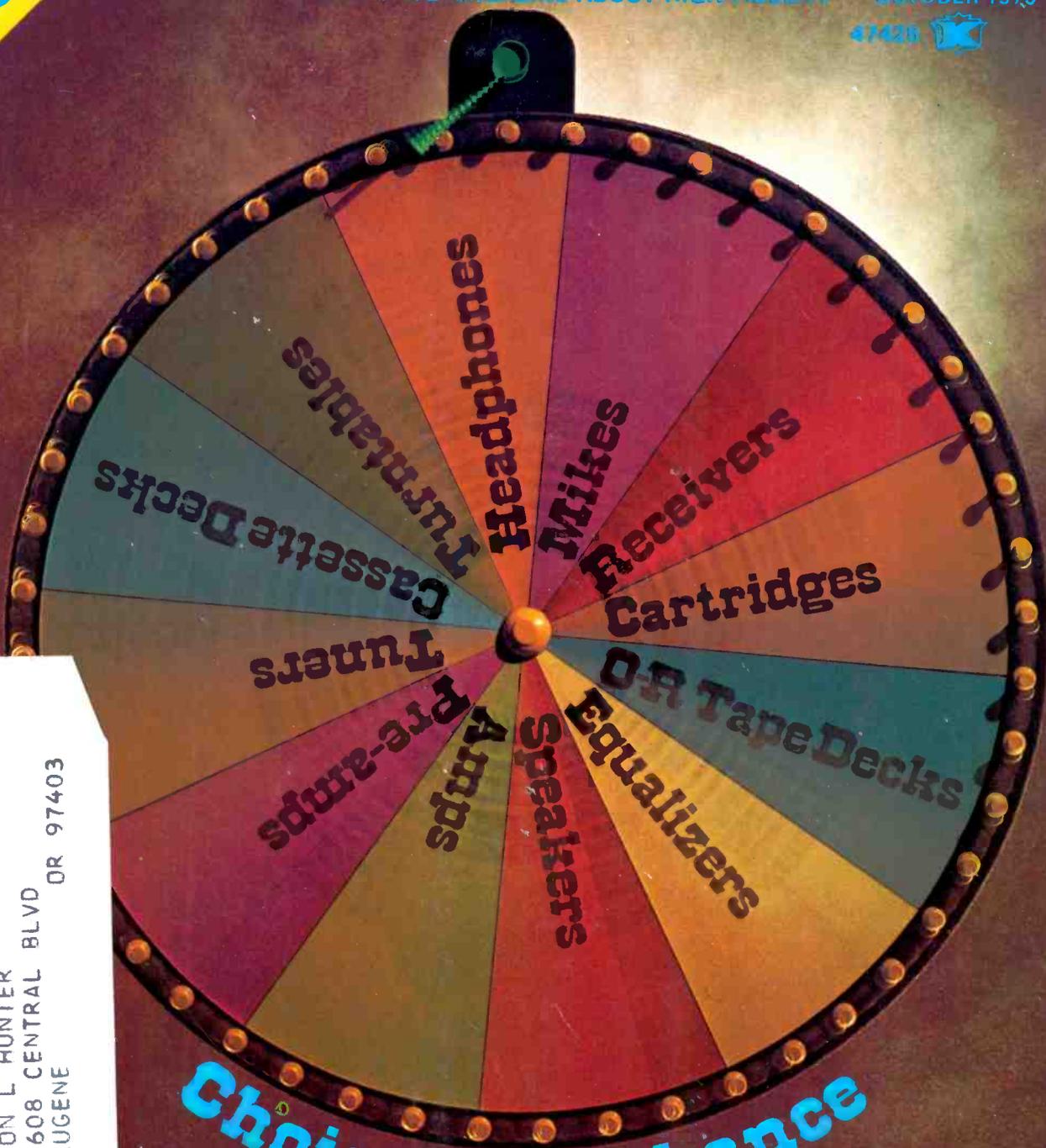


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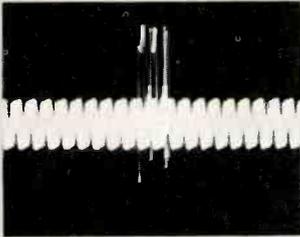
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October, 1975

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Vol. 59, No. 10

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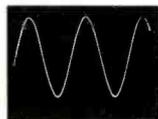
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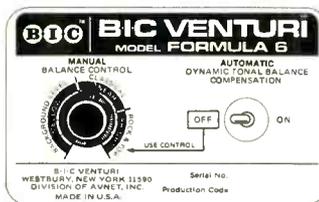


Fig. C



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Joseph Giovanelli

Further Notes on CATV

Having worked for some time in community antenna (cable) TV, I was interested in your reply to Keith Webster's letter in April. Connecting additional sets to the cable without additional payment (and usually without the right equipment) would be frowned upon—at the very least. This is especially true if, as is often the case, such connection causes interference to non-subscribers in the area.

In apartment complexes and crowded suburban areas, with some people on the cable and others using their own antennas, it's almost impossible to keep the CATV signals from causing interference to non-subscribers. Everyone of the non-subscribers feels, justifiably, that he has a right to proper reception (from the "free" airwaves), whether or not some people who have CATV service want to cheat the CATV company by hooking up extra sets to their cable connection.

This situation was typified by one customer we had in Poughkeepsie. This man had decided he was dissatisfied with having just one set hooked up to the cable tap we installed for him. He wanted an upstairs bedroom set connected also. He ran a long piece of regular 300-ohm twin lead (flat TV lead-in) from the downstairs set, over the house, to the upstairs bedroom on the other side. It worked fine for him—but it interfered with the reception on 50 to 100 non-subscribers' sets in the area—out to a couple of hundred feet from his house.

The twin-lead, being unshielded (cable TV uses co-axial, hence self-shielding leads) would radiate a signal which resulted in a vertical bar being displaced at varying distances across the picture (on nearby non-subscribers' sets tuned to the same channel). The bar was caused by the delay

introduced by the CATV system, which might be more, or less, than (but never quite the same as) the delay in the regular, non-system reception. In some severe cases, the interference could even wipe out the color.

On another occasion I had to disconnect a subscriber because his set was radiating its own i.f. signal like the devil's own interference. What had happened was that someone had "fixed" his tuner and, in replacing it in the set had left off its shielding.

If anyone has trouble with this sort of interference or suspects that this is the cause, it can be tracked down as follows. Get a directional TV antenna and a portable TV set and stick them in a car (or pickup truck to make rotating the antenna easier). Or try a pair of "rabbit ears" for the antenna, spread straight out like a folded dipole. Tune to the station being distributed on the cable, and drive around. When you see the picture coming in bright and clear from one of the houses, drive around it. We used to check for unauthorized multiple taps that way, and we always found either an unauthorized 300-ohm twin-lead tap, or that the signal was coming from someone's improperly-operating TV receiver tuner.

To multiply the sets operating off a cable the subscriber should do what the cable company does, use a 75-ohm to 300-ohm matching transformer at each end of a length of RG59U coaxial cable.

George W. Brooks
Poughkeepsie, N.Y.

If you have a problem or question on audio write to Mr. Joseph Giovanelli, at AUDIO, 134 North Thirteenth Street, Philadelphia, Pa. 19107. All letters are answered. Please enclose a stamped, self-addressed envelope.

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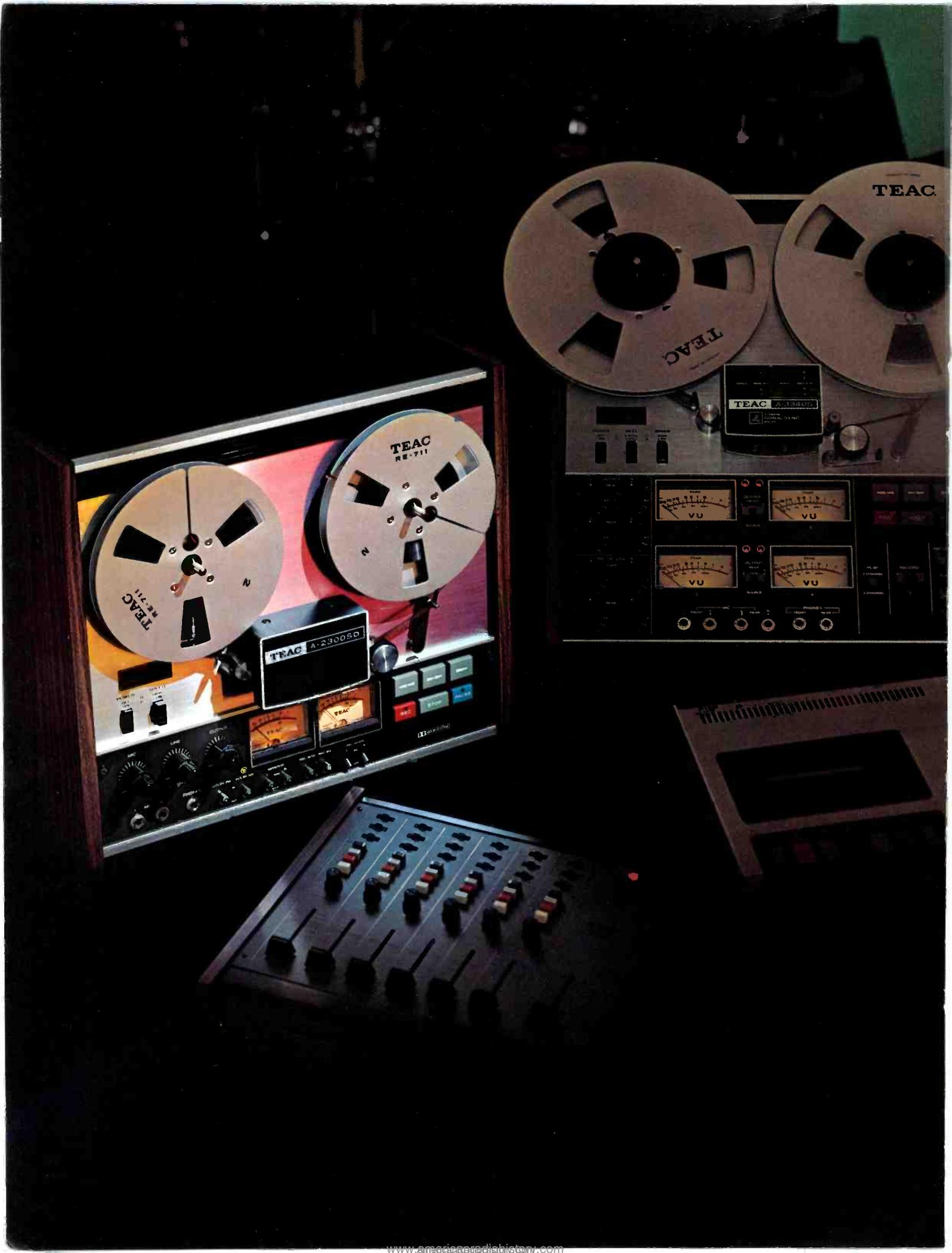
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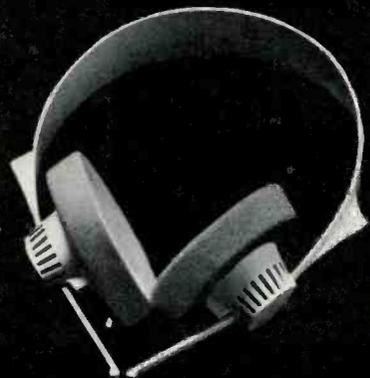
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Audio ETC

Edward Tatnall Canby

AD MUSIC! Seldom hi fi but 100 percent audio. It is surely the one music that every one of us hears the most of, by an enormous margin. On sheer volume, at least, it is music. 95 percent of the total signal. I may be a classical purist and so on, but don't think I keep my ears away from it. How could I? Nor, in case you thought so, am I always distressed by it. Ad music is ad music and not Beethoven—yet. How much can you expect? On the other hand, ad music is alive and kicking and in production—which means that the sky is the (potential) limit. Anything can happen, and *might* even happen. So I listen to ad music. And either I seethe and curse and groan, or I find myself mildly interested. Depends. So here's a plus. Followed by a minus, next month.

Over the years I've developed a pretty strong feeling that in any productive area—call it art or call it toothpaste—function is what shapes, and function determines value. Is the thing a success in terms of what it is trying to do? That is what matters. Ad music, like film music, exists strictly in this category and any attempt to shape it so it doesn't do what it is supposed to do is disastrous, as some composers have discovered. It must be ad music FIRST (and film music FIRST). Even if Beethoven, or J. S. Bach, were to write it, on a return visit to earth.

A radical reaction on my part, this, against everything I was duly taught about Grrreat Music. Maybe you too, if you took that old course in Music Appreciation they still keep giving. Great Art, we were told, lies high above all mundane things. It is born of profound inspiration (not to mention perspiration, as crusty old T. A. Edison put it), touched by the Gods. The Art-

ist is Different; he has Soul, he is delicately sensitive, he must not be tampered with and ESPECIALLY in his divine right to write exactly what he pleases!

This idea, take it from me, is transitory. It is the very essence of 19th c. Romanticism. And it dates—when it was new and young as an idea—right back to the later 18th century! The craftsman become artist, the slave of art liberated. Fascinating, and true in history. But now, you see, it leaves classical music somewhere up on a solid gold shelf. Mere commercial music is down there in the mud. Isn't that the way you always thought it was? See—you're indoctrinated too.

The Great Artist

Yes, classical music is my home base (though I avoid the word—it's like talking of "good scenery" or something, covering vast territories). If anybody believes in the stuff, I do. But I know, soberly, that nine-tenths of what we call classical began strictly as practical music—what we now might call commercial. Or even as folk music, out of the uneducated non-cultured substratum. It wasn't until the Enlightenment, the late 18th century in music, that this idea of, so to speak, the musical stratosphere, suddenly popped up. True, for a century or so the music world really acted out the theory—composers grew long hair, acted eccentric and often died of consumption. People (mostly German people) respected the Great Composer and in truth lifted him up into at least a modified stratosphere of Art. But in the long pull (and we are seeing the long pull in longer perspective every day now), this interesting phase was really short lived. Now—the Foundations are still trying to perpet-

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-10VU	4.2%	4.5%	8.5%	7.8%	4.8%
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uate it. Give the Artist his head! No restraints, no restrictions. The poor guy lives either in a total vacuum or, more likely, a professional coterie of his immediate associates and rivals. Just like the rest of us. Meanwhile—ad music goes on and on, for real.

If ad music generally isn't very important as music, that's because it has a job to do and there isn't much scope, as of the present. Enough, of course, to keep the stuff churning out by the metric ton, primed by that lure of most human endeavor, cash. But not *entirely* primed by cash. A good many ad composers probably feel a tiny bit of pride, once in awhile, for a job well done. So they try harder the next time. Pry open a tiny, sub-microscopic new bit of "scope"—as film music has long since done. I say, the sky is the limit, though the ascent skywards is millimeter by millimeter.

From my point of view, the reconciling of ad and classical music is easy. Just look back and see. The human tendency, here as elsewhere, is double. Most of the practitioners tend to do as little as possible and get away with it safely. Don't we all? But always, always, there are a few who are going to try to do just a bit more than is needed. Can't stop this. You probably get dragged into it yourself, every so often, whatever your work may be. And so music—any kind of music and any old art or product or line of goods—tends in the large to fill up its own space, then to push out a bit here and there, to perfect its technique more and more, and to go beyond the necessities. Yes—even in ad music! Bound to happen. And it *has happened*.

Bach, The Pragmatist

Do you think old Bach was a classical composer? No such word then. He was a craftsman on salary. Like the caterer who feeds the people at some event, Bach was hired to provide the music for Sunday church (four hours) every week, and to "cook" it too—that is, rehearse it. Strictly a practical job, and he was actually not a very good church composer—from my angle. He did too much. His music was too complicated and full of ideas, requiring a lot of attention. For its function, it was perhaps not as useful as his neighbor composer's, he with the name everybody has forgotten, down the road a piece. And don't think Bach didn't get criticized. He was always at war with the authorities, a stiff-necked, uncompromising old bird who would never let an ar-

gument go if he could stir it up a bit further.

Moreover—there being a lot on his side in the way of punk working conditions for low salary—he became extremely expert at remaking his old stuff into second-hand new products, recycling. For Bach was one of those harassed deadline men we all know. How would you enjoy churning out a half hour or an hour of new music every single week, copying it out, rehearsing it hastily maybe once through, some times not at all (they sight read it Sunday morning)—then tossing it into the back closet? *One, single performance!* And it was dead. New music for next week. At least the ad music composers get to hear their music more than once, in our technology. Only the "live on TV" composers get so shabbily treated, and not too often.

I know—you'll disagree, you who know the commercial composers. It's the same with them, you say. Churning out stuff, week after week, playing it once, to order, then back to the drawing board for more. That is exactly the point, then. *Bach was not a classical composer, any more than an ad composer is today.*

But Bach's recycling was so incredibly expert that his recycled music is almost invariably better than its original. Most of his biggest, Grreatest works—the B Minor Mass, and large numbers of weekly Cantatas—are patched together from recycled ideas, lying around in the discard closet.

Bach had absolutely no time, until his last years, to think of Posterity, and Great Music and all that. Not that he was modest—he knew his value. And in those last years he put together his big works, his collections, he wrote his compendia—the Art of the Fugue—to sum up his expertise. Even so, this did not constitute "classical," though it was the beginning. Bach wrote obstinately in his own way, because he was that kind of a man, an unbending, self-righteous personality who couldn't get along with his superiors who hired him. WHAT a familiar story!

Value Follows Function

And now—Bach, the classicist. Literally, over his dead body. The thing is, the good craftsman goes beyond the necessities at a big risk, often to his own immediate hurt. You can't be stiff-necked if you write for Hollywood or TV today, nor if you write ad music. *The function determines the product's value.*



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Arlington TX	KAMC	94.9	Columbus OH	WOSU	98.7
Baltimore MD	WAMR	106.5	Dayton OH	WTUE	104.7
Birmingham MI	WHNE	94.7	Dallas TX	KCHU	90.9
Boston MA	WROR	98.5	Dallas TX	KTLC	100.3
Boston MA	WVBF	105.7	Dallas TX	KVIL	103.7
Buffalo NY	WDCX	99.5	Dallas TX	KZEW	97.9
Buffalo NY	WBEN	102.5	Denver CO	KBPI	105.9
Carbondale IL	WSIU	91.9	Denver CO	KLZ	106.7
Charlotte NC	WEZC	104.7	Detroit MI	WABX	99.5
Charlotte NC	WROQ	95.1	Detroit MI	WOMC	104.3
Chicago IL	WFMT	98.7	Detroit MI	WJZZ	105.9
Chicago IL	WLOO	100.3	Detroit MI	WMUZ	103.5
Cincinnati OH	WEBN	102.7	Detroit MI	WQRS	105.1

Edmond OK	KWHP	97.7	Los Angeles CA	KGBS	97.1
Fairmont NC	WFMO	100.9	Los Angeles CA	KIQO	100.3
Flint MI	WGMZ	107.9	Los Angeles CA	KPFK	90.7
Fort Wayne IN	WMEF	97.3	Lancaster PA	WDAC	94.5
Fort Worth TX	KWXI	97.1	Lexington VA	WLUR	91.5
Fresno CA	KPHD	95.5	Louisville KY	WCNS	99.7
Gainesville GA	WDUN	106.7	Louisville KY	WLRS	102.3
Grand Rapids MI	WZZM	95.7	Madison WI	WYXE	92.1
Hanover NH	WDCC	99.3	Maine FL	WAIA	97.3
Hartford CT	WTIC	96.5	Manassas VA	WEZR	106.7
Henrietta NY	WITR	89.7	Memphis TN	WKNO	91.1
Houston TX	KILT	100.3	Miami FL	WAIA	97.3
Houston TX	KRLY	93.7	Minneapolis MN	KSJN	91.1
Indianapolis IN	WNAP	93.1	Morgantown WV	WAJR	101.9
Jackson MS	WLSI	96.3	New Orleans LA	WEZB	97.1
Kettering OH	WVUD	99.9	New Orleans LA	WNOW	101.1
Los Angeles CA	KBIG	104.3	New York NY	WNEW	102.7

New York NY	WOXR	96.3	Seattle WA	KIXI	95.7
New York NY	WRFM	105.1	Skokie IL	WCLR	101.9
Normal IL	WGTL	91.7	St. George SC	WPWR	95.9
Opportunity WA	KZPN	96.1	St. Louis MO	KCFM	93.7
Paterson NJ	WPAT	93.1	Stevens Point WI	WSPF	97.9
Philadelphia PA	WPMR	93.3	Sylvania OH	WXEZ	105.5
Portland ME	WDOS	97.9	Topeka KS	KTPK	106.9
Richmond VA	WEZS	103.7	Tuscaloosa AL	WUOA	95.7
Rochester NY	WCMF	96.5	Utica NY	WOUR	96.9
Rochester NY	WEZO	101.3	Washington DC	WAMU	88.5
Saline MI	WIOB	102.9	Washington DC	WASH	97.1
Salt Lake City UT	KDAB	101.1	Washington DC	WGMS	107.3
Salt Lake City UT	KSL	100.3	Washington DC	WHUR	96.3
San Antonio TX	KEXL	104.5	Washington DC	WMAL	107.3
San Diego CA	KGB	101.5	Wilkes-Barre PA	WYZZ	92.9
San Francisco CA	KABL	98.1	Youngstown OH	WYSU	88.5
Seattle WA	KIRO	100.7			

As you can hear for yourself, a Dolby FM signal is compatible. In fact, most people find it a better signal even when received on their normal equipment without Dolby decoding.

However, you may be the kind of person who likes to take advantage of every opportunity for improvement. If you use Dolby circuitry during reception, you can bring the signal even closer to the quality of the original source material.

Naturally, the noise is reduced. But that's not all. Dolby compression is standardized, recoverable compression. By using Dolby encoding instead of the conventional high frequency limiting normally required during transmission, the station gives the listener at home the opportunity of recovering the full frequency range and dynamics of the signal.

If these prospects excite you, we think you will soon be wanting to check out the new generation of receivers with built-in Dolby circuitry.* Some Dolby licensees are already producing their new models, and others have new designs in the pipeline.

Dolby FM is an improvement we think you will appreciate. **And it's happening.**

*If you enjoy doing your own hook-ups, you can use an add-on Dolby unit, aided by a simple circuit to change your receiver time-constant to 25 microseconds.

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 Telex 125797
 Cables Dolbylabs New York

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Three Compacts

Bozak quality sound for modest-sized rooms

It's a fact of physics that the larger the loudspeaker enclosure, the more realistic the bass reproduction.

Yet, room size and amplifier power limitations sometimes dictate the use of smaller-than-optimum loudspeakers. For these applications, Bozak, whose reputation for providing the truest possible bass spans more than a quarter century, has developed three compact speaker systems, each of which offers fidelity in bass response far beyond what might be expected from an enclosure of its size.

Rhapsody



The ideal loudspeaker for a medium-size room, the Rhapsody is a three-way system providing a full spectrum of true sound from natural bass through clear midtones to the highest shrill-free treble. Waterproof finish lets the Rhapsody double as an end table without fear of spotting. A three-position brightness control permits matching the speaker system to room acoustics. Sculptured foam grille enhances the true walnut surfaces.

Tempo III

Bozak's smallest three-way system has been acoustically designed to reproduce currently popular music with its emphasized bass. A ducted enclosure helps bring discotheque sound into the living room. Cabinet finish is waterproof, so there's no fear of ordinary liquids marring the surface. Grille is of modern acoustical fabric. Available in free-standing or bookshelf models.



Sonora



Although the smallest Bozak speaker, the Sonora caused Popular Science magazine to say "you can get really good sound from an under-\$100 speaker . . . While no speaker is perfect in reproducing lows, it was exactly this solid, rich sound that made the . . . Bozak speakers stand out." To which we add, the crystal clarity of its highs are equally important to the success of this finest of compact bookshelf speakers.

If you buy any compact speaker, regardless of your room size or budget, without first listening to the Bozak compacts, you'll be doing your music system an injustice. We'll gladly send you the names of dealers in your area where you can hear them for yourself.



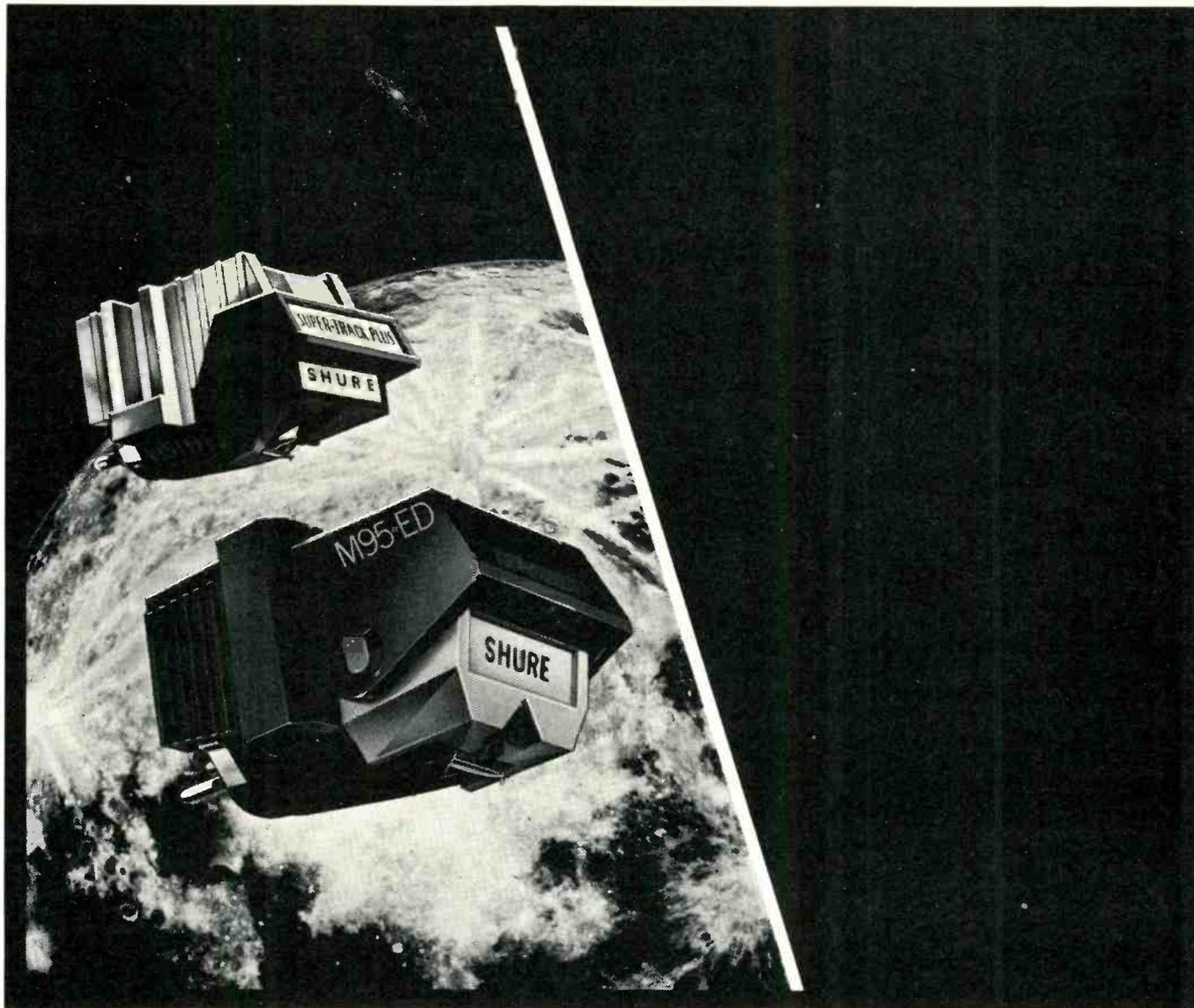
Bozak, Inc., Box 1166, Darien, Connecticut 06820

And what determines the product's prestige? Ah, such a question! Bach wasn't fired because music, even his complex music, was so greatly respected in the Lutheran church service that a hiring and firing became a pretty important occasion, and wasn't done in a hurry with no fanfare. That any congregation could sit through a new Bach Cantata every single Sunday, often in an unheated midwinter church, shows you where the musical product stood in general terms.

My idea here is simply to put our own most-heard audio music in perspective. We are at a very preliminary stage, in this particular musical craft. It has enormous importance because it is everywhere. But the craftsmen who produce the product don't yet swing very much weight. Ask one of them. If, one of these days, an ad composer gets to thinking he's Frank Sinatra or something and starts pushing the advertising people around, you'll know something big is on the way. If you ever hear about it. More likely he'll depart within seconds. He's no Bach.

