.	Cloth, var.	180	774.00	
KOSS	Model One	E.S.					E.S.				75	250, 1.6 & 6.5k	4/4	32 x 10 x 49	Oil. Wal.	Cloth, brn.	150	1500.00	
	Model Two	E.S.				1	Dome	T			75	250, 2.5k	4/4	24 x 11½ x 41	Oil. Wal.	Cloth, brn.	95	750.00	
	CM/1010	Pas.Rad.	8			1		T		92	15	2.5k		15½ x 11 x 28	Oil. Pec.	Cloth, brn.	43½	225.00	
	CM/1020	Twin Port	10	4½	Cone	1		M,T		95	15	450, 3k		15½ x 13¾ x 33	Oil. Pec.	Cloth, brn.	60	335.00	
	CM/1030	Twin Port	10	(2) 4½	Cone	1		M,T		96	15	400, 2.5 &6k		16½ x 14½ x 39	Oil. Pec.	Cloth, brn.	74	425.00	
	CM/530	Bas.Ref.	8			1		T		89	15	2.8k		24 x 13¾ x 12¼	Oil. Pec.	brn.	35	175.00	
KUSTOM ACOUSTICS	Imp	TAL	12			1¼	Dome	T	39-20 ±3	93	15	1.6k	8/6	24 x 14 x 9	Wal. Ven.	Knit blk.	46	189.00	TAL= tapered acoustical line.
	Impulse	TAL	12	5	Cone	1	Dome	M,T	39-22 ±3	93	10	750, 2.5k	8/5	24 x 14 x 9	Wal. Ven.	Knit blk.	48	239.00	
	Regency	TAL	12	5	Cone	1¼	Dome	M,T	30-22 ±3	92	15	350, 2.5k	8/5	26 x 16 x 13	Wal. Ven.	Knit blk.	80	399.00	
	Trapezoid	TAL	12	5	Cone	1¼ 1	Dome Dome	M,T ST	24-25 ±3	92	15	350, 2.5 & 9k	8/6	40 x 16 x 13	Wal. Ven.	Knit blk.	115	569.00	
	Labyrinth	Trans. line	12	5	Cone	1¼ 1	Dome Dome	M,T ST	19-25 ±2½	91	35	275, 2.5 & 9k	8/6	48 x 16 x 18	Wal. Ven.	Knit blk.	150	899.00	
	Trapezium	Trans. line	12	5	Cone	1¼ 1	Dome Dome	M,T ST	16-30 ±2	90	50	200, 2.5 & 9k	8/6	60 x 18 x 12	Wal. Ven.	Knit blk.	225	1999.00	

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Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
LAFAYETTE	Lafayette 2003A	Bass Ref	15	2x 6	Horn	(2)	phen ring	M,T				2 & 4k	8	29½ x 17¾ x 11½	Vin. Wal.			199.99	
	Lafayette 3001	Tuned Port	10				Heil AMT†		40-25	85		2k	6	25 x 14¼ x 14¼	Vin. Wal.	Cloth, brn.	50	199.99	†Trademark of ESS, Inc.
	Lafayette 3002	Pas.Rad.	(10) 10				Heil AMT†	T	35-25 ±3	90		2k	6	39 x 14¼ x 13	Vin. Wal.	Cloth, brn.	60	249.99	†As above.
	Lafayette 3003	Pas.Rad.	(12) 12				Heil AMT†	T	30-25 ±3	91		2k	6	39 x 14¼ x 14	Vin. Wal.	Cloth, brn.	67	249.99	†As above.
	PIP	Ac.Sus.	4			1	Dome					2.5k	8	7¼ x 4½ x 4½	Black alum.	Black Mesh	6	49.99	†As above.
	DSI	Ac.Sus.	6½			1	Dome						8	11¼ x 7½ x 6¾	Wal.	Brown		79.99	
	Lafayette 1001	Ac.Sus.	6			2¾	Cone						8	16 x 10 x 6½	Vin. Birch	Brown foam		34.99	
	Lafayette 1003	Ac.Sus.	8			2¾	Cone						8	18 x 11½ x 6½	Vin. Birch	Brown foam		49.99	
	Lafayette 1005	Ac.Sus.	10	3	Cone	3	Cone						8	20 x 12½ x 8¼	Vin. Birch	Brown foam		69.99	
	Lafayette 1007	Ac.Sus.	10	5	Cone	3	Cone	T					8	22 x 12½ x 10½	Vin. Birch	Brown foam		89.99	
	Lafayette 1009	Ac.Sus.	12	5	Cone	3	Cone	M,T					8	24 x 14½ x 10½	Vin. Birch	Brown foam		119.99	
	Lafayette 2001A	Bass Ref	10	2x 6	Horn	(2)	phen ring	M,T				2 & 4k	8	25 x 13½ x 12¼	Vin. Wal.			129.99	
	Lafayette 2002A	Bass Ref	12	2x 6	Horn	(2)	phen ring	M,T				2 & 4k	8	26 x 15½ x 13	Vin. Wal.			169.99	
LANCER ELECTRONICS	PA-20	Vented Port	12	5	Cone	1½	Dome	M,T	20-22 ±4.5		20	1 & 4k	8	18 x 13¼ x 39	Oil. Wal.	Cloth, tan	78	449.50	Phase aligned.
	SC-8	Vented Port	(2) 12	5	Dome	1½	Dome	M,T	20-22		10	500, 4.5k	8	18 x 13¼ x 28	Oil. Wal.	Cloth, blk.	65	359.50	
	SC-7A	Ac.Sus.	12	5	Cone	1½	Dome	M,T	20-20		10	500, 4.5k	8	15 x 11¾ x 25½	Oil. Wal.	Cloth, blk.	59	279.50	
	SC-9T	Ac.Sus.	10	5	Cone	(2) 1½	Dome	M,T	20-22		10	500, 4.5k	8	12 x 12 x 38	Oil. Wal.	Cloth, blk.	62	249.50	
	SC-4A	Ac.Sus.	12	5	Cone	2	Cone	M,T	20-20		10	750, 3.5k	8	15 x 12½ x 23½	Oil. Wal.	Cloth, brn.	53	199.50	
	SC-10A	Ac.Sus.	10			2	Cone	T	20-20		10	2.5k	8	12½ x 10 x 20¼	Oil. Wal.	Cloth, brn.	33	129.50	
	9535-2	Ducted Port	12			2	Cone		30-20		5	3k	8	14 x 11 x 25	Oil. Wal.	Cloth, var.	33	99.50	
	9534X	Ducted Port	8			3	Cone		40-18		5	3k	8	11¼ x 11¼ x 23½	Oil. Wal.	Cloth, var.	27	79.50	
	9711	Ducted Port	8						45-15		3		8	10 x 9 x 20¼	Oil. Wal.	Cloth, var.	19	59.50	
	SC-1	Ac.Sus.	6				Cone		50-18		5	3k	8	8 x 7¼ x 11	Oil. Wal.	Cloth, var.	17	39.50	
LEAK	3090	Trans. line	15	7 4	Cone Cone	2x 1	Iso-dynam.		35-26 ±3	88		350, 2 & 7k	6/5	20 x 15 x 47	Wal. Ven.	Foam, blk.	112	870.00	
	3080	Ac.Sus.	10	6¾	Cone	¾	Dome		38-22 ±3	85	12	450, 3.5k	8	13½ x 17¼ x 33¼	Wal. Ven.	Cloth, blk.	72	550.00	Time-delay compensated.
	3050	Ac.Sus.	(2) 6¾			¾	Dome		48-22 ±3	85	12	4k	8	11¾ x 13¼ x 25¼	Wal. Ven.	Cloth, blk.	42	355.00	Time-delay compensated.
	3030	Ac.Sus.	(2) 5			¾	Dome		60-22 ±3	85	12	4k	8	9¾ x 11 x 20½	Wal. Ven.	Cloth, blk.	24	230.00	Time-delay compensated.
	3020	Bass Ref.	5			¾	Dome		62-22 ±3	85	12	3k	8	8¼ x 10½ x 17¼	Wal. Ven.	Cloth, blk.	16	175.00	Time-delay compensated.
LENTEK	S4	Air Susp.	7¾			1	Dome		60-18K ±3	78	25	2.5K	8/7	19½ x 9¾ x 10	Wal. Teak	Cloth. brn.	25¾	640.00 pair	
LINN	DMS Isobarik	Isobarik	12x 9	(2) 5	Cone	(2) 1	Dome		16-20 ±2		50	375, 3k	4/4	15 x 16½ x 30	Teak, Wal.	Foam, blk.	95	2200.00 pair	
MAGNEPAN	Magneplanar MG-1	Bipolar Panel	428 sq. in.			68 sq. in.			50-16 ±4		25	2.4k	5	22 x 60 x 2	Oak	Cloth, white, blk.	35	495.00 pair	Matched, mirror-imaged pairs.
	Magneplanar MG-IIA	Bipolar Panel	500 sq. in.			68 sq. in.			45-16 ±3		40	2.1k	6	22 x 71 x 2	Oak	Cloth, white, blk.	45	825.00 pair	As above.
MARANTZ	DS-920	Vari-Q	12	5	Cone	1½	Dome	M,T	33-20 ±3	90	15	750, 2.5k	8	15x12 x38¼	Oil. Wal.	Poly. Brown	45	379.95	
	DS-900	Vari-Q	10	5	Cone	1½	Dome	M,T	35-20 ±3	88	15	750, 2.5k	8	15x12 x28¼	Oil. Wal.	Poly. Brown	43	319.95	
	8 MK11	Ac. Sus	15	5	Cone	1¾	Cone	M,T	30-20 ±3	91	10	800, 3k	8	16¼x12 x37½	Wal. Vinyl	Poly. Brown	60	259.95	
	7MK11	Ac Sus	12	5	Cone	1¾	Cone	M,T	35-20 ±3	88	10	800, 2.5k	8	14¾x 11½x25½	Wal. Vinyl	Poly. Brown	40	179.95	
	6MK11	Bass Ref.	10			1¾	Cone	T	35-20 ±3	88	20	2.5k	8	14¾x 11½x25½	Wal. Vinyl	Poly Brown	38	139.95	
	5MK11	Ac. Sus	8			1¾	Cone	T	40-18 ±3	88	10	2.5k	8	12x9½ x23	Wal. Vinyl	Poly Brown	28	114.95	
	4MK11	Ac Sus	8			1¾	Cone		60-15 ±5	88	10	3.5k	8	11¼x8¼ x19¼	Wal. Vinyl	Poly. Brown	17	79.95	

(continued)

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The Mini-Monitor was made in the image of the NS-1000. It has an identical finish, and like its bigger brother, is sold in mirror-image matched pairs. At low volume levels the sound is virtually the same. It's a primary monitor with the NS-1000 look and sound, for places the NS-1000 won't fit.

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Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange T=tweeter; ST=supertweeter	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
MARANTZ (continued)	HD-880	Vari-Q	12	5	Cone	1½ 1	Dome Dome	M,T St	30-22 ±3	90	15	750 2.3 5k	8	16x12 x40¼	Oil. Wal.	Poly. Brown	61	379.95	
	HD-770	Vari-Q	12	5	Cone	1 1½	Dome Dome	M,T, St	33-22 ±	90	15	750 2.3 5k	8	15x11¾ x26½	Oil. Wal.	Poly. Brown	46	289.95	
	HD-660	Vari-Q	10	5	Cone	1½	Dome	M,T	35-20 ±3	88	15	750, 2.5k	8	14¾x11½ x24¼	Oil. Wal.	Poly. Brown	38	239.95	
	HD-550	Vari-Q	8	5	Cone	1½	Dome	M,T	40-20 ±3	88	15	800, 3k	8	12¾x9½ x22½	Wal. Vinyl	Poly. Brown	27	189.95	
	HD-440	Ac. Sus	8	3½	Cone	3½	Cone		45-18 ±3	87	15	2k, 8k	8	11¼x8½ x19¼	Wal. Vinyl.	Poly. Brown	18	99.95	
	DS-940	Vari-Q	12	5	Cone	1 1½	Dome Dome	M,T, St	30-22 ±3	90	15	750, 2.3k 5k	8	15x12 x45¾	Oil. Wal.	Poly. Brown	62	439.95	
	DS-930	Vari-Q	12	5	Cone	1 1½	Dome Dome	M,T, St	33-22 ±3	90	15	750, 2.3 5k	8	15x12 x28¼	Oil. Wal.	Poly. Brown	46	379.95	
MATRECS INDUSTRIES	MA-254	Pas.Rad.	15	(2) 4½	Cone	3¼& 4½	Pz		25-24 +3		20		8	28 x 13 x 28	Oil. Wal.	Foam, brn.	65	205.95	
	MA-224	Air Sus.	12	4½	Cone	(2) 3¼	Pz		30-24		10		8	19½ x 13 x 28	Oil. Wal.	Foam, brn.	50	175.95	
	MA-203	Air Sus.	10	4½	Cone	2¾	Cone		35-22		5		8	15 x 11 x 26	Oil. Wal.	Foam, brn.	32	132.95	
	MA-123	Air Sus.	12	4½	Cone	1¾	Cone		35-22		8		8	15 x 10 x 24	Wal. Vin.	Cloth, brn.	29	109.95	
	MA-102	Air Sus.	10			2¼	Cone		35-22		5		8	12 x 10 x 20	Wal. Vin.	Cloth, brn.	20	45.95	
	MA-62	Air Sus.	6			3	Cone		40-20		1		8	10 x 6 x 17	Wal. Vin.	Cloth, brn.	11½	37.95	
	MA-82	Air Sus.	8			3	Cone		35-22		2		8	11¼ x 7½ x 18½	Wal. Vin.	Cloth, brn.	14	44.95	
McINTOSH	ML 1C ML 2C ML 10C ML 2M XR 3 XR 5 XR 6 XR 7		10 12 12 (2) 12														76 181 58 181 58 76 100 128	399.00 799.00 319.00 799.00 425.00 499.00 749.00 999.00	
MERIDIAN	M1	Pas. Rad.	12		Dome		Dome		26-20					20 x 39 x 14	Rose.	Cloth	66	3500.00 pair	Tri-amped, phase corrected.
MESA	Mesa 45	Pas.Rad.	8			3	Cone	T	45-22	94	15	85, 3k	8	11½ x 9¾ x 21	Wal. Ven.	Cloth, blk.	23	119.00	
	Mesa 65	Pas.Rad.	10			3	Cone	T	40-22	95	15	80, 2.5k	8	12½ x 10¾ x 23	Wal. Ven.	Cloth, blk.	32	169.00	
	Mesa 85	Pas.Rad.	10	5	Cone	3	Cone	M,T	36-22	96	30	65, 900, 6k	8	14¼ x 11¾ x 25¼	Wal. Ven.	Cloth, blk.	45	229.00	
	Mesa 125	Pas.Rad.	12	5	Cone	3	Cone	M,T	30-22	98	50	65, 900, 6k	8	16 x 13 x 27½	Wal. Ven.	Cloth, blk.	55	279.00	
	Mini- Mesa 15	Vented	3			1	Cone		60-20		5	3k	4	3¾ x 3 x 6	blk.	Black Alum.	2.3	109.00	
	Mini- Mesa 30	Vented	4			1	Dome		60-25		10	3.5k	4	4¾ x 4¼ x 7¼	blk.	Black Alum.	4.5	119.95	
	Mini- Mesa 50	Vented	5	3	Cone	(1)	Horn		50-25		10	1.8k, 9k	4	6½ x 4¾ x 9½	Wal. Ven.	Cloth, blk.	6.0	150.00	
MICRO-ACOUSTICS	FRM-1A	Ac. Sus.	10			1¼- 1½	Cone	T	30-18 ±4		18	1.7k	8/	26x15½ x13	Wal. Vin.	Var	40	210.00	
	FRM-2A	Ac. Sus.	10			(3) 1½	Cone	T	40-16 ±4		10	1.75k	8/	26x15½ x12¼	Wal. Vin.	Foam, brn.	34	166.00	
	FRM-3	Twin ducted ports	8			1½	Cone	Vari Axis	45-15 ±4		7	2.5k	8/	22x13 x9½	Wal. Vin.	Foam brn.	26	127.00	
	MS-1	MultiAxial Radial array							3.5-18 ±2		15	3.5, 7k	16/	4x9¼ x5¼	Oil Wal.	Var.	21¼	125.00	
MITSUBISHI	MS30	Ac. sus.	12	4	Cone	2¼	Dome	M,T	30-20	88	30	800, 5K	6/5	15¼ x 13½ x 26½	Oil. Wal.	cloth black	57½	380.00	
	MS20	Ac. sus.	12			2	Cone	T	35-20	88	30	1.5K	6/5	14½ x 12 x 24¾	Oil. Wal.	cloth black	44	250.00	
	MS10	Ac. sus.	10			2	Cone	T	35-20	87	30	1.5K	6/5	12½ x 11½ x 22½	Oil. Wal.	cloth black	32¼	165.00	
	DS50CS	Bass ref.	12	5	Cone	1	Dome	M,T	25-20	92	20	600, 5K	6	16¾ x 15½ x 35	Rose.	cloth black	77	460.00	
	DA40CS	Bass ref.	12			2	Cone	T	30-20	92	20	1.5K	8/6	15½ x 16 x 33	Rose. Vin.	cloth black	70½	360.00	

For about $15 you can buy the only total record care system or something less.

You have a choice. You can buy a fancy handled record cleaner. Or, for about the same money, you can have the only total record care system there is.

That is, our new Sound Guard™ record cleaner and our famous Sound Guard® record preservative. Both in one package.

The Sound Guard™ Total Record Care System.

With it, you do more than clean everything off your favorite records from dust particles to oily fingerprints.

You actually protect your record's life with a microscopically thin, dust-resistant patented lubricant.

If you want the most for your $15* (and the best for your records), you have to have the only total record care system there is.

Like all Sound Guard products, the Sound Guard Total Record Care System is sold in audio and record outlets.

*Suggested retail price.

Sound Guard® keeps your good sounds sounding good.