What happens to a good functional product, when it is better than the necessities require, is that it tends to live on after the fact. Or to die, and then live again, resurrected. Pepsi-Cola (TM) hits the spot, how many ounces was a lot? That ad music lasted for ages. (It was based on an old English tune, "D'ya Ken John Peel.") Little signs like this are interesting beginnings. Good musical ideas, very functional but also maybe a bit beyond the product. Maybe you remember the music and forget the ad. Horrors—not that! But it can happen. There's a good new music ad trend now—music which keeps getting rewritten and updated, with a conscious retaining of the older and familiar musical ideas. Allegheny Air Lines, for you Easterners, has an update radio ad music that has gone through numerous model changes over many years and still remains pleasingly recognizable. I enjoy it. Really well done, nicely paced, rhythmical, orchestrated, and treated with respect, as though the music itself were as important as the words that sell. It is! It can be.

And so I think it absolutely possible that some day commercial music composed as an aid to advertising may end up in the "imperishable" category—classical. Great Music! Art! That is, if we can keep the audio engineers from *killing the very sound of music* via their gadgetry. Which will be the minus side of my thoughts, next time. 



II'nd only to the III.



The new Shure M95ED phono cartridge combines an ultra-flat 20-20,000 Hz frequency response and extraordinary trackability with an utterly affordable price tag! To achieve this remarkable feat, the same hi-fi engineering team that perfected the incomparable Shure V-15 Type III cartridge spent five years developing a revolutionary all-new interior pole piece structure for reducing magnetic losses. The trackability of the M95ED is second only to the Shure V-15 Type III. In fact, it is the new "Number 2" cartridge in *all* respects and surpasses much higher priced units that were considered "state of the art" only a few years ago. Where a temporary austerity budget is a pressing and practical consideration, the M95ED can deliver more performance per dollar than anything you've heard to date.

Shure Brothers Inc.
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Manufacturers of high fidelity components, microphones, sound systems and related circuitry.

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AM5 High Fidelity Tuner.

A professional quality solid state AM tuner in attractive teak and black cabinet. Check these features:

Solid state — FET-IC construction throughout

Low distortion — less than 1 %

Notch filter — typical AM "noise and whistles" 90% eliminated

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4 μv sensitivity — pulls in the distant stations

Factory direct, only \$295.00 for audio quality comparable to FM.

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Shielded ferrite loop antenna with solid state preamp, plus tuning and sensitivity controls. Connecting the DA3 is like adding an extra tuned RF stage with variable gain to the front end of your AM section. See what it can do:

Overcomes the two most common AM reception problems: interference from TV and electrical sources and strong local stations "hiding" weaker distant stations close on the dial.

Improves inherent long range capabilities of AM — programs listenable from hundreds of miles.

Increases signal strength 4 to 8 times — (over a 40' long wire antenna) sharpens typical AM performance.

DA3 AM Antenna \$155.00

Factory direct — Money back guarantee — Rental Plan available, Master Charge and BankAmericard accepted. Complete specs and performance details available. For more information write or call toll free:

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Behind The Scenes

Bert Whyte

IF YOU belong to that select breed known as "ardent audiophile," sooner or later you'll acquire an open-reel tape recorder. As a quick look in *Audio's* annual directory issue will confirm, there is a mind-boggling selection of tape recorders available in a wide range of price categories. No matter what tape recorder you eventually choose, two things are certain. One is that few pieces of audio gear can give you as much pleasure as a good tape machine; the other is that you will have acquired what is probably the most technically sophisticated unit in your hi-fi system, an interfacing of mechanical and electronic parts of bewildering complexity.

It is perfectly true that even a "Danny Dullskull" can lay hands upon this technological marvel and by "following the simple directions from A to Z," come up with a high-quality tape recording. Manufacturers like to build in this sort of capability in their products. However, this ease of use is generally confined to the most simple functions and the most elemental recording tasks. There is a certain "mystique" to tape recorders, and even our "ardent audiophile" is a bit intimidated in his first confrontation with the formidable jargon of magnetic recording ... coercivity, remanence, bias, equalization, azimuth, zenith, headroom, tape saturation, flux densities, modulation noise, tape skew, scrape flutter, and on and on. Of course, you don't have to know about these things to make a good tape recording, but the very complexity of the subject is part of its attraction and a challenge for the doughty audiophile.

Having said this, I must point out that much of this information is hard to come by, so good intentions aside, most audiophiles' technical abilities in magnetic recording are rather limited. There is another factor operating too, which is responsible for many audiophiles being very apprehensive about

making even some of the most basic adjustments to their recorders. This can be summed up as the manufacturers exhortations in their instruction manuals to "keep your cotton pickin' hands off of things you don't understand!" This followed inevitably by ... "refer to authorized service station for adjustments to thus and so, etc., etc."

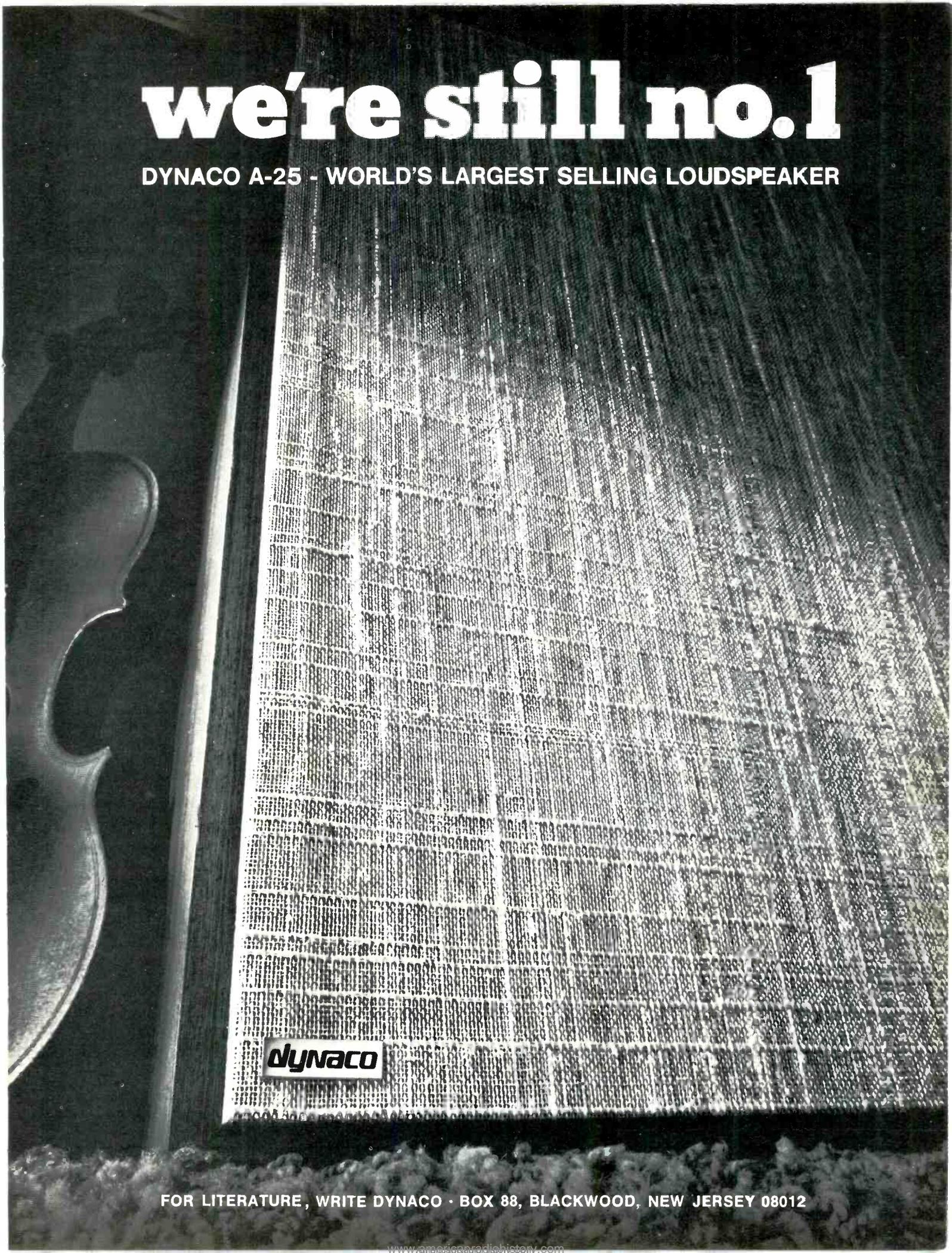
Okay, we'll agree that these warnings have their point. You can bet many a tape recorder has been rendered *hors de combat* by the inexperienced diddlings of their technically incompetent owners. On the other hand, those warnings have spooked even the more knowledgeable audiophiles to the extent that recorders which are in almost daily use go for months ... even years ... with little or no checkout and maintenance other than routine cleaning and demagnetization.

The owner of one of these recorders may hear some sonic aberration ... subtle perhaps ... but persistent and annoying. He may suspect that his machine's high frequency response is attenuated. In monitor checking between source and copy, there is a perceptible diminution of quality in the copy. Frustrated audiophiles ask if there are some ways to check on certain basic performance parameters of their tape recorders without having extensive (and expensive) test instrumentation and a knowledge of how to conduct these tests.

The answer is that a "sonic stethoscope" has been available for many years in the form of *precision test tapes*. You will note I emphasize *precision* and I don't mean the cheap gimcrack test tapes found in the tape accessory department of many retailers. Until fairly recently, Ampex was the principal source of the high-quality test tapes used throughout the professional recording industry. Now we also have professional test tapes from Taber Manufacturing and Engineering Co., 2081 Edison Ave.,

we're still no.1

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Or, for a few Hertz less and a lot of cents less, you can have quality almost as good in our Low Noise cassettes. (It's so good, many people compare it to our competitors' top-line products.)

However, both cassettes feature Maxell "tensitized" tape strength to pre-

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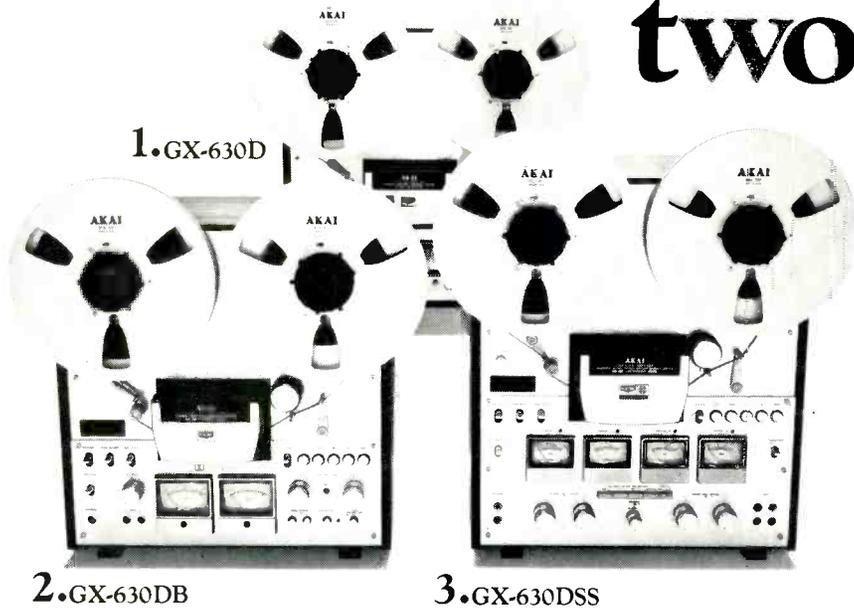
Check No. 37 on Reader Service Card

San Leandro, California 94577 and the test tapes I happen to prefer, those of the Magnetic Reference Laboratory, 999 Commercial Street, Palo Alto, California 94303. The MRL tapes get the nod from me for a number of reasons. For one thing they have a very comprehensive variety of test tapes available in virtually every tape-head configuration. Plus they have several unique test tapes containing material that is not available elsewhere. Lastly, MRL is under the direction of John (Jay) McKnight, formerly of Ampex and now dubbed (that's a pun!) the "Wizard of Watergate" since his impeccable technical credentials as one of the foremost experts on magnetic recording in this country earned him a place on the technical committee analyzing those infamous tapes.

Our "Sonic Stethoscope" is an MRL alignment tape. For the usual audiophile-type quarter- or half-track open-reel recorder using quarter-inch tape, you obtain a full-track test tape which has been recorded at the highest speed of your machine, 7½ or 15 ips, for example. Why full track? For one thing it simplifies manufacture and keeps costs down, plus you can use the tape on a variety of track configurations . . . instead of having to buy the specific tape for the specific track format. From a technical standpoint, any height error of the reproducing head does not introduce gain setting or frequency response errors. Now *without disturbing a single adjustment* in your tape head assembly, you can playback this tape and, with some simple rules of interpretation, it will give you an accurate indication of the total frequency response of your recorder. With a simple manipulation in the tape head assembly, this same test tape will enable you to check the azimuth of your reproduce head. (Azimuth in this context is the degree of perpendicularity of the tape head gap to the direction of tape travel. Ideally, the gap is perfectly vertical. Deviations from this condition will result in attenuation of the high frequency response.)

Let's take a closer look at the make-up of a typical alignment tape. A reference fluxivity tone at 1 kHz is recorded at the beginning and end of every test tape. This reference fluxivity is a value for the magnitude of the magnetic signal and is expressed as nanowebers per meter of track width. Different values of reference fluxivity apply to various recording tapes. Typically, 200 nWb/m is the reference fluxivity for general-purpose tape used in home recording,

One good thing leads to two others.



Once you've got something as good as the Akai GX-630D stereo tape deck, it starts you thinking.

Why stop here? Why not make a second one, with Dolby*? So we did.

Introducing the Akai GX-630DB — it has everything the GX-630D has, plus the Dolby* noise reduction system.

Well, that only started us thinking again. Why not a third, with quad?

Introducing the Akai GX-630DSS — it, too, has everything the GX-630D has, but it's got it in 4-channel sound with quadra-sync.

As for introducing a fourth, we're thinking about it.

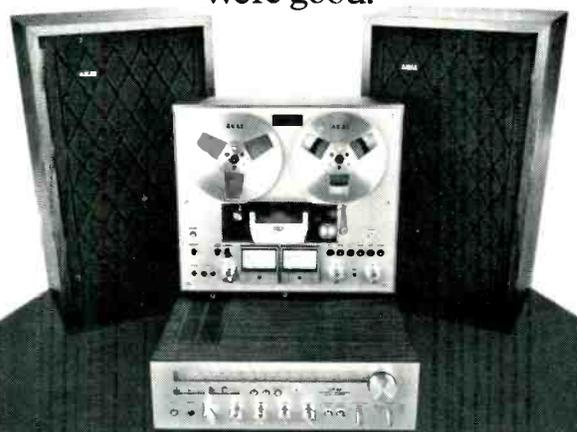
GX-630D

3 glass and single crystal ferrite heads, 3 motors (1 AC Servo Capstan Motor), 2 speeds (3 $\frac{3}{4}$ and 7 $\frac{1}{2}$ ips), feather touch full logic function controls, mic/line mixing, dual monitoring, automatic stop, output level control, pitch control. Akai reel-to-reel systems from \$299.95.

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If you're going to get big, you gotta be good.
We're good.



AKAI

whereas 250 nWb/m is the value for such tapes as 3M 206 or Ampex 406. In use, the 1-kHz reference fluxivity signal is used to set a standard zero VU on your VU meter. Once set, the playback gain control on your recorder is *not* touched during the playback of the test signals on the tape. Ideally, a recorder with a perfectly flat playback frequency response will not vary in gain at the reference fluxivity zero VU point. The reference fluxivity signal is also known as "operating level." On a 15-

ips test tape, all the signals are recorded at this operating level. On a 7½-ips tape, for technical reasons only the reference fluxivity signal is recorded at operating level, the other signals being recorded at minus 10VU. After the reference fluxivity signal, there is an 8-kHz signal for a course setting of azimuth, followed by a 16-kHz signal for fine setting of azimuth.

How do you set the azimuth of your machine's reproduce head? Well, friends, here is where some tape recorder manufacturers may get a bit miffed with me. Almost without exception, on a typical audiophile recorder once the manufacturer has set the azimuth, the azimuth adjustment screw is sealed with some variety of glue. Now this is all right to a degree, but head wear and other factors can conspire to put the gap out of alignment. Of course, enough head wear to cause a "grooving" or "lipping" of the head, and no alignment tape is going to help then because you need a new head! In any case, it is nice to know the actual setting of the azimuth, and any audiophile worth his salt will want to adjust the setting for optimum high-frequency response. Thus, after making absolutely certain which is the azimuth adjustment screw in your tape head assembly and using an appropriate tool (some units need an Allen wrench), boldly break the glop seal, and turn the screw to give you the maximum peak reading on your VU meter. If you should have a recorder that does not have a VU meter that reads playback signals, you will have to use an external VOM or VTVM. (Obviously, you would need a meter to read the other signals on the tape as well.)

Following the 16-kHz azimuth adjustment signal, the alignment tape has a series of discrete test frequencies at 31.5, 63, 125, 500, 1k, 2k, 4k, 8k, 10k, 12.5k, 16k, and 20k Hertz. The tape ends with a repeat of the 1-kHz reference fluxivity signal. Thus, the alignment tape can give you a quick checkout of your recorder's playback performance. I should mention that at the low frequencies of 31.5, 63, 125, and on up to 1kHz, there are elevated readings above the zero VU point because of what are known as "fringing effects" when a full-track tape is used on a multi-track head. Along with a calibration graph of the accuracy of the particular test tape you purchased, MRL furnishes a table of correction factors to subtract from the readings at the low frequencies.

What can you do if the alignment tape reveals that your recorder does

not have a flat playback frequency response? This is a problem of adjusting the equalization and unfortunately in the usual audiophile recorder, this circuitry is usually in the innards of the unit and generally beyond the ministrations of the average audiophile. So, in this case, friends, it is back to the manufacturer. Ironically, in the professional tape recorders, like my Ampex 440, all the equalization circuitry is on plug-in cards accessible from the front panel and subsequently very easy to adjust. The important advantages of using an alignment tape to check your playback response are that the method is quick, easy, and repeatable. It thus provides the knowledge required to put the recorder in perfect playback alignment so that any necessary recording adjustments can be undertaken.

MRL also makes a very clever "Difference Method" azimuth adjustment test tape. With this tape, one can check the azimuth of the reproduce head *without* actually changing any azimuth screw settings. On the tape, a medium frequency tone is alternately recorded at two azimuth angles symmetrically displaced from true azimuth. On playback the sequence is Tone A (at one angle) for 2 seconds, then a 0.1-second pause, the Tone B (at the other angle) for 2 seconds, then a 0.6-second pause. This is repeated throughout the length of the tape. When the reproduce azimuth is correctly set, the level output from tones A and B will be equal. In practice, if you obtain a reading within one dB of each other, the azimuth is close enough for practical purposes. Of course, if the two tones are further apart in level, then you must use the azimuth adjustment screw to make them equal.

For the advanced audiophile who has an oscilloscope with a triggered sweep, MRL has available a rapid frequency sweep test tape that sweeps all frequencies from 500 to 20,000 Hz and gives the appearance of a continuous display of all frequencies at once. An MRL film positive graticule is necessary for use with this tape. Placed over the face of the scope, it is available in 3-, 4-, and 5-in. sizes.

MRL has an interesting catalog, listing all their test tapes. For the tape recorder enthusiast, even the most basic alignment tape is invaluable. They're not cheap; \$30.00 for the 7½- or 15-ips quarter-inch tape, for example, but they are good investments, and given good care, as per the MRL instructions, these tapes will remain servicable for long time.



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After years of research with all types of record cleaning gadgets, gizmos and gimmicks, Fidelity came up with a simple, direct solution . . . the Record Washer! Now you can wash your records quickly and easily with this unique Spin & Clean system. Gets out dirt deep down in the record groove . . . gives you maximum performance from your old records. Comes complete with special cloth and enough Fidelity Record Wash Concentrate to wash up to 1,000 records!



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Introducing one of the finest collections of stereo receivers in the world: the MX 1580.

Power* of the Sony 7065. FM Sensitivity* of the Pioneer 338. Selectivity* of the Sherwood 7900A. Capture ratio* of the Marantz 2270. Total Harmonic Distortion* of the JVC VR-5660.

With so many excellent AM/FM stereo receivers around these days, who needs another? So instead of making just "another," we collected the most significant specs and useful features of five of the best, and "combined" them in one—the MX 1580.

Of course, some of these five receivers have features our one doesn't have (we think you can manage without two phono inputs).

But then, ours has features they don't have; features you *shouldn't* do without.

You pay for—and get—what you really need.

The MX 1580 has exclusive ASNC, which automatically reduces the noise level on weak stereo stations without reducing separation on strong ones.

And special thermal protection for output transistors and the power transformer.

Plus lots more we were able to include and, at \$479.95,** save you a few bucks in the bargain.

How? It wasn't easy. But we had help.

The oldest new company in the business.

Although we're a completely separate group, we were able to draw on the resources of a company that's been a leader in the industry since 1915. So we could afford to wait until we had the MX 1580 right.

And now it's so right, we insist that every single one be inspected twice before it's shipped. After all, we have one of the world's finest stereo collections to protect.

Features and Specs*

- Sensitive front-end with three dual gate MOSFET's and 4-gang tuning capacitor
- Two 6-pole linear phase filters for improved selectivity and phase response.
- High gain IC quadrature FM detector.
- Switchable signal-strength/center-tuned meter.
- Phase lock loop IC circuit for FM stereo multiplex.
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• CCL direct-coupled differential amplifier for extended frequency response and wide bandwidth.

Power 60 watts per channel, min. RMS

Power Bandwidth 20Hz-20kHz

Total Harmonic Distortion 0.5%

Load 8 ohms

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Frequency response . . 20Hz-25kHz

Usable sensitivity (I-F) . . . 1.8uV

Selectivity (I-F) 75dB

Capture ratio (I-F) 1.5dB

50dB sigral to noise margin . . 2.5uV

Stereo separation @ 1kHz . . . 50dB

@ 10kHz . . . 40dB

All specs subject to change without notice. Specs of competitive receivers taken from manufacturers own published data sheets. **Manufacturer's suggested retail price; optional with dealer.



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Onkyo offers a full line of highly rated stereo receivers, amplifiers and tuners; the world's 1st fully automatic 4-ch receiver; 2/way & 3/way speaker systems . . . all in a broad price range. See your dealer.

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ADDENDA—Craig Model 3139

The Craig Corporation has brought to our attention an error in the testing set-up for their Model 3139 car stereo unit, which resulted in our publishing a power output figure MUCH too low for this unit in our July, 1975 article "Five Car Radios Tested." Briefly, the difficulty appears to have been in the ground at the signal input of the unit, a situation which would never occur during actual use of the receiver in an automobile.

Results of the retest gave a power output figure at 1 kHz of 10.86 watts per channel at 1 percent distortion; Craig rates the unit at 12 watts per channel at 5 percent distortion. A corrected table of test results is shown here.

Brand & Model		Becker Mexico	Craig 3139	J.I.L. 605	Panasonic CQ-999	Pioneer KP-301
IHF Sensitivity, μ V	mono	4	6	4	4	3
	stereo	50	8	10	7	3
50dB Quieting, μ V	mono	3	7	3	5	3
	stereo	50		35	30	30
Mono S/N ratio@1000 μ V, dB		62	67	61	66	67
Stereo S/N ratio@1000 μ V, dB		56	68	56	55	57
Mono THD, %		1.1	1.0	0.65	1.0	1.25
Stereo THD, %		1.4	2.5	1.4	0.85	2.4
Max Power/Ch., watts		1.75	10.86	2.0	2.0	1.0
Separation@1 kHz, dB		28	14	22	38	22
Tape transport		Cass.	8-tr.	Cass.	8-tr.	Cass.
AM Incl.?		Yes	No	Yes	Yes	No
Automatic tuning?		Yes	No	Yes	No	No
Preset pushbuttons?		No	Yes	No	Yes	No
Price (\$)		844.28	169.95	249.95	200 approx.	199.95

Thiele—Sage of Vented Speakers

The graphs for Figs. 2 and 3 were interchanged and are reprinted here correctly. The first paragraph under the sub-heading "Closing Remarks" contained an extraneous and misleading sentence, the penultimate one.

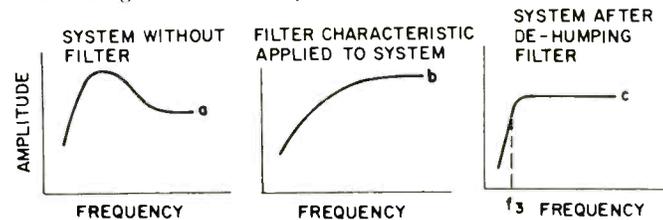


Fig. 2—Nature of response of alignments 10 through 14 before and after the addition of the required auxiliary filters.

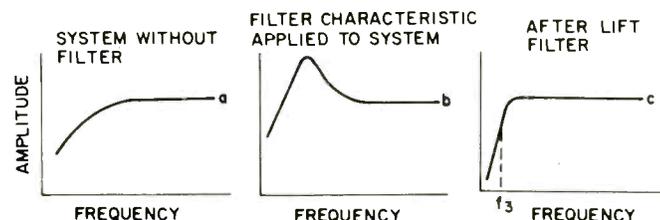


Fig. 3—Nature of response of alignments 15 through 19 before and after the addition of the required auxiliary filters.

Dear Editor:

Scott Not Part of EAD

Dear Sir:

In the August, 1975 issue of **Audio** you reported the death of Mr. Herman H. Scott. As part of your story on Mr. Scott you indicated that his firm was sold in 1972 to Eastern Air Devices.

This is to advise you that Eastern Air Devices, Inc. (now Electro Audio Dynamics, Inc.) never purchased H.H. Scott, Inc. although it had an option to do so which was not exercised. To the best of our knowledge, H.H. Scott, Inc. was sold to a group of European investors which had absolutely no connection with Eastern Air Devices and has been owned by that group for the past two or three years.

I would sincerely appreciate your correcting your story with respect to the ownership of H.H. Scott, Inc. at your earliest convenience.

Siegfried Susskind
President

Electro Audio Dynamics, Inc.
Great Neck, N.Y.

Car Radio Issue

Dear Sir:

I'm glad to see instrument tests on auto sound equipment, such as you had in the July issue. Let me add, however, that the Becker's variable separation is probably excellent for auto use — I find at the limits of stereo reception that my car radio is constantly switching from noisy, distorted stereo to clean mono and then back again. Gradual transitions would probably be much pleasanter.

One note on the directory section; complete as it was, it lacked data on such things as push-button and signal-seeking tuning; auto-reverse, fast-forward, and rewind tape motion, and other features most significant for car use.

Ivan Berger
Electronics & Photo Editor
Popular Mechanics
New York, N.Y.

Noise Filter

Dear Sir:

Thank you for publishing the construction article "Construct A Dynamic Noise Filter" (June '75). Mr. Strange's article was very clear and complete on how to build and operate the filter. I had no trouble at all in

obtaining the components or in constructing the unit. I hooked the unit up to my stereo system and I am very pleased with the operation. I hope you will make construction articles a monthly feature of your truly first-rate magazine.

Steven L. West
West Bend, WI.

"AS ORTOFON IMPLIES, THE VMS-20E AND M-15E SUPER CARTRIDGES HAVE VIRTUALLY IDENTICAL PERFORMANCE IN ALL RESPECTS. WE COULD HEAR NO DIFFERENCE BETWEEN THE TWO IN SIDE-BY-SIDE COMPARISONS."

Julian Hirsch, *Stereo Review*

The Ortofon VMS-20E is a new cartridge designed to offer essentially the same high order of performance as the now-famous M-15E Super, but to do so in a wider variety of tone arms—including those found on today's very best automatic turntables.

The difference between the two is best described by again quoting Julian Hirsch:

"The major difference between the two cartridges appears to be that the M-15E Super will play anything we

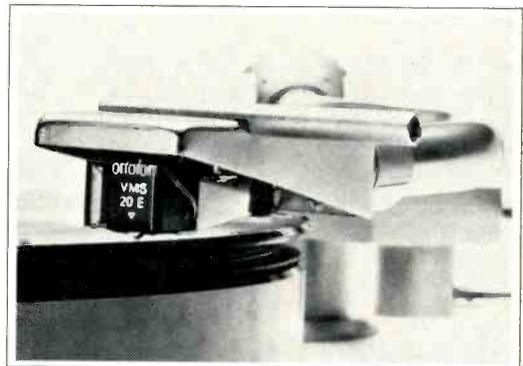
have seen on record without difficulty at 1 gram, while the VMS-20E might have to be operated at 1.5 grams in the most severe cases. We would still opt for 1-gram operation, assuming the tone arm is capable of it."

The VMS-20E employs Ortofon's unique (and patented) Variable Magnetic Shunt design, which frees the stylus from the need to drive either coils or magnet directly and allows a combination of very low dynamic mass (0.5 milligram) and very high compliance (40×10^{-6} cm/dyne in the horizontal plane in the VMS-20E).

It is a product of the meticulous manufacture and testing for which Ortofon (a maker of professional recording equipment for more than fifty years) is known throughout the world.

At \$65, the Ortofon VMS-20E is probably the least expensive way to make a major audible improvement in a good stereo system.

For more information, please write us at the address below.



ortofon .9 EAST 38TH STREET, NEW YORK 10016



Build an Audio Generator

M. J. Salvati

THIS ARTICLE details the construction and operation of a battery-powered audio oscillator (see Fig. 1). The output of this oscillator is a low-distortion sine wave at each of six switch-selected frequencies. Full specifications are given in Table I. This oscillator will be useful to the engineer, the serviceman, and the hobbyist. Typical applications include checking frequency response, sensitivity, speaker phasing, tone controls, filters, etc. (*Editor's Note:* While this project

will not be particularly difficult for the advanced construction enthusiast, the beginner should be warned that an oscilloscope and a.c. voltmeter are required for adjustment, some parts will not be very easy to obtain, and several sources may have to be checked. Actual construction should not be very tough, however.)

Theory of Operation

The circuit is essentially a Wein-bridge oscillator with an FET controlling the gain of the circuit. Output signal appearing at pin 6 of IC1 is rectified by diode D1 to produce a negative d.c. voltage across resistor R14. This voltage is well filtered by capacitor C4 (and sometimes C5 or C6) and applied to the gate of FET Q1. The channel resistance of the

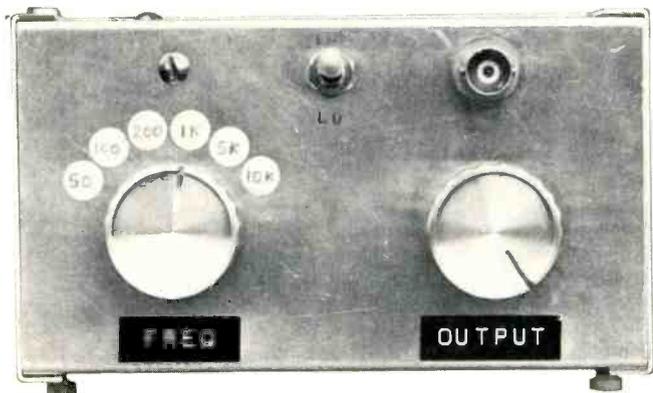


Fig. 1—Top of oscillator. Author's prototype uses BNC output jack instead of phono jack.

Table 1—Specifications

Frequencies	: 50, 100, 200 Hz; 1, 5, 10 kHz
Frequency accuracy	: $\pm 2\%$
Frequency response	: ± 0.2 dB
Output level (HI)	: 30 mV - 3 V rms into 10 KOhms or higher
Output level (LO)	: 0.3 mV - 30 mV rms into 100 ohms or higher
Total harmonic distortion	: less than 0.2% at any frequency
Power requirement	: Two 9 V batteries

TWICE AGAIN, HISTORY REPEATS ITSELF.

Carrying on the innovative tradition of our almost
ninety year involvement in music,
Yamaha announces a double breakthrough in all-FET technology.

Yamaha's C-1.

At \$1800, you've never seen a preamplifier like this before.

It's so different we call it the Master Control Center. You'll call it well worth waiting for.

From input to output, it's the first to use advanced FET's exclusively throughout the signal path.

Yamaha's C-1 is made for perfectionists who appreciate the superb clear tonality and exceedingly low distortion that only FET's can bring.

For advanced audiophiles who want the complete control over literally thousands of audio variables that only the most advanced circuits and features can offer.

A built-in oscillator.

Consider the C-1's unique built-in oscillator with level control, a professional test instrument that's usually found only in sophisticated audio labs.

By generating both random "pink" noise as well as the four most useful test tones (70 Hz, 333 Hz, 1 kHz and 10 kHz), the C-1's oscillator can be put to a variety of tasks:

Determining the precise phono impedance loading, checking the frequency response of speakers, A-B speaker comparisons, setting up a tape deck, balancing the output level of an entire system, and balancing room acoustics. You'll discover more and more uses as you go along.

(A word of caution: because the C-1's oscillator can be used externally, all your audiophile friends will want to use it to test their own components.)

Where most other manufacturers use a negative feedback design in their phono equalizer amplifiers, Yamaha specified the more sophisticated passive interstage equalizer (CR-type). The results were worth it:

Greater stability, lower distortion, superior tonality.

In our all-out effort to reduce noise at all preamp output levels (not just at

maximum output), the C-1 features a unique four-gang volume control that simultaneously adjusts inputs and outputs.

You're totally in control.

With the C-1's selectable equalization controls for presence and acoustic balance, you enjoy the equivalent of a separate equalizer. For those occasions when you don't want to use equalization controls, the C-1's special circuitry lets you bypass them completely.

Another unique feature that sets the Yamaha C-1 Master Control Center apart from other so-called state-of-the-art preamplifiers:

Six-position selectable phono impedance that allows your cartridge to be precisely loaded for optimum high frequency performance.

The Yamaha C-1's absolute control over sound also includes a pair of extra wide-range (-50 db to +6 db) peak reading meters. Electronic damping provides both faster peak readings and slower decay, assuring precise monitoring. You can also use the C-1's meters to monitor any external component that doesn't have meters.

Writing in *Audio* about our unique metering system, Bascom H. King stated:

"...by far the most accurate and meaningful of any meter set-up seen thus far."

Individual level controls let you balance the input from all signal sources, except the tuner. (Yamaha's companion tuner, the CT7000, has its own variable output level adjustment.) So the volume level stays the same when you switch, for example, from tape to phono, tuner to aux, etc.

And there's more.

Enough that once you hear the Yamaha C-1, you'll never be satisfied with another preamplifier again.

Yamaha's B-1.

At \$1600, it's already redefined state-of-the-art amplifier performance in a lot of people's minds. Yours might be next.

Revolutionary Vertical-FET design produces a completely different kind of sound. Clean, open and transparent. With a richness that goes beyond the best vacuum tube amplifiers.

And, up to now, unavailable.

Worth the wait.

As late as a few years ago, there existed only two types of transistors: bipolar and horizontal FET. Each operated in a completely different manner.

The bipolar device uses input current to control output current. On the other hand, the horizontal FET uses input *voltage* to control output current—a more suitable audio technique that's quite similar to vacuum triode tube design. (Both use input voltage to control output current; both have sharp cut-off characteristics which eliminate high-order harmonics and notch distortion.)

Only there was a small problem.

Because current passage was restricted to a single path, the horizontal FET didn't produce enough power to be used in the output stages of a power amplifier.

Then, in 1971, Prof. Nishizawa of Tohoku University drastically changed the FET's internal structure. The shape of the voltage-controlled constriction was altered to let the current take an almost infinite number of paths.

And so, the Vertical-FET was born.

During the past three years, working exclusively with Prof. Nishizawa, Yamaha's engineers have brought the Vertical-FET to the forefront of audio technology, where it serves as both driving and output devices in our new B-1 amplifier.

The B-1's rated 150 watts per chan-

nel (20 Hz to 20 kHz, less than 0.1% THD) are produced by only two Vertical-FET output devices per channel.

Compare that with the minimum of six to eight output devices per channel found on most other amps!

Yamaha knows that fewer output devices minimize the distortion caused by out-of-balance output devices during transistor switching cycles. And maximize tonality.

People are talking.

Here's what Julian Hirsch of *Stereo Review* had to say about the power-handling capacity of Yamaha's new Vertical-FET:

"Each of the FET's is about the size of an ordinary power transistor, but it can dissipate 300 watts!"

Audio's Bascom H. King observed that the B-1's power output at visual onset of clipping for an 8-ohm load was 220 watts—46% over spec!

So you can see that our 8-ohm rating of 150 watts is quite conservative indeed!

Because the B-1 is used as a reference amp by many of our dealers, we supply an optional control unit that can A-B up to five pair of speakers and balance them for efficiency at the head amp. Without the insertion of T-pads that degrade low-end response by decreasing damping characteristics.

It's called the UC-1. It costs \$250. And you don't have to be a Yamaha audio dealer to own one.

Besides speaker switching, the UC-1's extra wide-range peak delay meters, with faster peak and slower decay like those on the C-1 (but calibrated in both dB's and watts of power output), offer an extremely precise monitoring capability to your system.

Yamaha's C-1 and B-1, \$3650 the pair, with the UC-1 control unit.

After you hear them together, you'll never be satisfied with anything less.



YAMAHA

International Corp., P.O. Box 6600, Buena Park, Calif. 90620

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FET forms part of the resistive feedback divider (R7 and R8) from the op amp's output to its inverting input. The FET can therefore adjust the feedback divider to maintain oscillation at a non-distorting level according to the magnitude of the rectified feedback voltage. This action also keeps the output amplitude relatively constant from one frequency to another despite differences in the match between resistor pairs R1 - R6. For instance, if the output amplitude starts to get too high, the negative d.c. voltage at the gate of Q1 increases. This increases the channel resistance of the FET, thereby increasing the total resistance from pin 2 of IC1 to ground. This decreases the gain of IC1 and reduces its output amplitude.

The low circuit distortion is due to the FET's channel resistance being only a small portion of the total resistance from pin 2 to ground. However, the changes in channel resistance produced by the a.g.c. voltage at Q1's gate are big enough to perform the control function.

Another factor involved in achieving low distortion is adequately filtering the rectified output voltage used to control Q1. The time constant of resistor R14 and its parallel capacitor(s) must be very long compared to the period of oscillation. Capacitor C4 is adequate for the higher frequencies, but additional capacitance (C5 or C6) must be added for the lower frequencies. Large capacitance is not used at the higher frequencies to avoid unnecessarily long settling times.

The frequency of oscillation is determined by capacitor pair C1 and resistor pairs R1 - R6, according to the standard Wein bridge formula

$$f = \frac{1}{6.28 RC}$$

Only one set of precision capacitors is needed because the input bias current of the N5556 op amp is so low that several decades of resistance can be used to produce the several-decade frequency span.

IC 2 is connected as a unity-gain buffer that acts as an output driver for low-impedance loads. Resistor R12 builds up the output impedance of the device to near the 600-ohm impedance standard. Resistor R13 and switch S3 provide a "quick-and-dirty" method of achieving 40 dB attenuation of the output signal. If it is important to maintain 600-ohms output impedance at all output levels, the attenuator described in *Modifications* can be used instead.

Construction Notes

As far as layout is concerned, nothing is especially critical. The general arrangement of parts shown in Fig. 3 yields an easy-to-wire device. The only caution is to be sure your circuit board will fit into the space available in the case. If you have little experience with miniaturization, build the circuit board first and then see how big an aluminum case is needed. Further details on the circuit board are given below.

Sources recently listing IC1, IC2, and Q1 include Ancrona Corp., P.O. Box 2208A, Culver City, Calif. 90230; James, P.O. Box 822A, Belmont, Calif. 94002; New-Tone Electronics, P.O. Box 1738AM, Bloomfield, N.J. 07003, and Solid State Systems, P.O. Box 617A, Columbia, Mo. 65201.

Circuit Board The components covered in tone on the schematic diagram are to be mounted on the circuit board. Use No. 22 solid wire to make the connections from circuit board to chassis-mounted parts; the short stiff wire leads make the circuit board self supporting.

Perforated board or printed circuit techniques can be used for the circuit board, although I recommend Ver-board® by Vero Electronics. The metallized grid pattern accepts DIP IC's directly and permits incredibly-dense packaging.

FET For lowest distortion, Q1 should have a moderately-high pinchoff voltage (around 3 volts). This is available from a 2N3819 type FET with an Idss of 8-10 mA.

Frequency-Determining Resistors The absolute value of the frequency-determining resistors (pairs R1 - R6) determines the frequency of oscillation along with the absolute value of capacitor pair C1. However, the relative value, or

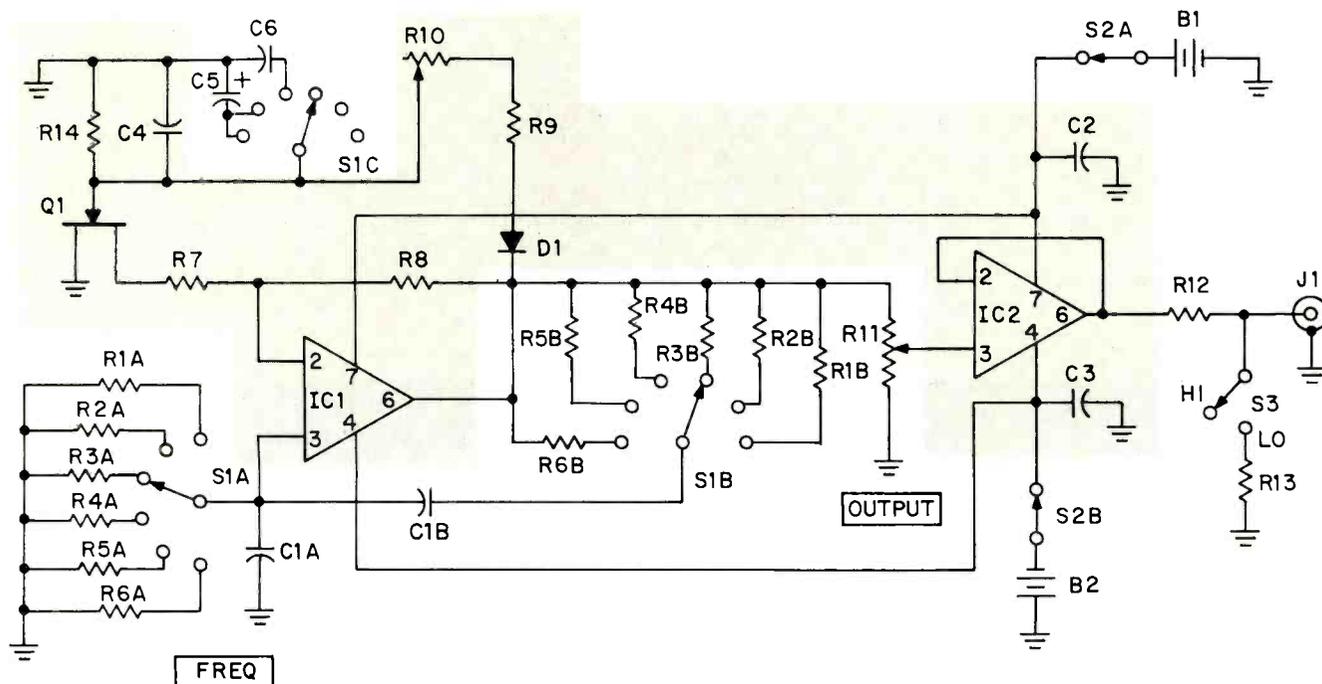


Fig. 2—Schematic diagram. Parts covered with tone are on circuit board.

While everyone is still trying to make V-FETS at any price, we now make them at a lower price.



When Sony introduced the first amplifiers with vertical field-effect transistors last year, the reactions were nothing short of incredible.

Consumers wrote in asking where they could hear the equipment. Audiophiles demanded to know where they could buy it. And our competitors wanted to know how they could make it.

In fact, the only problem was that more people couldn't afford the \$1300 price.

So, we at Sony decided to do something about it. And what we've come up with is our new \$400 V-FET integrated amplifier, the TA-4650. The TA-4650 is quite an advanced little piece of equipment. Because the V-FET isn't just another combination of gadgets, or a souped-up version of the same old thing. It's a completely new device that combines the good points of both bi-polar transistors and triode vacuum tubes. Without suffering the drawbacks of either. Because it's made with V-FETS, the TA-4650 gives you a new level of highly defined triode sound; along with the efficiency and stability found only in solid state devices. The TA-4650 delivers 30 watts per channel, minimum RMS at 8 ohms, 20Hz-20kHz with no more than 0.1% total harmonic distortion.

It has a direct coupled power amplifier stage. As well as direct coupled FET amplifiers in the tone control and buffer stages.

Its bass and treble controls have a turnover frequency selector that starts at 250HZ/500HZ for bass and 2.5kHz/5kHz for treble.

Its volume control is equipped with a switch for 20dB muting. And it has a level control memory device so volume can be set at any predetermined point.

But as good as our new V-FET amplifier is, we're just as proud of the components we make to go along with it.

Our ST-4950 AM/FM stereo tuner, for example, has a MOS FET front end, uni-phase solid state filters and IC's in IF stages. This allows an FM capture ratio of only 1.CdB, selectivity of 80dB and an S/N ratio of 70dB. The ST-4950 also has a phase-locked loop

(PLL) MPX section. Which means you get excellent stereo separation and low distortion.

Of course, if you're going around looking for a turntable, by all means take a look at our PS-4750 (cartridge sold separately).

It has a direct drive servo motor with a wow and flutter rating of only .03%.

Its base and platter are made from molded compound instead of metal, so resonance has been greatly reduced. It also has air-damped cushions, which compensate for warps in records (again reducing resonance). The end result is a much cleaner sound.



It's no accident that Sony makes the world's first commercially available V-FET equipment. Or that we have matching components good enough to complete your system.

You see, we've got more solid state audio experience than anyone else. We've been at it for twenty years. For proof just stop by your Sony dealer. And use your ears.

*TA-8650: 80 watts per channel, min. RMS @ 8 ohms, 20Hz-20kHz, with no more than 0.1% total harmonic distortion.

SONY®

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match between the two resistors of each pair, affects the circuit's oscillatory activity, so each pair must be closely matched to produce the same output amplitude at each frequency. The closer the resistor pairs are matched, the less demand there is on the a.g.c. circuit to maintain output flatness. This allows the circuit to be optimized for low distortion.

The match between the resistor pairs can be achieved either of two ways. One is easy but expensive, the other is harder but cheap. First, you can purchase 1% tolerance resistors of the values specified in the Parts List. Second, you

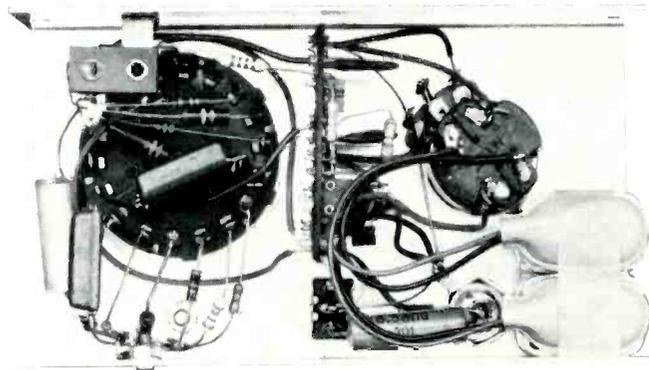


Fig. 3—Interior view. Circuit board is seen mounted edgewise between *FREQ* switch at left at *OUTPUT* pot at right. Batteries are taped in place at lower right corner of case.

Table 2—Parts List

Ref.	Description	Suggested Commercial Part
IC1, IC2	Signetics N5556 op amp*	
Q1	2N3819 FET (Vp greater than 2.5v)*	
D1	1N914, 1N4148, etc. high-frequency silicon diode	
J1	RCA phono jack	Switchcraft 3501FR
B1, B2	9V transistor radio battery	
S1	6-position, 3-pole rotary switch, shorting contacts	Mallory 3163J
S3	SPST slide or toggle switch	
C1A,C1B	5490 pF 1% mica capacitor	
C2,C3	0.05 μ F 25V disc-ceramic capacitor	
C4	0.1 μ F 25V mylar or ceramic capacitor	
C5	2.2 μ F 16V electrolytic capacitor	
C6	0.47 μ F 25V mylar capacitor	
R1A, R1B	2870 1% 1/4W film resistor*	Dale CMF-65
R2A, R2B	5760 1% 1/4W film resistor*	Dale CMF-65
R3A, R3B	28.7K 1% 1/4W film resistor*	Dale CMF-65
R4A, R4B	1% 1/4W film resistor*	Dale CMF-65
R5A, R5B	287K 1% 1/4W film resistor*	Dale CMF-65
R6A, R6B	576K 1% 1/4W film resistor*	Dale CMF-65
R7	23.7K 1% 1/4W film resistor*	Dale CMF-65
R8	48.7K 1% 1/4W film resistor	Dale CMF-65
R9	51K 5% 1/4W carbon resistor	
R10	50K trimmer pot	Beckman 91
R11/S2	50K log-taper pot with DPST switch	Centralab B32/KR2
R12	620 ohm 5% 1/4W carbon resistor	
R13	6.2 ohm 5% 1/4W carbon resistor	
R14	470K 10% 1/4W carbon resistor	
—	5 1/4 x 3 x 2 aluminum case	
—	knobs with index mark (2 req.)	
—	9V battery connectors (2 req.)	

*See text, *Construction Notes*.

can measure a number of 5% tolerance resistors of the nearest standard value(s) and select from them the pair that are the closest match (and hopefully, near the specified value). A digital ohmmeter is recommended for this task, although a standard (analog) ohmmeter with mirrored scale can be used if you are especially good at meter reading. If frequency accuracy is important, a digital ohmmeter *must* be used.

If matches within 1% are not obtainable, or you are unlucky enough to buy 1% resistors that are off in opposite directions, always use the lowest-value resistor of the pair as the one connected to switch section S1A.

Feedback Resistors. The proper ratio between resistors R7 and R8 for low distortion and reliable operation is quite critical. The closeness of the match between capacitor pair C1 and resistor pairs R1 - R6 affects the amplifier gain, hence the proper R7:R8 ratio. The values given in the Parts List for these resistors assume that parts of the specified tolerance are used for C1 and R1 - R6. In this case no adjustment of R7 and R8 is needed. However, if poorly-matched components are used, resistor R7 should be a 22K 5% carbon resistor, and R8 should be replaced by a 43K 5% carbon resistor (R8A) and a 5K trimmer pot (R8B), as shown in Fig. 4. Then, use the *Feedback* adjustment procedure in the next section.

Modifications. A simpler version of this oscillator covering only 200, 1000, and 5000 Hz can be built using 741's, or a 1458 or 747 for IC1 and IC2. In this case, omit capacitors C5 and C6, resistors R1, R2, and R6, and section C of switch S1. Use a 3-position, 2-pole switch instead for S1, and use a 0.47 μ F capacitor for C4.

If a constant output-impedance step attenuator is desired, build the output circuit as shown in Fig. 5. Use a DPDT slide or toggle switch for S3 and 1/4-W carbon resistors of the values shown.

Adjustments

To adjust this audio oscillator, an oscilloscope and a.c. voltmeter are required.

If resistor R8 is a fixed precision resistor, perform only the *Output Level* adjustment. If resistor R8 is a combination of trim pot and fixed resistor, perform the *Feedback* adjustment and *Output Level* adjustment, in that order.

Feedback. To adjust the feedback, proceed as follows:

1. Set trim pot R8B for maximum resistance, and trim pot R10 at mid rotation.
2. Set the *FREQ* switch to 1 kHz and the output-level switch (S3) for *HI* output.
3. Connect an oscilloscope to the output jack (J1). Set the scope's input attenuator to 2 V per division.
4. Rotate the *OUTPUT* control fully clockwise, and observe the sine wave on the oscilloscope. Adjust trim pot R10 for a sine wave of about 8 V P-P.
5. Slowly turn trim pot R8B in the direction of minimum resistance while watching the scope. When you reach the point where the output amplitude drops below 4 V P-P or oscillation ceases entirely, turn the trim pot just enough in the other direction to produce a stable, constant-amplitude sine wave at all positions of the *FREQ* switch. (Note: the settling time is relatively long at 50 and 100 Hz; do not mistake this for instability.)

When pot R8B is set towards the critical point (near minimum resistance), distortion is extremely low (less than 0.05%) but the output amplitude varies greatly from one frequency to another and the output voltage available is far below spec. Setting pot R8B in this area is recommended only for single-frequency operation and only if low distortion is far more important to the application than stability. Conversely, when pot R8B is set towards maximum resistance,

The best ears in the business have judged our recorders.

Like to hear their verdict?



Model 8080 8-Track



Model 4766 Cassette Deck

"It (the Model 4766 Cassette Deck) is in every way typical of the finest cassette-deck performance—which is to say, very fine indeed. . . . It will probably do as many things as any cassette machine we know of. Furthermore, it does them about as well as the current state of the cassette art allows, and at a very down-to-earth price."

STEREO REVIEW, Aug. 1975

"... Wollensak is showing the way with innovations and improvements in these machines... the Model 8080 (8-Track) has a frequency response which extends to over 16kHz and exhibits an excellent signal-to-noise ratio and low distortion... how does the 8080 compare with a similarly-priced cassette machine? In terms of the basic performance parameters... there isn't much to choose between the two formats at this price level."

AUDIO, Aug. 1975

Those are excerpts from recent reviews of Wollensak's 4766 Cassette and 8080 8-Track recorders. The experts have tested, analyzed, charted and listened to our decks. Now it's your turn. Because, as far as we're concerned, there's only one, true measure of our equipment—your ears.

There *is* a difference. It takes a sensitive, sophisticated ear to hear it, but that's the ear we're designing for at Wollensak.

We invite you to audition these recorders at your dealers. Compare price and performance with anything else on his shelves. And, if you still can't hear the difference, don't buy ours. While you're there, though, ask him for reprints of the entire reviews we've quoted here. Or, if you prefer, write 3M Company, Box 33050, Wollensak Dept. 400, St. Paul, Minnesota 55101.

3M
COMPANY

**Wollensak by 3M.
Not for Tin Ears.**

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distortion is relatively high (about 1%) but the output amplitude is extremely flat even with poor matches between resistor pairs R1 - R6. Setting pot R8B in this area is recommended for applications where frequency response is more important than distortion. In between these extremes is an area where distortion and frequency response are both within the specification limits.

Output Level. Set the *FREQ* switch to 1 kHz and the output-level switch (S3) for *HI* output. Connect an a.c. voltmeter to the output jack (J1). Rotate the *OUTPUT* control

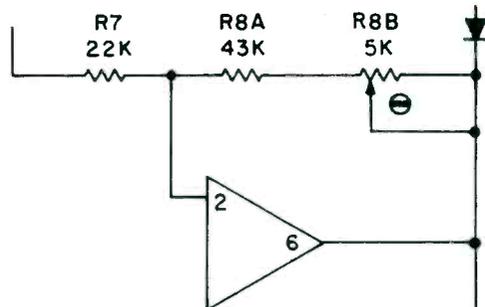


Fig. 4—Modification for achieving very low distortion.

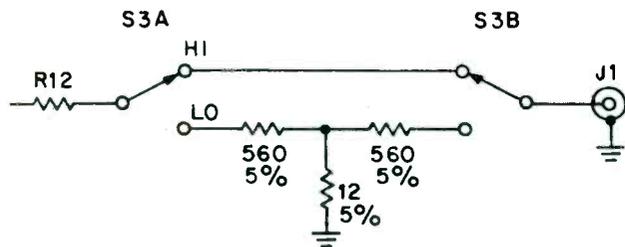


Fig. 5—Constant-impedance output attenuator.

fully clockwise. Adjust trim pot R10 for a voltmeter indication of 3 V RMS.

As a final check, measure the output level at the other frequencies. If the difference between highest and lowest output amplitude exceeds 0.4 dB (or whatever you consider satisfactory), repeat the *Feedback* adjustment to determine the point that yields low distortion with low output-level variation. If a really-good distortion analyzer is available (Sound Technology 1700A or selected H-P 333A), check the distortion at 200 or 1000 Hz while performing these adjustments.

Use

The various uses of an audio oscillator are too numerous and too well known to discuss here in any depth, so this discussion will be confined to applications where the special characteristics of this device are especially valuable.

The most unique feature of the oscillator, relative to commercial equipment in its performance class, is that it is battery operated. This permits use in systems where power-line ground loops cause feedback problems, in locations where access to an a.c. outlet is difficult, and in field servicing or adjusting portable (remote-pickup) equipment. Its small size is an additional asset when working in cramped quarters behind a console or equipment rack or when test equipment must be transported to a remote location. Although not exactly "vest pocket" sized, the oscillator can easily be packed in a toolbox or attache case.

When the circuit is optimized for flat output, its frequency response will rival that of all but the very best oscillators on the market. Thus, it is suitable for critical frequency response measurements. Even if not so optimized, its frequency response is flat enough for nearly all studio measurements. Similarly, when the oscillator is optimized for low distortion, it can serve as the signal source for all but state-of-the-art distortion measurements.

SECRETS FROM THE AUDIO FILE



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ADVICE FROM: John Wilson, recording engineer, Capitol Records, Inc.

PROBLEM: Distortion and background wind. You're stalled by a sibilant singer. Or a performer who pops his p's. Or you're losing the wails of a howling wolf under the whistle of a howling wind.