Ball

Sound Guard preservative—Sound Guard cleaner—Sound Guard Total Record Care System

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Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
MONITOR AUDIO	MA1 Series II	Bass ref.	13 x 9	6¼	Cone	1	Dome		45-19 ±3.5	96	20	375, 3k	8	13½ x 15 x 30	Teak, Wal.	Blk.	60	429.00	
	MA3 Series II	Bass ref.	13¾ x 9	6¼	Cone	1	Dome		40-19 ±2.5	96	15	400, 3.5k	8	13¾ x 13⅛ x 28	Teak Wal., Teak	Blk.	60	549.00	
	MA4	Bass ref.	8¾			1	Dome		45-18 ±2.5	96	15	3.2k	8	12½ x 11 x 23½	Teak, Wal.	Blk.	36	309.00	
	MA5 Series II	Ac. sus.	8¾			1	Dome		50-19 ±3	96	20	3.3k	8	12 x 10 x 22	Teak, Wal.	Blk.	26	228.00	
	MA7	Bass ref.	6			¾	Dome		55-20 ±4	96	8	3.5k	8	9 x 8 x 16	Teak, Wal.	Blk.	15	150.00	
	MA8		10			1	Dome		45-20 ±3	96	10	3.4k	8	9 x 8 x 16	Teak, Wal.	Blk.	17½	180.00	
NAKAMICHI	Slimline Reference Monitor	Bass Ref.	8			1¼	Cone		50-16 ±5	94	20	2k	16/-	16½ x 13¾ x 36¾	Oil. Wal.	Cloth, Brown	62	480.00	Passive, mechanical crossover
NORMAN LABORATORIES	7	ac sus	12			(2) 1	Dome	T	40-20k ±3			1.5k	8/8	15½ x 13 x 23½	Oil Wal.	Cloth Black	40	200.00	
	8	ac sus	10			1	Dome		45-20k ±4			1.5k	8/8	12 x 10 x 23	Oil Wal.	Cloth Black	28	130.00	
	9	ac sus	(3) 10			(3) 1	Dome	T,W	35-20k ±3			1.5k	4/4	15½ x 15 x 45½	Oil Wal.	Cloth Black	75	440.00	
	10	ac sus	(2) 10			(2) 1	Dome	T	40-20k ±3			1.5k	4/4	15 x 13 x 37½	Oil Wal.	Cloth Black	60	290.00	
OHM ACOUSTICS	Ohm F	Sealed	12 x 16†						37-19 ±4		75		8/4	44 x 18x x 18	Oil. Wal.	cloth		700.00	†Walsh driver.
	Ohm H	Vented	8	2	Cone	1	Dome	T			10				Oil. Wal.	cloth		340.00	
	Ohm C2	Vented	10	2	Cone	1	Dome	T										260.00	
	Ohm D2	Vented	10	2	Cone			T			10				Oil. Wal.			200.00	
	Ohm L	Vented	8	2	Cone	2	Dome	T			8				Oil. Wal.			165.00	
	Ohm E	Sealed	8	2	Cone			T			7				Oil. Wal.			110.00	
ONKYO	M-160	Ac. sus	15	4	† Cone	1	†† Dome	M,T	45-20 ±5	93	20	700, 4.5k	8/6	16½ x 13 x 27	Vin. Rose	Cloth, Black	45	250.00	†Carbon Fiber ††Titanium
	M-240	Ac. sus	12			(2) ¾	Cone	T	50-20 ±5	91	15	2k	8/6	13½ x 13 x 22	Vin. Rose	Cloth, Black	30.1	165.00	
PSB SPEAKERS	Beta II	Bass Ref	8			1	Dome		25-20		45	1.5k	4/5	23 x 12 x 10½	Oil Wa.l	Cloth, black	35	990.00 pair	Motional Feedback
	Passif II	Pas Rad.	8 10			1	Dome		35-20		20	2k	8/6	29½x13½ x12½	Oil Wal.	Cloth, black	35	560.00 pair	
	Passif I	Pas Rad.	7 8			1	Dome		38-20		12	2k	8/6		Wal. vin.	Cloth, bl.	30	400.00 pair	
	Avante II	Bass Ref.	8			1	Dome		40-20		15	1.5k	8/6	19½ x 11 x 10	Wal.	Cloth, black	25	290.00	
	Avante I	Bass Ref.	8			1	Dome		40-20		15	1.5	8/6	19½ x 11 x 10	Oil Wal.	Cloth, black	25	340.00 pair	
	Avantini II	Bass Ref	7			1	Dome		45-20		8	1.5k	8/6	14½ x 8½ x 8	Wal. vin.	Cloth, black	15	200.00 pair	
PEDERSEN ACOUSTICS	1	Folded Horn	15	(2) 2	Dome	1½	Dome	B,T	20-18	100	25	350, 3.5k	8/4	32x 25x 48	Oil Wal.	Cloth blk, navy	350	5600.00 pair	Folded horn, elec. equal.
PERFECTIONIST AUDIO	Model One Woofer	Folded Trans. Line	(2) 9 x 13						10-240Hz ±0.9	95	20	100-200Hz	8/4	72x27x 24	Oil. wal.	cloth black	380	1800.00	Two sub-woofers in one box. Front firing.
	Model Two Woofer	Folded Trans. Line	8						18-240Hz ±0.9	93	20	100-200	8/4	47x12x 18	Oil. wal.	cloth black	95	600.00	
PETROFF LABS	PL-2	Air Sus.	15						30-150 ±30		50	150	8/4	19 x 19 x 19½	Oil Wal.		52	195.00	Subwoofer, w. x-over.
	PL-2 Panel	Air Sus.		10		1	Dome		150-20 ±1		50	150, 4k	8/4	12½ x 10 x 44	Oil Wal.	Cloth, Blk	48	400.00 Pair	
PHASE LINEAR	Phase III		(2) 12 (4) 8	4 (8)	Cone	(8) 1 (2) 1	Cone Dome	M, T, ST	24-22 ±3	80	100	100, 550, 3.8k	6/4	24 x 63 x 5	Oil. Wal.	Cloth Brn.	160	1349.95	Sub-woofer included
	Phase I	7th order Che-bechev	(2) 12						24-100 ±3			100	4	22 x 18½ x 22	Oil. Wal.		90	399.95	Subwoofer, W. internal cross over
PHILIPS HIGH FIDELITY	RH545	MFB	12	2	Dome	1	Dome		20-20	108		500, 3K		17¼x12½ x25½	black ash	blk	67	1,399.95	Tri-amplified MFB system
	RH567	MFB	10	2	Dome	1	Dome		27-20			500, 3.5K		13 x 10¾ x 21¼	black ash	blk		449.95	Bi-amplified MFB system
	RH544	MFB	8	2	Dome	1	Dome		35-20			500, 4K		11⅛ x 8½ x 15½	black ash	blk		399.95	Bi-amplified MFB system
	RH541	MFB	6			1	Dome		45-20			1400		9 x 7 x 11½	black ash	blk		199.95	Amplified MFB system
	AH475	Ac sus	8			1	Dome		40-20		10	3.5K	8/7	13¾ x 11 x 23¾	Walnut vin	cloth, blk	38	199.95	
	AH476	Ac sus	10	2	Dome	1	Dome	M	35-20		20	1.5 & 5.5k	8/7	13¾ x 11⅛ x 26	oil wal	cloth, blk	42	229.95	

(continued)

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms: Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
PHILIPS HIGH FIDELITY (continued)	AH477	Ac sus	12	2	Dome	1	Dome	M, T	32-20		20	1.5 & 5.5k	8/7	15½x14⅝ x 27⅞	oil wal	cloth, blk	54	299.95	
	SJ2930	Tuned port	8			(2) ¾	Cone		48-17.5		5	4.5k	8/7	13 x 11⅜ x 21½	wal. vin	cloth, blk	23.5	179.95 pair	
	SJ2931	Tuned port	10			1	Dome		47-20		5	4k	8/7	13¾ x 11½ x 24	wal. vin	cloth, blk	31.5	109.95	
	SJ2932	Tuned port	10	(2) 5	Cone	1	Dome		46-20		5	2 & 6k	8/7	14½x12½ x 27	wal. vin	cloth, blk	42	124.95	
PIONEER	HPM-200	AC. Sus.	(2) 10	2½	Soft Dome		HPM film	M,T, ST	25-25	89	50	100, 700, 2k,5k	6/ 5.5	29x19 x32	Wal.	Cloth, brn.	124	550.00	
	HPM-150	Bass ref.	15¾	4	Cone	1¾		M,T	25-40	92.5	10	750, 2.6, 8.5	6.3/ 4	17¾x17¾ x38¾	Wal.	Cloth, blk.	82¼	500.00	
	HPM-100	Bass ref.	12	4	Cone	1¾	Cone	M,T	30-25	92.5	15	1.2, 4 12k	8/6	15½x15½ x26½	Wal.	Cloth, blk.	58¾	300.00	
	HPM-60	Bass ref.	10	4	Cone	1¾	Cone	M,T	35-25	92.5	15	1.2, 4 12k	8	13¾x12¾ x24	Wal.	Cloth,	38½	225.00	
	HPM-40	Bass ref.	10			1⅜	Cone	T	35-25	91	10	4, 10k	8	12¾x12½ x22½	Wal.	Cloth, blk.	28¾	150.00	
	CS-99A	Inf. Baf.	15	4, 5	Cones		Horn	T, M(2)	25-22	97		800, 2, 5k	8	16½x11½ x24¾	Wal.	Cloth, brn.	51¾	275.00	
	Proj. 120	Bass ref.	10	5	Cone	1⅞	Cone		30-20	92		1 & 4K	8/	13 x 19¾ x 23	Wal.	Cloth, brn.	26	145.00	
	Proj. 100A	Bass ref.	10	2	Dome	2	Cone		40-20	91.5		700, 6k	8/	13 x 10½ x 23	Wal.	Foam, blk.	30	125.00	
	Proj. 80	Bass ref.	8			1⅞	Cone		35-20	92		1.5k	8/	10½x8½ x18½	Wal.	Cloth, brn.	12½	99.00	
	Proj. 60A	Bass ref.	8			1¾	Cone		50-20			3k	8/	10¾ x 8½ x 18½	Wal.	Foam, blk.	12	80.00	
PLASMATRONICS	Hill Type 1	Inf Baf	12	5	Cone		Plasma	T	18-20 ±3	107	100	125, 700, 1k	8/6	25 x 19 x 57¾	Oil Wal.	Cloth Black	276	5995.00 pair	Bi-amped, w. high amp.
POINT THREE SYSTEMS	Point 3	Ac. sus.	(2) 10	5	Cone	1	Dome		20-20 ±3	90	30	125, 4k	8	15 x 24 x 12	Oil. Wal.	cloth, blk.	80	395.00	Three piece system.
	DB VIII	Ac. sus.	(2) 10	(2) 5 8	Cone Cone	(2) 1 & (2) ¾	Dome	M,T	20-20 ±3	89	50	100, 300. 4 & 10k	8	42 x 24 x 11	Wal.	cloth blk.	80	1600.00 pair	
POLK AUDIO	Model 10	Pas. Rad.	10	6	Cone	1	Dome		22-25 ±2	96	10	60, 3k	6/5	28 x 16 x 11½	Wal., rose vin.	Cloth, black	56	220.00	
	Model 7A	Pass. Rad.	10	6	Cone	1	Dome		26-25 ±2	94	10	60, 3k	8	24 x 14 x 9⅛	Wal., rose. vin.	Cloth, black	35	159.95	
	Model 5	Pass. Rad.	8	6	Cone	1	Dome		31-25 ±2	92	10	60, 3k	8	21½ x 10½ x 8½	Wal., rose. vin.	Cloth, black	29	119.95	
	Mini Monitor	Pass. Rad.	4½	4½	Cone	1	Dome		34-25 ±2	92	5	60, 3k	6	15 x 6¼ x 4⅝	Wal. vin.	Foam, black	10	109.95	
PRECISION SOUND UNLIMITED	PSU I	port	2 x 9	4½	cone	3	cone		25-21 ±2	94.6	5	2.5k	6.4/ 7.8	9¾ x 8¾ x 10½	birch	foam brn.	14	99.95	
	PSU II	port	2 x 9	4½	cone	3	cone	T	20-21 ±2	94.6	5	2.6k	6.2/ 8.6	9¾ x 17½ x 10½	birch	foam brn.	28	189.95	
	PSU Subwoofer		10						15-2k ±2			82/ 2k	6.4/ 12.2	23 x 19¼ x 12½	birch		50	395.00	†Switched.
PRECEDENT AUDIO	MZ Mod 111	Trans. Line	8	5	Cone	¾	Dome		40-20 ±2½	89	35	600, 3.5k	8	29 x 16 40	Plas.	Foam	250	1333.00	
	MZ Mod 11	Trans. Line		5	Cone	¾	Dome		70-20 ±2½	86	35	3.5k	8	7½ x 13 36	Plas.	Foam	100	666.50	
PRESAGE	17	Vented	8			2	Cone		60-18 ±4	92	10	1.6 k	8/6	11½x21½ x8½	Vin.	Cloth, Black	20	99.00	
	15	Vented	8			2	Cone	T	60-19 ±4	95	10	1.4 k	8/6	11½x21½ x8½	Wal. Vin.	Cloth, Brn/Blk	20	135.00	
	9	Vented	10			1	Dome	T	35-20 ±3	90	15	1.4 k	8/6	14 x 25 x 11	Wal.	Cloth, Blark	38	199.00	Bass boost switch.
	5	Pas. Rad.	8	4½	Cone	1	Dome	M,T	30-20 ±3	89	20	470, 3.5 k	8/6	15 x 26 x 12½	Wal.	Cloth, Black	43	249.00	
	4	Pas. Rad.	10	4½	Cone	1	Dome	M,T	27-20 ±3	91	20	470, 3.5 k	8/6	15 x 42 x 15½	Wal.	Cloth, Black	65	599.00	
PYRAMID LOUDSPEAKER	Metronome MOD 2	Air Sus.	14						29-90 ±3	87	200	80	8/5	27½x16½ x25	Oil. Wal.	Foam Blk.	115	1200.00 pair	Sub-woofer.
	Metronome MOD 2W	Air Sus.	8	4½	Cone	2	Cone	M,T	58-19 ±3	87	200	250, 750. 5k	8/5	12½ x 8 x 18	Oil. Wal.	Foam Blk.	27	1400.00 pair	
	Metronome MOD T-1	Add-on					Ribbon	†	3k-100k ±4	95	20	3k	12	4¾ x 7¾ x 4¾	Alum. Blk.	Foam Blk.	8½	990.00 pair	†Step attenuator.
QUAD (Acoustical Mfg.)	ESL	E.S.							50-18 ±3		15		15	34½x10½ x 31		Alum. blk.	40	1180.00 pair	
QUADRAFLEX	ST21	Ac. Sus.	15	6	Cone	1	Dome	M, T	28-22.5 ±4		10	250, 3K	8	18½x12½ x40¼	Oil. Wal.	Cloth var.	83	299.95	
	ST19	Ac. Sus.	12	6½	Cone	1	Dome	M, T	32-22.5 ±4		10	500, 3K	8	15¼x12¾ x26¼	Oil. Wal.	Cloth var.	54	229.95	
	ST17	Ac. Sus.	10	6½	Cone	2½	Cone	M, T	38-20 ±4		10	600, 3k	8	14¼x11¾ x24¾	Oil. Wal.	Cloth var.	48	169.95	
	ST15	Ac. Sus.	10			2½	Cone		45-20 ±4		10	1.5k	8	13½x11 x23¼	Wal. Vin.	Cloth var.	38	119.95	
	ST11	Ac. Sus.	8			2½	Cone		55-20 ±4		10	1.5k	8	12¼x10 x21¼	Wal. Vin.	Cloth var.	33	84.95	

Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms: Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
QYSONIC RESEARCH	Array	laminar flow vent	(2) 8	4½	cone	2 1	cone dome	M, T, ST	28-22 +2,-5	92	30	800, 3,8k	6/4	12½ x 8½ x 47½	Wal. Oak.	Cloth, Black	28	479.00	W. Stand
	TAD	termin. line	(2) 4½			2 2	cone dome	T	40-20 +2,-5	89	15	2 8k	6/4	8¼ x 6½ x 25¼	Wal. Oak.	Foam Black	23	189.00	Opt. Stand.
	Micro	termin. line	(2) 3			2	cone		80-18 +2,-5	79	8	3k	6/4	4½ x 3½ x 11	Wal. Oak.	Foam Black	5	89.00	
	Laug	termin. line	(2) 8						28-100 +2,-5		30	90	6/4	11½ x 10 x 33½	Wal. Oak.	Foam Black	50	229.00	Subwoofer
RH Labs	SB-1	Helmholtz Int.	12						18-120 ±5		60		9/5	40½x22 x18½	Oak, Wal.		150	395.00	Subwoofer, Crossovers sep.
RTR INDUSTRIES	EXP-8v	Ac Sus	8			3¼	Cone	T	48-18.5 ±4	90	12	2k	8	11¼x8½ x19⅞	Vinyl	Cloth, black	27	100.00	
	EXP-12v	Ac. Sus.	12			3¼	Cone	T	40-18.5 ±4	91	20	2k	8	14¼x11½ x25¼	Vinyl	Cloth, black	44	185.00	
	HPR-12 MAG	Pas. Rad.	12	5	Cone	(2) 2½ 3	Cone Pz	M,T	38-22 ±3.5	93	12	1.5k 7.5k 12k	8	14¼x13 x36	Oil Wal.	cloth, brown	72	400.00	
	75D	Ac. Sus.	10	1.5	dome	1	dome	M,T	40-20 ±3	90.5	20	1.25 10k	6	14¼x11½ x25¼	Vinyl	Cloth, black	48	250.00	
	100D	Ac. Sus.	12	1.5	dome	1	dome	M,T	40-20 ±2	90.5	25	1.25 10k	6	15x14 x26½	oil Wal.	cloth, black	50	350.00	
	300D	Ac. Sus	(2) 10	1.5	dome	1	dome	M,T	36-20 ±2	90.5	25	1.25 10k	4	14½x12½ x42	oil Wal.	cloth, black	75	400.00	
	600D	Ac Sus	(2) 12	(2) 1.5	dome	(2) 1	dome	M,T	32-20 ±2	91.5	25	950, 10k	4	16½x16½ x48	oil Wal.	cloth, black	112	600.00	
	PS/1	Ac Sus	8	1.5	dome	1.0	dome	T	65-20 ±2	90.5	25	1.5 9k	6	12¾x8 x21⅞	Oil Wal.	cloth, black	35	300.00	Pyramid shape.
	DAC/1		12 (2)15						16-150Hz ±1.5		40	120	6	29½x28 x21¼	Oil Wal	cloth, black	135	600.00	Subwoofer.
	800	Ac. Sus	8 10	1.5	dome	1.0	dome	W, M, T	36-20k ±2	90.5	25	150, 1.5k 9k	6	23⅞x13¼ 37½	Oil Wal	cloth, black	76	500.00	
	ESR-6	E.S.8				(6) 3x6	E.S.	W,T	1.5-20k ±2		15	1.5k	8	14½x12 x14½	Oil Wal.	cloth, black	23	250.00	Add-on Tweeter.
	ESR-15	E.S.				(15) 3x6	E.S.	W,T	1.25-20 ±2		15	1.25k	8	16½x16½ x19½	Oil Wal.	cloth, black	48	400.00	Add-on Tweeter
	DR-1		(2) 10 12				E.S.	T	28-20 ±2		75	325	8	16½x16½ x49	oil Wal.	cloth, black	165	1495.00	W. amps for ES, x=over.