RECORDING TIP: You can improvise a windscreen by fastening an old woolen sock over the mike. It shields the mike diaphragm from those sudden blasts of wind. You'll lose some high frequency, but you'll lessen the pops, whistles and rumbles. This makeshift filter works best with the worst mikes and well worn socks. Experiment with it. Sure, it's unscientific, but it's a good tip to have up your sleeve. Or, in your sock.

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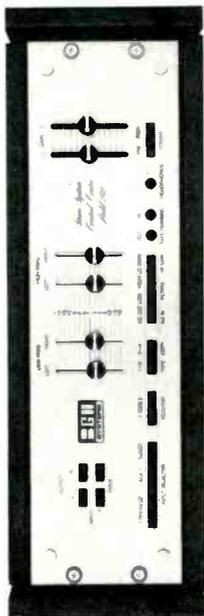
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Annual Equipment Directory

NEARLY 20 YEARS ago, *Audio* published its first Directory of High Fidelity Equipment. Since then, the annual Directory has grown, and this edition lists more than 1,500 products in 13 categories from more than 240 manufacturers. Even so, we do not list every product worthy of the adjective "high fidelity." Some makers do not wish to supply specifications, others could not be contacted in time, and in some categories we simply ran out of space.

Obviously, with this sort of volume, we must rely on the manufacturer's data, but we have found through our equipment reviews that the maker's specifications hold up very well. The tabular forms have been revised again this year, though such features as the letter codes have been kept. Readers should note, however, that amplifier power is specified as by the FTC test method, tuner specs show many figures of the new IHF standard, and that there is a new sensitivity figure in the speaker tables.

For additional data, the reader may write to the manufacturer at the address below. The addenda to the Directory will be published in December.

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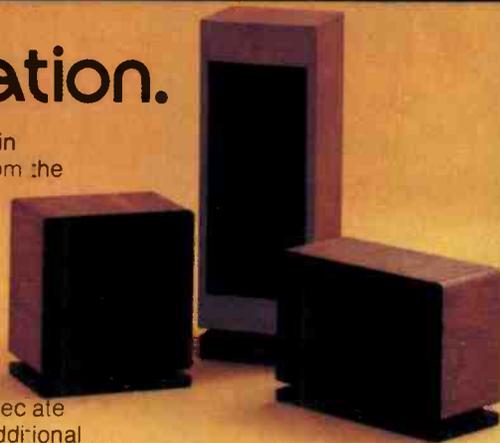
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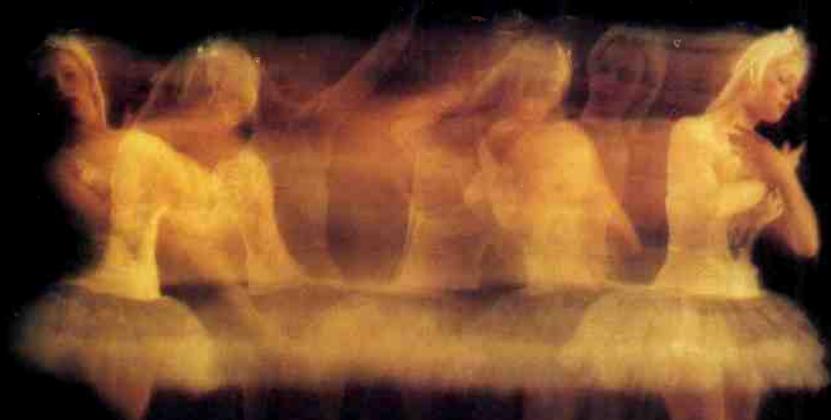
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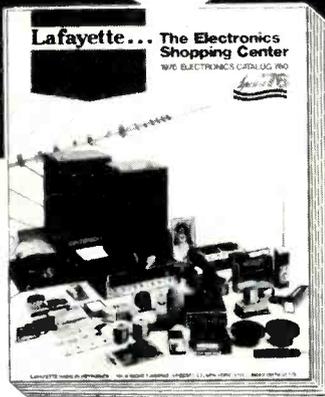
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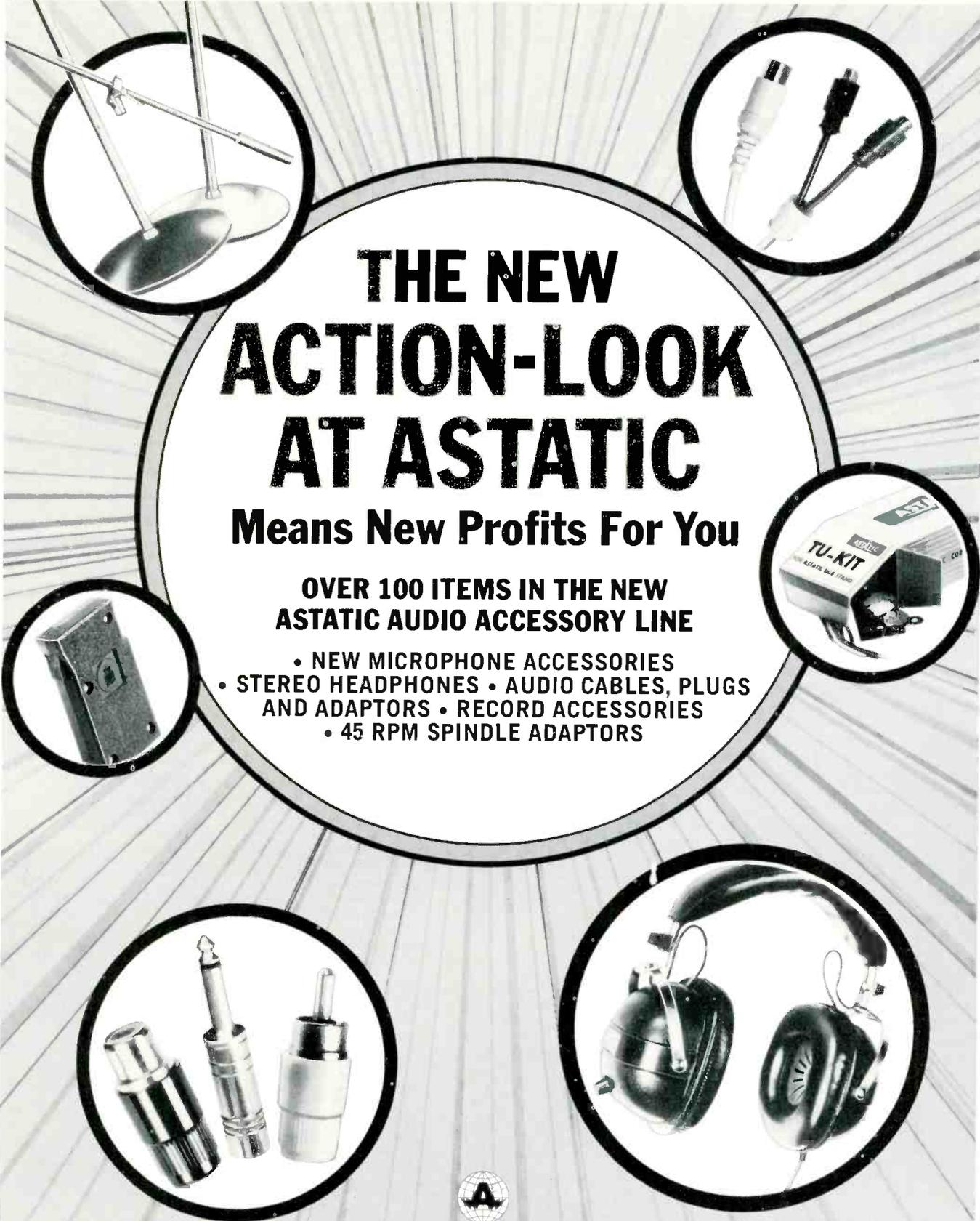
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AMERICAN AUDIO	(T,B) 4002	200	5-30	0.1	0.1				1.5				8	100	19x5½x17	65	1500.00													Direct coupled triodes, rack mount, peak pwr. indicators, 3-dB/step attn. swit.		
AUDIONICS	P23 P23C	100 70	20-20	.03	.05								4/8	100	19x5½x14	32	399.95													Also avail. w/o front panel, power sw., rack handles, at \$370.00 Lower power, utility version of above.		
AUDIO RESEARCH	(T,B) D150 (T,B) D76A (T,B) D52	150 75 50	20-15	0.5	0.3								*	**	19x10½x16½	110	1995.00													*Output transformer taps at 4, 8 or 16 ohms; **14 at 8 ohms. Rack mount. * as above ** as above		
BGW SYSTEMS	(B) 250B (B) 500D (B) 750A (B) 1000 (Q,B) 4X250 (B) 100	90 200 200 250 200 30	20-20	0.1	0.1	110				1.5			2	500	19x11½x5¼	28	499.00													Front panel ckt. brkr., mono switch. Fan included. Mono switch, fan.		
BOSE	(B) 1801	250	20-20	0.5	0.5				1.5					40		84	986.00													2 VU meters, LED output level display.		
BOZAK	929	150	20-20 +0, -0.2	.2	.2				1.0				8	100	19x12x7	44	849.00													929 includes meters. Model 929 PV avail. w/o meters: \$749.00		
CAMBRIDGE (CM LABS)	Classic One	50	20-20	.05	.05	65	2/2	3000	.25	10	8	4	100	16½x9x2	14	600.00																
CERWIN-VEGA	(B) A-1800 (B) A-3000I	225 365	20-20	.08	.02				1.5				4	500	19x11½x8	33	599.00														LED output indicators; voltage/current limiters. Incl. electronic crossovers at 250 Hz, VU meters.	
C/M LABS	(B) CM912	150	20-20	0.2	0.1								4	50	19x15½x5¼	39	900.00														Input impedance 50K. *Input sens. 1.0 V.	
CROWN	(B) D-60 (B) D-150A (B) DC-300A (B) M-600	28 80 155 600	20-20	0.05	0.01	106			0.775	15.0			*	**	17x8½x1¼	10	269.00														*4 or greater; ** 4, 8, 16 Mono.	
DUNLAP CLARKE	(B) 1000 (B) 500	250 150	20-20	0.25	0.25				1.75				2	500	19x7x15	80	1199.00														Walnut case, \$80.00. Walnut case, \$60.00.	
DYNACO	(B) Stereo 400 (B) Stereo 410 (B) QSA-300 (B) Stereo 150 (B) Stereo 120 (B) Stereo 80 SCA-800 (B,T) MK-III	200 200 75 75 60 30 30 50	20-20	.25	.1				1.6					8,16	80	17x14x7	52	725.00														Kit: \$499.00. W. meters, ST-400M/A \$799.00, MC-4 meter kit, \$85.00, Fan-1 fan kit, \$30.00, PBK-400 rack mount, \$14.95. Kit: \$399.00. Built-in fan. Space for adding level ctrl. Kit: \$449.00. Wired incl. four mtrs., QSA-300M/A, MC-3 meter kit avail. Kit: \$249.00 Kit: \$189.00 Kit: \$139.00 Kit: \$299.00 Kit: \$139.00
EPI	ONE	125	10-30	0.2	0.2								2-20	1000	18½x12½x7½	58	649.00														Voltage & current overload indicators.	
ESS	(B) 1004A (B) 1002A (B) 500A (B) 250A (B) 250	* * * * *	20-20	0.25	0.25				0.75				4		19x15x7	46	860.00														Metered, F/A cooling, A & B spkr. systems. *Watts @ 4 ohms, 500. Metered, F/A cooling, A & B spkr. systems. *Watts @ 2 ohms, 500. Metered, A & B spkr. systems. *Watts @ 8 ohms, 250 Metered, A & B spkr. systems, *Watts @ 4 ohms, 250. *Watts @ 4 ohms, 250.	

Amplifiers



Dunlap Clarke 1000



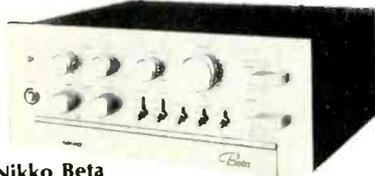
Heathkit AA-1640



Luxman M-4000

MANUFACTURER	MODEL	FTC power/rch., 8 ohms, watts	Freq. range for rated power, Hz, kHz	Highest THD from 0.25W to rated power, %	Highest IM from 0.25W to rated power, %	S/N phono, re 10 mV input, dB	Phono sensitivity, in mV, phono 1, phono 2	Phono overload, in mV, phono 1, phono 2	Mike input sens., mV	High level input, V	Headphone output level, V	Headphone load impedance	Output impedance, ohms	Damping factor, 1, kHz	Dimensions, in inches	Weight, lbs. (net)	Price, \$	NOTES	
GREAT AMERICAN SOUND	(B) Ampzilla	200	20-20 ±1	.05	.05	100*				1.6			100+	17½x9x7	46	599.00(K)		* Re preamp in; direct-reading power mtrs. preceded by (T).	
	(B) Son of Ampzilla	80	20-20 ±1	0.5	0.5	100*				1.0			100+	15½x7x5	25	799.00(W)		* Re preamp in; direct-reading power mtrs. preceded by (T).	
	(B) Godzilla	300	20-20 ±1	.25	.25	100*				1.6			100+	17½x9x7	50	799.00		Mono., 1000 watts into 2 ohms. * As above.	
	(B) White Knight	90	20-20 ±0.5	0.5	0.5							8	100	19x12x8	50	999.00		Pure class a, servo controlled.	
HAYNES	(T,B) 9	100	20-20	0.25	0.25					1.6		*	30+	22x15x12	65	499.50(W) 299.70(K)		Mono, IC-regulated power supply. * 4, 8, 16.	
HEATH	(B) AA-1640	200	20-20	0.1	0.1	—	—	—	1.5	—	—	—	50	19x18x7½	58	439.95(K)		Output meters AAA-1640 1, 69.95.	
	AA-15	50	20-20	0.3	0.3	60	2.2	155	—	0.2	—	—	45	17x12½x4	21½	199.95(K)		5 inputs incl. tape monitor, tone flat, loudness, 2 spkr. switches.	
	AA-29	35	20-20	.25	0.2	65	2.2	155	—	0.18	—	—	40	16½x14½x5	22½	184.95(K)		Modular construction, 6-inputs incl. tape monitor, 2 spkr. switches.	
	AA-1214	15	20-20	0.5	0.5	60	2.0	75	—	0.19	—	—	30	12½x12x4	9½	109.95(K)		Tape monitor input, Stereo headphone jack, spkr. switch.	
	(Q) AA-2005A	15	20-20	0.5	0.5	60	2.2	35*	—	0.2	—	—	30	19½x12x5	24	139.95(K)		* Exceeds 5V using input level control. Modular construction, SQ matrix system.	
INFINITY	(T) 500DSP	250	20-20	0.1	0.1								40	18½x16x4½	35	1850.00		Digital signal processing (switching amplifier).	
JVC	4VN-770	11	10-30	0.5	0.8	65	2.5		—	.07	—	—	—	16½x12x5½	21½	279.95		Two tape monitors, two matrix decoders, four VU meters.	
	4VN-990	30	10-30	0.5	0.8	65	2.5/2.5		—	0.15	—	—	—	16½x15½x5½	35¼	599.95			
	VN-900	50	20-20	0.25	0.4	56	2.5	250	—	0.2	—	—	—	16½x12½x5½	28	399.95			
KENWOOD	KA-8006	70	20-20	0.2	0.2	76	2.5/2.5	250	2.5	0.15	0.57	8	30	17x6½x11½	29½	439.95			
	KA-6006	48	20-20	0.3	0.3	76	2.5/2.5	250	2.5	0.15	0.48	8	30	17x6½x11½	26	359.95			
	KA-4006	32	20-20	0.5	0.5	76	2.5/2.5	140	—	0.15	0.28	8	30	17x6½x12	24	259.95			
	KA-1400G	14	50-20	0.8	0.8	68	2.5/2.5	80	3	0.15	0.32	8	30	14½x5x10	11½	159.95			
	(B) 70017	170	20-20	0.1	0.1	100	—	—	—	—	0.36	8	40	17½x8x14½	59½	749.95			
LAFAYETTE	(Q) LA-84	20	20-20	0.5	1	60 65	6/4	12/84	0.5	*	8-16	8	—	15½x13x4	19	349.95		4-chan. SQ full logic; optional CD-4 demodulator; *Phones output level variable.	
	LA-1050	22	20-20	0.5	1	60 65	2.5/6	42/85	0.5	*	8-16	8	—	11	149.95		Headphone jack has 4-chan. ambience matrix.		
	LA-475	10	40-20	0.8	1	130/3.5			0.35	*	8-16	8	—	12½x10½x4½	10	99.95		*As above. 4-chan. ambience matrix. * As above.	
LEAK (ERCONA)	2100	30	10-40	0.1	0.1		2.2/6	*	0.83			4-8	40	16½x12½x5½	17½	495.00		*Input overload margin +35 dB	
	2200	45	10-40	0.1	0.1		2.5/6.5	*	1.0				40	16½x12½x5½	20	650.00		*As above	
LUXMAN	(B) M-6000	300	20-20	0.05	0.05							8	100	22x17x9	115	2995.00		LED Peak Indicator	
	(B) M-4000	180	20-20	0.05	0.05							8	100	19x15x7	68	1495.00		LED Peak Indicator	
	(B) M-2000	110	20-20	0.05	0.05							8	70			995.00		LED Peak Indicator	
	(B) M-1500	75	20-20	0.05	0.05							8	50	19x10x7	34	795.00			
	L-100	110	20-20	0.05	0.05	65	3/3	450/450		0.18		8	50	19x14x7	42	995.00		Touch Muting	
	L-309	75	20-20	0.1	0.05	65	2.5/2.5	300/300		0.1		8	40	19x12x6	28	795.00		Linear Equalizer	
	L-507	50	20-20	0.1	0.05	65	2.4/2.4	300/300		0.1		8	40	18x11x7	25	495.00			
MARANTZ	11500	75	20-20	0.1	0.1	78	1.8	300	1.8	.18		8	8	45	15½x12½x5½	33	549.95		Incl. Dolby
	1150	75	20-20	0.1	0.1	78	1.8	300	1.8	.18		8	8	45	15½x12½x5½	33	449.95		
	1070	35	20-20	0.3	0.3	78	1.8	120		.18		8	8	45	14½x10½x4½	19	279.95		
	1040	20	20-20	0.3	0.3	78	2.1	120		.15		8	8	45	14½x10½x4½	16	199.95		
	1200B	100	20-20	0.1	0.1		1.35		1.35	.13		8	8	100	15½x12½x5½	31	699.95		
	(B) 510	256	20-20	0.1	0.1							8	100	15½x12½x5½	46	899.95		With meters 999.95	
	(B) 250M	126	20-20	0.1	0.1							8	100	15½x12½x5½	28	549.95		Incl. meters.	
	(B) 140	75	20-20	0.1	0.1							8	60	14½x10½x4½	24½	299.95		incl. meters.	
	(Q) 4140	25	20-20	.3	.3		1.8	110		.18		8	8	40	15½x12½x5½	33	549.95		4-channel meters
	(Q) 4070	15	40-20	.9	.9		2.0	100		.15		8	8	40	14½x10½x4½	25	299.95		

Amplifiers

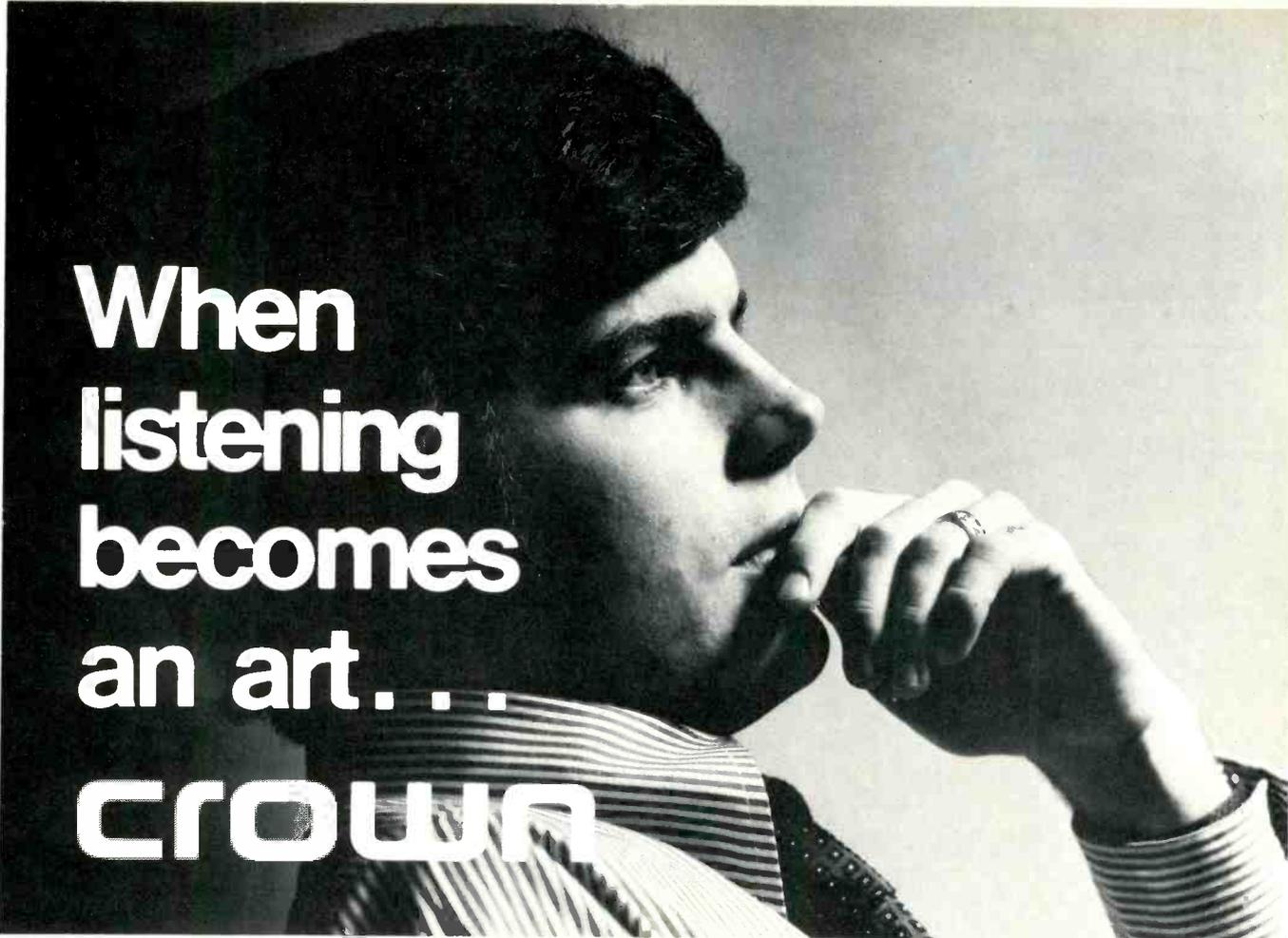


Nikko Beta

Pioneer SA-9900

SAE Mk 2500

MANUFACTURER	MODEL	FTC power/ch. - 8 ohms, watts		Freq. range for rated power, Hz - kHz		Highest THD from 0.25W to rated power, %		S/N phono, re 10 mV input, dB		Phono sensitivity, in mV, Phono 1, phono 2		Phono overload, in mV, Phono 1, phono 2		High level input, V		Headphone output level, V		Headphone load impedance		Output impedance, ohms		Damping factor, 1 kHz		Dimensions, in inches		Weight, lbs. (net)		Price, \$		NOTES
		50	10-20	0.02	0.03																									
NAIM (AUDIOPHILE SYSTEMS)	(B) NAP 160	50	10-20	0.02	0.03												32	17x11 ⁷ / ₈ x4 ³ / ₈	18	799.00										
NIKKO	TRM-800	60	20-20	0.3	0.3	65	2.5/2.5	300/300		0.180				8			8	18x6x13 ³ / ₈	27 ¹ / ₂	379.95										
	TRM-600	28	20-20	0.5	0.5	65	2.2/2.2			0.160				8			30	15x6x12	17	239.95										
OLSON	AM 473	15	50-20	0.9	0.7	55	2.5	38		0.175	3.8	16	8	28	16 ¹ / ₂ x5 ¹ / ₈ x10 ¹ / ₂	20	189.95													
	AM 479	15	50-20	0.7	0.7	55	2.5	38		0.175	3.8	16	8	28	18 ¹ / ₂ x4 ³ / ₈ x11 ¹ / ₄	15	114.98													
ONKYO	A-7022	54	20-20	0.5	0.05	75	*	300		0.1				4/16	80	16 ¹ / ₂ x5 ¹ / ₈ x14 ¹ / ₂	29	359.95									*1.2/2.4/4.8			
	A-7055	23	20-20	0.5	0.05	75	*	230		0.1				4/16	80	16 ¹ / ₂ x5 ¹ / ₈ x14	25	239.95									*1.2/2.4/4.8			
PAOLI	(B, T) 60M	50	20-20	1.0	1.0	-	-	-		-	-	-	-	*	-	14x9x7 ¹ / ₂	28	300.00									Single channel; *4, 8, 16			
PHASE LINEAR	700B	345	20-20	.25	.25									4-16	1000	19x7x10	45	799.00												
	400	201	20-20	.25	.25									4-16	1000	19x7x10	35	499.00												
PILOT	225	25	20-20	0.5	0.5	65	2.5			0.3				8		15x11x5		259.90												
PIONEER	(B) SPEC 2	250	20-20	0.1	0.1	-	-	-		-	-	-	-	4/8	70	19x13 ¹ / ₂ x7	-	899.95										Peak level meters		
	SA-9900	110	20-20	0.1	0.1	70	2.5/10	550/1000		6/24	0.15	-	low	4/8	30	16 ¹ / ₂ x16x6 ¹ / ₂	44	749.95									3-pos. turnover, tone controls			
	SA-9500	80	20-20	0.1	0.1	70	2.5/10	250/500		6/24	0.15	-	low	4/8	30	16 ¹ / ₂ x14x6 ¹ / ₂	38	499.95									100W @ 4 ohms.			
	SA-8500	60	20-20	0.1	0.1	70	2.5/10	200/400		7.5/15	0.15	-	low	4/8	30	16 ¹ / ₂ x13x6	28 ³ / ₄	399.95									75W @ 4 ohms.			
	SA-7500	40	20-20	0.3	0.3	70	2.5/2.5	200/200		7.5	0.15	-	low	4/8	25	16 ¹ / ₂ x13x6	26 ¹ / ₂	299.95									45W @ 4 ohms.			
	SA-5200	10	20-20	0.8	0.8	70	2.5	100		-	0.15	-	4/16	4/8	30	16 ¹ / ₂ x13x5 ¹ / ₂	16	138.95												
(Q) QA-800A	20	20-20	0.5	0.5	80	2.5/2.5	-		-	0.2	-	4/8	4/8	40	17x13 ¹ / ₂ x5 ¹ / ₂	24	399.95													
(B, D) QM-800A	25	20-20	0.5	0.5	-	-	-		-	-	-	-	4/8	65	17x13 ¹ / ₂ x5 ¹ / ₂	26	279.95											4 meters.		
QUINTESSENCE	(B) Power Amp. II	150	6-20	0.05	0.05	-	-	-		-	-	-	-		250	16x14x6	70	1200.00												
	(B) Power Amp. I	75	6-20	0.05	0.05	-	-	-		-	-	-	-		250	15x14x5	37	850.00												
RADFORD (AUDIOINICS)	HD250	50	20-20	.15	.02	90	1.5/-	270		0.1			4*	4.8	50	17x4 ¹ / ₂ x11	21	730.00										Preamplifier section sold as model 2D22, * or higher.		
	2D2100	75	20-20	.02	.01	90	1.5/-	270		0.1			4*	4.8	100	17x4 ¹ / ₂ x11	28	950.00									Direct coupled. *As above.			
	2D100	90	20-20	.02	.01					1.0			4*	2.8	100	17x7x12	26	795.00									Direct coupled.			
	2D200	150	20-20	.02	.01					1.0			4*	2.8	100	17x7x12	35	1050.00									As above.			
RADIO SHACK	SA-1000	20	20-70 +1.5,-4	0.9	0.2*	-60	1.7/3.4							8		4 ¹ / ₈ x15 ¹ / ₂ x11 ¹ / ₂		159.95									* @ 15W			
REVOX	(B) A722	60*	40-15	0.2		90				0.75	4.5	8			15	9 ¹ / ₂ x12 ¹ / ₂ x6 ¹ / ₂	20	525.00									* @ 4 ohms.			
ROTEL	RA-312	18	50-20	1.0	0.5	65	2.8/-	110		0.16			8-16		40	16x9 ¹ / ₈ x4 ¹ / ₂	11	179.95												
	RA-412	25	20-20	0.5	0.5	70	2.5/2.5	120/120		0.15			8-16		40	16x9 ¹ / ₈ x4 ¹ / ₂	13.2	219.95												
	RA-612	35	20-20	0.5	0.15	70	2/2	130/130		0.15			8-16		50	17 ¹ / ₂ x12x5 ¹ / ₂	18.7	289.95												
	RA-812	45	20-20	0.3	0.15	70	2/4	180/180		0.12			8-16		50	17 ¹ / ₂ x12x5 ¹ / ₂	20.9	359.95												
	RA-1212	70	20-20	0.3	0.08	75	2/4	200/200		0.12			8-16		70	17 ¹ / ₂ x12x5 ¹ / ₂	28.6	449.95												
	RA-1412	110	20-20	0.1	0.08	75	2/4	250/250		0.12			8-16		80	21 ¹ / ₂ x17 ¹ / ₂ x7 ¹ / ₂	49.5	749.95												
SAE	B25/2500	300	20-20	0.05	0.05	100	-	-		1.84	-	-	4-16	150	19x15x7	58	1250.00											FTC rating, 4 ohms, 450/ch. 2500, professional model, has rack mount, handles.		
	33	75	20-20	0.1	0.1	75	1.3	100		.16	-	10	low	4-16	150	17x11x6	25	450.00										Tape dubbing, front panel tape inputs.		
	B 4DM	100	20-20	0.1	0.1	100	-	-		1.50	-	-	4-16	150	17x13x5 ¹ / ₂	32	600.00											Direct-reading power meters, thermal protection, full complementary circuit.		
	B 3CM	200	20-20	0.1	0.1	100	-	-		1.50	-	-	4-16	150	17x13x5 ¹ / ₂	50	1000.00											Feedback gain controls, relay speaker protection, Direct-reading power meters.		
	B 31B	50	20-20	0.1	0.1	100	-	-		1.0	-	-	4-16		15x8x4 ¹ / ₂	14	250.00											Full complementary circuit, thermal protection.		



When listening becomes an art... CROWN

The ideal component is not a performing instrument. It achieves the ultimate when it adds nothing to the music. Zero noise, zero distortion, zero anything. This "nothingness" concept is CROWN's goal through the tortuous, painstaking production route each product takes at CROWN.

The payoff is at the end of the line: CROWN's 18-point Proof of Performance sheet... a unique guarantee. First, as with most things at CROWN, it is completed and signed

by hand (not a stamp, not a number)... by a real, live person*! And no technician will sign that sheet unless the guaranteed performance specs have been verified.

A CROWN owner gets a product better than he was promised! Unbelievable? Not to a CROWN owner. That's why he buys another CROWN... and another. Getting something more is a pleasant surprise in these days of "push-it-thru" production philosophy. A casual observer of a CROWN production line might say we have a complex about hands. Hands are

everywhere. Young hands, nimble fingers, painstaking hands. CROWN builds with hands... tests with machines. CROWN people are responsible people. That's why John Bachman's technicians won't sign your Proof of Performance sheet unless the product performs as promised... or better.

CROWN. Maker of highest quality power amps, input and output control centers, tape decks, electronic crossovers and electrostatic speaker systems.

*John Bachman, supervisor of the recorder set-up and inspection department, graduate of DeVry Institute of Technology in Chicago; twenty-five years old, with Crown five years.

John and his team of inspectors do their utmost to make sure you will never have a reason to complain!



CROWN

Box 1000

Elkhart, IN. 46514

Check No. 17 on Reader Service Card

Amplifiers



Sansui BA-5000



Technics SE-9600



Yamaha B-1

MANUFACTURER	MODEL	FTC power/chan., 8 ohms, watts		Freq. range for rated power, Hz, kHz		Highest THD from 0.25W to rated power, %		S/N phono, re 10 mV input, dB		Phono sensitivity, in mV, Phono 1, Phono 2		Phono overload, in mV, Phono 1, Phono 2		Mike input sens., mV		High level input, V		Headphone output level, V		Headphone load impedance		Output impedance, ohms		Damping factor, 1 kHz		Dimensions, in inches		Weight, lbs. (net)		Price, \$		NOTES		
		Power	Chans.	Hz	kHz	0.25W	Rated	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2	Phono 1	Phono 2			
SANSUI	(B) BA-5000	300	20-20	0.1	0.1								0.7				*	10	19x18 ³ / ₈ x8 ¹ / ₂	108	1299.95									Power meters; 600W mono; *Outputs at 4, 8, 16.				
	(B) BA-3000	170	20-20	0.05	0.05								0.7				4.8	100	18 ¹ / ₈ x15 ¹ / ₂ x7	49.8	899.95								Power meters; 340W mono.					
	AU-20000	170	20-20	0.05	0.05	70	**	350/350					0.13						18 ¹ / ₈ x15 ¹ / ₂ x7	49.8	999.95									Power meters; *Outputs at 4, 8, 16 ohms. **1.5, 3, 6/1.5, 3, 6 mV.				
	AU-11000	110	20-20	0.08	0.08	65	**	300/300					0.13						18 ¹ / ₈ x14 ¹ / ₂ x6 ¹ / ₂	42.5	749.95									**As above.				
	AU-9900	80	20-20	0.08	0.08	65	**	300/300					0.13						18 ¹ / ₈ x14 ¹ / ₂ x6 ¹ / ₂	39.7	599.95									**As above.				
	AU-7700	55	20-20	0.1	0.15	75	2.5/2.5	300/300					0.1/0.8					8	30	17 ¹ / ₈ x12 ¹ / ₂ x5 ¹ / ₂	27.1	399.95												
	AU-6600	42	20-20	0.15	0.15	70	2.5	300/300					0.1/0.8					8	30	17 ¹ / ₈ x12 ¹ / ₂ x5 ¹ / ₂	24.9	359.95												
	AU-5500	32	20-20	0.15	0.2	70	2.5	200					0.1/0.8					8	30	17 ¹ / ₈ x12 ¹ / ₂ x5 ¹ / ₂	22.9	299.95												
	AU-4400	20	40-20	0.3	0.5	70	2.5	100	2.5				0.15					8	50	15 ¹ / ₂ x9 ¹ / ₂ x4 ¹ / ₂	13.9	199.95												
AU-2200	10	40-20	0.8	1.0	65	2.5	100	2.5				0.15					8	30	15 ¹ / ₂ x9 ¹ / ₂ x4 ¹ / ₂	12.1	149.95													
SCHOBBER	(B) TR-3D	70	5.40 ±.5	0.1	.07	85							.15-1.0*					4-16	28	5 ¹ / ₂ x11 ³ / ₈ x8	17 ¹ / ₂	240.00(K)									*Adjustable.			
	(B) TR-3M	70	5.40 ±.5	0.1	.07	85							.15-1.0*					4-16	28	5 ¹ / ₂ x11 ³ / ₈ x8	16 ¹ / ₂	176.00(K)									*Adjustable, mono.			
H. H. SCOTT	A236S	15	20-20	0.5	0.5	60	2.5	55				0.15					150	8	35	15 ¹ / ₂ x9 ¹ / ₂ x5 ¹ / ₂	12	159.95												
SHERWOOD	SEL-400	85	20-20	0.25	0.25	104	2.4, 5, 9/2	100/100	2.3			.15						all		30	14 ¹ / ₂ x9 ¹ / ₂ x5	33	Under 400									Dynaquad, hi & lo fltrs, remt. spkrs		
	S-9400	40	20-20	0.8	0.6	74	1.8/1.8	80/80	2.1			.20						all		40	17 ¹ / ₂ x14x5 ¹ / ₂	29	Under 300									Dynaquad, hi & lo fltrs.		
SONY	TA8650	80	20-20	0.1	0.1	82	**	175/310/7				0.2	0.15	0.1	*	8		8	80	6 ¹ / ₂ x17 ³ / ₈ x16 ¹ / ₂	44 ¹ / ₂	1300.00									*Accepts high or low impedance phones. Phone output levels shown at 8 ohms. **2.5/4.5/0.1 (head amp). V-FET circuitry.			
	TA-1130	50	20-20	0.1	0.1	88	1.2/1.2	70/70				0.13	0.3	*	8	100		8	100	6x15 ¹ / ₂ x13	18 ¹ / ₂	430.00									*As above.			
	TA-4650	30	20-20	0.1	0.1	82	2.5/2.5	300/300				0.15	0.3	*	8	45		8	45	6 ¹ / ₂ x17x12 ¹ / ₂	25 ¹ / ₂	400.00									*As above. V-FET.			
	TA-1150	30	20-20	0.2	0.2	84	2.0/2.0	70/70				0.14	0.4	*	8	100		8	100	6x15 ¹ / ₂ x13	18 ¹ / ₂	280.00									*As above.			
	TA-1055	20	40-20	0.5	0.5	84	2.0/-	70/-	2.0			0.25	0.3	*	8	22		8	22	4 ¹ / ₂ x16x11	13 ¹ / ₂	210.00									*As above.			
	TA-1066	15	40-20	0.8	0.8	82	2.5/-	70/-				0.25	0.3	*	8	22		8	22	4 ¹ / ₂ x16x11	13 ¹ / ₂	170.00									*As above.			
	(B) TAN-8250	150	20-20	0.1	0.1	100						1.0						8	250	6 ¹ / ₂ x17 ¹ / ₂ x16	55	1300.00									V-FET output.			
	(B) TAN-8550	100	20-20	0.1	0.1	100						1.0						8	200	6 ¹ / ₂ x17 ¹ / ₂ x16	41 ¹ / ₂	1000.00												
	(B) TA-3200F	100	20-20	0.1	0.1	110						1.4						8	170	6x15 ¹ / ₂ x12 ¹ / ₂	30 ¹ / ₂	400.00												
(B) TA-3140F	35	20-20	0.1	0.1	110						0.85						8	100	6x8x12 ¹ / ₂	14 ¹ / ₂	200.00													
STAX (DISCWASHER)	(B) OA-300	150*	DC-150k	0.02	0.02	100**												4-32	800	17x15x11	90	3600.00									*Class A; **Re high level input. Meters; stepped output atten., 40-watt limiter.			
SUPERSCOPE	A-235	3	30-15	1.0	-		3													15x5x7	6 ¹ / ₂	89.95												
	A-245	8	20-30	1.0	-		2.5													15x5x7	8	119.95												
	A-260	12	20-40	1.0	-		2													15x5x12	15 ¹ / ₂	189.95												
TECHNICS BY PANASONIC	(B) SE-9600	110	20-20	0.08	0.08								1.0						*													Constant voltage and current power supply, fast response peak level power output meters with switchable ranges, thermo-sensitive output warning indicators. *Variable output impedance (damping factor).		
TOSHIBA	SB-500	25	50-20	0.4		65														20	15 ¹ / ₂ x12 ¹ / ₂ x5	16	249.95								Incl. equal. for capacitance pickup., mike mixing.			
	(Q) SB-404S	9	50-20	0.8	0.8															20	15 ¹ / ₂ x12x5	16	299.95								Equal. for cap. pickup, decoder for SQ, QS.			
YAMAHA	B-1	150	20-20	0.1	0.1															4-16	100	18x15 ¹ / ₂ x6		1600.00							FET power output; separate on/off switches and level controls for 5 sets of spkrs. Meters. Opt. class A operation w/front panel switch; FET phono eq. amps; cont. var. loudness comp.; dual tape ckt. *No load.			
	CA1000	70	20-20	0.1	0.1	80	3/3	310/310	2.5	0.12	25.3*	270	4-16	70	17 ¹ / ₂ x5 ¹ / ₂ x12 ¹ / ₂					70	17 ¹ / ₂ x5 ¹ / ₂ x12 ¹ / ₂	34.2	600.00							Optional class A operation; Cont. var. loudness comp.; dual tape ckt.; separable amp and preamp. *No load.				
	CA800	45	20-20	0.1	0.1	80	3/3	310/310	2.5	0.12	21*	270	4-16	70	17 ¹ / ₂ x5 ¹ / ₂ x12 ¹ / ₂					70	17 ¹ / ₂ x5 ¹ / ₂ x12 ¹ / ₂	29.7	470.00							Cont. var. loudness cont.; dual tape ckt.; separable amp and preamp. *No load.				
	CA600	30	20-20	0.1	0.1	80	3/3	310/310	2.5	0.12	17.9*	270	4-16	70	17 ¹ / ₂ x5 ¹ / ₂ x12 ¹ / ₂					70	17 ¹ / ₂ x5 ¹ / ₂ x12 ¹ / ₂	24.2	330.00							separable amp and preamp. *No load.				
	CA400	20	20-20	0.1		75	3/3	135/135	3.0	0.15	14.7*	270	4-16	50	17 ¹ / ₂ x5 ¹ / ₂ x12 ¹ / ₂					50	17 ¹ / ₂ x5 ¹ / ₂ x12 ¹ / ₂	17.6	270.00							*No load.				

LUX offers three good reasons for the growing movement toward separate amplifiers and tuners.

Possibly the highest acclaim a receiver can be awarded is to have one or more of its elements compared favorably with its equivalent in a separate tuner, preamplifier, or power amplifier. Nevertheless, for most music lovers, a good receiver more than fulfills their requirements. But for a growing number of dedicated audiophiles, who are seeking the ultimate in music reproduction, nothing but separates will do.

They know what kind of power it takes to reproduce music's original wide dynamic range and high levels without peak clipping or distortion. (A barely detectable 3-dB increase in output level requires double the amplifier power.) A very powerful amplifier must have massive power-supply components to be able to deliver the large amounts of current demanded by high-level output circuits. The size and weight of the power transformers alone means receivers must leave off well below where really high power begins.

For those who want to hear their music at realistic sound levels, LUX audiophile/engineers have designed products such as the M-4000 power amplifier. This unit is capable of 180 watts per channel, and even with both channels driven simultaneously to full output into 8-ohm loads, each channel has no more than 0.05% harmonic and intermodulation distortion at any frequency from 20 to 20,000 Hz.

Sophisticated protection circuits react to the electronically-subtle differences between normal high-level audio signals and abnormal voltage/current conditions. Hence, the M-4000 won't be fooled into producing unpredictable and audible distortions when operating with certain reactive

loudspeaker loads. Each of the stages—Class-B output and Class-A drive—has independent power-supply sections to minimize intermodulation effects. And fully independent power-supplies for each channel maintain full wattage potential under large-signal drive conditions.

Similar considerations went into the design of the C-1000 preamplifier. Every parameter that contributes to sonic differences, subtle as well as obvious, was examined anew. Among them: phase linearity, rise time and small-signal overload. One result: the magnetic-phono input circuits are virtually overload-proof—accepting almost half a volt at 1000 Hz! Another: the phono-preamplifier circuits have astonishingly low distortion of 0.006%, and the rest of the preamplifier circuits add only 0.001% more.

The Luxman T-310 AM/FM stereo tuner has everything from calibrated Dolby circuits for decoding Dolbyized FM broadcast and tapes to variable AM muting. Among its typical specifications: an IHF-ratio sensitivity of 1.7 microvolts and an exceptional 2.2 microvolts for 50 dB of quieting. And special five-pole phase-compensating filters in the IF section contribute to a 1.5-dB capture ratio and exceptionally low distortion levels (0.1% mono, 0.12% in stereo).

Of course, it takes some technical knowledge to fully appreciate the design approaches described above. But only your ears are required to hear the end result. In either case, you may soon be among those who own one or more of the thirteen LUX power amplifiers, preamplifiers, integrated amplifiers or tuners. You'll

find them at a select number of dealers who are dedicated audiophiles themselves.

Luxman C-1000
Preamplifier,
\$895.

Luxman M-4000
Power Amplifier, \$1,495.

Luxman T-310
AM/FM Tuner,
\$595.



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Pre-Amplifiers



Audio Research SP-3A-1

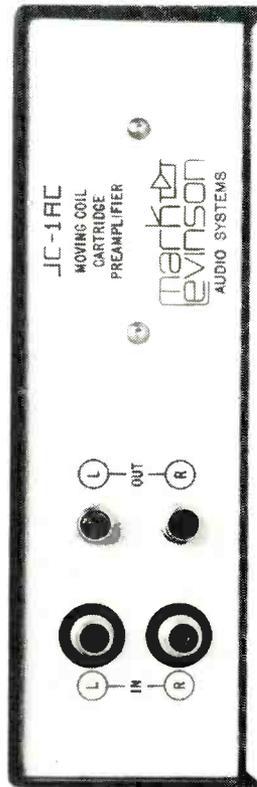
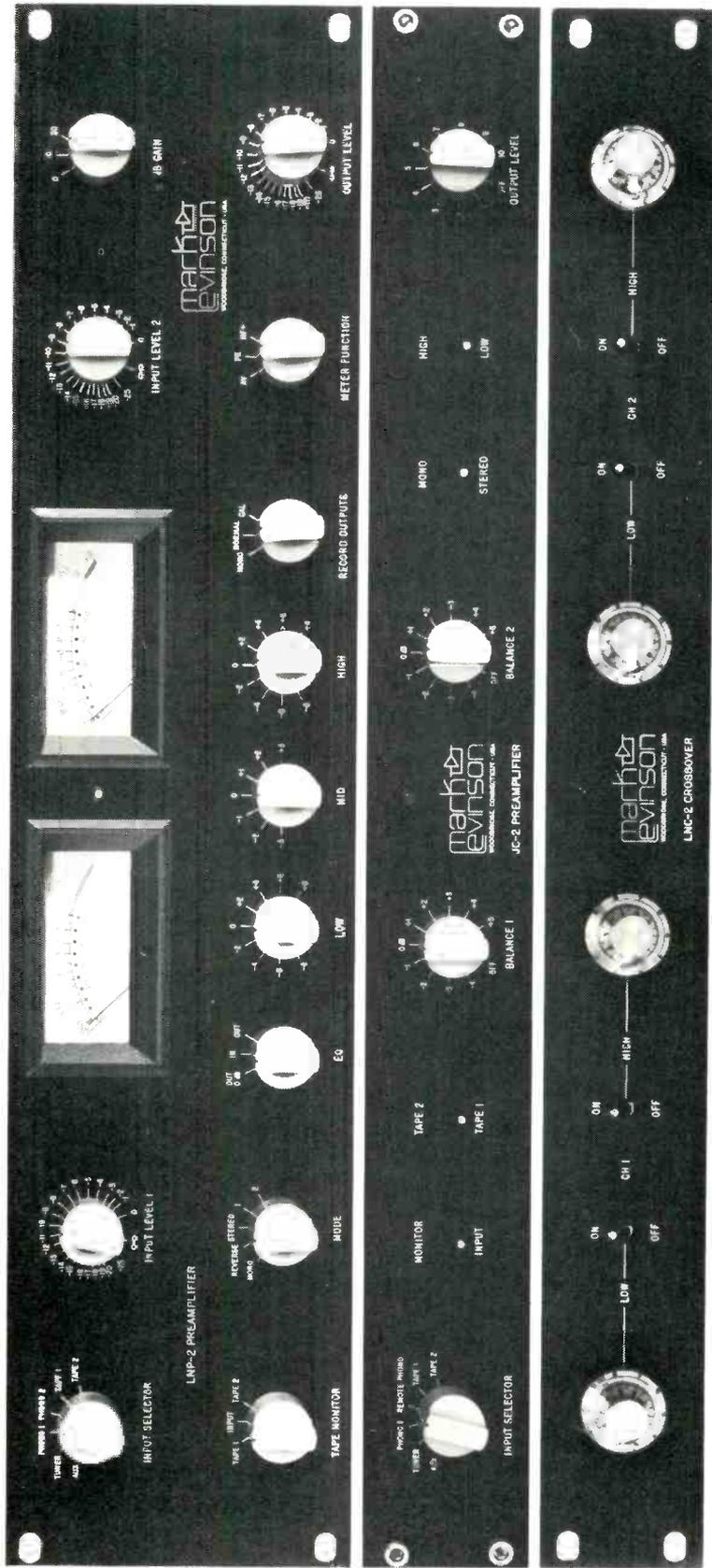


BGW 202



Bose 4401

MANUFACTURER	MODEL	Frequency response 2Hz - 20kHz, ±2 dB	Rated output, V	THD at rated output, %	IM at rated output, %	S/N ratio, phono, dB re 10 mV input	Phono sens., mV, phono 1/phono 2	Phono overload, mV, phono 1/phono 2	Mike input sens., mV	High-level sens., V	Tape mon. impedance, ohms	Tape mon. output level, V	Dimensions, in.	Weight, lbs.	Price, \$	NOTES
ACCUPHASE	L-200	20-20 ±0.2	2.0			2/6		2.0	200	0.2	18x6x14	31	600.00			
ACE AUDIO CO.	BSP	20-20 ±1	2	.05	.05	70	2.2	250	.1	50k	.2	11x8x3	3	136.00(W) 82.50(K)	High-gain model.	
	ZDP	0-67 +0.3	1	0	0	76	10.0	110	1.0	50k	.1	11x8x3	3	109.75(W) 82.50(K)	Low-gain model; no tone controls.	
AUDIO RESEARCH	(T) SP-3A-1	10-30±1	5	.005*	.008*	66**	6.5/6.5	300/300	.35	100k	.35	15½x5½x12½	14	695.00	*W/ tone controls out.	
	CA-1	10-30±1	10	.001	.001	110		*300				8x3x6	4	395.00	**Unweighted. Cartridge preamp (head amp). *30 dB gain.	
BGW SYSTEMS	202	20-20 ±0.5	4	.01	.01	82	1.5/1.5	100/100	—	0.2	600	10	5½x10½x19	20	569.00	Rack mount.
	201	20-20 ±0.5	4	.01	.01	82	1.5/1.5	100/100	—	0.2	600	10	5½x10½x19	20	399.00	Rack mount.
BOSE	(Q) 4401	20-20 ±0.2	2	0.2	0.2	86*	2.0/2.0	70/70	0.2			18x6x13	12	599.00	Provision for 3 built-in 4 chan. decoders; SQ decoder \$74.95, CD-4 decoder remote control, available. *A weighted	
BOZAK	919	20-20 ±0.25	10*	0.1	0.1	74**	2/2	250/250	0.3	.075	10k	#	17½x10½x7	21	797.00	*Across 200 ohms. **ref. to 10V output. #80mV nominal, max.=4V
C/M LABS	CC3	2-80 ±0.5	2	.05	.02	80	1.6/6.4*	100	0.2	250k	.25	19x5¼x9	12	450.00	*Adjustable.	
CROWN	IC-150	10-20 ±1	10	0.05	0.01	90	0.8-8*	33-330*	0.22	600		17x8½x5¼	10	349.00	*Adjustable, walnut cabinet optional	
DAYTON-WRIGHT	SPSMK3	7-250* ±1	1.5	.005	.002	80	0.004	130	0.6	10k	0.6	6x10x6½	7	430.75	No tone controls. *Phono input response.	
	SPL	7-500* ±1.5	1.5	.005	.002	70	.03/1.5	**	0.6	10k	0.6	13x10x6½	13	882.00	No tone controls. *As above.	
	DIV-535	9-500 ±1.5	.01	.002	.002	70	.03	**				2x10x7		392.50	**2.5/130, cont. adjustable. Pre-preamplifier (head amp) for moving cartridges. **As above.	
DUNLAP CLARKE	10	5-200 ±3	4	0.05	0.05	95	1.0	180	0.2	600		19x3½x12	12	599.00	Rack mount; walnut case, \$40.00	
OYNACO	PAT-5	10-50±1	2	.05	.05	70	2.7/2.7	100	2.0	.2	15k	.2	13½x11¼x4¼	13	325.00	Kit: \$199.00
	PAT-4	10-100±5	2	.05	.05	70	4.0	80	4.0	.2	600	.2	13½x9x4¼	10	199.00	Kit: \$119.00
	(T) PAS-3X	10-40±5	2	.05	.05	70	2.0	250	2.0	.2	47k	.2	13½x9x4¼	11	129.00(K)	Avail. only as kit.
EPI	TWD		5	.005	.005	86	1.8	150	2	0.25	600	0.25	18½x17x7½	47	2000.00	
	FOUR		5	.005	.005	82	1.8	150	—	0.25	600	0.25	18½x11x5¼	14	349.00	
GREAT AMERICAN SOUND	Thaetra	20-20 ±1	2	.01	.01	86	1.5/.06*	100/3	.18	600	.1	17x5¼x12	35	799.00	*Incl. servo head amp for moving-coil pickups.	
	Thoebe	20-20 ±1	2	.01	.01	86	1.5	100	.18	600	.1	17x5¼x10	25	369.00		
KENWOOD	700C	20-20	1.5	0.04	0.04	76	2.5/2.5	400/400	2.5	0.15	100k	.150	17¼x5¼x11¼	21	649.95	
LUXMAN	C-1000	2-80 -0.5	2	.007		65	2.5/2.5	450/450	0.15				19x10x7	22	895.00	Touch muting.
	CL-350	10-50 -1.0	2	.02		63	2.0/2.0	300/300	0.11				19x10x7	19	495.00	Low freq. trimmer.
MARANTZ	3800	20-20 ±.25	3	.02	.01	82	3	100	3	.3	150	3	15¼x5¼x12½	16	599.95	Incl. Dolby.
	3600	20-20 ±.25	3	.02	.01	82	3	100	3	.3	150	3	15¼x5¼x12½	15	499.95	
	3200	20-20 ±.5	3	.05	.05	76	1.8	200		.18	600	3	14¼x4¼x10¼	12	219.95	



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Pre-Amplifiers



Phase Linear 4000



Pioneer SPEC 1



Technics SU-9600

MANUFACTURER	MODEL	Frequency response Hz - kHz, ±2 dB	Rated output, V	THD at rated output, %	IM at rated output, %	S/N ratio phono, dB re 10 mV input	Phono sens., mV, phono 1/phono 2	Phono overload, mV, phono 1/phono 2	Mike input sens., mV	High-level sens., V	Tape mon. impedance, ohms	Tape mon. output level, V	Dimensions, in.	Weight, lbs.	Price, \$	NOTES
MARK LEVINSON AUDIO	LNP-2 JC-2														2250.00 1050.00	Complete specifications available from factory. As above.
NAIM (AUDIOPHILE SYSTEMS)	NAC 12	20-20 ±0.5	1	0.02	0.02	65	2						12x5½x4½	3	399.00	Optional phono board for moving coil p.u.
PHASE LINEAR	4000 2000	20-20 ±1 20-20 ±1	8 8	.25 .1	.25 .1	72 74	2/2 2.5	85/85 85	0.2 0.2	3k 3k	.2V .2V	19x7x10 19x5½x6	18 7	599.00 299.00		
PHILIPS	SC102A	2.80 ±1	2	.05	.02	80	*	250	—	.12	50k	.12	12½x4x9	6	299.50	*Phono sens. variable: 1.4-5V. Incl. opto-mute protect circuit.
PIONEER	SPEC-1 QC-800A(Q)	10-70 +0,-0.5 10-70 ±1	2/7 2.5	0.05/ 0.1 0.05	—	70 80	2.5/10 2.5/2.5	500/1000 —	2.5 —	0.15 0.15	2200 —	0.15 0.15	18⅞x7x16⅞ 16x5½x13¼	— 16½	499.95 279.95	RM, SQ decoders.
QUINTESSENCE	Preamplifier I	9-80 ±0.25	7	0.01	0.01	72	14	165			10k	10	11x14x4	10	500.00	
RADFORD (AUDIONICS)	2D22	20-20 ±1	1			96	1.5	270	—	0.1			17x4¼x10	12	499.00	
REVOX	A720	20-20 ±1	1.5	0.1		65	3/9*	30	*		100k	0.2	19¼x12¼x6¼	30	1665.00	Tuner preamplifier-control unit. Tuner frequency-synthesized digital. *Phono input level sens. adjustable. High level sens. adjustable 0.1 to 1.0V.
SAE	1B 1M 9B 30	10-100 ±0.25 10-100 ±0.25 10-100 ±0.25 10-100 ±0.25	2.5 2.5 2.5 2.5	0.02 0.02 0.02 0.03	0.02 0.02 0.02 0.03	80 80 80 72	2 2 2 3.1	100 100 100 100	— — — —	0.25 0.25 0.25 0.40	500 500 500 500	0.25 0.25 0.25 0.40	17x5¼x10¼ 17x5¼x10¼ 17x5¼x7 15x4¼x8	15 15 11 7	825.00 660.00 500.00 200.00	7-band eq. with tape eq.; fixed resistor volume control. Connections for external eq.; NAB standard VU meters. 7-band eq. with graphic display; front panel tape dubbing.
SANSUI	CA-3000	10-10	1.3	0.03	0.03	70	*	1000		0.13		0.13	18⅞x14⅞ x7⅞	29.3	699.00	2 meters. *1.5, 3, 6/1.5, 3, 6 mV.
SONY	TAE-8450 TA-2000F	10-100 +0,-1 10-100 +0,-2	1.0 1.0	0.03 0.03	0.05 0.05	86 88	* *	** **	0.16 0.5	0.15 0.11	1k 10k	0.15 0.1	6¼x17¼x13¼ 6x15¼x12¼	26 19¼	1300.00 580.00	*Switchable: phono 1, 1.5/4.5; phono 2, 1.5/4.5/0.16. **Switchable: phono 1, 140/400; phono 2, 140/400/13. *Switchable: 1, 2/0.006/1.2. **Switchable 300/15/300.
SOUNDCRAFTSMEN	PE 2217	5-100 ±25	7	0.01	0.01	84	1.0/1.0	105/105	—	0.1	600	*	20x7¼x11¼	28	499.50	*0.1 to 2. Two separate 10-octave equalizers. Two LED balancing circuits. 4 independent phono pre-amps. Double dubbing 100 dB S/N. Includes case or rack mounts.
STAX (DISCWASHER)	SRA-12S	10-60 ±1½	12	0.02	0.18	90	0.8/-	200/-		0.250			7x5x12	7	500.00	All direct-coupled FET; drives 2 Stax phones.
TECHNICS BY PANASONIC	SU-9600	2-100 ±.25	1*	0.02	0.02	73	2/1-3	**		0.1		0.1	7x17¼x14¼	23¼	629.95	*12V max. **900/450 to 1350 mV.
YAMAHA	C-1	10-50 ±0.2	.775	0.02	0.02		2/8	800/-	2.0	0.2	1000	.15	18⅞x15⅞x6¼	28¼	1800.00	All FET; built-in generator gives 4 sine waves, pink noise; peak read mtrs.; 30dB atten.; mtrs. & gen. may be used external.