The New TCD 340 A With The Exclusive ACTILINEAR Recording System

Tape recorders can no longer be looked upon as independent units in today's extremely sophisticated sound systems, but rather as components within a total system with performance capability as advanced as all other components of that system.

Drawing upon its unequalled 30 year tradition in magnetic recording technology, Tandberg has met this challenge by developing a completely new concept known as ACTILINEAR Recording (Patent pending).

In conventional recording systems, the summation of record & bias currents in the recording head is done through passive components, leading to inherent compromise solutions. The new ACTILINEAR System is free of these compromises, as the passive components have been replaced with an active Transconductance amplifier developed by Tandberg. Just a couple of its benefits are: up to 20 dB more headroom over any recording system currently available, and the ability to handle the new high coercivity tapes.

In fact, Tandberg's new ACTILINEAR Recording System, when used in conjunction with the soon-to-be-available metal particle tapes now under intense development in the U.S., Japan and Germany, offers performance parameters approaching those of experimental Pulse Code Modulation (PCM) technology, yet is fully compatible for playback on all existing tape recorders. It is literally a recording system for the future, with no obsolescence factor, as it can be used with any tape, available now or in years to come.

Tandberg engineers have mated this advanced recording system with the finest cassette deck transport available today, making their new TCD 340 A a worthy successor to the world-famous TCD 330 cassette deck. When used with the better brands of recording tape currently available, the TCD 340 A's ACTILINEAR Recording System permits an extremely linear frequency response, a significant increase in headroom, as well as a reduction of high frequency IM distortion and the cancellation of Slew Rate limitations.

And when metal particle cassette tapes become available, the TCD 340 A can be adjusted to take full advantage of their increased signal capacity. At that time, Tandberg will also offer the ultimate cassette deck—the remarkable TCD 340 AM, complete with front panel switching for the new metal particle tape.

Both these remarkable cassette decks excel in more than just their circuitry. Like their famous predecessor, the TCD 340 series offers three separate heads (not a "2-in-1 sandwich" head compromise) for professional recording & monitoring, as well as Tandberg's renowned three-motor, dual capstan closed loop transport, coupled with complete logic-controlled solenoid operation. Plus exclusive features such as adjustable azimuth & built-in 10 kHz tone generator, allowing the user to select the perfect alignment for each cassette, as well as to spot dropouts and inferior quality tape. And the TCD 340 A boasts a 70 dB signal-to-noise ratio, plus very low 0.12% WRM wow & flutter!

And there's more: Automatic take-up of tape loops when the cassette is inserted. Frequency-equalized, peak-reading meters. Servo-controlled high speed winding. Plus vertical or horizontal operation, optional remote control & rack mounting.

Tandberg's TCD 330 was the deck that delivered cassette performance exceeded only by the finest reel-to-reel machines. Now, the 340 series with ACTILINEAR Recording narrows the gap even more.

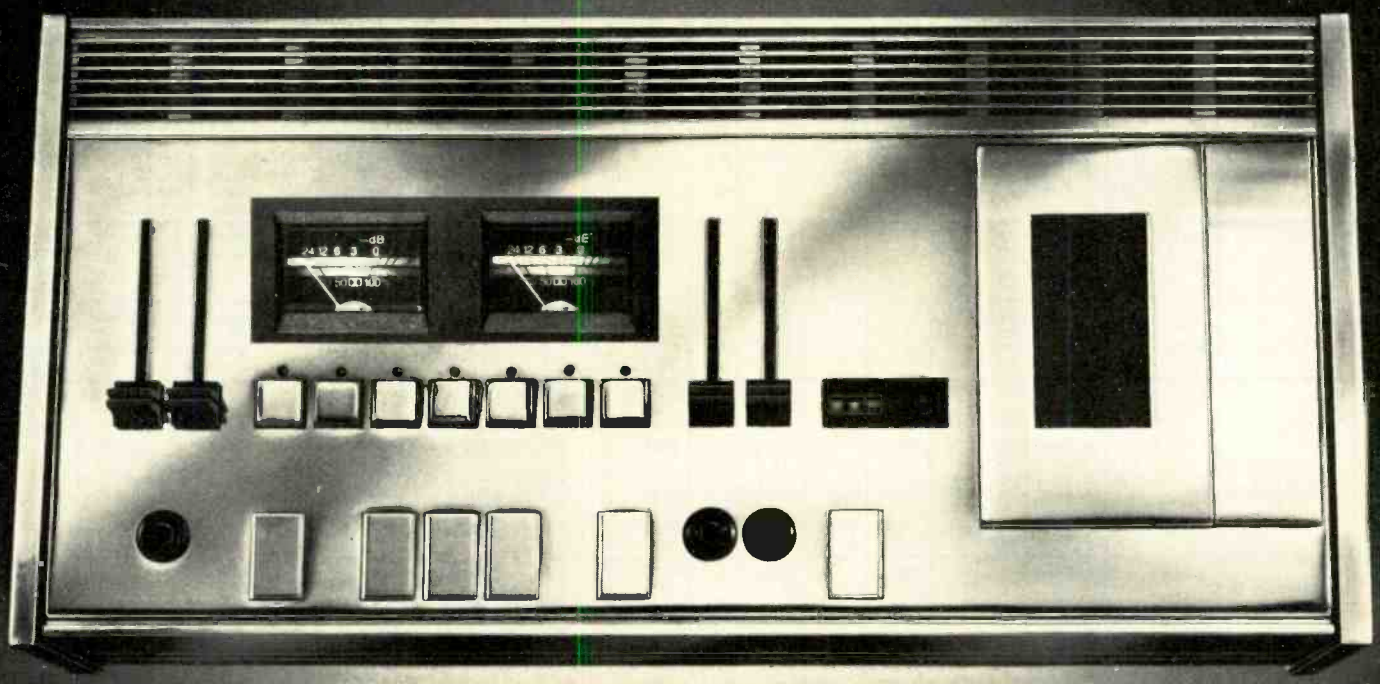
For your nearest dealer, write: Tandberg of America, Inc., Labriola Court, Armonk, N.Y. 10504. Available in Canada.

TANDBERG

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
RADIO SHACK	Optimus T-2000	Ac. Sus	(2) 10	6½	Cone	2	Dome	M,T	50-20 ±4.5	90		800, 6k	8	12½x12½ x34	Oil. Wal.	Cloth brn.		259.95	
	Optimus T-100	Ac. Sus.	(2) 8			3	Cone	T	55-18 ±4.5	90		3.5k	8	13x12½ x35½	Oil Wal.	Cloth brn		159.95	
	Mach One	Ac. Sus	15		4-cell horn		horn	M,T	45-25 ±4.5	88		900, 5k	8	17¾x12 x28¼	Oil. Wal.	Cloth brn.		219.95	
	Optimus -10	Pas. Rad.	8			3½	Dome	T	40-20 ±4.5	90		2.5k	8	15¼x10½ x25	Oil. Wal.	Cloth brn.		139.95	
	Optimus -25	Ac. Sus.	12	4	Cone	2½	Cone	M,T	45-20 ±4.5	91		1.3, 6k	8	14x11 x25	Oil. Wal.	Cloth brn		129.95	
	Optimus 21	Ac. Sus.	10			(3) 2	Cone	T	45-18 ±4.5	88		1.2k	8	12¾x11 x22¼	Oil. Wal.	Cloth brn		109.95	
	Nova 7B	Ac. Sus	10			(3) 2	Cone	M,T	35-20 ±4.5	87		2k	8	12½x11¼ x22¼	Oil. Wal.	Cloth brn		129.95	
	Nova-6	Ac Sus	8			3	Cone	T	50-20 ±4.5	86		2k	8	11½x9¼ x19¼	Oil. Wal.	Cloth brn.		79.95	
	MC-2000	Ac Sus	8			2½	Cone		50-17 ±4.5	89		2k	8	13¾x8 x23½	Oil. Wal.	Cloth, brn.		89.95	
	MC-1400	Ac Sus	8			3	Cone		65-20 ±4.5	91		2.5k	8	11½x7½ x18	Oil. Wal.	Cloth, brn.		69.95	
	MC-1200	Ac. Sus	8			2½	Cone		65-17 ±4.5	86		4k	8	10¾x7½ x17¾	Oil. Wal.	Cloth, brn.		59.95	
	MC-500	Ac. Sus	5			2	Cone		95-20 ±4.5	86		7k	8	9x5¾ x11¾	Oil. Wal.	Cloth, brn.		39.95	
ROGERS	LS 3/5a	Inf. Baffle	5			1	Dome		70-20 ±3	95	25	3k	15 x 8	7½ x 6½ x 12	teak wal.	cloth black	11½	499.00 pair	
	Compact Monitor	Inf. Baffle	8			1	Dome		50-20 ±3	96	25	3k	8/7	20 x 11 x 11	Teak, Wal.	Cloth Black	25	600.00 pair	
	Monitor Two	Inf. Baffle	8	1¼	Dome	1	Dome		40-20 ±3	96	25	3k 12k	8/5	12 x 12 x 25	Teak, Wal.	Cloth Black	31	800.00 pair	
	L35B/ XA75	Inf. Baffle	12					M,T	30-150 ±3		40	150	8/8	32½x16½ x 18	Teak Wal.	Cloth Black	78	1999.00 Pair	Subwoofer.
ROGERSOUND	Reference Three	Pas. rad. ac. sus.	(2) 12	4	Cone	1	Dome		20-22		20	125, 4k	8	32x18x12	Wal.	Cloth blk.	90	725.00	Satellite, 6 x 6¼ x 10.
	Subwoofer	Pas. rad.	(2) 12						20-250		20		8	18x12x 36	Wal.	cloth blk.	71	419.95	
	Micron 80	Ac. sus.	4			1	Dome		80-22		10		8	6x6¼x10	Wal.	cloth blk.	19	169.95	
	6600H	Bass ref.	(2) 12	(2) 5	Cone	1½x 4	Horn	M,T	25-20		10	800, 5k	4	18x11x 46	Wal.	cloth blk.	90	489.95	

(continued)

Tandberg Presents the Next Generation



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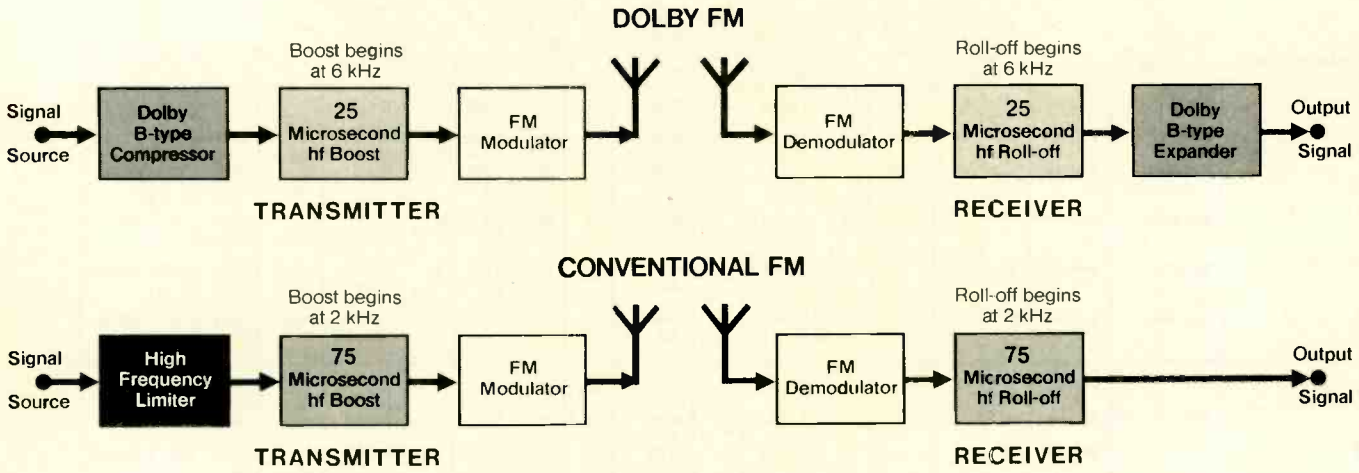
Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms: Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
ROGERSOUND (continued)	Max	Bass ref.	12	5	Cone	1	Dome	M,T	30-20		12	800, 4k	8	18x12x 32	Wal.	cloth blk.	60	330.00	
	3600	Bass ref.	12	5	Cone	1½	Dome	M,T	35-22		12	800, 4k	8	14½x11½ x25	Wal.	cloth blk.	50	279.95	
	3300	Bass ref.	12	5	Cone	2½	Phen. Ring	M,T	40-20		10	800, 5k	8	14½x11½ x25	Wal.	cloth blk.	49	249.95	$209.95 black.
	Ranger	Bass ref.	10	5	Cone	1½	Dome	M,T	40-20		10	800, 5k	8	14½x11½ x25	Wal.	cloth blk.	39	210.00	
	Alpha 1	Bass ref.	8				Dome	T	45-20		10	1.6k	8	11½x11½ x46½	Wal.	cloth blk.	60	129.95	
	Mixdown Monitor		6x 9			2	Cone		65-20		2	3.5k	4/8	10x7¼x 11	Wal.	cloth blk.	12½	99.95 pair	
	Monaco	Bass ref.	8			2½	Phen. Ring	T	50-20		2	1.6k	8	12¼x10¼ x22	Wal.	cloth blk.	34	109.95	
SANSUI	SP-L800	Bass Ref.	(2) 12			2¾	Horn	T	30-25	95		1.5k	8	18¼x15½ x38	Oil. Wal.	Cloth, Blue	94.4	950.00	
	SP-L700	Bass ref.	(2) 10			2¾	Horn	T	30-25	93		2k	8	17x15 x35¼	Oil. Wal.	Cloth, Blue	81.5	680.00	
	P-X9000	Bass Ref.	16	8	Cone	(4) †	Horn	M,T.	25-23	100		1.6& 10k	8	17¾x 11¼x26½	Wal.	Wood	46.7	370.00	†2.6x2"w/2 horn STs.
	P-X8000	Bass Ref.	16	(2) 5⅛	Cone	(3) †	Horn	M,T	25-23	98		1.6& 10k	8	17¾x 11¼x26½	Wal.	Wood	44.8	320.00	†6x2"w/2 horn ST
	P-X7000	Bass Ref.	12	5⅛	Cone	(3) †	Horn	M,T	30-23	97		1.5, 5& 10k	8	15½x11¼ x25¼	Wal.	Wood	37.8	270.00	†6x2"w/2 horn ST.
	P-X6000	Bass Ref.	10	5⅛	Cone	2⅜	Horn	M,T	30-23	95		1.5, &6k	8	15½x11¼ x25¼	Wal.	Wood	33.7	220.00	
	A3100	Ac. Sus.	12	5½	Cone	†	Horn	M,T	35-22			800 2.5k	8	16x12x 25	Wal.	Cloth Black	38½	200.00	†2x5 In. PZ.
	A2100	Ac. Sus.	10	5½	Cone	†	Horn	M,T	40-22			800 2.5k	8	13¼x11¼ x23	Wal.	Cloth Black	26⅞	150.00	†2x5 in. PZ.
	A1100	Ac. Sus.	10			†	Horn		45-22			2.5k	8	13¼x11¼ x23	Wal.	Cloth Black	24¾	100.00	†2x5 in. PZ.
SARAS	30A	Ac. sus	12	5	Cone	1			30-18 ±3	90	30	500, 5K	8	12¼x15½ x 25	Oil Wal		57	330.00	
	20A	Ac. sus	12			1			30-18 ±3	90	30	1.8K	8	12¼x15½ x25	Oil Wal		55	235.00	
	10A	Ac. sus	10			1			30-18K ±4	90	30	1.8K	5	12x13¾ x24	Oil Wal.		46	195.00	
H. H. SCOTT INC.	PRO100B	Air Sus.	15	(2) 4½	cone	(2) 1	dome	M,T	36-20 ±4	94	20	700, 3.5K	4		oil. wal.	knit black	67	549.95	
	197B	Air Sus.	15	4½	cone	1	dome	M,T	38-20 ±4	95	15	750, 3.5k	8/6		wal. vin.	knit brn.	54	279.95	
	196B	Air Sus.	12	4½	cone	1	dome	M,T	38-20 ±4	96	15	800, 3.5K	8/6	25½x15x 10¾	wal. vin.	knit brn.	42	239.95	
	196W	Air Sus.	12	4½	cone	1	dome	M,T	38-20 ±4	96	15	900, 3.5K	8/6	25½x15x 10½	oil. wal.	knit brn.	42	279.95	
	186B	Air Sus.	10	4½	cone	1	dome	M, T	38-20 ±4	95.4	10	900 3.5K	8/6	24x13½x 10½	wal. vin.	knit brn.	33	179.95	
	177B	Air Sus.	8	5	cone	1¾	cone		50-18 ±4	95	7	1.20 3.5K	8/6	19x11 x9⅛	wal. vin.	knit brn.	20	119.95	
	176B	Tuned port	8			1¾	cone		60-18 ±4	93.5	5	3.5k	8/6	18x10½x 8½	wal. vin.	knit brn.	17	89.95	
	188T	Air Sus.	10	4½	cone	1	dome	M,T	38-20 ±4	95.4	10	900 3.5k	8/6	33⅜ x 13⅛ x 10½	wal. vin.	knit brn.	44	199.95	
SERVOLINEAR	II	Periphonic	8, 10	4½	Cone	1	Pz	M,T			25		8/6	14½x14½ x26½	Rose.	Cloth, Black	55	200.00	All models motional feedback without conventional crossover
	III	Periphonic	8, 10	4½	Cone	1	PZ	M,T			50		8/6	16x16 x31.5	Rose.	Cloth, Black	78	300.00	
	IV	Periphonic	8, 10	4½	Cone	1x3	PZ	M,T			75		8/6	17x17 x34	Rose.	Cloth, Black	88	400.00	
	V	Periphonic	†	8 4½	Cone	1x3	PZ	M,T			100		8/6	18x18 x43	Rose.	Cloth, Black	108	600.00	† 8,. (2) 10
	VI	Periphonic	†	8 4½	Cone	1x3	PZ	M,T			150		8/6	19½x19½ x 46½	Rose.	Cloth, Black	125	800.00	† (2) 10, 12
	VII	Periphonic	†	8 4½	Cone	1x5	PZ	M,T			200		8/6	23½x23½ x52½	Rose.	Cloth, Black	225	1000.00	†10,12,15
SHAHINIAN ACOUSTICS	Obelisk	trans. line pas. rad	8			(3) 1	dome		32-18 ±3	90	25	2K	6/4	12 x 14 x 27	Wal.. oak	Black Brown	42	350.00	Teak, $400.00; Rose, $425.00.
SHURE	SR112	Bass ref.	(2) 8				†	T	46-16 ±5	87	10	2.6k	8/6	23x15 x15¾	Vin.	Metal Blk.	38	340.00	†120° radial horn.
	SR116	Bass ref.	(2) 8				†	T	45-16 ±5	87	10	2.6k	8/6	23x15 x15¾	Vin.	Metal Blk.	39	384.00	Portable. †As above.
SINUS	2300	Air Susp.	9			1	Dome		30-19		10	4k	8	10.8 x 18.7 x 9	Wal. Ven.	Cloth Brn.	15	142.50	
	3400	Air Susp.	10.7	3¼	Cone	¾	Dome		30-21		20	700, 6k	8	12¼ x 21½ x 11½	Wal. Ven.	Cloth Blue	24	229.50	
	44F	Bass Ref.	10.7	3¼	Cone	1	Dome		25-20		20	700, 6k	8	13 x 24 x 13	Wal. Ven.	Wire Mesh	39	389.50	
	55M	Bass Ref.	(2) 10.7	1.8	Dome	(2) ¾	Dome	M,T	22-20		40	600, 7k	4	13 x 24 x 18	Wal. Ven.	Wire Mesh	59	599.50	
SNELL ACOUSTICS	Type A	Ac. Sus	10	4	Cone	1	Dome	T	36-18 ±1½		40	300, 2.5k	4	23¾ x 13 x 46½	Oil. Wal.	Coth, Black	97	1370.00 pair	Mirror image pairs.
SONEX (SUMIKO)	Model Two Mk 11	Time Aligned (TM)	(2) 6½	3	Cone	1	Dome		32-18 ±6	90	50	1.3, 7 k	8/3.5	35½x 16x 12½	Wal.	Cloth, brown	58	1500.00 pair	