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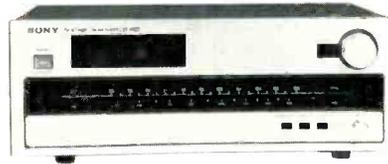
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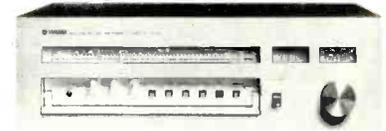
Tuners



Sherwood SEL-300



Sony ST-4950

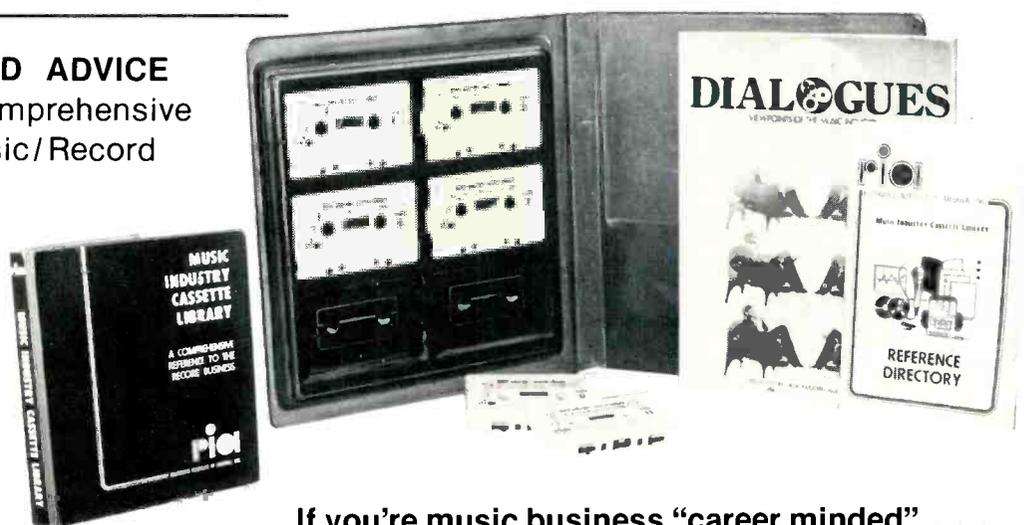


Yamaha CT-7000

MANUFACTURER	Model	IHF sensitivity, μ V, mono/stereo		Capture ratio, dB	Att. chan. selectivity, dB	AM suppress., dB	Signal for 50 dB mono/stereo	Stereo sep., 1 kHz, dB	Stereo sep., 10 kHz, dB	THD, mono, 100% mod, 1 kHz	THD, stereo, 100% mod, 1 kHz	Tuning indicator(s) type, how many	S/M ratio, max., at 200 μ V, mono/stereo, dB	Max. output level, V	De-emphasis (dB)	Dimensions, in.	Weight, lbs.	Price, \$	NOTES
		mono	stereo																
PILOT RADIO	211	1.8	1.5	65		5/40	38		0.4	0.8	2 Mtrs.	65/60	1	75	15x5x11		199.95	*Plus Pilotune.	
PIONEER	TX-9500	1.5/-	1.0	85	55	2.5/35	40	35	0.15	0.2	2 Mtrs.	80/76	*	25/75	16 $\frac{1}{2}$ x5 $\frac{7}{8}$ x14 $\frac{3}{8}$	20	399.95	Var. muting, PLL MPX. *Var output .07-2 V.	
	TX-7500	1.9/-	1.0	80	55	4/50	40	35	0.2	0.3	2 Mtrs.	73/68	*	25/75	16 $\frac{1}{2}$ x5 $\frac{7}{8}$ x14 $\frac{3}{8}$	18	249.95	Relay muting, PLL MPX. *Var output .05-1.5 V.	
	TX-6200	1.9/-	1.5	60	50	-	40	30	0.2	0.4	Mtr.	70/-	*	75	16 $\frac{1}{2}$ x5 $\frac{7}{8}$ x13 $\frac{3}{8}$	15 $\frac{1}{2}$	139.95	*Var. output .06-1.8 V.	
RADIO SHACK	TM-1000	2/-	2				35		.3	.3	Mtr.	65			4 $\frac{3}{8}$ x15 $\frac{1}{4}$ x11 $\frac{1}{2}$		159.95		
REVOX	A720	1/10	1	60	54		40		0.2	0.2	2 Mtrs.	70/-	1.5	75	19 $\frac{1}{2}$ x12 $\frac{1}{2}$ x6 $\frac{1}{2}$	30	1665.00	Tuner-preamplifier-control unit, frequency-synthesizing digital tuner.	
ROTEL	RT-224	4/-	4	50	50	7/-	35	30	0.5	1	Mtr.	60/-			13 $\frac{1}{2}$ x8 $\frac{1}{2}$ x4 $\frac{1}{2}$	6.6	139.95		
	RT-324	1.9/-	1.5	60	50	4/-	40	35	0.3	0.5	Mtr.	65/-			16x9 $\frac{1}{2}$ x4 $\frac{1}{2}$	7.7	179.95		
	RT-624	1.8/-	1.0	85	54	3.3/-	40	35	0.3	0.5	2 Mtrs.	70/-			17 $\frac{1}{2}$ x12x5 $\frac{1}{2}$	17.6	289.95		
	RT-824	1.6/-	1.0	85	55	3/-	40	35	0.3	0.5	2 Mtrs.	70/-			17 $\frac{1}{2}$ x12x5 $\frac{1}{2}$	19.8	359.95		
SAE	(F) 6B	1.6/3.0	1.5	140	100	3.6/28	50	38	0.1	0.15	Scope*	75/65	1.0	75	17x10 $\frac{1}{2}$ x5 $\frac{1}{2}$	20	1250.00	Butterworth i.f. filters, *digital readout, adjustable muting.	
	(F) 8	1.6/3.0	1.5	120	100	3.8/30	45	35	0.15	0.20	2 Mtrs.*	70/60	1.0	75/25	17x10 $\frac{1}{2}$ x5	18	650.00	IC i.f. filters, *digital readout, terms. for multipath scope.	
	(F) 32	1.6/3.5	1.5	100	100	4.2/32	42	32	0.15	0.20	*	67/57	1.0	75	17x7x5 $\frac{1}{2}$	12	350.00	*As above.	
SANSUI	TU-9900	1.5/-	1	90	58	3/-	50	40	0.06	0.08	2 Mtrs.	80/76	1	*	18x6 $\frac{1}{2}$ x12 $\frac{1}{2}$	21 $\frac{1}{2}$	449.95	*25, 50, 75	
	TU-7700	1.8/-	1.5	80		3/-	40	30	0.2	0.3	2 Mtrs.	75/-	.78	75/50	17x5x9 $\frac{1}{2}$	15 $\frac{1}{4}$	329.95		
	TU-5500	1.9/-	2	60		4/-	40		0.3	0.4	2 Mtrs.	70/-	.78	75/50	17x5x9 $\frac{1}{2}$	15 $\frac{1}{4}$	279.95		
	TU-4400	2/-	2			4/-	40		0.3	0.4	2 Mtrs.	70/-	.78	75/50	15 $\frac{1}{2}$ x4 $\frac{1}{2}$ x9 $\frac{1}{2}$	11	199.95		
H. H. SCOTT	(F) T33S	1.0/1.8	1.2	75	75	5/25	40		0.25	0.35	2 Mtrs.	75/70	1	50,75	17 $\frac{1}{2}$ x6x13	12	999.95	Frequency synthesizer, manual or card-programmed, automatic scanning, digital display.	
	T311S	2.5/5	2.5	55	55	5/25	35		0.6	0.8	Mtr.	60/50	1	50,75	15 $\frac{1}{2}$ x5 $\frac{1}{2}$ x9 $\frac{1}{2}$	10	169.95		
SEQUERRA	Model 1*	1.6/3	1	120	70	2.6/30	55	46	0.6	0.11	2*	73/69	1.2	*	19x7x14 $\frac{1}{2}$	46	2500.00	*Panoramic & tuning displays on scope; 75, 50 or 25 μ S de-emphasis.	
SHERWOOD	SEL-300	1.5/-	1.5	85	65	3.0/-	40	35	0.15	0.3	2 Mtrs.	70/65	1.0	75	16 $\frac{1}{2}$ x14x5 $\frac{1}{2}$	25	Under 500	Digital readout, var. mute	
	S-2400	1.8/-	1.5	65	60	3.5/-	40	35	0.8	0.5	2 Mtrs.	70/65	1.0	75	17 $\frac{1}{2}$ x14x5 $\frac{1}{2}$	24	Under 250	Var. output, 4-chan. output.	
SONY	ST-5130	1.5/-	1.0	100	60	2.3/-	42		0.2	0.3	2 Mtrs.	75/-	2	75	6x15 $\frac{1}{2}$ x13 $\frac{1}{2}$	16 $\frac{1}{2}$	370.00		
	ST-4950	1.9/-	1.0	80	53	4.0/-	40	30	0.15	0.3	2 Mtrs.	70/-	2	75	6 $\frac{1}{2}$ x17x13	17	350.00		
	ST-5150	2.0/-	1.0	70	56	2.7/-	40		0.3	0.5	2 Mtrs.	70/-	2	75	6x15 $\frac{1}{2}$ x13 $\frac{1}{2}$	15 $\frac{1}{2}$	280.00		
	ST-5055	2.2/-	1.0	70	45		35		0.4	0.6	Mtr.	68/-	2	75	4 $\frac{1}{2}$ x16x11	10 $\frac{1}{2}$	210.00		
	ST-5066	2.2/-	1.5	55	45		35		0.5	0.8	Mtr.	68/-	2	75	4 $\frac{1}{2}$ x16x11	10 $\frac{1}{2}$	170.00		
	STC-7000	1.7/-	1.0	100	60		40		0.3	0.5	2 Mtrs.	70/-	2	75	5 $\frac{1}{2}$ x18 $\frac{1}{2}$ x13 $\frac{1}{2}$	22 $\frac{1}{2}$	590.00	Includes preamp.	
SUPERSCOPE	T-220	2.8	4	45	35	7/40	32	20	0.5	1.0	Mtr.	65/55	-	75	14x5x13	15 $\frac{1}{2}$	179.95		
	T-210	5	6	25	35	10/55	30	15	1.0	1.5	Mtr.	60/-	-	75	14x5x8	5 $\frac{1}{2}$	119.95		
TOSHIBA	(F) ST-910	1.8/-	1	70	65		40		0.16*	0.2		75/-			17 $\frac{1}{2}$ x5 $\frac{1}{2}$ x13 $\frac{1}{2}$	17 $\frac{1}{2}$	1800.00	Digital display, crystal oscillator, auto tuning, Sensitized-glass touch switches for all functions. 3-level signal-strength indicators. 3-level muting control. * @ 400Hz.	
	ST-410	2.0/-	1.5	60	50		40		0.5*		2 Mtrs.	40/-			15 $\frac{1}{2}$ x4 $\frac{1}{2}$ x13	12 $\frac{1}{2}$	239.95	* @ 400Hz.	
YAMAHA	CT 7000	2.0/-	1.0	80	60		50	35	.06/-	0.06	2 Mtrs.				17 $\frac{1}{2}$ x5 $\frac{1}{2}$ x12 $\frac{1}{2}$	28 $\frac{1}{2}$	1200.00	7-gang tuning capacitor, i.f. bandwidth switchable, MPX noise filter, auto touch tuning, multipath scope terminals. Dual outputs.	
	CT-800	1.7/-	1.0	80	55		45	35	.15/-	0.30	2 Mtrs.				17 $\frac{1}{2}$ x5 $\frac{1}{2}$ x12 $\frac{1}{2}$	16 $\frac{1}{2}$	370.00	As above, less cap, tuning and swit. bandwidth.	
	CT-600	2.0/-	1.5	75	55		40	28	.3/-	0.5	2 Mtrs.				17 $\frac{1}{2}$ x5 $\frac{1}{2}$ x12 $\frac{1}{2}$	16 $\frac{1}{2}$	270.00	As above.	
	CT-400	2.0/-	2.0/-						.3/-	0.5	2 Mtrs.				17 $\frac{1}{2}$ x5 $\frac{1}{2}$ x11 $\frac{1}{2}$	11	210.00		

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Receivers



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B & O 4000



Craig 5502

- NOTES: (1) All models solid-state except where mod. no. is preceded by (T).
 (2) (K) indicates kit price; (W) wired.
 (3) All models FM/AM except FM-only where preceded by (F).
 (4) (Q) with mod. no. means 4-channel.

MANUFACTURER	Model	Ave. power/ch. into 8 ohms, W, as per FTC rule		Max THD 0.25 W, rated power, %	Max IM 0.25 W, rated power, %	Freq. range for FTC-rated power, Hz/kHz	S/N, phono, re 10 mV input, dB	Phono sens., mV	Phono overload, mV	IHF sens., tuner, mono/stereo microvolts	Capture ratio, dB	Signal for 50 dB S/N, mono/stereo	THD mono, 100% mod, 1 kHz, %	THD stereo, 100% mod, 1 kHz, %	De-emphasis, μ S	Alt. clean, selectivity, dB	Tuning aids, no. & type	S/N ratio, mono/stereo, dB	Dimensions, in.	Weight, lbs.	Price, \$	NOTES
		50	30																			
AKAI	(Q) AS-1080DB	*				20-20			1.8/-	1.0				50	80	Mtr.					895.00	*40 w/ch. in 4-chan., 80 w/ch. in stereo. *25 w/ch. in 4-chan., 50 w/ch. in stereo.
	(Q) AS-1070	*				20-20			2/-	1.0				50	70	Mtr.					695.00	
	AA-1050	50				20-20			1.8/-					50	80	2 Mtrs.			17x5x13	28	450.00	
	AA-1030	30				20-20	80	3	1.9/-	1.5		0.2	0.4	50	70	2 Mtrs.	70				350.00	
	AA-1010DB	13				40-20			2/-			0.4	0.8	50	60	2 Mtrs.					299.95	
	AA-810DB	10				20-20	75	2.5	2/-	3		0.4	0.8	50	65	Mtr.	70				249.95	
BANG & OLUFSEN	Beomaster 4000	60*	0.4	0.3	40-20	58	3	2/-	3					50	55	Mtr.	70*	3x23x10%	22%	595.00	*Power @ 4 ohms, S/N at 10 kHz, 100 μ V.	
	Beomaster 3000-2	40*	0.6	0.6	40-20	60	3	2/-	3					50	55	Mtr.	70*	3x23x10%	19%	495.00		
CAMBRIDGE AUDIO	1500	5	1.0	1.0	50-20	60	2.8	28	3.5/12	3.5	8/20	0.8	1.0		40	Mtr.	62/62	17x6x10%	14	179.95		
	2500	25	0.9	0.9	20-20	70	4	40	2.5/8	3	6/15	0.8	0.9		50	Mtr.	70/65	17x6x11	23	279.95		
C/M LABS	RR805	54	0.3	0.2	20-20	65	2.2	125	1.8/7	1.5	5/30	0.5	0.5	50/75	70	2 Mtrs.	65/63	19x5x4x14	36	600.00		
CONCORD (Benjamin)	CR-50	5	2		20-25	55	3		4.5/-	6		1.0	1.5		40	Mtr.		16x11x4x4	9%	129.95	Mag. phono input; tape mon. swit.; spkr. sel. Fine tuning; duo-glo ind.; black-out dial. Fine tuning; duo-glo ind.; elec. crt. brkr. Same as above.	
	CR-110	7	1		27-30	60	2.8		3/-	3		0.8	1.5		50	Mtr.		15x11x5x5	9%	164.95		
	CR-210	12	1		20-30	58	2.8		2.9/-	2		0.6	1		43	Mtr.		16x12x5x5	16	219.95		
	CR-260	25	1		20-35	60	2.5		2.3/-	1.5		0.5	1		46	2 Mtrs.		18x15x5x5	20	269.95		
CRAIG	5501	17	0.9		10-40	60	2.5	150	2.5/-			0.5	1.0	75/25		Mtr.		19x5x13	16%	199.95		
	5502	25	0.9		10-40	60	2.5	150	2.0/-			0.5	1.0	75/25		2 Mtrs.		19x5x13	19	249.95		
GTE SYLVANIA	RS4744	60	.25	.5	20-20	70	2.2	80	1.8/3.5	1.5	3/35	.4	.4	75	55	2 Mtrs.	67/65	17x6x15	29	479.95		
	RS4743	30	.25	.5	20-20	70	2.2	80	1.8/3.5	1.5	3/35	.5	.5	75	55	Mtr.	67/65	17x6x15	27	349.95		
	RS5742	20	.5	.8	20-20	70	2.2	80	1.9/4	1.5	3/35	.5	.5	75	45	Mtr.	65/60	18x5x13x3	27	279.95		
	RS5741	10	.5	.8	40-20	70	2.2	80	1.9/4	1.5	3/35	.5	.5	75	45	Mtr.	65/60	18x5x13x3	23	199.95		
	RS5740	5	1.0		60-20	56	2.2	50	4/6.5	6.5		.5	.7	75	50	MPX ind.	60/55	18x5x12	17	159.95		
	(Q) RQ4748	50	0.5	0.5	20-20	60	2.6	90	1.9/3.5	1.5	2.8/35	.5	.5	75	55	2 Mtrs.	67/60	21x6x6x15	44	699.95		
	(Q) RQ4747	25	0.5	0.5	20-20	60	2.6	90	1.9/3.5	1.5	2.8/35	.5	.5	75	55	2 Mtrs.	67/60	21x6x6x15	38	599.95		
	(Q) RQ4746	15	1.0	1.0	20-20	50	3	60	2.3/4	1.5	3/40	.3	.3	75	50	2 Mtrs.	67/60	17x6x15	27	479.95		
	(Q) RQ4745	7.5	1.0	1.0	30-20	50	3	60	2.3/4	1.5	3/40	.3	.3	75	50	Mtr.	67/60	17x6x15	27	399.95		
	HEATH	AR-1500A	60	0.25	0.1	20-20	63	1.8	145	1.8/-	1.5		0.5	0.5	75	90	2 Mtrs.	60/58	18x13x7/8	32		399.95(K)
AR-29		35	0.25	0.2	20-20	65	2.2	155	1.8/-	1.5		0.5	0.5	75	70	2 Mtrs.	60/58	16x14x5x5/8	26.5	329.95(K)	Modular construction, 9-pole L-C FM filter, preassembled front-end, 2 spkr. switches.	
AR-1302		20	0.25	0.25	20-20	65	2.4	155	1.9/-	1.8		0.5	0.5	75	60	2 Mtrs.	60/55	16x14x5x5/8	26.5	279.95(K)	Modular construction, ceramic filters, preassembled front-end, 2 spkr. swit.	
AR-1214		15	0.5	0.5	20-20	60	2.0	75	2.0/-	2.0		0.5	0.75	75	60	-	60/55	17x13x3x3/8	13	199.95(K)	Ceramic filters, PLL MPX	
AR-2020Q		15	0.5	0.5	20-20	60	2.0	75	2.0/-	2.0		0.5	0.75	75	60	-	60/55	20x14x5	24	269.95(K)	Modular construction, ceramic filters, PLL MPX, AM, SQ decoder.	
HITACHI	SR-302	15	0.8	0.8	40-20	70	2.5	100	1.9/-	1.0	10/35	0.2	0.4	75	46	Mtr.	70/-	17x5x5x13x3	18%	219.95		
	SR-502	22	0.8	0.8	40-20	70	2.5	100	1.9/-	1.0	9/34	0.2	0.4	75	46	Mtr.	70/-	17x5x5x13x3	18%	269.95		
	SR-802	50	0.3	0.3	20-20	74	2.5	100	1.7/-	1.0	8/32	0.15	0.25	75	80	2 Mtrs.	74/-	19x5x15x5	26%	399.95		

Receivers



JVC 4VR-5456



KLH Fifty-Two



Leak 2000



Kenwood KR-9940



MX 1661

- NOTES: (1) All models solid-state except where mod. no. is preceded by (T).
 (2) (K) indicates kit price; (W) wired.
 (3) All models FM/AM except FM-only where preceded by (F).
 (4) (Q) with mod. no. means 4-channel.

MANUFACTURER	Model	Ave. power/chan. into 8 ohms, mW, as per FTC rule	Max. THD @ 25 W, rated power, %	Max. IM @ 25 W, rated power, %	Freq. range for FTC-rated power, Hz-kHz	S/N, phono, re 10 mV input, dB	Phono sens., mV	Phono overload, mV	IHF sens., tuner, mono/stereo microvolts	Capture ratio, dB	Signal-to-noise ratio, 50 dB quieting, μ V, mono/stereo	THD mono, 100% mod, 1 kHz, %	THD stereo, 100% mod, 1 kHz, %	De-emphasis, μ S	All. chan. selectivity, dB	Tuning aids, no. & type	S/N ratio, mono/stereo, dB	Dimensions, in.	Weight, lbs.	Price, \$	NOTES
JVC	(Q) 4VR5426X	13	1.0	1.0	20-20	65	1.5	2.2/-	2.5		0.5	0.8	75	50	Mtr.		6 $\frac{1}{2}$ x18x15 $\frac{1}{2}$	26 $\frac{1}{2}$	399.95		
	(Q) 4VR5436X	15	0.8	1.0	20-20	65	1.5/3	2/-	2		0.5	0.8	75	65	2 Mtrs.		6 $\frac{1}{2}$ x20x15 $\frac{1}{2}$	31 $\frac{1}{2}$	549.95		
	(Q) 4VR5446X	21	0.5	0.8	20-20	65	1.5/3	2/-	2		0.5	0.8	75	65	2 Mtrs.		6 $\frac{1}{2}$ x20x15 $\frac{1}{2}$	34 $\frac{1}{2}$	649.95		
	(Q) 4VR5456X	43	0.5	0.8	20-20	65	1.9/3	1.8/-	1.2		0.4	0.6	75	65	Mtr.		7x20 $\frac{1}{2}$ x16	44	399.95		
	5505	8	0.8	0.8	20-20	65	3	2.2/-	2.5		0.5	0.8	75	50	2 Mtrs.		5 $\frac{1}{2}$ x18 $\frac{1}{2}$ x13	17 $\frac{1}{2}$	179.95		
	5515	19.5	0.8	0.8	20-20	65	2.5	2.2/-	2.5		0.5	0.8	75	50	2 Mtrs.		6x17 $\frac{1}{2}$ x12 $\frac{1}{2}$	19 $\frac{1}{2}$	269.95		
	5525	25	0.8	0.8	20-20	65	2.5	2.2/-	2.5		0.5	0.8	75	50	2 Mtrs.		6x18 $\frac{1}{2}$ x12 $\frac{1}{2}$	23	349.95		
	5535	30	0.8	0.8	20-20	65	2.5	2/-	2		0.5	0.8	75	65	2 Mtrs.		6x18 $\frac{1}{2}$ x12 $\frac{1}{2}$	25 $\frac{1}{2}$	399.95		
KLH	52A	32	1.0		25-20	69	3.5	60	2		5	.8		52	2 Mtrs.		5 $\frac{1}{2}$ x18x18	23	349.95		
	55A	13	1.0		45-15	55	2.5	25	2.0		5	1.0		46	Mtr.		5 $\frac{1}{2}$ x16 $\frac{1}{2}$ x19 $\frac{1}{2}$	16	259.95		
KENWOOD	KR-9400	120		0.1	20-20	70	2.5	150	1.7/-	1.3	0.3	0.5	25/75	80	2 Mtrs.	72/-	22x6 $\frac{1}{2}$ x15 $\frac{1}{2}$	45	749.95		
	KR-7400	63	0.3	0.3	20-20	70	2.5	120	1.7/-	1.3	0.3	0.5	75	80	2 Mtrs.	70/-	19x6x13 $\frac{1}{2}$	31	519.95		
	KR-6400	45	0.3	0.3	20-20	70	2.5	120	1.9/-	1.5	5/-	0.3	0.5	75	65	2 Mtrs.	68/-	19x6x13 $\frac{1}{2}$	29	449.95	
	KR-5400	35	0.5	0.5	20-20	70	2.5	120	1.9/-	1.5	5/-	0.3	0.5	75	65	Mtr.	68/-	19x6x13 $\frac{1}{2}$	25	379.95	
	KR-4400	25	0.5	0.5	20-20	70	2.5	120	2.1/-	2	5/-	0.4	0.6	75	55	Mtr.	65/-	19x5 $\frac{1}{2}$ x13 $\frac{1}{2}$	20	299.95	
	KR-3400	16	1.0	1	20-20	70	2.5	110	2.5/-	3	7/-	0.4	0.6	75	45	Mtr.	62/-	19x5 $\frac{1}{2}$ x13 $\frac{1}{2}$	16 $\frac{1}{2}$	259.95	
	KR-2400	13	1.0	1	20-20	70	2.5	100	2.5/-	3	7/-	0.4	0.6	75	45	Mtr.	62/-	19x5 $\frac{1}{2}$ x13 $\frac{1}{2}$	16	219.95	
	KR-1400	10	1.0	1	50-20	70	2	100	2.5/-	3		0.4	0.6	75	45	Mtr.	60/-	22x16 $\frac{1}{2}$ x15	16	179.95	
	(Q) KR-9940	50		0.5	20-20	70	2	120	1.8/-	3	-/63	0.5	0.8	75	50	2 Mtrs.		21x6 $\frac{1}{2}$ x14 $\frac{1}{2}$	46	974.95	
	(Q) KR-8840	40		0.5	20-20	70	2	120	1.9/-	3	-/63	0.5	0.8	75	50	Mtr.		21x6 $\frac{1}{2}$ x14 $\frac{1}{2}$	44	849.95	
	LAFAYETTE	(Q) LR-5000	35	0.5	1	20-20		6/4	14/100/70	1.65/-	1.5	0.5		75	60	2 Mtrs.	65	21x5x15	31	599.95	
(Q) LR-3000		15	0.5	1	20-20		6/4	10/70		2.5	0.5		75	40	Mtr.	65	17 $\frac{1}{2}$ x5x14	19	449.95		
LR-3500		47	0.5	1	20-20	68	6/2.5	105/46	1.65/-	1.5	0.25		75	60	2 Mtrs.	65	19 $\frac{1}{2}$ x5x14	25	399.95		
LR-2200		27	0.5	1	20-20	65	6/2.5		1.75/-	1.5	0.5		75	60	2 Mtrs.	70	17x5x14	16	299.95		
LEAK (Ercona)	2000	30	0.1	0.1	10-40		2.2	*	1.6/-	1.5	0.5	0.5	50	50			18 $\frac{1}{2}$ x11 $\frac{1}{2}$ x5 $\frac{1}{2}$	21.5	750.00	*Phono overload margin \geq 35 dB.	
MX	MX1581	60	0.3	0.5	20-20		2.5	100	1.8/-	1.7	2.5/30	0.2	0.3	25/75*	75	2 Mtrs.	70/65	19x6x15	36	529.95	*Dolby circuit includes 25 μ S de-emphasis.
	MX1580	60	0.5	0.8	20-20		2.5	50	1.8/-	1.7	2.5/30	0.2	0.3	75	75	2 Mtrs.	70/65	19x6x15	36	479.95	
	MX1571	40	0.3	0.5	20-20		2.5	100	1.8/-	1.7	2.5/30	0.2	0.3	75	75	2 Mtrs.	70/65	19x6x15	35	429.95	
	MX1570	35	0.5	0.8	20-20		2.5	50	1.8/-	1.7	2.5/30	0.2	0.3	75	75	2 Mtrs.	70/65	19x6x15	35	399.95	
	MX1561	28	0.3	0.5	20-20		2.5	100	1.8/-	1.7	2.5/30	0.2	0.3	75	75	2 Mtrs.	70/65	19x6x15	34	379.95	
	Mx1143	20	0.5	0.8	20-20		2.5	90	2.1/-	1.7	3.5/-	0.4	0.8	75	65	Mtr.	65/60	17 $\frac{1}{2}$ x5x12 $\frac{1}{2}$	31	299.95	
	MX1142	15	0.5	0.8	20-20		2.5	90	2.2/-	1.7	5.0/-	0.5	0.8	75	58	Mtr.	65/60	17 $\frac{1}{2}$ x5x12 $\frac{1}{2}$	31	239.95	
	(Q) MX1671	50	0.5	0.8	20-20		2.5		1.8/-	1.7	2.5/30	0.2	0.3	25/75*	75	2 Mtrs.	70/65	22 $\frac{1}{2}$ x6x15	40	799.95	*Dolby circuit includes 25 μ S de-emphasis.
	(Q) MX1661	25	0.5	0.8	20-20		2.5		1.8/-	1.7	2.5/30	0.2	0.3	75	75	2 Mtrs.	70/65	22 $\frac{1}{2}$ x6x15	35	699.95	
	(Q) MX1630	25	0.5	0.8	20-20		2.0/4.0		1.8/-	1.7	2.5/30	0.2	0.3	75	75	2 Mtrs.	70/65	22 $\frac{1}{2}$ x6x15	35	599.95	
(Q) MX1620	12	0.5	0.8	20-20		2.0/4.0		1.8/-	1.7	2.5/30	0.2	0.3	75	75	2 Mtrs.	70/65	22 $\frac{1}{2}$ x6x15	30	499.95		
MARANTZ	2325	125	.15	.15	20-20		1.8	100		1.25	5/50	.15	.3	25/75	80	2 Mtrs.		18x5 $\frac{1}{2}$ x19 $\frac{1}{2}$	49	799.95	
	2275	75	.25	.25	20-20		1.8	100		1.5	5/50	.25	.35	25/75	80	2 Mtrs.		17x5x14 $\frac{1}{2}$	38	649.95	
	2250	50	.25	.25	20-20		1.8	100		1.5	5/50	.3	.4	25/75	65	2 Mtrs.		17x5x14 $\frac{1}{2}$	34	499.95	
	2240	40	.3	.3	20-20		1.8	100		1.5	5/50	.3	.4	25/75	65	2 Mtrs.		17x5x14 $\frac{1}{2}$	30	449.95	
	2235	35	.25	.25	20-20		1.8	100		1.5	5/50	.3	.4	25/75	65	Mtr.		17x5x14 $\frac{1}{2}$	26	399.95	
	2220B	20	.5	.5	20-20		1.8	100		2.5	5/50	.3	.5	25/75	50	Mtr.		17x5x14 $\frac{1}{2}$	23	299.95	
	(Q) 4400	50	.15	.15	20-20		2	110		1.5	5/50	.2	.3	25/75	75	Scope		18x5 $\frac{1}{2}$ x19 $\frac{1}{2}$	53	1250.00	
	(Q) 4300	40	.15	.15	20-20		2	110		1.5	5/50	.2	.3	25/75	70	2 Mtrs.		18x5 $\frac{1}{2}$ x19 $\frac{1}{2}$	52	899.95	
	(Q) 4270	25	.3	.3	20-20		2	110		1.5	5/50	.3	.4	25/75	60	2 Mtrs.		17x5x14 $\frac{1}{2}$	39	699.95	
	(Q) 4240	17	.5	.5	20-20		2	100		1.5	5/50	.3	.4	25/75	60	2 Mtrs.		17x5x14 $\frac{1}{2}$	36	599.95	
	(Q) 4230	12	.5	.5	20-20		1.8	100		2.5	7/-	.4	.7	25/75	48	2 Mtrs.		17x5x14 $\frac{1}{2}$	34	499.95	
	(Q) 4220	8	.9	.9	40-20		2.1	100		2.5	10/-	.5	.8	75	48	Mtr.		16x4 $\frac{1}{2}$ x11	20	299.95	
	NIKKO	7075	38	0.5		20-20				1.9/-	1.3				2 Mtrs.	-/50	19x6x14	30	399.95		
		5055	18	0.8		20-20				2/-	1.5				2 Mtrs.	-/50	19x6x14	25	299.95		
8085		30	0.5		20-20				2/-	1.5				2 Mtrs.	-/50	19x6x14	26	349.95			
8085		45	0.3		20-20				1.9/-	1.3				2 Mtrs.	-/50	19x6x14	30	449.95			
3035		15	0.8		20-20				2/-	1.5				Mtr.	-/50	19x6x14	24	249.95			
9090		58	0.3		20-20				1.8/-	1.8				2 Mtrs.	-/55	18 $\frac{1}{2}$ x6 $\frac{1}{2}$ x5 $\frac{1}{2}$	33	499.95			
2025		10	1.0		40-20				2.5/-	3.0				Mtr.	-/45	18x5x14	16	199.95			

We're not afraid to turn our back on you.



The Sylvania RS4744

We can afford to be very forward about our back.

Because the back of our RS 4744 stereo receiver is one of the most versatile you'll ever see. We've got phono inputs for two different turntables. And two sets of tape monitor input and output jacks. And terminals for main speakers, remote speakers, and PQ4 speakers. And three AC power outlets, one switched and two unswitched. The rest you can see for yourself in the picture above.

But what's behind our back is just as impressive as the back itself.

As *Popular Electronics** put it, the RS 4744 "met or surpassed all the published specifications we were able to test" and was



"... well above average in the important performance aspects."

Take power, for example. *Popular Electronics* found the RS 4744 "conservatively rated" at 60 watts per channel, min. RMS at 8 ohms from 20Hz to 20kHz with no more than .25% Total Harmonic Distortion. Which made it "outstanding for a receiver in the RS 4744's price range." FM 50 dB quieting sensitivity was equally impressive—"a very good 3 μ v in mono and 35 μ v in stereo."

But don't take our word for it. Or their word for it. Go see the RS 4744 for yourself.

Back or front, any way you look at it, the RS 4744 is one fine stereo receiver.

**Popular Electronics*, December 1974 Issue.

GTE SYLVANIA

Check No. 24 on Reader Service Card

Receivers



Superscope R-350



Technics SA-8500X

- NOTES: (1) All models solid-state except where mod. no. is preceded by (T).
 (2) (K) indicates kit price; (W) wired.
 (3) All models FM/AM except FM only where preceded by (F).
 (4) (Q) with mod. no. means 4-channel.

MANUFACTURER	Model	Ave. power/ch. into 8 ohms, 7W, as per FTC rate.		Max THD 0.25 W-rated power, %	Max IM D 25 W-rated power, %	Freq. range for FTC-rated power, Hz-kHz	S/N, phono, re 10 mV input, dB	Phono sens., mV	Phono overload, mV	IF sens., tuner, mono/stereo microvolts	Capture ratio, dB	Signal for 50 dB quieting, μ V, mono/stereo	THD mono, 100% mod. 1 kHz, %	THD stereo, 100% mod. 1 kHz, %	Deemphasis μ S	Alt. chan. selectivity, dB	Tuning aids, no. & type	S/N ratio, mono/stereo, dB	Dimensions, in.	Weight, lbs.	Price, \$	NOTES
		20	0.6																			
SHERWOOD	(Q) S-7244	20	0.6	0.6	20-20	84	3.0	100	1.9/-	1.5	3.5/-	0.25	0.5	75/-	55	Mtr.	66/62	18x15x5 1/4	40	Under 500	Remote cont.; tape mon.; FM mute; hi filtr.	
	(F) S-8900A	60	0.3	0.3	20-20	84	1.5	100	1.7/-	1.9	2.7/-	0.15	0.3	75/-	65	Mtr.	70/65	17x14x6 1/4	30	Under 450	Dynaquad; 4-chan. tuner output.	
	S-7900A	60	0.3	0.3	20-20	84	1.5	100	1.7/-	1.9	2.7/-	0.15	0.3	75/-	65	Mtr.	70/65	17x14x16 1/4	30	Under 475	Dynaquad; hi filtr.; FM mute	
	S-7310	38	0.5	0.5	20-20	84	2.0	90	1.8/-	1.2	2.7/-	0.25	0.5	75/-	65	Mtr.	70/65	17x13x5 1/4	35.5	Under 400	Dynaquad; hi filtr.; tape mon.; rem. spkr. swit.	
	S-7210	26	0.6	0.8	20-20	84	2.0	110	1.9/-	1.4	2.8/-	0.3	0.6	75/-	65	Mtr.	70/65	17x13x5 1/4	28.5	Under 300	Dynaquad; FM mute; tape mon.	
	S-7110	17	0.9	0.9	40-20	84	2.0	90	2.0/-	1.5	2.9/-	0.4	0.6	75/-	60	Mtr.	70/65	17x13x5 1/4	27.5	Under 250	Loud swit.; tape mon.; remote spkr. swit.	
	S-7010	10	0.9	1.0	40-20	84	2.0	80	2.8/-	4.0	3.3/-	0.6	0.8	75/-	50	Mtr.	65/62	17x13x5 1/4	27	Under 200	Tape mon.; remote spkr. swit.	
SONY	STR-7065	60	0.2	0.2	20-20	86	2	100	2/-	1		0.2	0.5	75/-	70	2 Mtrs.	70/-	6x18x14 1/4	33 1/3	550.00	All models: THO at 400 Hz.	
	STR-7055	35	0.2	0.2	20-20	84	2	100	2/-	1		0.2	0.5	75/-	70	Mtr.	70/-	6x18x14 1/4	33 1/3	450.00		
	STR-7045	30	0.2	0.2	20-20	85	1.8	80	2.6/-	1.5		0.2	0.5	75/-	70	Mtr.	70/-	6x18x14 1/4	31	370.00		
	STR-7035	24	0.8	0.8	40-20	72	2.5	60	2.2/-	1.5		0.3	0.8	75/-	60	Mtr.	68/-	6x17x14 1/4	19	300.00		
	STR-6046A	20	0.8	0.8	20-20	72	2.5	60	2.2/-	1.5		0.3	0.8	75/-	60	Mtr.	68/-	5x17x13 1/4	19 1/2	280.00		
	STR-7025	18	0.8	0.8	40-20	72	2.5	60	2.2/-	1.5		0.3	0.8	75/-	60	Mtr.	68/-	6x17x14 1/4	18 1/2	260.00		
	STR-6036A	15	0.8	0.8	20-20	72	2.5	60	2.2/-	1.5		0.3	0.8	75/-	60	Mtr.	68/-	5x17x13 1/4	19	230.00		
	STR-7015	15	0.8	0.8	40-20	72	2.5	100	2.2/-	3		0.3	0.8	75/-	60	Mtr.	68/-	6x16x13 1/4	16 1/2	220.00		
	(Q) SQR-8750	30	0.2	0.2	20-20	78	5/2.5	100/50	1.9/-	1.2		0.2	0.5	75/-	75	Mtr.	70/-	7x20x14 1/4	47 1/2	700.00		
	(Q) SQR-6750	20	0.2	0.2	20-20	76	5/2.5	100/50	2.2/-	1.5		0.3	0.6	75/-	50	Mtr.	70/-	7x20x14 1/4	43 1/3	600.00		
(Q) SQR-4750	15	0.8	0.8	20-20	76	5/2.5	100/50	2.2/-	1.5		0.3	0.6	75/-	50	Mtr.	68/-	6x18x13 1/4	29	500.00			
SUPERSCOPE	R-310	5	1.0	-	30-30	-	3	100	5/30	4	7/70	0.7	1.0	75/-	35	Mtr.	68/58	17x5x11	16	179.95		
	R-330B	8	1.0	-	20-20	-	2.5	150	5/20	5	6/45	0.5	1.0	75/-	28	Mtr.	68/57	17x5x13		219.95		
	R-340B	12	1.0	-	30-30	-	2.5	140	2.2/35	2.5	3/40	0.5	.5	75/-	45	Mtr.	73/62	17x5x13		259.95		
	R-350	15	1.0	-	20-20	-	4	120	2.8/40		7/40	0.5	1.0	75/-	45	Mtr.	65/55	17x5x13	20 1/2	299.95		
TANBERG	TR1055	55	0.2	0.2	4-70	68	2.8*	100	-/2	0.9		0.2	0.15	0.2		80	2 Mtrs.		17x5 1/2x12 1/2	22 1/2	649.90	*Adjustable.
	TR2075	75	0.2	0.2	4-100	68	1.5-8*	160	-/2	0.9		0.2	0.15	0.2		80	2 Mtrs.		20x14x6		999.00	*Adjustable.
	TR1040		0.2	0.2	4-60	68			-/2	0.9		0.2	0.3			80	Mtr.		17x12 1/2x5 1/4		549.90	
TECHNICS BY PANASONIC	SA-5550	58	0.3	0.4	20-20	70	2		1.8/-	1.6		0.2	0.4	75/-	70	2 Mtrs.	70/-	18x5x15 1/4	28 1/2	479.95	Detent tone controls, 2 sets tape mons., multiple sprk. protect, cer. filter i.f.s. PLL MPX.	
	SA-5350	28	0.5	0.7	20-20	70	2		1.9/-	1.6		0.3	0.4	75/-	70	Mtr.	70/-	16x5 1/2x14	21 1/2	349.95	As above except dual sprk. protect. & no tone detents.	
	SA-5250	23	0.5	0.7	20-20	70	2		1.9/-	1.6		0.3	0.4	75/-	70	Mtr.	70/-	16x5 1/2x14	18 1/2	299.95	As above.	
	SA-5150	16	0.8	0.8	20-20	70	2		1.9/-	1.8		0.3	0.4	75/-	70	Mtr.	70/-	16x5 1/2x14	15 1/2	229.95	Ceramic filter i.f.s, PLL MPX.	
	(Q) SA-8500X	26	0.5	0.5	20-20	70	2		1.9/-	1.5		0.3	0.4	75/-	65	Mtr.	65/-	6x21 1/2x15 1/4	37 1/2	739.95	CD-4 demod. & matrix decoder w/ 2 pos.; 4 VU meters, three 4-chan. tape mons.; direct-coupled amps; detent tone cont. switch for 2 sets of 4 spkrs.	
(Q) SA-8100X	16	0.5	0.7	20-20	70	2		1.9/-	1.5		0.3	0.4	75/-	65	Mtr.	65/-	6x19x5 1/4	32 1/2	649.95	As above except sprk. sw. & tone detent.		
TOSHIBA	SA-300	7.5	0.8		50-20	65	3		2.5/-	3		0.4	1.0			Mtr.		15x5x11 1/4	15 1/2	219.95	*11.5 w/ch. in strapped (stereo) mode.	
	(Q) SA-304	8*	0.8		50-20	60	3		2.5/-	2.5		0.4	0.5			Mtr.		15x5x11 1/4	18	349.95	*50 w/ch. in strapped mode.	
	(Q) SA-504	20*	0.4		50-20	65	2.5		1.8/-	1.5		0.2	0.5			2 Mtrs.		20x5x14	33	569.95	*40 w/ch. in strapped mode.	
	(Q) SA-514	15*	0.4		20-20	65	2.5		2/-	2		0.3	0.5			2 Mtrs.		20x5x14		599.95		
YAMAHA	CR-1000	10	0.1	0.1	20-20	3			1.7/40	1	3/40	0.15	0.3	75/-	80	2 Mtrs.	75/72	20x6x13 1/4	41.8	850.00	Auto-touch tuning. 2 tape circuits w/ dubbing.	
	CR-800	45	0.1	0.1	20-20	3			1.7/40	1	3/40	0.15	0.3	75/-	80	2 Mtrs.	75/72	18x6x11 1/4	30.8	580.00	As above.	
	CR-600	30	0.1	0.1	20-20	3			2.0/50	1.5	3/40	0.3	0.5	75/-	75	2 Mtrs.	70/66	18x6x11 1/4	27.5	460.00		
	CR-400	16	0.5	0.1	20-20	3			2.5/50	2.0	3.5/50	0.3	0.8	75/-	75	2 Mtrs.	68/66	17x6x11 1/4	20.9	330.00		

Introducing the BSR Silent Performer

The only rumble from this belt-drive turntable comes from our competitors.

For years most expensive manual record-playing devices have used belt-drive as a smooth, trouble-free—and most important—silent method for transmission of power. Now, our engineers have succeeded in integrating a highly-reinforced belt-drive system into more affordably-priced turntables. They offer a combination of features and performance not yet available in even more expensive competitive models. We call them the Silent Performers.

Our Model 20 BPX is a fully automated single-play turntable with a precision machined platter, high-torque multi-pole synchronous motor, tubular "S" shaped adjustable counter-weighted tone arm in gimbal mount, viscous cueing, quiet Delrin cam gear, automatic arm lock, dual-range anti-skate and much more. It is packaged with base, hinged tinted dust cover, and ADC K6E cartridge. See your audio dealer for more information, or write to us.



BSR

Consumer Products Group
BSR (USA) Ltd.
Blauvelt, N.Y. 10913

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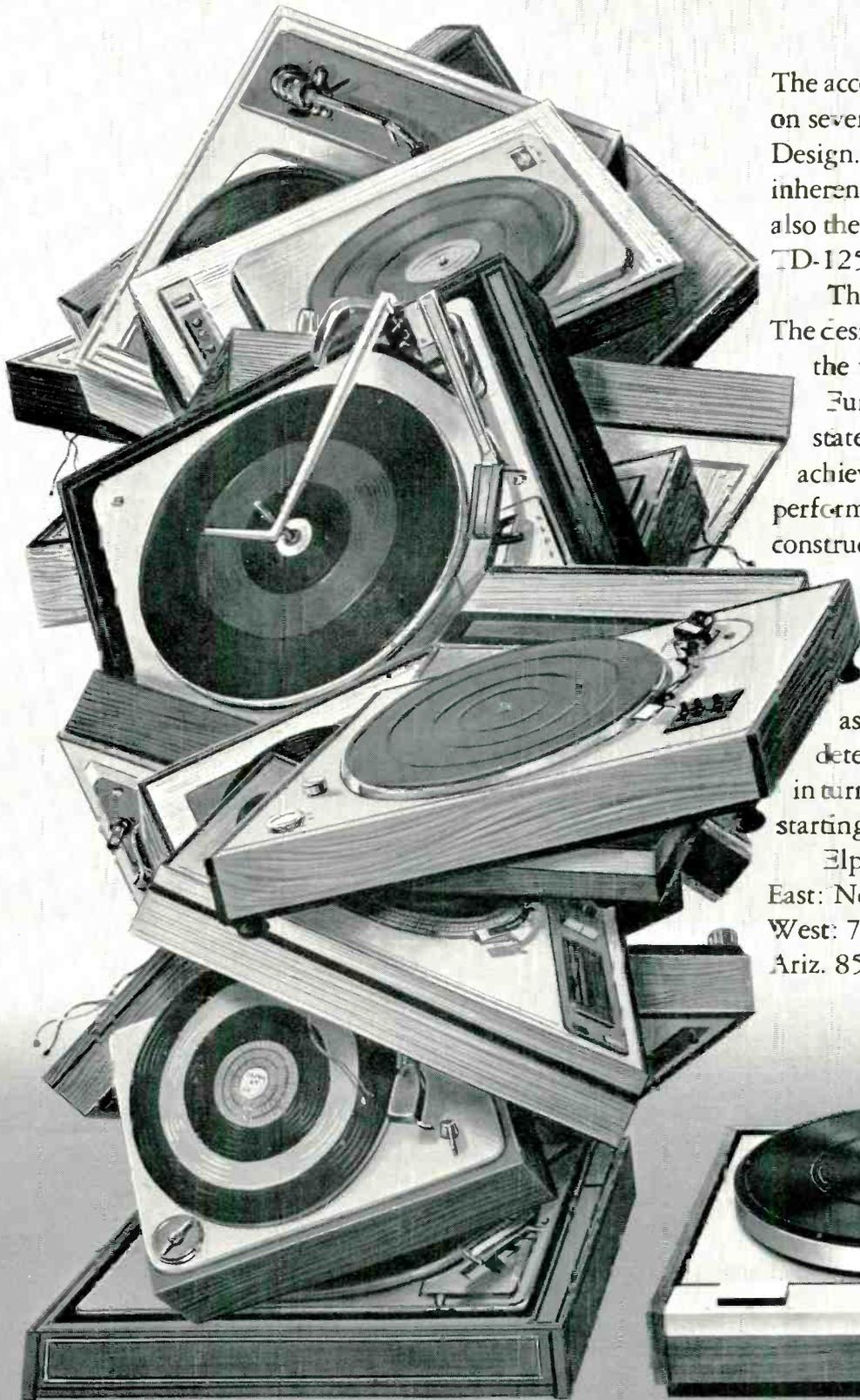
Multi-Play Turntables

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 letter code)	Spindle diameter, in.	Wow & flutter at 33 1/3, % (W/F M/S)	Rumble, dB (DIN "B")	Max. tracking error, deg/in.	Pickup stylus dist., in.	Stylus force adjustment method	Tracking force range, gms.	Arm resonance, Hz.	Max. track records	Change cycle at 33 1/3, sec.	Base opt. or inc.?	Clearance above board, in.	Dimensions, in. inches	Overall height, in.	Dust cover inc.?, or price?	Weight, lbs. (net)	Price, \$	NOTES
B.I.C.	940	B	12	0.03	-65	0.35	8.6	Bal.	0.4	9	6	14	opt.	5	15 1/2 x 12 1/4 x 6 1/2	11	no	12	109.45	300 rpm sync. direct drive mtr. As above, *3% speed var. As above, plus illum. strobe, electronic speed control.
	960	B	12	0.03	-65	0.35	8.6	Bal.	0.4	9	6	14	opt.	5	15 1/2 x 12 1/4 x 6 1/2	11	no	12	159.95	
	980	B	12	0.03	-65	0.35	8.6	Bal.	0.4	9	6	14	opt.	5	15 1/2 x 12 1/4 x 6 1/2	11	no	13	199.95	
BSR	200BAX	B	11	0.06	-60	0.75	7.5	Adj.ctr. wt.	0.4	7	6	12	inc.	5	16 1/2 x 14 1/2	8	inc.	18%	204.85	Incl. ADC VLM MK II cartridge, sync. motor, belt drive, stylus wear indicator. Belt drive.
	100BAX	B	11	0.09	-58	0.75	7.5	Adj.ctr. wt.	0.6	11	6	12	inc.	5	16 1/2 x 14 1/2	8	inc.	16%	154.80	
	8100X	B	12	0.15	-55	0.5	8.5	Adj.ctr. wt.	0.4	7	6	14	inc.	4%	17 1/2 x 14 1/2	8 1/2	inc.	22	299.80	Dual voltage motor, stylus wear indi., variable speed control. As above.
	7100X	B	12	0.15	-55	0.5	8.7	Adj.ctr. wt.	0.4	7	6	14	inc.	4%	17 1/2 x 14 1/2	8 1/2	inc.	19	255.80	
	2620W	B	11	0.18	-54	1.0	7.5	Adj.ctr. wt.	0.6	11	6	8	inc.	4	15 1/2 x 14	7 1/2	inc.	15	150.80	Variable speed control.
	2310W	A	10	0.26	-50	1.0	7.5	Adj.ctr. wt.	0.6	11	6	8	inc.	4	15 1/2 x 14	7 1/2	inc.	15	110.80	All models include cartridge, base, dust cover, two spindles.
	2260X	A	10	0.3	-50	1.0	7.5	Adj.ctr. wt.	0.6	11	6	8	inc.	4	15 1/2 x 13 1/2	7 1/2	inc.	14	89.80	
CRAIG	8403	A									6		inc.		15 1/2 x 14	7	inc.	12%	59.95	W. ceramic pickup.
DUAL	1225	B	10%	0.15	56	0.46	8%	Bal. & spg.	0.5	8	6	13	opt.	4%	13 x 11	6	opt.	8%	139.95	Gimbal suspension tone arm. Belt drive.
	1226	B	10%	0.12	57	0.46	8%	Bal. & spg.	0.5	9	6	13	opt.	4%	13 x 11	6	opt.	9%	169.95	
	1228	B	10%	0.09	59	0.46	8%	Bal. & spg.	0.5	5 1/2	6	13	opt.	4%	13 x 11	6	opt.	9%	199.95	
	1249	B	12	0.06	63	0.4	8%	Bal. & spg.	0.3	6	6	13	opt.	5	14 1/2 x 12	6 1/2	opt.	15	279.95	
ELAC (BENJAMIN)	50HMKII	A	12	0.06	-40*	0.4	8	Bal. & spg.	1/2-6%	8	10	10		5%	14 1/2 x 12 1/2	18			249.95	*NAB.
	760	A	12	0.06	-44*	0.4	8	Bal. & spg.	1/2-6%	8	10	10		5%	14 1/2 x 12 1/2	18			199.95	*NAB.
	820	B	11	0.07	-40*	0.5	8	Bal. & spg.	1-4		10	12		5%	13 1/2 x 11	15			129.95	*NAB.
GARRARD	Z2000B	B	11%	0.06	-64	0	7%	Bal. & wt.	5.3	5	5	12	opt.	4%	14 1/2 x 14	7 1/2	9.95	18	229.95	W. stylus timer, lo. capacity cables.
	990B	B	11%	0.06	-64	0.5	8%	Bal. & spg.	7.4	8	5	12	opt.	4%	15 1/2 x 14	7 1/2	9.95	18	169.95	W. base, cover, Shure 93E pickup, lo. capacity cables.
	770M	A	10%	0.08	-57	0.7	7%	Bal. & spg.	1.5-5	10	6	10	inc.	4%	16 1/2 x 15	8 1/2	inc.	14	119.95	
	440M	A	10%	0.10	-55	0.9	7%	Bal. & spg.	2.6	12	6	10	inc.	4%	16 1/2 x 15	8 1/2	inc.	14	79.95	W. base, cover, Shure 93E pickup, lo. capacity cables.
GLENBURN	(Q)2195B/□	A	11	0.10	-55	±0.5	8	Bal.	1.5-3	7	6	25	inc.	6%	14 1/2 x 15 1/2	8	inc.	15	149.95	W. audio-technica AT-14S pickup.
	2195B	A	11	0.10	-55	±0.5	8	Bal.	1.5-3	7	6	25	inc.	6%	14 1/2 x 15 1/2	8	inc.	15	119.95	W. ADC K3E pickup.
	2175B	A	11	0.10	-55	±0.5	8	Bal.	1.5-3	7	6	25	inc.	6%	14 1/2 x 15 1/2	8	inc.	15	89.95	W. ADC K6E pickup.
	(Q)2155B/□	A	11	0.12	-55	±1	7%	Spg.	1.5-3	10	6	25	inc.	6%	14 1/2 x 15 1/2	8	inc.	14	99.95	W. Audio-technica AT-12S pickup.
	2155B	A	11	0.15	-55	±1	7%	Spg.	2.4	10	6	25	inc.	6%	14 1/2 x 15 1/2	8	inc.	14	74.45	
	2110B	A	11	0.20	-55	±1	7%	Spg.	2.5	10	6	25	inc.	6%	14 1/2 x 15 1/2	8	inc.	13	59.95	
	1120A	A	11	0.20	-45	±1	7%	Spg.	2.6	10	6	25	inc.	6%	14 1/2 x 15 1/2	8	inc.	13	59.95	
1100A	A	10	0.20	-42	±1	7%	Spg.	2.6	10	6	25	inc.	6%	14 1/2 x 15 1/2	8	inc.	13	49.95		
MESA	Mesa I	B	11				8%	Bal. & spg.	0.5		6		inc.	4	17 x 14 1/2	7 1/2	inc.	13%	49.95	W. ceramic cart., 2 diamond styli.
	Mesa IM	B	11				8%	Bal. & spg.	0.5		6		inc.	4	17 x 14 1/2	7 1/2	inc.	14	59.95	4-pole mtr., Audio-technica AT-10 cart.
	Mesa II	B	11				8%	Wgt. & spg.	0.5		6		inc.	4	17 x 14 1/2	7 1/2	inc.	14	69.95	4-pole mtr., Audio-technica AT-11 cart.
	Mesa III	B	11				8%	Wgt. & spg.	0.5		6		inc.	4	17 x 14 1/2	7 1/2	inc.	14	89.95	As above, but AT-11 cart.
	(Q)Mesa IV	B	11				8%	Wgt. & spg.	0.5		6		inc.	4	17 x 14 1/2	7 1/2	inc.	14	139.95	As above, but AT-14SA 4-chan. cart.
MX	MX1220	A	11	0.20	-52			Bal. & spg.	1 1/2-5		6		inc.	8%	16 1/2 x 14 1/2	10	inc.	19%	129.95	Incl. Shure M-75 cart.
	MX1230	A	11	0.15	-58			Bal. & spg.	1-5		6		inc.	8%	16 1/2 x 14 1/2	10	inc.	21%	169.95	Incl. Shure M-75 cart.
	(Q)MX1236	A	11	0.15	-58			Bal. & spg.	1-5		6		inc.	8%	16 1/2 x 14 1/2	10	inc.	21%	199.95	Incl. Audio-Technica AT-12S cart. & lo. cap. cables.
P.E. (IMPRO)	3060	A	10%	0.08*	-59	0.5	8%	Bal. & spg.	0.3		6	13	opt.	5	13 x 10%	6 1/2	12.95	10%	199.95	*DIN
	3048	B	10%	0.09*	-58	0.5	8%	Bal. & spg.	0.3		6	13	opt.	5	13 x 10%	6 1/2	12.95	14	169.95	*DIN
	3046	B	10%	0.12*	-57	0.5	8%	Bal. & spg.	0.5		6	13	opt.	5	13 x 10%	6 1/2	12.95	13	149.95	*DIN
	3044	B	10%	0.15*	-56	0.5	8%	Bal. & spg.	0.5		6	13	opt.	5	13 x 10%	6 1/2	12.95	12%	119.95	*DIN
RADIO SHACK	LAB 50	B	11	0.09	-58			Bal. & spg.	0.6	11	6		inc.		16 1/2 x 14 1/2	8	inc.	16.25	99.95	Belt drive, ind. base, cartridge.
TECHNICS BY PANASONIC	SL-1350	B	13	0.04	-70	0.22	9	Wgt.	0.3	7-10	6		inc.		17 1/2 x 13 1/2	8	inc.	21	349.95	Direct-drive motor, Memo gram

Some things hold up better than others.