Dolby FM and Conventional FM
Symmetry is the Difference



These block diagrams show the difference between Dolby FM and conventional 75 microsecond FM. The difference is symmetry. With Dolby FM, the circuits at the transmitter are matched by complementary circuits in the receiver. Such symmetry of signal handling has long been valued in disc and tape recording – and indeed in noise reduction systems. Unfortunately, in conventional FM broadcasting the standards were set so long ago (back in the 40's) that modern wide-range program material causes problems; high frequency limiting has to be used, and thus there is an extra process at the transmitter which is not matched by any complementary treatment in the receiver.

The Dolby B compression and expansion system is well known for its mathematically exact mirror-image operation; this is a key element in permitting FM stations and receivers to function in a symmetrical way. Here's how. First the conventional 75 microsecond high frequency boost and roll-off are reduced to the point where high frequency limiting is no longer required at the transmitter (this happens with a reduction to 25 microseconds, which gives a boost and cut beginning at about 6 kHz instead of 2 kHz). Unfortunately, this step is inherently accompanied by about a 5 dB increase in receiver noise. In the second step, however, the addition of the Dolby B system not only takes care of the additional noise but results in a noise level some 5 dB lower than conventional FM.

Thus, the overall effect is that about half of the 10 dB Dolby noise reduction capability is traded off for symmetrical signal handling. But, considering the two extremes of the dynamic range, there is still a genuine *total* increase of 10 dB in available dynamic range above about 3 kHz.

If you like the idea of a symmetrical FM system with reduced noise, then we invite you to write to us for further information. The following information is available:

1. Technical details and explanations of Dolby FM.
2. A list of stations with Dolby FM encoder units.
3. A list of receivers with built-in Dolby FM circuits.

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Listening to Dolby FM

Basically, listening to the improvement brought about by Dolby FM is like listening to any audio equipment improvement – such as those made to turntables, pickups, amplifiers, and speakers. A particular improvement in a component may well be there all the time, but its noticeability will depend on various factors, such as the listening environment or the type and quality of the program material.

In the same way, the overall Dolby FM listening improvement is subtle most of the time; occasionally, however, it will be quite obvious. It should be remembered that in FM the 10 dB action of the Dolby system is distributed nearly equally between the low-level noise and the high-level signals. The audibility of any change is therefore less obvious, and depends more on program material and other conditions, than the effect of the Dolby system on cassettes.

Relative to the hiss level of conventional broadcasting and reception, a somewhat (but not startlingly) reduced hiss will be noticed by listeners with weak-signal reception conditions; listeners with a strong signal will note no change (as with conventional FM, the noise will be determined by the station's source material). Listeners in any reception area, though, will notice a full recovery of source material high-frequency dynamics, regardless of signal strength. On most stations, cymbal crashes and other program material containing high-level high-frequency components will sound distinctly brighter and cleaner. Otherwise, for those rare stations which conventionally hold down modulation in order to preserve high-frequency signal integrity, the introduction of Dolby encoding allows an increase in overall level by several dB. Of course, this increase will be apparent to all listeners, regardless of location and whether or not they have receivers equipped with Dolby FM circuits.

We think that critical listeners can hear and enjoy the various improvements described above often enough to make the extra cost of Dolby FM well worthwhile.

Dolby

Dolby Laboratories Inc

'Dolby,' and the double-D symbol are trade marks of Dolby Laboratories

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S76/172

Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
SONY	SS-G7	Bass ref.	15	4	Cone	1½	Dome	MT	30-20 ±3	94		550, 4.5k	8	20 x 37 x 17½			121	1000.00	Phase aligned.
	SSU-4000	Bass Ref.	10	3¼	Cone	1	Dome	MT	30-20 ±3	91	20	550, 5.5k	8	13½ x 47 x 14¼	Oil Wal.	Cloth Brown	70½	400.00	W. Passive radiator
	SSU-3000	Bass Ref.	10	3¼	Cone	1	Dome	MT	35-20 ±3	91	20	600, 5.5k	8	13½ x 34¼ x 14¼	Oil wal.	Cloth Brown	59½	300.00	
	SSU-2000	Ac. sus.	10			2¼	Cone		35-20 ±3	90	20	2.5k	8	13¼ x 21¼ x 14¼	Oil. Wal.	Cloth Brown	38	150.00	
	SSU-1250	Bass ref.	8			2¼	Cone		45-20 ±3	90	10	4k	8	13½ x 25¾ x 11¾	teak vin	Cloth brown	24¼	100.00	
	SSU-1050	Ac. sus.	8			2¼	Cone		50-20 ±3	88	10	1k	8	11¾ x 17¾ x 8¼	Teak. Vin.	Cloth Brown	18	130.00 pair	
SOUND DYNAMICS	10S	Bass ref.	10			1	Dome	T	32-20 ±3	100	8	2.2k	8/4	14½ x12 x25¼	Wal. vin.	cloth blk.	46	199.00	
	12S	Bass ref.	12			1	Dome	T	28-20 ±3	101.5	10	2k	8/4	15¼x12 x 26½	Wal. vin.	cloth blk.	55	279.00	
	15S	Bass ref.	15			1	Dome	T	27-20 ±3	102	15	1.8k	8/4	20x17¼ x32	Wal. vin.	cloth blk	62	399.00	
	153S	Bass ref.	15	6	Cone	1	Dome	M,T	26-20 ±3	103	25	900, 4k	8/4	20x22 x32¾	Oil Wal.	cloth blk	123	599.00	
	183S	Bass ref.	18	8	Cone	1	Dome	M,T	25-20 ±3	103	50	800, 3.8k	8/4	23¾x22¾ x36¾	Oil. Wal.	cloth blk.	152	899.00	
	2184S	Bass ref	(2) 18	8	Cone	1	Dome	M,T	20-20 ±2	104	100	400, 800, 3.8k	8/4	37¾ x 26½ x 41	Oil. Wal.	cloth blk	250	1500.00	
SONIC ENERGY SYSTEMS	TA-8	Tuned port	8			1	Dome	T	65-18 ±3	87	10	72, 2.5k	8/4	9x12 x 9¾	Wal.	cloth blk.	35	129.00	
	TA-10	Tuned port	10			1½	Dome	T	70-17 ±3	87	10	43, 2k	8/6	23x13 12½	Wal.	cloth blk.	47	162.50	
	TA-10F	Pas. rad.	(2) 10			1½	Dome	T	40-17 ±3	87	10	50, 2k	8/6	38x15 x12½	Wal.	cloth. blk.	70		
	TA-10P	Tuned port	10	4½	Cone	1	Dome	T	31-21 ±3	87	10	45, 1.5 5k	8/4	23x13 x12½	Wal.	cloth blk.	70	375.00	
	TA-12p	Tuned port	12	4½	Cone	1	Dome	T	20-21 ±3	89	10	45 1.5 & 5k	8/5	41x22 x11	Wal.	cloth blk.	86	450.00	
	BE-2.2	Pas. rad.	10							87	10	150	8/7	35x19 x9¾	Wal.	cloth blk	85	220.00	bass box
SONIC SYSTEMS	Monolith	Rad. slot port	(2) 15			(4) 1⅜	Comp.	T	33-18 ±4	97	5	1.2k	4	26½ x 46 x 24	Oil. Wal.	Cloth, Blk.	200	2995.00 pair	
	Summit	Rad. Slot port	15			(2) 1¾	Comp.	T	38-18 ±4	94	10	1.2k	8	24½ x 21 x 40	Oil. Wal.	Cloth, Blk.	150	2295.00 pair	
	Tower	Rad slot Port	12			(2) 1¾	Comp.	T	40-18 ±4	92	10	1.2k	8	21½ x 19 x 40	Oil. Wal.	Cloth, Blk.	135	1695.00 pair	
SPEAKERLAB	Point One	Ac. Sus.	6			1	Dome	T		88	15	2.5k	4/3 or 8/6	7x5 x10	Oil. Wal.	clth brn.	10	95.00	
	1	Ac. Sus.	8			1	Dome	T		92	5	2.5k	8/6	11¾x9½ x18¾	Oil. Wal.	cloth, brn.	30	105.00	
	2	Ac. Sus	10			1	Dome	T		92	10	1.5k	4/3	15¼ x 10¾ x 26¼	Oil Wal.	cloth, brn.	49	159.00	
	2.5	Ac. Sus.	10	6	Cone	1	Dome	M,T		88	10	500, 1k	4/3	15¼x10¾ x26¼	Oil. Wal.	cloth, brn.	52	205.00	
	3	Ac. Sus.	12	6	Cone	1	Dome	M,T		91	15	500, 4k	8/6	16¼x11¾ x28	Oil. Wal.	cloth, brn.	65	265.00	
	4	Ac. Sus.	12	6	Cone	4¼ x 1¼	Horn	M,T		91	15	500, 4k	8/6	16¼x11¾ x28	Oil Wal	cloth, brn.	65	295.00	
	6	Ac. Sus.	12	14 x 3¼	Horn	4½ x 1¼	Horn	M,T		91	15	1k,6k	8/6	16¼x11¾ x28	Oil. Wal.	cloth, brn.	70	325.00	
	7	Ac. Sus.	10, 12	14 x 3¼	Horn	4½ x 1¼	Horn	M,T		92	15	1k,6k	4/3	18x15 29	Oil Wal.	cloth, brn.	85	430.00	
	Super 7	Ac. Sus.	10,12	14 x 3¼	Horn	4½ x 1¼	Horn	M,T,		92	15	1k,6k	4/3	18x15 x29	Oil. Wal.	cloth, brn.	86	520.00	
	K	Horn	15	17x6	Horn	4½ x 1¼	Horn	M,T		101	10	400, 5k	8/6	32¼x28 x50½	Oil. Wal.	cloth, brn.	170	650.00	
	Thirty	Nestorovic	8,10	5	Cone	1	rec. dome	M,T		91	25	750, 4k	8/6	13 x 10¾ x 31	Oil Wal	cloth, brn.	60	285.00k	
SPENDOR SPEAKERS	BC-3	Mod. ref.	12	8	Cone	(2) 1¼ Dome ¾	Dome		50-14 ±2		50	700, 3 & 13k	8/6	15½ x 15½ x 31½	Wal. Rose.	Cloth blk.	75	750.00	$800.00 in rosewood.
	BC-1	Mod. ref.	8			(2) 1¼ Dome ¾	Dome		60-14 ±3		25	3 & 13k	8/6	12 x 12 x 25	Wal. Rose.	Cloth blk	31	325.00	$350.00 in rosewood
	SA-1	Ac. sus.	6			1	Dome		70-14 ±3		20	3k	8/6	9 x 9 x 12	Wal. Rose.	Cloth blk.	16	200.00	$215.00 in rosewood.
STARK DESIGNS	SR-2A	Ac. Sus	12	2	Dome	1	Dome	M,T,	32-20 ±3.5		40	950, 3.4k	8	15 x 13 x 24	Oil. Wal.	Cloth, brown	50	320.00	
	SR-1A	Ac. Sus	10	2	Dome	1	Dome	M,T	40-20 ±3.5		30	950, 3.4k	8	15 x 11 x 24	Oil. Wal.	Cloth, brown	44	270.00	
(continued)	SE-2A	Ac. Sus	10			1	Dome	T	40-20 ±4.0		20	1.55k	8	13 x 11 x 24	Oil. Wal.	Cloth, brown	38	220.00	

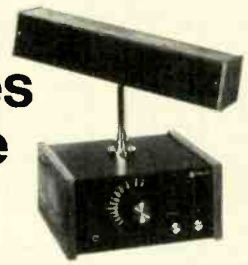
MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
STARK DESIGNS (continued)	SE-1A	Ac. Sus	8			1	Dome	T	50-20 ±4.0		20	1.65k	8	10 x 11 x 21	Oil. Wal.	Cloth. brown	32	175.00	
	SD-2A	Ac Sus	10			1	Dome		40-20 ±4.5		20	1.95k	8	13 x 11 x 18	Oil. Wal.	Cloth. brown	28	150.00	
	SD-1A	Ac. Sus.	8			1	Dome		50-20 ±4.5		20	1.95k	8	10 x 11 x 15	Oil. wal.	Cloth. Brown	22	125.00	
SYMDEX	Sigma	Inf. baf.	6½			1	Dome		58-20 ±1.5	83	40	2.5k	8/ 7.5	10x6.5 x 20.75	oil. wal.	Foam. brown	22	299.00	
SYNERGISTICS	S-72A	Sealed	(2) 10	(2) 4.5	Cone	(3) 2.5	Cone	M,T	26-24	94	6	1,7.5 12.5k	4	27x11 x 42	Oil. Black	Cloth, Black	103	600.00	4-way with ST.
	S-92	Sealed	12	(6) 4.5	Cone	(2) 1x2	Film	M,T	24-30 ±2	91	30	140, 2k	8	(2) 22x62x3 40x15x18	Oil. Wal.	Cloth Black	280	2000.00	3-piece w. stereo woofer
	S-62A	Sealed	12	4½	Cone	(3) 2½	Cone	M,T	26-24	93	8	1, 7.5 12.5k	8	18x18x36	Oil. Wal.	Cloth, Black	67	400.00	4 way w/ ST.
	S-12A	Sealed	8			2½	Cone		40-20	95	6	3.2k	8	17¾x9¾ x 8½	Wal. Vin	Cloth, Black	17	100.00	
	S-22A	Sealed	8			2½	Cone	T	33-20	94	6	3.2k	8	12x9½ x23	Wal. Vin	Cloth, Black	29	130.00	
	S-32A	Sealed	10			2½	Cone	T	28-20	90	10	2.5k	8	14¼x11½ x25½	Wal. vin	Cloth, Black	38	170.00	
	S-42A	Sealed	10	4½	Cone	2½	Cone	M,T	28-20	91	10	1.5 & 7.5k	8	14¼x11½ x25½	Wal. Vin	Cloth, Black	40	230.00	
	S-51A	Sealed	12	4½	Cone	2½	Cone	M,T	30-24	93	8	1,7.5 12.5k	8	14¼x11½ 25½	Oil Wal.	Cloth, Black	42	325.00	4-way w/ ST.
	S-52A	Sealed	(2) 8			(4) 2½	Cone	T	30-20	93	8	3.2k	4	14½x12½ x32	Oil Wal.	Cloth, Black	55	325.00	
TAMON	TS707	Ac.Sus.	15	5	Cone	1½	Dome	M,T	30-35	96	30	600, 2.5 & 13k	8	27½x17½ x12½	Oil Teak	Cloth, brn.	55	379.95	
	TS505	Ac. Sus.	12	5	Cone	1½	Dome	M,T	32-35	93	25	700, 2.5k	8	24½x14½ x12½	Oil Teak	Cloth brn.	38	269.96	
	TS404	Ac. Sus	10	5	Cone	1½	Dome	M,T	38-35	92	20	800, 2.5k	8	22½x12½ x12½	Oil Teak	Cloth brn.	30	229.95	
	TS303	Ac. Sus.	8			1½	Dome		45-22	92	15	3k	8	18½x11 x10½	Oil Teak	Cloth brn.	15	139.95	
	CR050	Ac. Sus.	12	5	Cone	1½	Cone	M,T	32-22	93	25	800, 3k	8	24½x14½ x12½	Black vin.	cloth blk.	37	359.95	
	CR040	Ac. Sus.	10	5	Cone	1½	Cone	M,T	38-22	92	20	800, 3k	8	22½x12½ x12½	Black vin.	Cloth blk.	28	249.95	
	CRO 30	Ac. Sus.	8			1½	Cone		45-22	90.5	10	3k	8	18½x11 x10½	Black vin.	Cloth blk.	15	139.95	
TANDBERG	Studio Monitor	Inf. Baf	12	2	Dome	(2) 1	Dome	M,T.	25-20 ±4	96		600, 3.5k	8/6	30 x 18½ x 13½	Rose	Cloth grey	48.5	1500.00 pair	
	TL 5020	Inf. Baf.	12	5	Cone	1	Dome		35-22 ±4	96		700, 3.5k	8/6	26 x 14 x 11¼	Rose	Cloth grey	38.5	800.00 Pair	
	TL3520	Inf. Baf.	10	3¾	Cone	1	Dome		40-22 ±4	96		700, 3.5k	8/4	23¾ x 14⅛ x 10¼	Rose	Cloth grey	29.4	600.00 pair	
	Fasetts	Ported	5			2¼	Cone		60-20 ±4	96		3.5k	8/4	11⅛ x 9¾ x 9	Black, Orange		7.6		
	TL2520	Inf. Baf.	8	3⅜	Cone	2	Cone		45-20 ±4	96		700, 3.5k	4/3	21 x 12 x 9	White Rose	Cloth Grey	20.3	400.00 Pair	
TANGENT ACOUSTICS	SPL-1	Inf. Baf	4			1	Dome		95-25 ±3	87	10	3k	8/6	7x7¾ x10¾	Wal./ teak	Cloth black	8	199.00 pair	
	TM-3	Inf Baf	8			1	Dome		55-30 ±3	83	20	3k	8/6	10x11¼ x14½	Wal./ teak	Cloth blk.	22	335.00 pair	
	TM-1	Reflex	8			1	Dome		40-30 ±3	83	20	3k	8/6	12x12½ x25	Wal./ teak	Coth blk	33	459.00 pair	
	RS-2	Inf Baf	8			1	Dome		52-30 ±3	82	30	3k	8/6	10x11¼ x14½	Wal./ teak	Cloth blk	22	519.00 pair	
	RS-4	Reflex	8			1	Dome		39-30 ±3	82	30	3k	8/6	12x12½ x25.	Wal./ teak	Cloth blk	33	739.00 pair	
	RS-6	Reflex	8	8	Cone	1	Dome		35-30 ±3	82	30	300, 3k	8/6	12x12½ x31	Wal./ teak	Cloth blk	44	989.00 pair	
TANNOY	Bucking-ham	Ported						M,T	35-20 ±3	95	50	350, 3.5k	8/6	24x18 x46	Wal/ Rose	Cloth Brn.	212	2250.00	All models use single - unit cone woofer and horn.
	Windsor	Ported						M,T,	40-20 ±3	92	50	350, 3.5k	8/6	23x16 x33	Wal/ Rose	Coth Brn.	125	1250.00	
	Arden	Ported						M,T	45-20 ±3	91	40	1k	8/6	26x14½ x39	Oil. Wal	Cloth Brn.	125	777.00	
	Berke-ley	Ported						M,T,	45-20 ±3	91	40	1k	8/6	21x12 x33	Oil. Wal.	Cloth Brn	90	655.00	
	225	Pas. Rad						M,T,	45-20 ±3	89	25	3.5k	8/6	15x12 x28	Oil. Wal.	Cloth Brn.	55	495.00	
	185	Pas. Rad.						M,T.	45-20 ±3	89	25	3.5k	8/6	15x11 x26	Oil Wal	Cloth Brn	55	425.00	
	125	Ported	10			1½	Horn	T	50-20 ±3	88	20	5k	8/6	13x10 x24	Oil. Wal.	Cloth Brn	45	228.00	
TECHNICS	SB7000A	Vented	13¾	4¾	Cone	1¼	Dome	M,T	37-22	90.5	15	700, 6k	6	19x16¼ x33¾	Blk. & Chrm	cloth blk.	72.8	440.00	Linear phase resp.
	SB6000A	Vented	12			1¼	Dome	T	39-22	91	15	1.8k	6	16⅜x13½ x33½	Blk. & Chrm.	cloth blk	55	340.00	As above.
	SB5000A	Vented	10			2½	Cone		40-20	92	15	1.5k	8	13⅜x12¾ x28¼	Blk.	cloth blk.	35¼	180.00	As above
(continued)	SB4500A	Vented	10			2½	Cone		40-20	90.5	15	2k	6	13¾x12¾ x25		cloth blk.	32	300.00 pair	As above

Loudspeakers

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
TECHNICS (continued)	X-10	Vented	8			1	Dome		46-20	90.5	15	2.3k	6	10½x9½ x18		cloth brn	17.6	200.00 pair	As above
	X-30	Vented	8	3½	Cone	1	Dome	M,T	44-20	93	15	1.2 & 3k	6	11x10 x21¼		cloth brn.	25.3	360.00 pair	As above.
	X-50	Vented	10	3½	Cone	1	Dome	M,T	43-20	93	15	1&3k	6	13½x13 x24		cloth brn.	42	500.00 pair	As above
	P-1000	Vented	8			2½	Cone		42-20		10	4k	8	13½x11¾ x22¾		cloth brn.		180.00 pair	As above.
THIEL	01	Sealed	10			1½	Dome		30-16 ±3	93	10	1.2k	8/7	11¾x9¼ x20½	Oil. Wal, rose	Foam blk	30	400.00 pair	Incl. electronic EQ.
	02	Ported	6½			1	Dome		45-20 ±3	92	10	2.5k	8/7	11x9½ x19	Oil. Wal, rosewd.	cloth blk	22	220.00 pair	
	03	Ported	10	5	Cone	1	Dome		27-20 ±3	92	20	700, 4k	8/6	12x12 x38	Oil. Wal, rosewd	Cloth blk	42	775.00 pair	Phase coherent, incl. elect. EQ.
THORENS	HP-360												4	22¼x31½ x4	Blk.	Cloth Blk.	34	700.00	
	HP-380												4	31½x44½ x4	Blk.	Cloth Blk.	68	990.00	
TRANSAUDIO	1012B	Ac. Sus.	12	5	Cone	2½	Cone		38-18 ±4		5	600, 2k	8	16½x10¼ x27	Wal., Vin	Foam, Black	42	149.95	
	1011B	Ac. Sys.	12			2½	Cone		40-18 ±4		5	1.8k	8	15½x10¼ x26	Wal., Vin	Foam, Black	36	99.95	
	1010B	Ac. Sys.	10			3	Cone		45-17 ±4		5	1.8k	8	13¼x9¾ x24¼	Wal., Vin.	Foam, Black	33½	69.95	
	1008A	Ac. Sys.	8			3	Cone		60-16 ±5		5	2k	8	11½x8½ x18	Wal., Vin.	Foam, Black	25	44.95	
TRANSDUCTION	T-2	Inf. Baf	5			¾	Dome	T	55-25 ±3	87	20	3.2k	8/6	9¼x7¾ x14¼	Oil. Wal.	Cloth, Black	17	175.00	
	T-5	Trans. Line	13x9	5	Cone	¾	Dome	M	30-25 ±3	86	25	325, 3.2k	8/6	15x13½ x30	Oil Wal	Cloth Black	70	380.00	
	T-14	Trans. Line	13 x 9	5	Cone	¾ ¾	Dome Dome	M,T	14-30 ±3	85	35	325, 3.2 & 14.5k	8/6	18¾ x 15½ x 56¾	Oil. Wal.	Cloth Black	140	800.00	
	BC-2		13 x 9						28-150 ±3		40	Var.	8/8	15x13 x5	Oil. Wal.		22	375.00	Subwoofer, w. crossover.
	S-5	Trans Line	13x9						22-150 ±3		40	Var.	8/8	15x13½ x30	Oil. Wal.	Cloth Black	65	500.00	As above
	S-14	Trans Line	13x9						14-150 ±2		50	Var.	8/8	18¾x15½ x56¾	Oil. Wal.	Cloth Black	130	825.00	As above
VISONIK	D302MO	Air sus.	4			2	Cone		50-22		10	2k	4	4¼x4¼ x6¾	Blk.	Metal	5	100.00	
	D500	Air sus.	4			1	Dome		50-25		10	2.5k	4	4½x4½ x6¾	Grey	Metal	5	110.00	
	D502	Air sus.	4			¾	Dome		45-30		20	1.4k	4	4¼x4¼ x6¾	Blk.	Metal	5½	115.00	
	D602	Air sus.	5			1	Dome		38-25		20	1.4k	4	5¾x5¾ x9¼	Blk. Wal.	Metal	8.8	160.00	
	D702	Air sus.	7			1	Dome		30-25		20	2.1k	4	8x8 x13	Wal.	Metal	14.3	200.00	
	D803	Air sus.	8	1½	Dome	¾	Dome		30-30		20	1.1 & 4.5k	4	8x8 x13	Wal.	Metal	16½	250.00	
	Sub 1 W/D502	Air sus.	12	4	Cone	¾	Dome		16-30		50	160, 1.4k	4	17x12¾ x23¾	Wal.	Cloth Brn.	64	590.00	Subwoofer W/D502
	Sub 2 W/D502	Air sus.	10	4	Cone	¾	Dome		20-30		50	160, 1.4k	6	14x9¼x 19½	Wal.	Cloth Brn.	40	530.00	Subwoofer 2 w/D502
	Euro 5	Air Sus	8			1	Dome		30-25		10	1.3k	4	11x9½ x19	Wal.	Cloth Brn.	24	170.00	
	Eruo 7	Air sus.	2x7	1½	Dome	1	Dome		25-25		10	900, 4.6k	4	13¼x9¼ x23	Wal.	Cloth Brn.	32	300.00	
DICK WAGNER	DW-1	SEALED	(8) 12	(16) 4	Cone	(5) 1	dome		26-19 ±5	89	100	600, 6k	8/3	48x63 x22	Rose	Cloth brn.tan	190	5700.00 pair	
WINDSOR	2000 S	Ac. Sus	8			2½	Cone	T	55-20 ±5	92	10	2.5k	8	11x9x21	Wal. Vin.	Brown	15	70.00	
	3000 S	Ac Sus.	10			2½	Cone	T	50-20 ±5	92	10	2.5k	8	14x9x 24½	Wal. Vin.	Brown	18	105.00	
	4000 S	Ac. Sus.	12	4	Cone	2½	Cone	T	45-20 ±5	92	10	700, 3k	8	15¾x 11¼x26	Wal. Vin.	Brown	28	150.00	
	5000 V	Pas. Rad	12	8	Cone	2½	Cone	T	40-20 ±4	92	10	67, 1.5k	8	18x10¾ x29	Wal. Vin.	Brown	35	210.00	
	6000 V	Pas. Rad	15	8	Cone	(2) 2½	Cone	T	35-20 ±4	92	10	58, 1.5 & 8k	8	19½x 10¾ x30	Wal. Vin.	Brown	43	275.00	
WATSON LABORATORIES	10	Dipole †	(2) 10	(2) 8	Cone 4	1 1¼	Dome Dome	M,T	24-21 ±4	91	120	250, 800, 4k, 17k	4/	24¾ x 21½ x 47	Rose.	Blk.	78	1950.00 pair	†Infinite baf., gas filled.
	7	†	10	8 4	Cone	1 1¼	Dome Dome	M, T	27-18 ±4	88	120	250, 800, 4k	4/	19½ x 15 x33	Rose.	Blk.	52	1295.00 pair	†as above.
	25W	†	(8) 10						16-250 ±4	93	100	150	8/4	52 x 34 x 17½	Rose.	Blk.	120	1649.00	Subwoofer, †as above.
	10W	†	(2) 10						20-250 ±4	92	75	250	8/4	23¾ x 21½ x 19	Rose.	Blk.	40	449.00	Subwoofer, †as above.

MANUFACTURER	Model	Enclosure type	Woofer dia., inches	Midrange dia., inches	Midrange type	Tweeter dia., inches	Tweeter Type	Level controls? W=woofer M=midrange; T=tweeter; ST=supertweeter)	Anechoic freq. response Hz to kHz ± dB	dB SPL/watt/meter	Recommended min. amp. power	Crossover frequencies, Hz.	Impedance, ohms; Nominal/minimum	Dimensions, inches	Finish	Grille Material Color	Weight, lbs.	Price $ (Noted if per pair.)	Notes
WHARFEDALE	E-70	Bass Ref.	10	(2) 4	Cone	1	Horn	M, T	50-18 ±3	94	3	800, 7k	8	13½ x 14 x 32	Wal. Ven.	Cloth, blk.	70	475.00	
	E-50	Bass Ref.	10	4	Cone	1	Horn	M, T	55-18 ±3	94	3	800, 7k	8	13½x13½ x26	Wal. Ven.	Cloth, blk.	42	390.00	
	SP-120 Dovedale	Bass Ref.	(2) 6¾	4	Cone	2 x 1	†		35-26 ±3	88		800, 5k	6/5	15½x12½ x25	Wal. Ven.	Cloth, brn.	55	355.00	†Isodynamic.
	SP-100 Teesdale	Bass. Ref.	8	4	Cone	2 x 1	†		40-26 ±3	87		800, 5k	6/5	13½ x 11 x 22⅜	Wal. Ven.	Cloth, brn.		270.00	
	XP-80 Glendale	Ac. Sus.	10	4	Cone	¾	Dome		50-20 ±3	86			6	12 x 10½ x 22⅛	Wal. Ven.	Cloth, brn.		210.00	
	XP-60 Linton	Ac. Sus.	8	4	Cone	¾	Dome		60-20 ±3	87			6	10½ x 9½ x 18⅜	Wal. Ven.	Cloth, brn.		160.00	
	XP-40 Shelton	Ac. Sus.	8			¾	Dome		63-20 ±3	86			6	9¾ x 9½ x 16¼	Wal. Ven.	Cloth, brn.		115.00	
	XP-20 Denton	Ac. Sus.	6¾			2	Cone		65-18 ±3	88			6	9¾ x 8¾ x 14	Wal. Ven.	Cloth, brn.		90.00	
YAMAHA	NS-1000	Ac. Sus	12	8½	Dome	1¼	Dome	M, T		90		500, 6k	8	28x15½ x14¼	Ebony	Cloth, Blk.	86	1450.00 Pair	Beryllium dome.
	NS-1000M	Ac. Sus	12	8½	Dome	1¼	Dome	M, T		90		500, 6k	8	26¼x14¾ x12¾	Black	Cloth, Blk.	68	1020.00 Pair	Beryllium dome.
	NS-500	Ac. Sus	10			1½	Dome	M, T				1.8k	8	24½x13¼ x11½	Black	Cloth, Blk.	43	520.00 Pair	Beryllium dome.
	NS-69011	Ac. Sus	12		Dome	1¼	Dome	M, T		90		800, 6k	8	24¾x11¾ x11½		Cloth, Blk.	48	620.00 Pair	
	NS-325	Bass Ref	10	4¾	Cone	2	Dome	M, T		92		600, 5k	8	24x14 x11¾		Cloth, Brn.	34	450.00 Pair	
	NS-225	Bass Ref	10			2	Dome	T		92.5		1.8k	8	22¼x13¼ x12¾		Cloth, Brn.	30	350.00 Pair	
	NS-5	Ac. Sus.	10			1	Dome			88		1.5k	8	20¾x11¾ x11		Cloth, Blk.	25	200.00 Pair	
	NS-10M	Ac. Sus.	7			1⅜	Dome		60-20	90	25	2k	8	8½x8 x15	Blk. Paint	Cloth, Blk.	13¼	260.00 Pair	
ZENITH RADIO	MC4000	QB3 Vented	12	5	Cone	3½	Horn	M,T	30-20 ±6	91.5	5	600, 2k	8/6	17x28 x13.2	Wal.	Cloth Brown	45	479.00 pair	
	MC3000	B4 Vented	10			3½	Horn	T	40-20 ±6	90.0	5	2k	8/8	15.62 x24.75 x10.75	Wal. Vin.	Cloth Brown	29	289.00 pair	
	MC2000	B4 Vented	8			3½	Horn		50-15 ±6	89	5	2.5k	8/6	14.5x22.5 x8.62	Wal. Vin.	Cloth Brown	18.5	199.00 pair	

AM Comes Alive



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THE POINT OF MOST RETURN.

WALCO's New "EXTENDED RANGE" Replacement Stylus . . .

Turns Your Present Cartridge Into a "Super" Cartridge!

Since its introduction this remarkable *replacement stylus* has earned universal acclaim from reviewers and consumers. It has even led a trend to stylus modifications by major cartridge manufacturers, attempting to duplicate our unique achievement — high praise, indeed!

WHAT'S BEHIND IT: Experts agree that lower stylus mass is desirable, and new record playing equipment has been moving in that direction. But now, Walco engineers have substantially reduced total stylus assembly mass through an unprecedented *combination* of technological advances.

WHAT IT DOES: This important breakthrough (1) extends high frequency response, (2) reduces distortion, (3) yields greater stereo separation, (4) improves groove tracing, (5) minimizes record surface noise, (6) gives *audible* improvement in sound clarity, and (7) costs as little as about five records.
Most significant of all, these improvements take place in the cartridge you now own.

HOW WE DO IT: Walco has perfected a way to bond a 60% smaller nude diamond tip directly to the underside of the cantilever. This permits a smaller, lighter, stronger assembly. In addition, the Walco stylus is formed into a parabolic (Shibata-type) tip for maximum groove contact.

Artist's rendering of high magnification, revealing what the eye cannot see:

WHAT IT MEANS TO YOU: We believe there is no need to spend a hundred dollars or more to upgrade your present high quality cartridge to state-of-the-art performance. It can be done in seconds, at home, merely by replacing the original stylus with a precision-crafted Walco "ER" replacement assembly designed especially for it, and made to fit exactly!

FREE BROCHURE: We'll send you a detailed report on the amazing Walco "ER", and a list of cartridges for which units are presently available. Or ask your dealer: Walco products are available from Audio and Record shops nationwide.

For maximum pleasure from your present sound system, look into the Walco "ER" Replacement Stylus. It is the point of most return — the whole point of high fidelity.

Walco WALCO ELECTRONICS

Div. Walco-Linck Corp., Clifton, N.J. 07015

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Microphones


Mura DX-20V


Audiotex 30-2312


Sennheiser MD-431


Audio-technica AT-813


Toshiba EM-220

Technics RP-354OE

MANUFACTURER	Model	Directional Pattern	Operating Principle	Case Material	Response Tailored For	Impedance, ohms	Frequency Range, Hz to kHz	EIA Sensitivity, dBm	Mike Connection	Cable length, feet	Cable plug type	Dimension, inches; length x diameter	Weight, ounces	Mounting Method	Price, $	Notes
AKG	C-424	Cardioid X4	Condenser	Nickel	Studio	200	20-20	-136	XLR	66		10½ x 1½	18	⅝ x 27	1700.00	Quadraphonic, W. preattenuator.
	C-422	Variable X 2	Condenser	Black Chrome	Studio	200	20-20	-138	XLR	66		9¼ x 1½	15½	⅝ x 27	1600.00	Stereo, 9 remote-select patterns.
	C-34	Variable X 2	Condenser	Black Chrome	Studio	200	20-20	-136	XLR	66		7¾ x 1½	9¾	⅝ x 27	1100.00	Stereo.
	C-33	Cardioid X 2	Condenser	Black Chrome	Studio	200	20-20	-136	XLR	66		7¾ x 1¼	9¾	⅝ x 27	650.00	Preattenuator, 4 pattern select., bass rolloff.
	C-414EB	Variable	Condenser	Zinc	Studio	200	20-20	-136	XLR		Not Furn.	5½ x 1 ¾	12	⅝ x 27	535.00	9 capsules w. various patterns.
	C-451E	Modular	Condenser	Brass	Studio	200	20-20	-132	XLR		Not Furn.	5 x ¾	3½	⅝ x 27	245.00	Two-way diaphragm, 3-position base.
	D-222E	Cardioid	Dynamic	ABS/ Diecast	Studio	200	20-16	-148	XLR		Not Furn.	8¼ x 1¾	9	⅝ x 27	165.00	Two-way dia.
	D-224E	Cardioid	Dynamic	Brass	Studio	200	20-20	-142	XLR		Not Furn.	7¾ x 1	10	⅝ x 27	300.00	Two-way daiphragm, 3 position bass.
	C-501E	Cardioid	Electret	Brass		200	40-20	-141	XLR		Not Furn.	5¾ x ¾	3½	⅝ x 27	135.00	Supplied with battery, stand adapter, and case.
	C-502E	Omni	Electret	Brass		200	20-20	-141	XLR		Not Furn.	5¾ x ¾	3½	⅝ x 27	135.00	As above.
	C-505E	Cardioid	Electret	Brass		200	40-20	-141	XLR		Not Furn.	6¼ x 2¼	5½	⅝ x 27	140.00	As above.
	D-200E	Cardioid	Dynamic	Brass		200	25-16	-149	XLR		Not Furn.	7¼ x 1¾	8½	⅝ x 27	105.00	Two-way transducer.
	D-2000E	Super Cardioid	Dynamic	Zinc Alloy		200	35-17	-144.5	XLR		Not Furn.	6½ x 2¼	11	⅝ x 27	125.00	2 position bass.
	D-1000E	Cardioid	Dynamic	Brass		200	40-17	-144.5	XLR		Not Furn.	6⅛ x 1½	8½	⅝ x 27	85.00	BMS — Switch for EQ
	D-190E	Cardioid	Dynamic	Brass		200	30-15	-144.5	XLR		Not Furn.	6¼ x 1½	6½	⅝ x 27	75.00	on/off switch version available, also offered as a stereo pair.
	D-170E	Cardioid	Dynamic	Zinc Alloy		200	50-15	-146	XLR		Not Furn.	6½ x 2¼	12	⅝ x 27	105.00	Built-in pop filter.
	D-160E-1	Omni	Dynamic	Brass		200	40-20	-150.5	XLR		Not Furn.	5½ x ¾	4½	⅝ x 27	75.00	Includes wire mesh windscreen.
	D-140E	Cardioid	Dynamic	Brass		200	30-15	-145	XLR		Not Furn.	5¾ x 1½	6.2	⅝ x 27	155.00	Bass roll-off switch.
	D-120E	Cardioid	Dynamic	Alum		200	100-17	-146.5	XLR		Not Furn.	6½ x 2¼	5¼	⅝ x 27	65.00	Bass roll-off switch, also in stereo pair.
	D-12E	Cardioid	Dynamic	Brass		400	40-17	-145	XLR		A-3 XLR	5½ x 2¾	18	⅝ x 27	190.00	Elastic steel suspension, swivel joint
AKAI AMERICA	ACM-80	Uni-Directional	Electret Condenser	Alum.		600	30-17 ±6	-73		6	Phono Plug	1½ x 7⅛	5¼		24.95	
	ACM-100	Uni-Directional	Electret Condenser	Alum.		600	3-17 ±6	-68		10	Phono Plug	¾ x 6	5¼		45.95	
AIWA	DM-511P	Uni	Moving Coil	Plas.	Vocal	600	100-12		RCA Phono	9.9	Mini Plug	1x6¾	4		60.00 pair	Sold only in pairs.
AUDIO-TECHNICA	AT801	Omni	Electret	Alum.		600	40-18	-142	A3F	16½	¼ ph plug	7½ x 1½	5½	⅝ x 27	60.00	On-off switch.
	AT802	Omni	Dynamic	Alum.		600	50-16	-150	A3F	16½	¼ ph. plug	7 x 1½	5	⅝ x 27	60.00	
	AT803S	Omni	Electret	Alum.	Lavalier	600	50-15	-151	A3F	16½	Not furn.	1 x ¼	0.1	clip	80.00	Belt clip/battery pack, on-off switch.
	AT805S	Omni	Electret	Alum.	Lavalier	600	50-15	-151	A3F	16½	¼" ph. plug	2 x ½	1	clip	50.00	On-off. switch
	AT811	Cardioid	Electret	Alum.		600	50-20	-150	A3F	16½	¼" ph. plug	8 x 1½	7	⅝ x 27	80.00	On-off switch.
	AT812	Cardioid	Dynamic	Alum.		600	50-18	-155	A3F	16½	¼" ph. plug	8 x 1½	7½	⅝ x 27	80.00	On-off switch.
	AT813	Cardioid	Electret	Alum.		600	20-20	-153	A3F	16½	¼" ph. plug	8 x 2	6½	⅝ x 27	95.00	With built-in blast filter, on-off switch.
AUDIOTEX	30-2312	Omni-Directional	Dynamic	Alum.	Vocal		55-13	-85		15	Phone Plug	7 x 1	10.5	⅝ x 27	28.20	
	30-2314	Cardioid	Dynamic	Alum.	Music	50	50-13	-58		10	Phone Plug	6¾ x 1	13.5	⅝ x 27	34.00	
	30-2310	Cardioid	Dynamic	Alum.	Music	600, & 50k	80-13	-73 & -54†		10	Phone Plug	3¾ x ¾	2.5	⅝ x 27	25.50	†-73 @ 600 ohm, -58 @ 50K ohm.
	30-2318	Cardioid	Condenser	Plastic	Vocal	1000	40-16	-65	Direct	13	Mini-Plug	½ x 1½	2.5	⅝ x 27	21.35	
	30-2316	Uni-Directional	Condensor	Alum.	Music	600	50-13	-69	Direct	20	Phone Plug	7 x ¾	10.5	⅝ x 27	60.15	
BEYER DYNAMIC	M160	Hyper Cardioid	Ribbon	Alum.	Flat	200			A3F						334.00	Double Ribbon.
	M260S	Hyper Cardioid	Ribbon	Brass	Flat	200	50-18	-153	A3F	15	Not Furn.	9½ x 2	10½		189.00	On/Off switch
	M500	Hyper Cardioid	Ribbon	Alum	Vocal	200	40-18	-153	A3F	15	Not Furn.	7½ x 2½	8.5		205.00	
	M69	Cardioid	Moving Coil	Steel	Flat	200	50-16	-144	A3F	15	Not Furn.	7¼ x 2	8.8		150.00	Avail. w/bass roll-off switch

(continued)

MANUFACTURER	Model	Directional Pattern	Operating Principle	Case Material	Response Tailored For	Impedance, ohms	Frequency Range, Hz to kHz	EIA Sensitivity, dBm	Mike Connection	Cable length, feet	Cable plug type	Dimension, inches; length x diameter	Weight, ounces	Mounting Method	Price, $	Notes
BEYER DYNAMIC (continued)	M88	Hyper Cardioid	Moving Coil	Brass	Flat	200	30-20	-144	A3F	15	Not Furn.	7¼ x 2	10¾		300.00	
	M101	Omni	Moving Coil	Brass	Flat	200	40-20	-150	A3F	15	Not Furn.	4¾ x 1	5⅜		189.00	
	M201	Hyper Cardioid	Moving Coil	Brass	Flat	200	40-18	-149	A3F	15	Not Furn.	6½ x 1	7¾		179.00	
	XIN	Cardioid	Moving Coil	Plas.	Flat	200	30-18	-146	A3F	15	Not Furn.		11		135.00	
	MC711	Omni	Cond.	Brass	Flat	200	40-20		A3F		Not Furn.				425.00	Mc711-714 consists of one CV710 preamp shaft & four inter-changeable head capsules, CK711-CK 714.
	MC712	Omni	Cond.	Brass	Flat	200	40-20		A3F		Not Furn.				455.00	
	MC713	Cardioid	Cond.	Brass	Flat	200	40-20		A3F		Not Furn.				460.00	
	MC714	Cardioid	Cond.	Brass	Flat	200	40-20		A3F		Not Furn.				490.00	
CALECTRO	Q4-157	Omni-Directional	Dynamic	Alum.	Vocal	200-50k	55-13	-85		15	Phone Plug	7 x 1	10.5	⅝ x 27	24.30	
	Q4-152	Cardioid	Dynamic	Alum.	Music	50k	50-13	-58		10	Phone Plug	6¾ x 1	13.5	⅝ x 27	29.35	
	Q4-158	Cardioid	Dynamic	Alum.	Music	600-50k	80-13	-73 -54		10	Phone Plug	5½ x ⅞	16	⅝ x 27	23.70	†73dB at 600 Ohm, -54dB at 50K Ohm
	Q4-142	Cardioid	Dynamic	Alum.	Music	50k	100-15	-59		3	Mini-Plug	3¾ x ¾	2.5	⅝ x 27	11.75	
ELECTRO-VOICE	RE 20	Cardioid	Dynamic	Steel	Flat	50-250	45-18	-150	Swcft. A3F	15	Not furn.	8½ x 2¼	26	⅞ x 27	330.00	Variable-D (R) for no proximity effect.
	RE15	Super Cardioid	Dynamic	Steel	Flat	150	80-15	-150	Swcft. A3F	15	Not furn.	6½ x 1½	6	⅝ x 27	189.00	As above.
	RE10	Super-Cardioid	Dynamic	Steel	Flat	150	90-13	-150	Swcft. A3F	15	Not furn.	6¾ x 1½	6	⅝ x 27	120.00	As above.
	660	Super-Cardioid	Dynamic	Zinc	Flat	150	90-13	-150	Swcft. A3F	15	Not furn.	6½ x 1½	10½	⅝ x 27	78.00	As above.
	D535	Cardioid	Dynamic	Steel	Voice	150	60-17	-148	Swcft. A3F	15	Not furn	7¼ x 2	9.2	⅝ x 27	108.00	Single-D for up-close bass boost.
	671A	Cardioid	Dynamic	Zinc	Voice	150	60-14	-151	Swcft. A3F	15	Not furn	6¼ x 2	8	⅝ x 27	81.00	As above.
	CS15P	Cardioid	Condenser	Steel	Flat	150	40-18	-137	Swcft. A3F	15	Not furn.	7 x 1¼	8	⅝ x 27	234.00	As above, phantom powereed.
	1776	Cardioid	Condenser	Zinc	Voice	150	60-18	-144	Swcft. A3F	15	Not furn.	7½ x 2	12		105.00	As above battery powered.
	RE55	Omni	Dynamic	Steel	Flat	150	40-20	-150	Swcft. A3F	15	Not furn.	10½ x 1¼	8½	⅝ x 27	219.00	Used as secondary lab standard.
	DO54	Omni	Dynamic	Steel	Flat	150	50-18	-149	Swcft. A3F	15	Not furn.	5¾ x 1¼	6½	⅝ x 27	105.00	
	636	Omni	Dynamic	Steel/ Zinc	Flat	HI-Z 150	60-13	-154	EV QG4M	15	Not furn.	10¼ x 1¼	15	⅝ x 27	81.00	
	635A	Omni	Dynamic	Steel	Voice	150	80-13	-149	Swcft. A3F	15	Not furn.	6 x 1½	6	⅝ x 27	66.00	
	631B	Omni	Dynamic	Zinc	Voice	HI-Z 150	80-13	-150	Swcft. A3F	15	Not furn	6¼ x 1½	6	⅝ x 27	57.00	Removable On/Off switch actuator.
	C015P	Omni	Condenser	Steel	Flat	150	20-20	-141	Swcft. A3F	15	Not furn.	7 x 1¼	7½	⅝ x 27	252.00	
	REBS	Omni	Dynamic	Steel	Voice	150	90-10	-155		30	Not furn.	2¾ x 5½	8	†	99.00	† Neck cord. Lavalier
	647AL	Omni	Dynamic	Alum.	Voice	150	60-12	-155		18	Not furn	3¾ x ¾	2	†	75.00	† As above. Lavalier.
	C090	Omni	Condenser	Metal	Voice	150	40-15	-148		6	Swcft A3M	1 x ½	1	†	111.00	† Tie clasp. Lavalier
HANDY	96-1058	Omni Directional	Dynamic	Alum.	Vocal	200 & 50K	55-13	-85		15	Phone Plug	7 x 1	10.5	⅝ x 27	32.60	
	96-1056	Cardioid	Dynamic	Alum.	Music	50K	50-13	-58		10	Phone Plug	6¾ x 1	13.5	⅝ x 27	39.30	
JVC	M-210	Uni-Dir	Elect.	Alum.	Chrome	600	40-18	-71	Phone	10	Phone	8¾ x 3½	13	⅝ x 27	59.95	Stereo Mike.
	M-510	Super Dir	Elect	Alum.	Chrome	600	40-20	-68	Phone	15	Cannon	16 x 1	9	⅜ x 27	189.95	Opt. Uni-Dir. Capsule
	HM-200E	Binaural	Elect.			600	40-18		Phone	6.6	Phone				99.95	With Head Phone.
MURA	DX-129	Cardioid	Dynamic	Plastic	Orch. Vocal	600, 50K	40-15	-74, -56	G.C. 18-092	20	phone	7½x 2	7	⅝x 27	49.95	Stand adaptor included
	DX-247	Omni	Dynamic	Alum/ Plastic	Orch. Vocal	600, 50K	40-15	-75, -57	G.C. 18-092	20	phone	7x 1½	3	Desk stand	34.95	Desk stand included
	EX-279	Omni	Electret	Alum.	Vocal	600	30-16	-72		6	Mini phone	1¾ x ¾	1	clip	25.95	Lapel mike, Battery included
	DX-20V	Cardioid	Dynamic	Alum.	Orch. Vocal	600, 50K	60-15	-74, -56	G.C. 18-092	20	phone	10½x 1	6	⅝x 27	44.95	Stand adaptor included
	DX-30V	Cardioid	Electret	Alum.	Orch. Vocal	600, 50K	20-18	-62, -56	G.C. 18-092	20	phone	8x 1	6	⅝x 27	69.95	Stand adaptor and Battery included
	DX-285	Omni	Electret	Alum.	Orch. Vocal	600	20-18	-74		20	phone	6¼x 1½	2-¾	desk stand	34.95	Battery and desk Stand included
	DX-235	Omni	Dynamic	Plastic	Orch. Vocal	600	50-15	-78		6	Mini phone	6½x 1½	3½	desk stand	24.95	W. phone plug adaptor and desk stand included.

Microphones

MANUFACTURER	Model	Directional Pattern	Operating Principle	Case Material	Response Tailored For	Impedance, ohms	Frequency Range, Hz to kHz	EIA Sensitivity, dBm	Mike Connection	Cable length, feet	Cable plug type	Dimension, inches; length x diameter	Weight, ounces	Mounting Method	Price, $	Notes
NAKAMICHI	CM-1000	Cardioid†	cond.	Metal	all-purpose	600	20-20 ±2.5	-139	XLR 3	15	Not furn.	5½ x 1	5	5/8 x 27	355.00	† Opt. omni capsule, $125.00.
	CM-700	Cardioid/ Omni†	Electret	Metal	all-purpose	600	20-20 ±3	-137	XLR 3	15	phone	7 x 1	5	5/8 x 27	185.00	† Opt. shotgun capsule, $85.00.
	CM-300	Cardioid/ Omni†	Electret	Metal	all-purpose	200	30-18 ±3.5	-148	XLR 3	15	phone	8 x 1	6	5/8 x 27	135.00	† Opt. capsules: shotgun, $60, super-omni $40.00. Tri-mike set for $365.00.
	CM-100	Cardioid†	Electret	Metal	all-purpose	200	30-18 ±3.5	-148	XLR 3	15	phone	8 x 1	6	5/8 x 27	85.00	†Accepts same capsules as CM-300.
	CM-50	Omni	Electret	Metal	all-purpose	250	20-18 ±3.5	-147		6	phone	1¼ x ½	3	clip	135.00	Miniature mike w/tie clip.
	DM-1000	Cardioid	Moving Coil	Metal	vocal/ music	250	30-18 ±2.5	-148	XLR 3	15	phone	7½ x 1½	12	5/8 x 27	245.00	Triple pop/blast filter
	DM-500	Cardioid	Moving Coil	Metal	vocal	250	50-15	-145	XLR 3	15	phone	6½ x 1½	6	5/8 x 27	85.00	Integ. pop/blast filter.
PEARL (Ercona)	DC21	Card.	Cond.	Alum.	Music/ Vocals	30, 200, 600†	30-20 ±3		Att.	33	Preh	3 x ¾	1½	⅝ x 27	230.00	†Bal., Hi-Z, unbal.
	DC20	Omni	Cond.	Alum.	Music/ Vocals	30, 200, 600†	30-20 ±3		Att.	33	Preh	3 x ¾	1¼	⅝ x 27	220.00	†As above.
	TC4-USV	Variable	Cond.	Alum.	Music/ Vocals	200	30-20 ±3		Tuchel	20	Preh	1¾ x 5¾	5	⅝ x 27	895.00	Remote pattern control at power supply.
	VM41-4130	Card.	Cond.	Alum.	Music/ Vocals	200	30-20 ±3		XLR 3-12	20	Preh	10 x ¾	5	⅝ x 27	950.00	Interference cond.
PIONEER	CM-1	Switchable Uni-Omni	Electret Condenser	Alum.	Universal	600	20-20†			18	phone plug	8-3/8x 1½	10½		100.00	†Omni, 40-20 uni.
	CM-2S	Hyper-Cardiod	Electret Condenser	Alum.	Universal	1000	20-20			21	Phone (2)		11-¼		60.00	
PRIMO	EMU-4520	Cardioid	Elect. Cond.	Brass	Music, Vocal, Record.	200	50-15		Swcft. A3F	19.7	phone	7.9x 1.26	5.7	⅜x 27		3-position switch
	EMU-4580	Cardioid	Elect. Cond.	Alum.	Vocal, Record	1K	100-8			20	phone	6.7x 1.6	3	metric		
	UD-305A	Cardioid	Dynamic	Die cast	Music, Vocal	250	50-15		Swcft. A3F	19.7	Not furn	6.5x 2	8	⅜x 27		On-off switch
	UD-305B	Cardioid	Dynamic	Die cast	Music, Vocal	250	50-15		Swcft. A3F	19.7	Not furn	6.5x 2	8	⅜x 27		
	UD-305F	Cardioid	Dynamic	Die cast	Vocal, paging	250	50-15			2.6	Not furn.	6.3x 1.5	7	⅜x 27		
	UD-836L	Cardioid	Dynamic	Die cast	paging	200	70-14			5	Not furn.	3.5x 1.1	5	⅜x 27		
	UD-980	Cardioid	Dynamic	ABS	Vocal, Record	dual	100-13		Special	19.7	phone	6.4x 1.7	5	spl		On-off switch, dual impedance.
	UD-985	Cardioid	Dynamic	ABS	Vocal, Record	600	100-13			9.8	phone	6.4x 1.7	3	spl		On-off switch.
RADIO SHACK	33-919	Cardioid	Electret	Alum.	Vocal/ Instrument	600	30-15	-72	Phone Plug	10	¼				31.95	Dual Pattern Stereo.
	33-985	Cardioid	Dynamic	Alum.	Vocal	†	80-13	-82	Phone Plug	15	⅛				49.95	†Suitable 50-250 to 50,000 ohms
	33-922	Cardioid	Dual-response	Alum.	Vocal/ Instrument	200	80-15	-76	XLR	10	¼				59.95	
	33-992	Cardioid	Dynamic	Alum.	Vocal	†	80-12	-60	Phone Plug	10	¼				29.95	600 or 50,000 ohms.
	33-1045	Cardioid	Dynamic	Alum.	Vocal	600	30-15		Phone Plug	10	⅛				29.95	
	33-1044	Omni	Dynamic	Alum.	Vocal	600	30-15		Phone Plug	10	¼				27.95	
SENNHEISER	MD 211	Omni	dyn.	brass	Studio, instrum.	200	30-20	-153	A3M	15					290.00	
	MD 402	Sup. Card.	dyn.	Alu.		200	80-12	-152	A3M	15	A3M				79.50	
	MD 421	Cardioid	dyn.	Plas.		200	30-17	-151	A3M	15					265.00	Adj. bass response, high overload.
	MD 431	Sup. Card.	dyn.	Zinc		200	30-20	-151	A3M	15					371.00	Built-in EQ and shockmount
	MD 441	Sup. Card.	dyn.	Alu.	Vocal	200	40-16	-151	A3M	15	A3M				308.00	Intern shockmt., high vol. before feedbck.
	MKE 202	Omni	Elect.	Metal		200	50-15	-144	A3M						172.00	
	MKE 402	Sup. Card.	Elect.	Metal		200	50-15	-144	A3M						201.00	
	MKE 802	Club	Elect.	Metal		200	50-15	-138	A3M						241.00	Electret shotgun microphone.
	MKE 10	Omni.	Elect.	Brass		1k	40-20								130.00	
	MKE 2002	Binaural	Cond.	Metal	Music	1.5k	40-20	-135							403.00	Stereo mike.
	MKH106TU	Omni	Cond.	Metal	Studio	2	20-20								472.00	12V AB powering.
	MKH 106 P48U	Omni	Cond.	Metal		10	20-20									
	MKH406TU	Card.	Cond.	Metal	Studio	2	40-20								529.00	12V AB powering.
	MKH 406 P48U	Card.	Cond.	Metal	Studio	10	40-20								529.00	48V phantom
	MKH416TU	Super Card.	Cond.	Metal	Studio	20	40-20								610.00	12V AB powering.
	MKH 416 P48U	Super Card.	Cond.	Metal	Studio	10	40-20								610.00	48V phantom.
	MKH 816TU	Shotgun	Cond.	Metal	Studio	20	40-20								748.00	12V AB power.
	MKH 816 P48U	Shotgun	Cond.	Metal	Studio	10	50-20								748.00	48V phantom.

MANUFACTURER	Model	Directional Pattern	Operating Principle	Case Material	Response Tailored For	Impedance, ohms	Frequency Range, Hz to kHz	EIA Sensitivity, dBm	Mike Connection	Cable length, feet	Cable plug type	Dimension, inches; length x diameter	Weight, ounces	Mounting Method	Price, $	Notes
SHURE	516EQ	Cardioid	Dynamic	Alum.		50	50-15	-153	Swcft. A3F	15	Phone Plug	6¼ x 1½	9½	⅝ x 27	84.00	Eq mike. Pair $151.20
	545SD	Cardioid	Dynamic	Alum.		150, 33K	50-15	-149, -151	Swcft. A3F	15	Not furn.	6¼ x 1¼	9	⅝ x 27	80.40	On/off switch.
	565SD	Cardioid	Dynamic	Alum		150, 33k	50-15	-148.5, -150.5	Swcft A3F	15	Not furn	6¼ x 2	10½	⅝ x 27	89.40	On/off switch
	589S	Cardioid	Dynamic	Alum		150, 33k	90-13	-155, -156	Swcft. A3F	15	Not furn.	7 x 1½	12	⅝ x 27	61.20	On/of switch
	SM57	Cardioid	Dynamic	Alum	Prof.	150	40-15	148	Swcft. A3F	20	Not furn.	6¼ x 1¼	10	⅝ x 27	99.00	
	SM58	Cardioid	Dynamic	Alum		150	50-15	-148	Swcft. A3F	20	Not furn.	6¼ x2	15	⅝ x 27	126.60	
	SM59	Cardioid	Dynamic	Alum		150	50-15K	-155	Swcft. A3F	20	3-PIN XLR	7¾ x1¾	7.6	⅝ x 27	132.00	Internal shock mount
	SM81	Cardioid	Condenser	Steel	Record	800	20-20k	-142	Swcft A3F	25	3-PIN XLR	8½ x1	8	⅞ x 27	225.00	
SONY	C-76	Super uni	Elec. cond.		Perform Arts	250	40-16		XLR-3			26¾ x 1	14.6		690.00	Windscreen, LED indicator
	C-74	Super uni	Elect. cond.		Perform Arts	250	40-16		XLR-3			16⅞ x 1	12.5		580.00	As above.
	C-38B	omni/uni	Condenser		Vocal/ Inst.	250	30-16		fixed	20	XLR 3-12C	8¾ x 3	23		475.00	Int. bat. & phantom powering, equalizer.
	C-37p	omni/uni	Condenser		Vocal/ inst.	250	30-16		fixed	20	XLR 3-12C	7⅜ x 1⅞	18		425.00	Can use phantom power, equalizer.
	ECM-53FP	cardioid	Back Elec.		Multi	250	40-15		fixed	10	XLR-3	10¾ x ⅞	7.8		265.00	
	F-660	uni	Dynamic		Vocal	250	100-10		XLR-3			6½ x 1½	6.4		250.00	Windscreen.
	ECM-56F	uni	Back Elec.		Vocal	250	20-20		fixed	20	XLR 3-12C	8¼ x 2	17		230.00	Bat. or phantom power.
	ECM-65F	uni	Back Elec.		Vocal	250	70-20		XLR-3	20	XLR-3-12C	7 x 1½	7.5		220.00	As above, w/double windscreen.
	ECM-64P	omni	Elec. cond.		Vocal	250	40-20		XLR-3	20	XLR-3-12C	7 x 1½	7.5		220.00	As above.
	ECM-50PS	omni	Elec. cond.		Multi	250	40-14		fixed	10	XLR-3-12C	⅞ x ½	0.3		200.00	Tie-tack design, bat. or phantom power.
	ECM-33F	uni	Back Elec.		Multi	250	20-20		XLR-3	20	XLR-3-12C	7 x 1⅛	6.5		175.00	Bat. or phantom power.
	F-115	omni	Dynamic		Multi	600	40-12		fixed	20	XLR-3-12C	6⅞ x 1¼	9.5		150.00	All-weather design.
	ECM-30	omni	Elec. cond		Multi	250	50-14		fixed	10	XLR-3-12C	⅝ x ⅜	0.18		100.00	
	ECM-41	uni	Elect. cond.		Multi	250	50-13		fixed	8	XLR-3	10¾ x ¾	5.6		95.00	Adj. telescoping wand.
	ECM-990F	uni x 2 pieces	Back. Elec.			200	40-16		Sony type	10	phone x 2	8¼ x 3½	11.3		130.00	LED indicator.
	ECM-23F	uni	Back Elec.		Vocals/ Instr.	250	20-20		XLR-3	20	phone	7½ x 1⅛	6.7		100.00	
	F-560M	uni	Dynamic		Vocal	200	80-13		XLR-3	6.4	XLR-3-12C	6⅛ x 1⅜	7.5		90.00	Low-cut switch.
	ECM-170AM	omni	Elec. cond.			200	20-16		Sony type	16	phone	6⅛ x 1	5.6		68.00	
	ECM-150M	omni	Elec. Cond.		p.a.	250	40-13		fixed	6.5	phone/ mini	⅝ x ⅜	2.8		58.00	On/off switch.
	ECM-260F	uni	Back Elec.			200	50-14		XLR-3	16	phone	7⅛ x 1½	4.4		57.00	
	ECM-31M	uni	Elec. cond.		p.a.	250	50-13		fixed	8	mini	19⅝ x ¾	5.6		48.00	
	ECM-99A	uni x 2 pieces	Elect. Cond.			250	50-12		fixed	10	phone x 2	7¾ x 2⅜	10		48.00	
	F-540	uni	Dynamic			300	80-13		fixed	16	phone	7 x 1⅜	13		38.00	
	ECM-16M	omni	Elec. cond.			250	50-13		fixed	6	mini	1⅜ x ⅜	1.09		33.00	
	ECM-210S	uni	Elec. cond.			200	50-12		fixed	8	mini/ remote	7¼ x 1½	4.8		31.00	
	ECM-210M	uni	Elec. Cond.			200	50-12		fixed	8	mini/ remote	7¼ x 1½	4.8		29.00	
	F-510	uni	Dynamic			320	80-12		fixed	10	mini	7⅜ x 1¾	9.5		25.00	
	F-99M	uni x 2 pieces	Dynamic			200	80-12		fixed	5	mini x 2	6¼ x 1⅛	4		25.00	
	F-500S	uni	Dynamic			320	80-12		fixed	8	mini/ remote	7⅛ x 1⅞	7.5		22.00	
	F-500	uni	Dynamic			320	80-12		fixed	8	mini/ remote	7⅛ x 1⅞	7.5		20.00	
SPEEDEX	31-850	Cardioid	Dynamic	Alum.	Music	50K	100-15	-59	Direct	3	Mini-Plug	3¾ x¾	2.5	⅝ x 27	6.96	
SUPERSCOPE	EC-1	OMNI	Elec. cond.	Alum	Music	2k	60-13 ±3	-156		10	Mini	4 x ¾	3½		11.95	W/windscreen, desk stand, & battery.
	EC-3	Cardioid	Elec. cond.	Alum.	Music	1.5k	50-15 ±3	-156		10	Mini	7 x ¾	8⅜		18.95	As above.
	EC-5	Cardioid	Elec. cond.	Alum.	Music	2.2k	40-15 ±3	-149		10	Mini	7 x ¾	4		29.95	As above.
	EC-7	Cardioid	Elec. cond.	Alum.	Vocal/ Music	250	40-16 or ±3	-146		10	Phone	7½ x 1½	10¼		39.95	

(continued)

Microphones

MANUFACTURER	Model	Directional Pattern	Operating Principle	Case Material	Response Tailored For	Impedance, ohms	Frequency Range, Hz to kHz	EIA Sensitivity, dBm	Mike Connection	Cable length, feet	Cable plug type	Dimension, inches; length x diameter	Weight, ounces	Mounting Method	Price, $	Notes
SUPERSCOPE (continued)	EC-9P	Cardioid	Elec. cond.	Alum.	Music	250	30-17 ±3	-151	Cannon XLR-12C	10	Bare Wire	7¾ x 1¼	13¾		84.95	Inc. low-cut filt., 10-dB pad.
	EC-12B	Omni	Elec. cond.	Alum.	Vocal	250	100-15 ±3	-143		10	Mini	10¼ x ½	2¼		34.95	Inc. tie clasp & 12 in. telescoping rod.
	EC-15P	Omni	Elec. cond.	Alum.	Vocal	250	70-16 ±3	-144		15	Cannon XLR-12c	1½ x ¼	1		59.95	Tie-clip operation.
	EC-33S	Cardioid	Elec. cond.	Plastic	Music	1k	50-15 ±3	-146		10	Mini	7¼ x 2	6¼		44.95	
TEAC	ME 120	Omni, Cardioid	Cond	Alum	Music/ Voc	200	30-17 ±3	-139	XLR	15	XLR	8x1	7		120.00	
	ME80	Cardioid	Cond	Alum	Music/ Voc	200	30-17 ±3	-139	XLR	15	XLR	8x1	7		80.00	
	MM100	Cardioid	Dynamic	Alum	Music/ Voc	200	30-16 ±3		XLR	15	XLR				100.00	
TECHNICS	RP-3330	Cardioid	Dynamic		Vocal	400	50-12	-78		10	phone	6½ x 2	5¼		30.00	On/off switch, wind screen, mike std., holder, ⅜-in. adapter.
	RP-3500E	Cardioid	Electret		All-purpose	600	50-12	-68		16.5	phone	8¼ x 1.8	4¼		60.00	Uses AA cell. On/Off switch, wind screen, tripod std., holder, ⅜-in adapter.
	RP-3210E	Dual cardioid	Electret		All-purpose	600	50-12	-70		10		7¼ x 2½	3¼		60.00	Uses AA cell. Wind screen. tripod std.
	RP-3540E	Cardioid	Electret		All-purpose	600	40-14	-70		16.5	phone	9 x 1.65	6½		70.00	Uses 2 AA cells. On/off switch.
TOSHIBA	EM 220	Uni	Back Electret	Alum	Vocal	1000	50-18	-70 ±3					10		34.95	On/off switch
	EM 420	Uni	Back Electret	Alum	Vocal	1000	50-20	-68 ±3					10		64.95	
UHER	M136	Omni	Dynamic				50-15									
	M154	Omni	Dynamic				150-100									
	M517	Cardioid	Dynamic				50-15									
	M534	Cardioid	Dynamic				50-16								65.05	
	M536	Cardioid	Dynamic				100-14									
	M537	Cardioid	Dynamic				30-18									
	M538	Cardioid	Dynamic				30-18									
	M539	Omni	Dynamic				40-17									
	M640	Omni	Dynamic				70-15								95.80	

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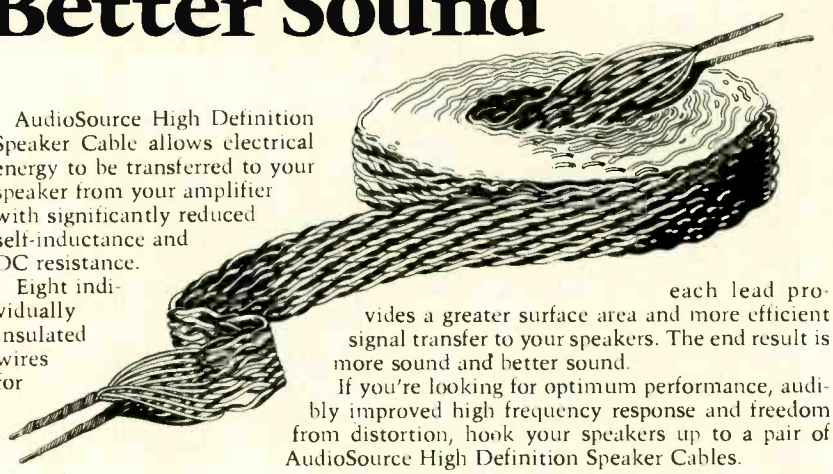

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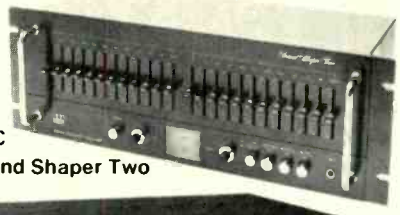
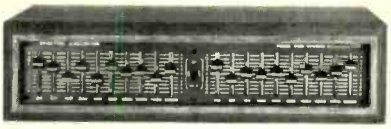
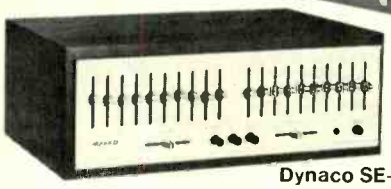


ADC
Sound Shaper Two

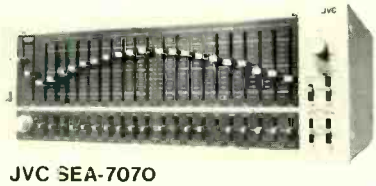


Spectro Acoustics 2102

SAE 2800



Dynaco SE-10



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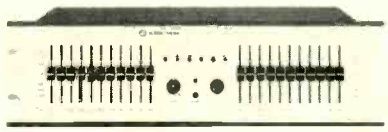

Klark-Teknik DN-22

MANUFACTURER	Model	No. of Channels	No. of Bands	Bandwidth, octaves	Boost/Cut Range, ± dB	Rated Output, rms V	% THD at rated output	dB S/N at rated output	Dimensions, inches	Weight, lbs.	Price, $	Notes
ACE AUDIO	AE2002	2	5	2	12	2	0.05	85	34x12¼x7	3	143.50W 94.75K	Separate controls for each channel.
ADC	Sound Shaper 2 Mark 1	2	12	1	12	9	0.02	85	16⅜ x 6¼ x 6¼	13	279.95	Rack mountable.
	Sound Shaper I	2	5		12	10	0.05	80	10½ x 5⅜ x 6¾	7½	119.95	
ALTEC LANSING	729A	2	24	1/3	14†	4.5	0.5	80	5¾x18½x8	13	1200.00	†Cut only
AUDIO SCIENTIFIC	1310	2	10	1/3	14	10	0.05	†95	19-in. rack		395.00	†At 2 V.
	1310 P	2	10	††	14	10	0.05	†95	19-in. rack		470.00	††20 variable center frequencies.
CERWIN-VEGA	GE-2	2	13	½, 1	12	2	0.02		19x5¼x7¼	12	550.00	Includes subsonic filter (12 dB/octave); full octave control above, half octave control below "middle C."
CROWN	EQ-2	2	11	½	15	2.5	0.01	90	19 x 7 x 14½	16	1095.00	Adjustable center frequency for each filter.
DB SYSTEMS	DB-5	2	6		15	3	0.0008	96	8½x3¼x7	2.6	325.00	Power supply, $62.00.
DYNACO	2540	2	10	1.3	12	2	0.04	85			379.00	Avail. wired only.
	SE-10	2	10	1.3	12	2	0.04	85	13½ x 12 x 4¼	10	249.00	Avail. kit only.
HEATH	AD-1305	2	5	2	12	1.5	0.05	90	17½x8x4¼	8½	119.95	Kit only.
JVC	SEA-20G	2	7	1⅓	12	3	0.06	70	4x15⅜x12½	7.5	179.95	
	SEA-50	2	10	1¼	12	4	0.03	80	6⅜x16⅝x13½	15.2	269.95	
	SEA-7070	2	2x10	1	6/12	2	0.005	115	6½x16½x13½	18.9	749.95	
KLH-BURWEN	RE3000	2	6		44	2.5	0.05	94	4¾ x 7½ x 1½†	1.5 2.4		†Dims. for hand-held control; power unit 5¾ x 9¾ x 2¼, w 20-foot cord.
KLARK-TEKNIK	DN22	2	11	1	12	4	0.01	90	19 x 5.4 x 8.4	16	815.00	Includes high- and low-pass filters, can also be balanced.
	DN27	1	27	⅓	12	4	0.01	90	19 x 5.4 x 8.4	16	765.00	Also balanced.
LUX AUDIO	5G12	2	12	1†	10/2	1	0.03	115	17.7 x 16 x 4	16.5	695.00	†Switchable wide/narrow Q.
	G-11	2	10	1	12/6	1	0.005	110			495.00	
	5F70	2	2	†	12	1	0.005	104	17.7 x 16 x 2.25	11.2	395.00	†Tone-control unit: bass turnover 125,250,500,& 1k; treble 1k, 2k, 4k, 8k Hz. Has band-cut filter for mid-bass.
MXR INNOVATIONS	Stereo Ten-Band Equalizer	2	10	1	12	1 8Max	0.05	95	9¼x2x7	4.5	199.95	ISO centers, 1.5 V/ μS slew rate, -3 dB at 5Hz & 60 kHz ±12 dB level controls.
	Stereo Fifteen-Band Equalizer	2	15	⅔	12	1 8Max	0.02	97	19x3½x6	7	325.00	As above, but 7V/ μS slew rate.
	One Third Octave Equalizer	1	31	⅓	12	1 8Max	0.01	92	19x3½x6	7	350.00	As above but -3 dB at 40 kHz.
NIKKO	EQ.1	2	10	1	12	1	0.006	105	19 x 3¼ x 9		279.95	

(Continued on page 182)

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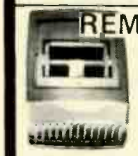

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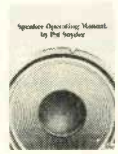

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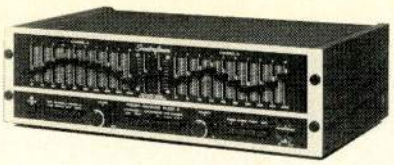

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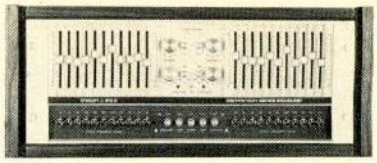
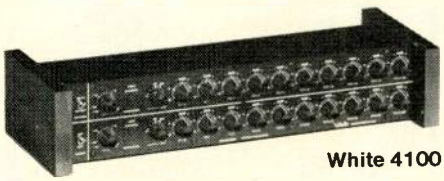
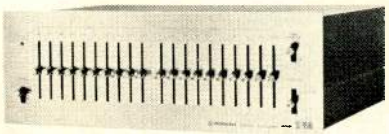


Crown EQ-2



White 4100



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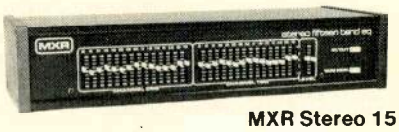

MXR Stereo 15

(Continued from page 177)

MANUFACTURER	Model	No. of Channels	No. of Bands	Bandwidth, octaves	Boost/Cut Range, ± dB	Rated Output, rms V	% THD at rated output	dB S/N at rated output	Dimensions, inches	Weight, lbs.	Price, $	Notes
ONKYO	E-30	2	9 †(11)	1⅓	10/5	1.5	0.01	100	17¾ x 14½ x 3¼	14.3	549.95	†Lowest band is switchable.
	U-30	2							17¾ x 14½ x 3¼	13.2	399.95	Selectors, meters.
PIONEER	SG-9500	2	10	1	10	2	0.03	90	16½x13½x6	15¼	300.00	
RADIO SHACK	31-1987	2	5	1	12		0.02	80	10x6x4		69.95	Separate L&R controls.
ROTEL	RE2000	2	10		12	0.75	0.005	100	19¼ x 12¾ x 6	14	340.00	Two tape monitors, full dubbing
SAE	2800	2	4	0.3-3.6	16	2.5	0.02	95	19 x 8.75 x 3.5	18	600.00	Parametric design.
	1800	2	2	0.3-3.6	16	2.5	0.02	95	19 x 5.25 x 3.5	16	350.00	As above.
H.H. SCOTT	Audio Analyzer 830Z	1	10	1							499.95	Octave-band real time analyzer with signal generator.
SHURE	M610	1	8	1	12†	5	0.5	71	12x7x2½	4	149.40	†Cut only. One mike, one AUX input & output.
	SR107	1	10	1	15	6.2	1	99	18x8x1¾	7¾	250.00	One line input; 1 line, 1 mike, 1 AUX outputs.
SONTEC ELECTRONICS	HF-230	2	3	†	12	1	0.001	85	19x1¾x6	9	990.00	†Variable. Parametric design, 200 V/ μS slew rate, 14 V rms maximum output.
SOUND-CRAFTSMEN	RP2215-R	2	10	1	15	10	0.01	114	19x5¼x11	22	370.00	Tape & line EQ, wire-wound circuitry, w. test record & computone charts.
	RP2201-R	2	10	1	12	10	0.01	105	19x5¼x11	22	299.00	Tape & line EQ, op-amp synthesized inductors, zero-gain level controls, w. test record & computone charts.
	SE450	2	10	1	12	10	0.01	105	17x3½x10	16	249.00	Tape & Line EQ, op-amp synthesized inductors, zero-gain level controls.
SPECTRO ACOUSTICS	210	2	10	1	15	2	0.1	90	17x6x7	12	295.00	Gyrator synthesis circuitry, tape EQ.
	210R	2	10	1	15	2	0.1	90	19x6x7	12	295.00	As above, plus EIA rackmount.
	2102	2	10	1	15	2	0.1	90	17x3.5x7	10	200.00	As above w. EIA rackmount.
TECHNICS	SH-9010	2	5	†	12	1	0.02	90	19x14½x4	13¼	500.00	†Adjustable Q from 0.7 to 7.0. Universal (graphic/parametric) with ea. channel independently adjustable. Mounts in standard 19" rack mount.
	SH-9090P	1	12	†	12	††	0.05	94	19x14¾x7	21¾	1000.00	†As above. †† +24 dBm. Universal (graphic/parametric).
WHITE INSTRUMENTS	4002	1	27	⅓	10	6.1	0.2	-92	18½x3½x8	11	690.00	Active EQ, opt. rack mount, opt. low-level bi-amp crossover.
	4004	1	24	⅓	15	6.1	0.1		19x3½x8	13	1100.00	Passive EQ, high- & low-pass filters, opt. low-level bi-amp crossover, 600-ohm/600-ohm.
	4100	2	10	1	10	6.1	0.1	-92	18½x3½x6	8	599.00	Active EQ, opt. rack mount, phono connect., low-level bi-amp crossover.
	4199	2	1	20Hz	18				1¾x1¾x2¾	0.5	60.00	Passive subsonic filter.
	4201	1	27	⅓	15	6.1	0.2	-92	19x3½x8	11	730.00	Active cut-only EQ, high-pass filter, 10-dB make-up gain, opt. low-level bi-amp crossover.
	4220	1	9	1	10	6.1	0.1		19 x 1¾ x 6	6	199.00	Passive EQ, designed to interface w. hi-Z gear without matching loss, opt. low-level bi-amp crossover.
	4301	1	41	1/6 & 1/3	10	6.1	0.2	-92	19 x 5¼ x 8	18	1190.00	Active EQ, high-pass filter, input atten., opt. low-level bi-amp or tri-amp crossover, mid & high freq. trimmers.

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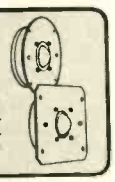

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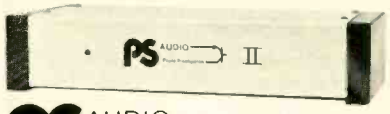

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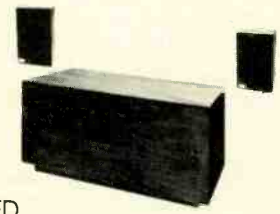

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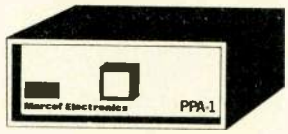

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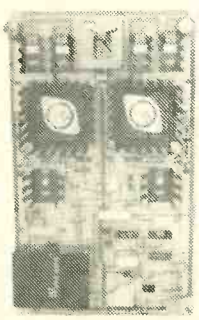

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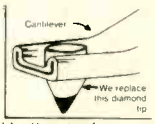

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WILL NEVER KNOW OUR

By using a simple test you can prove to yourself that Marantz loudspeakers deliver the same brilliant sound separation over the widest possible listening area:

Here's the test:

Have your Marantz dealer place any pair of Marantz floor standing loudspeakers in a normal listening position. Now, listen as your selection of dynamic music is played through the Marantz loudspeakers. Notice the three dimensional quality of the sound. Now close your eyes and have two people slowly turn the Marantz loudspeakers until they're actually *facing each other.*

Did the sound change?

In almost every case we've found the listener cannot hear a change in the sound . . . because there isn't any! Even with the loudspeakers facing each other. Incredible!

But if you try the same test with most conventional loudspeakers you'll notice a striking difference. The sound literally falls apart. You'll hear a loss of overtones—sparkle and brilliance—all the qualities that make music open and spacious disappear.

WHY MARANTZ PASSED THE TEST WHILE OTHERS FAIL.

In a nutshell: Constant Radiated Power (CRP)—180 degrees dispersion regardless of frequency. To achieve CRP we consider both the frequency response and dispersion characteristics of each individual transducer in the system; woofer, midrange and tweeter. The result is a unique design approach incorporating three important performance parameters:

1. We know that dispersion is determined by the diameter of the radiating surface—the speaker cone—and the frequency being reproduced. So we pick the precise frequency at which each individual driver radiates 180 degrees and use this as the crossover point.

But many manufacturers often crossover at a frequency where, for example, the woofer's dispersion has already started to beam. Why? They may be trying to save money by using cheaper transducers and crossover networks. Or, perhaps they consider CRP to be unimportant. But you won't!

2. Our transducers are positioned on the baffle to ensure the best possible dispersion.

Other manufacturers may position their driver for eye-appeal, but that's not good enough for Marantz.

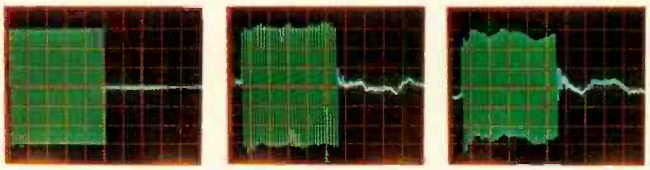
3. To control transition between our drivers, we use the most sophisticated, best thought-out crossover networks ever developed.

As you can see from the illustration below (Fig. A), wherever you are in the room you hear the same ideal stereo separation and 180 degrees dispersion pattern. Notice how the other speaker "beams" certain frequencies in a narrow corridor (Fig. B). Unless you sit directly in front of those speakers, you lose part of the music.

TRANSDUCERS YOU'D EXPECT FROM A WINNER.

Wide sound dispersion alone doesn't guarantee sonic accuracy. You also need transducers that exhibit low distortion and low stored energy.

Tone burst test demonstrates superior low stored energy characteristics of Marantz loudspeakers.



Original signal. Note instant start/instant stop of trace.

Marantz loudspeaker. Note close similarity to original signal.

Competitor. Note overhang caused by inability of cone to stop vibrating.

Stored energy is the continued vibration of a loudspeaker's radiating element after the driving force has stopped. It can exist in any loudspeaker; woofer, midrange or tweeter, and is heard as a smearing or running together of the individual instruments.

To assure Low Stored Energy, Marantz uses extremely rigid cones and domes tightly coupled to the voice coil to create a homogeneous rigid structure. Accurate control of this structure is then assured by an extremely powerful magnetic motor assembly. The result is that Marantz transducers move as a unit in a smooth, piston-like motion without the slightest hint of cone break-up or flexing—even under the most rapid acceleration and deceleration! You hear precise, sharp instrument definition—the truest musical sound possible—wherever you are in the room!

Your Marantz dealer has the full line of Marantz speaker systems. If you truly want the best—and are willing to spend a little more to get it—then go for it. Go for Marantz.

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'OT TEST. YOUR EARS
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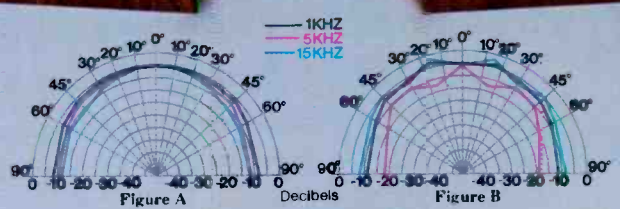


Figure A

Figure B

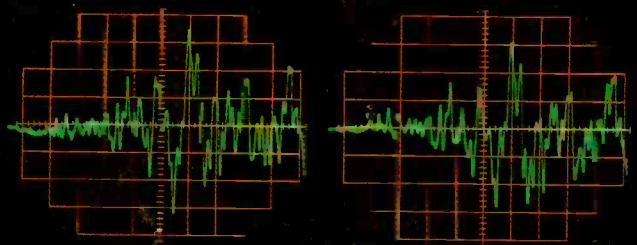
The Marantz speaker disperses all the frequencies 180 degrees.

Conventional speakers tend to narrow certain frequencies.

In actual test, speakers should be placed the same distance apart as you are away from them.

Introducing Technics Linear Phase bookshelf speaker series. Each with staggered speakers, a wide frequency response and flat amplitude. It may sound complicated, but it made Technics Linear Phase our biggest idea in speakers.

And now with the 3-way SB-X50 and SB-X30 plus the 2-way SB-X10, our biggest idea is small enough for shelf mounting. Like our other Technics Linear Phase Speakers, they all have the ability to reproduce a musical waveform that's virtually a mirror image of the original. Our engineers call it waveform fidelity.



Piano Waveform.

Piano Waveform reproduced by SB-X50.

Look at the waveforms. If seeing is believing, you've just become a believer in Technics Linear Phase. Because that's accuracy that sounds better than good. It sounds live.

How we got that much accuracy into such small enclosures was extremely complicated. But our engineers found the key. A straight horn on a dome tweeter. It not only improved high frequency dispersion, it also gave us the unconventional staggered speaker configuration we wanted, in the conventional enclosure you want.

But what's more important is what Technics Linear Phase bookshelf series does for your hi-fi. For the first time you can have the accuracy of Technics Linear Phase in a speaker system small enough for shelf mounting.

How Technics made their biggest idea in speakers, smaller.

SB-X50

SB-X10

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