The accepted concept of durability is based on several very important factors. Material. Design. Engineering. Function. And inherent value. Coincidentally, these are also the hallmarks of the Thorens TD-125 AB Mark II.

The materials are the finest available. The design and engineering incorporate the ultimate in turntable technology.

Functioning flawlessly, it originates state-of-the-art that others have yet to achieve. To match the impeccable performance, this Thorens is constructed to hold up . . . not wear down. It has inbred longevity instead of built-in obsolescence.

The precision performance of the TD-125 AB Mark II serves as continuing proof of the Thorens determination to remain the classic name in turntables. There are other models, too, starting at \$169.95.

Elpa Marketing Industries, Inc.
East: New Hyde Park, N.Y. 11040;
West: 7301 E. Evans Rd., Scottsdale,
Ariz. 85260.

THORENS®



Keep on trackin'

With an Empire wide response cartridge.

A lot of people have started "trackin'" with Empire cartridges for more or less the same reasons.

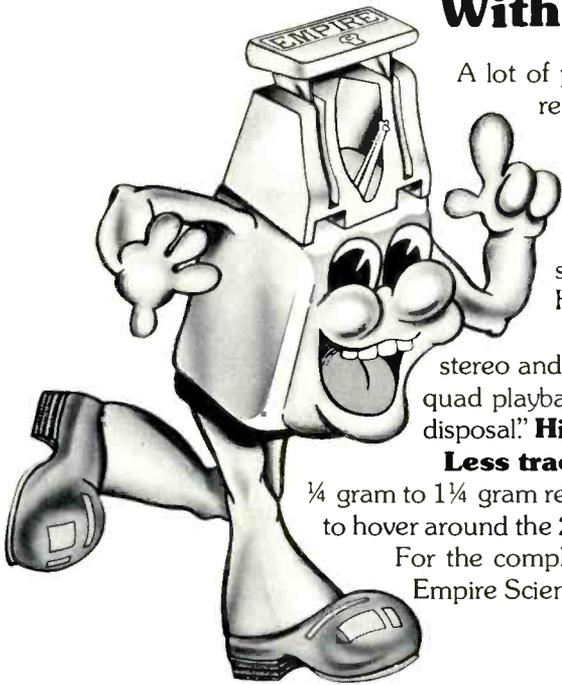
More separation: "Separation, measured between right and left channels at a frequency of 1 kHz, did indeed measure 35 dB (rather remarkable for any cartridge)." **FM Guide, The Feldman Lab Report.**

Less distortion: "...the Empire 4000D/III produced the flattest overall response yet measured from a CD-4 cartridge - within ± 2 dB from 1,000 to 50,000 Hz." **Stereo Review.**

More versatile: "Not only does the 4000D/III provide excellent sound in both stereo and quadriphonic reproduction, but we had no difficulty whatever getting satisfactory quad playback through any demodulator or with any turntable of appropriate quality at our disposal." **High Fidelity.**

Less tracking force: "The Empire 4000D/III has a surprisingly low tracking force in the $\frac{1}{4}$ gram to $1\frac{1}{4}$ gram region. This is surprising because other cartridges, and I mean 4 channel types, seem to hover around the 2 gram class." **Modern Hi Fi & Stereo Guide.**

For the complete test reviews from these major audio magazines and a free catalogue, write: Empire Scientific Corp., Garden City, N.Y. 11530. Mfd. U.S.A.



EMPIRE

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Choose the Cartridge Designed to Play Best in Your System

Plays 4 Channel Discrete (CD4) and Super Stereo Plays 2 Channel Stereo

Plays All 4 Channel Matrix Systems (SQ, QS, RM)

Model	4000 D/III	4000 D/II	4000 D/I	2000 E/III	2000 E/II	2000 E/I	2000 E	2000
Frequency Response in Hz:	5-50,000	5-45,000	10-40,000	5-35,000	6-33,000	8-32,000	10-30,000	10-28,000
Output Voltage per Channel at 3.54 cm/sec groove velocity:	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
Channel Separation	more than 35dB	more than 35dB	35dB	35dB	35dB	35dB	30dB	30dB
Tracking Force in Grams:	$\frac{1}{4}$ to $1\frac{1}{4}$	$\frac{1}{2}$ to $1\frac{1}{2}$	$\frac{3}{4}$ to $1\frac{1}{2}$	$\frac{1}{2}$ to $1\frac{1}{2}$	$\frac{1}{2}$ to $1\frac{1}{2}$	$\frac{3}{4}$ to $1\frac{1}{2}$	1 to 3	1 to 3
Stylus Tip:	miniature nude diamond with .1 mil tracing radius ™4 Dimensional	miniature nude diamond with .1 mil tracing radius ™4 Dimensional	miniature nude diamond with .1 mil tracing radius ™4 Dimensional	nude elliptical diamond .2 x .7 mil	nude elliptical diamond .2 x .7 mil	nude elliptical diamond .2 x .7 mil	elliptical diamond .3 x .7 mil	spherical diamond .7 mil
For Use In:	turntable only	turntable only	turntable or changer	turntable or changer	turntable or changer	turntable or changer	changer only	changer only
LIST PRICE:	 (White)	 (Yellow)	 (Black)	 (Clear)	 (Blue)	 (Green)	 (Red)	 (Smoke)

Single-Play Turntables

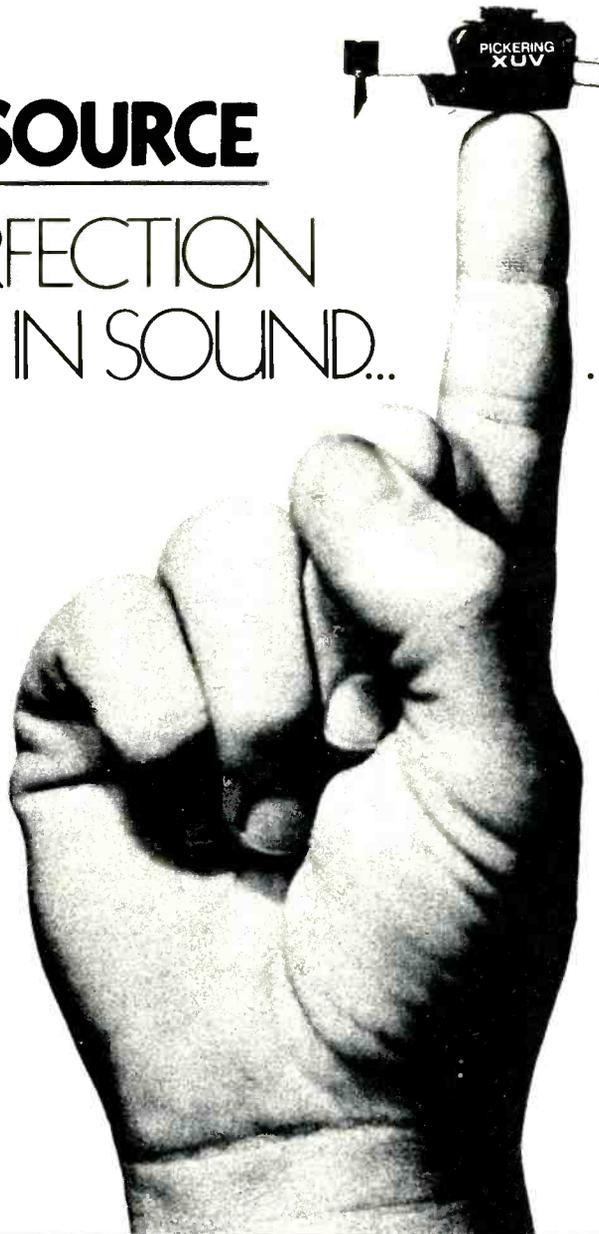
SPEEDS

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 notes)	Wow & flutter @ 33 1/3, % RW (RMS)	Turntable in dB (DIN "g")	Motor type	Platter type (dia. in.)	Speed adjustment, %	Drive system (belt, idler)	Speed accuracy, 33 1/3, %	Dimensions, in inches	Weight, lbs. (net)	Motor (for separate arm)	Overall length, in.	Pivot-stylus dist., in.	Vertical bearing type	Lateral bearing type	Stylus force adj. method	Max. tracking error, deg/in.	Anti-skate adjustment?	Arm resonance Hz	Stylus force range, gms.	Weight, if separate arm, oz.	Price \$	NOTES	
																									33 1/3
PHILIPS	GA209	B	0.055	65	d.c. servo	11%	3	belt	0.5	17x6 1/2 x 13	17%		11%	8.5	*	**	ctr. wt.	0.15	yes	7.5	3		299.50	Auto. record size & speed select, start up & arm rtn. *Single roll over bearing. **Pivot & bushing lat. bear. ***As above.	
	GA212	B	0.07	60	d.c. servo	11%	3	belt	0.5	15 1/2 x 6 x 13	13%		11	8.6	*	**	ctr. wt.	0.15	yes	9	3/4		169.50	Auto shutoff. *** As above.	
	GA427	B	0.14	55	24-pl. sync.	10%		belt	1.0	15 1/2 x 5 x 13	9		9%	7.6	*	**	ctr. wt.	0.23	yes	8	1 1/4		99.50	Auto arm return. *** As above.	
PIONEER	PL-71	B	0.05	60*	d.c. servo	12%	2	direct		18x7 1/4 x 16	24%			8.8	ball	ball	wt.	yes		0-2.5			299.95	*JIS stds.	
	PL-55X	B	0.05	58*	d.c. servo	12%	2	direct		18x7 1/4 x 16	23			8.7	ball	ball	wt.	yes		0-2.5			249.95	*As above.	
	PL-A45D	B	0.10	47*	d.c. servo	12%		belt		18x6 1/2 x 16	22%			8.7	ball	ball	wt.	yes		0-2.5			169.95	2 motors, auto repeat. *As above.	
	PL-150/II	B	0.08	48*	sync.	12%		belt		17x6 1/2 x 14	16%			8.7	ball	ball	wt.	yes		0-3.5			129.95	Auto return & cue. *As above.	
	PL-120/II	B	0.08	48*	sync.	12%		belt		17x6 1/2 x 14	16%			8.7	ball	ball	wt.	yes		0-3.5			99.95	Cueing, stylus overhang gauge. *As above.	
QUADRAFLEX	QL14	B	0.1	-55	sync.	12%		belt	0.8	17x13 1/2 x 6	16		11 1/2	8%	ball	ball	bal.	1.2	no	8	0.4		129.95	W. CD-4 cables; strobe markings.	
RADIO SHACK	LAB-100	B	0.09	-58		12		belt		16 1/2 x 9 1/2 x 14 1/2	16%						bal. & spg.	yes	9	0.4		99.95	Incl. base, cover, and cartridge.		
ROTEL	RP-1000D	B	0.1	47	hys. sync. pulse sync.	12	12	-5	belt direct	0.1	18 1/2 x 13 1/2 x 7			9%	ball	ball	bal.	1.5	yes		0-4		99.95		
	RP-500D	B	0.05	60	hys. sync. pulse sync.	12	12	-5	belt direct	0.01	18 1/2 x 13 1/2 x 7			9%	ball	ball	bal.	1.0	yes		0-4		199.95		
SANSUI	SR-717	B	0.03	-72	d.c.	12	4	direct		20x15 1/2 x 7	29			9%	*	pivot	bal. wt.	yes		0-3			349.95	*Knife edge vert. bearing.	
	SR-525	B	0.03	-72	d.c.	12%	3.5	direct		18 1/2 x 15 x 6	21			8%	*	ball	bal. wt.	yes		0-3			279.95	*As above.	
	FR-3080	B	0.07	-60	sync.	12		belt		17 1/2 x 14 x 6	17%			8%	*	pivot	bal. wt.	yes		0-4			199.95	2 motors; auto or manual operation.	
	SR-313	B	0.06	-62	sync.	12		belt		18x15 1/2 x 7	12%			8%	*	ball	bal. wt.	yes		0-3			169.95	*As above.	
	SR-212	B	0.10	-58	sync.	12		belt		17 1/2 x 14 x 6	14%			8%	pivot	ball	bal. wt.	yes		0-4			129.95	Automatic start/stop.	
SME (SHURE)												3009-TMP	9	9	knife	ball	bal. wgt.	yes		0-1.5	32		140.00	Non-detachable shell.	
												3009/S2	9	9	knife	ball	bal. wgt.	yes		0-1.5	32		152.00	Detachable shell.	
SONY	PS-2251	B	0.04	69	A.C. servo	12%	4	direct		7 1/2 x 19 1/2 x 16	33		13%	9%	ball	ball	wght.	2.27	yes		0-3		430.00	Also avail. w/o tone arm at \$350.00.	
	PS-4750	B	0.045	70	D.C. servo	13%	4	direct		7 x 18 1/2 x 16	18.3		12%	9%	ball	ball	wght.	2.50	yes	18	0-3		300.00		
	PS-5550	B	0.06	65	D.C. servo	11%	4	belt		5 1/2 x 18 1/2 x 15	20		13%	9%	ball	ball	wght.	2.50	yes		0-3		260.00		
	PS-5520	B	0.1	61	hys. sync. induc.	11%		belt idler		7 x 17 1/2 x 5	18.67		11%	8%	ball	ball	wght.	3.67	yes		0-3		190.00		
	PS-1100	B	0.2			11%				6 x 17 x 13	14.3		11%	8%	ball	ball	wght.		yes		0-2.5		100.00		
STANTON	8004-II	B	0.07*	60	sync.	12		belt	0.3	13x14 1/2 x 7	12				Mag.	Mag.	wght.	1.7	yes	7	0-4		199.95	*Wow & fl. DIN 45 507.	
	8004-IV	B	0.07*	60	sync.	12		belt	0.3	13x14 1/2 x 7	12				Mag.	Mag.	wght.	1.7	yes	7	0-4		224.95	*As above. With 780/400 discrete four-channel pickup.	
STAX (DISCWASHER)											UA 7M	14	9.4	ball	ball	bal.		yes		0-3			185.00	Interchangeable head shells; low-capacitance cables; ramped cueing; adj. to platter height.	
TANNOY/MICRO	TM550D	B	0.04	-60	D.C. servo	12.2	6	direct		18 1/2 x 13 1/2 x 5	18		11	8%	ball	needle	bal.	1.5	yes	7	0-3		330.00		
	TM440D	B	0.045	-55	D.C. servo	12.2	6	direct		17 1/2 x 13 1/2 x 6	18		11	8%	ball	needle	bal.	1.5	yes	7	0-3		249.00		
	TM33	B	0.045	-50	sync.	11.8		belt		18 1/2 x 13 1/2 x 5	18		11	8%	ball	needle	bal.	1.5	yes	8	0-3		180.00		
	TM22	B	0.05	-50	sync.	11.8		belt		17 1/2 x 13 1/2 x 6	16.5		11	8%	ball	needle	bal.	1.5	yes	8	0-3		138.00		
TECHNICS BY PANASONIC	SP-101I	A	0.025	-70	d.c.	12%		direct	0.002	14 1/2 x 14 1/2 x 4													499.95	Crystal-controlled, phase-locked speed.	
	SP-10	B	0.03	-70	d.c.	12	2	direct	0.01	14x14x4	20												449.95		
	SL-1100A	B	0.03	-70	d.c.	13%	5	direct	0.01	15 1/2 x 20 x 7 1/2	28%												389.95		
	SL-1200	B	0.03	-70	d.c.	13	5	direct	0.01	14x16x7	22		8%					0.33	yes	7	0-4		279.95		
	SL-1300	B	0.03	-70	d.c.	13	5	direct	0.01	17 1/2 x 14 1/2 x 5	20%		9					0.22	yes	7	0-3		299.95		
	SL-1500	B	0.03	-70	d.c.	13	5	direct	0.01	17 1/2 x 14 1/2 x 5	12%		9					0.22	yes	7	0-3		199.95	As above except not automatic play and shutoff.	
THORENS (ELPA)	TD 125	E	0.067	65	sync.	12	2	belt	0.5	18x14x5	32		12	9.06	ball	ball	spg.	0.2	yes	8	0-4		410.00	Also avail. w/o arm.	
	TD 145 C	B	0.067	55	sync.	12	2	belt	0.5	17x13 1/2 x 7	16%		12	9.06	ball	ball	spg.	0.2	yes	8	0-4		299.95	Electronic arm lift & shutoff; w. base, dust cover.	
	TD 160 C	B	0.06	55	sync.	12	2	belt	0.5	17x13 1/2 x 7	16%		12	9.06	ball	ball	spg.	0.2	yes	8	0-4		249.95	Incl. base, dust cover.	
	TD 165 C	B	0.06	55	sync.	12	2	belt	0.5	17x12 1/2 x 7	20		12	9	ball	ball	spg.	0.2	yes	10	0-4		169.95	Incl. base, dust cover.	
TOSHIBA	SR-355	B	0.04		d.c. servo	12		dir.			26%			8%	pivot	ball	helix	2	yes		0-4		279.95		
	SR-305	B	0.1		sync.	12		belt			14%			8%	pivot	ball	helix	5	yes		0-4		129.95	Auto return, auto cueing.	
	SR-80	B	0.1	50	hys. sync.	12%		belt		19 1/2 x 16 x 7	17%				ball	ball	bal.	1.5	yes		0-3		299.95	Incl. electret cartridge & equalizer.	
WIN LABS YAMAHA	Lab 10	B	0.06	* 70	sync. D.C. servo	11%	0	direct	0.1	17 1/2 x 15 1/2 x 4	6%		11%	9%	sleeve ball	ball	bal. & spg.	2	no		5-6	0-3		150.00	*-60 dB, NAB standard; Cueing mirror strobe; dual electronic speed control.
	YP-800	C	0.03		D.C. servo	11%	3	direct	0.2	18 1/2 x 6 x 14 1/2	27.6		11%	11%	ball	ball	bal. & spg.	2	no		9.5	0-3		500.00	Motor synchronous outer rotor.
	YP-701	B	0.08	65	sync. outer rotor	11%		belt		19x16 1/2 x 6	20%		12%	1%	ball	ball	bal. & spg.	2.7	yes	9	0-4		220.00		

THE SOURCE

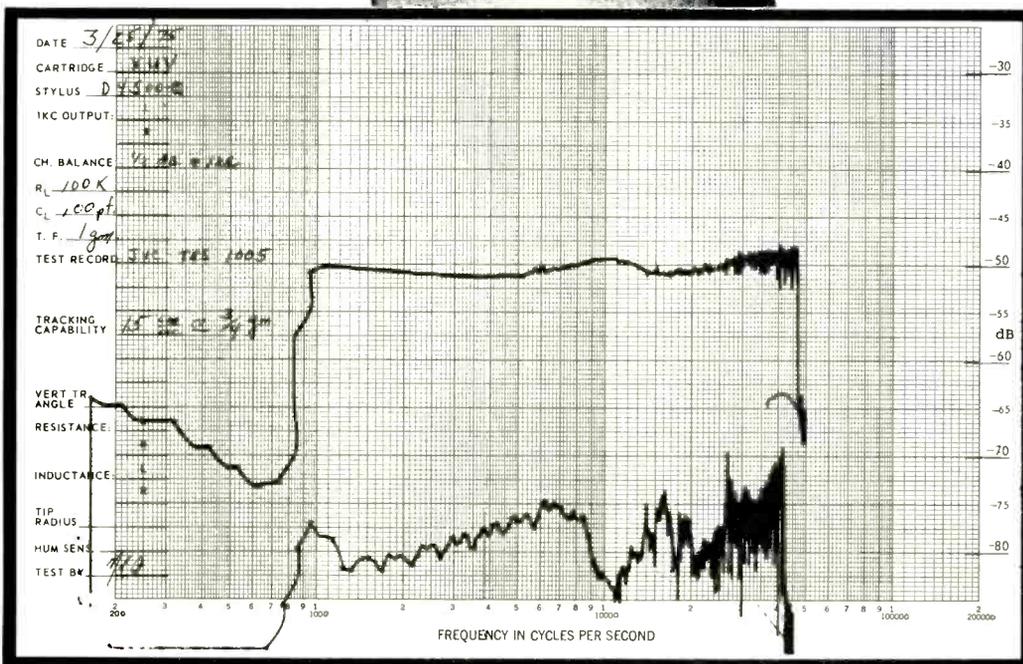
OF PERFECTION IN SOUND...



...tracks at one gram (or less)
in stereo and discrete

Pickering's engineers pursued the idea of a totally new departure in cartridge design with all the zeal of true crusaders. They had a reason . . . there was a demand for a pickup to play both stereo and discrete (as well as SQ and QS) with *total and absolute precision* at one gram. That they succeeded is a remarkable achievement because this cartridge successfully tracks all types of records at forces even lighter than one gram. It is a *real first* to do it this accurately.

The XUV/4500-Q features Pickering's patented Quadrahedral® stylus assembly. The Quadrahedral stylus assembly incorporates those features that produce extended *traceAbility™* for 4-channel as well as stereo. This means that it possesses not only superior performance in low frequency tracking, but also in high frequency *tracing ability*. When combined with the exclusive Quadrahedron™ stylus tip, a brand new shape, it can truly be called: "the Source of perfection in Sound", whether the playback requirement is stereo, SQ, QS, or discrete 4-channel.



a typical curve of the XUV/4500-Q

Shown at left is a printout graph from Pickering's testing apparatus. The top line is a frequency response curve (note that it starts at 1,000 cycles for the sake of simplicity). It depicts the unusually flat frequency response throughout the spectrum. The bottom line, which also starts at 1,000 cycles, shows the separation characteristics of this new cartridge.

Believe us, you have never seen one quite like this because Pickering's exclusive new design development also makes it superior to other cartridges in the playback of stereo records, as well as discrete.

The specifications are so exciting that we hope you will write to Pickering and Company, Inc., Dept. A, 101 Sunnyside Blvd., Plainview, New York 11803 for further information.



Check No. 48 on Reader Service Card

Phono Cartridges

MANUFACTURER	MODEL	Freq. respon., Hz-kHz, ±dB		Stereo sep., 1 kHz, dB		Stereo sep., 10 kHz, dB		Output, 1 kHz, 5 cm/sec., mV		Tracking force range, gms.		Load resistance, ohms		Recommended L loading capacitance (pF)		Stylus type (see letter code)		Stylus radius (radius) mils		Factory or user stylus replacement?		Weight, gms.		Price, \$		Replacement stylus price, \$		NOTES STYLUS TYPE S Spherical E Elliptical Q CD-4 capability (Shibata, etc.)
ADC	XLM-MKII	15-20 ±1.5	28	22	*	¾-1½	47k	275	E	0.3-0.7	user	5.25	100.00	29.95	*0.9 mV/cm/sec.													
	VLM-MKII	15-20 ±1.5	24	20	*	1-2	47k	275	E	0.3-0.7	user	5.25	75.00	24.95	*As above.													
	Super XLM-MKII	15-50	28	22	*	¾-1½	47k	100	C	2.0-0.2	user	5.75	125.00	39.95	*0.6 mV/cm/sec.													
	Q-36	+2,-5 15-20 ±3	26		5.5	¾-1½	47k	220	E	0.3-0.7	user	5.75	59.95	24.95														
	Q-32	15-20 ±3	24		5	1-2	47k	220	E	0.3-0.7	user	5.75	49.95	19.95														
	Q-30	15-20 ±3	24		5	1-2	47k	220	S	0.5	user	5.75	39.95	15.95														
	P-36	15-20 ±3	26		5.5	¾-1½	47k	220	E	0.3-0.7	user	5.75	39.95	19.95														
	P-32	15-20 ±3	24		5.5	1-2	47k	220	E	0.3-0.7	user	5.75	29.95	16.95														
P-30	15-20 ±3	22		5.5	1-2	47k	220	S	0.7	user	5.75	19.95	13.95															
AKG	P8E	10-30	30	25	3.5	¾-1½	47k	275	E	0.2-0.7	user	6	85.00															
	P7E	10-25	20	14	4.5	1½-2½	47k	275	E	0.3-0.7	user	6	60.00															
	P6E	10-22	25	14	6.0	1½-3	47k	275	E	0.4-0.8	user	6	40.00															
	P6R	10-22	25	14	6.0	2-4	47k	275	S	0.7	user	6	35.00															
ASTATIC	181d	60-12k ±6	25		150	2-3	143k	100	S	0.7-3.0	user	1.7	14.95	6.45	Ceramic.													
	157d	90-14k ±6	24		165	3-4.5	143k	100	S	0.7-3.0	user	3.4	14.95	6.45	Ceramic.													
	155d	70-11k ±6	23		625	3.5-5	1m	100	S	0.7-3.0	user	3.4	11.95	6.45	Ceramic.													
	139d	90-13k ±6	24		390	4.5-6	500k	100	S	0.7-3.0	user	3.4	13.75	6.45	Ceramic.													
AUDIO-TECHNICA	AT-10	20-20	20	15	4.8	2½-4	47k	100	S	0.7	user	5.5	24.95	12.95														
	AT-11	15-25	20	15	4.8	2-3	47k	100	S	0.7	user	5.5	34.95	17.95														
	AT-11E	15-28	20	15	4.8	2-3	47k	100	E	4x.7	user	5.5	44.95	24.95														
	AT-12E	15-30	22	17	4.2	1½-2	47k	100	E	4x.7	user	5.5	54.95	29.95														
	AT-12S	15-45	25	20	2.7	1-2	47-100k	100	C	*	user	5.5	64.95	36.95	High compliance. *Shibata.													
	AT-13Ea	15-45	25	20	4.2	1-2	47k	100	E	.2x.7	user	5.8	64.95	34.95	*Shibata stylus, tapered cantilever, low mass.													
	AT-14Sa	5-45	25	20	2.7	1-2	47-100k	100	Q	*	user	5.8	75.00	39.95														
	AT-15Sa	5-45	25	22	2.7	1-2	47-100k	100	Q	*	user	8.0	100.00	50.00	Incl. individual response curve. *As above.													
AT-20SLa	5-50	25	23	2.7	1-2	47-100k	100	Q	*	user	8.0	175.00	85.00	Hand-selected AT15Sa. *As above.														
BANG & OLUFSEN	MMC6000	*	25	20	0.6	0.1-1.5	100k	100	Q	**	***	4	100.00		*Freq. resp. 20-15,000 Hz±1.5 dB. 30-45,000 Hz for CD-4. **Stylus radius 0.7 x 50 microns. ***Not replaceable.													
	SP12	20-15,25 ±3	25	20	1.0	1-1.5	47k	100	E	0.2x0.7	user	8.5	85.00	40.00														
	SP10	20-15,25 ±3	25	20	1.0	1-1.5	47k	100	S	0.2x0.6	user	8.5	75.00	30.00														
	SP14	20-16	20	20	1.0	1-1.5	47k	100	S	0.2x0.6	user	8.5	45.00	22.00														
DECCA (PADLI)	London Exp. Mk 5	30-18 ±2	25	20	7.5	2.5-3.0	47k	0	S	0.5-0.6	fty.	5.0	145.00	65.00	Response curve suppl. Tip mass under 1.0 milligram.													
	London Mk 5	30-16k	20	18	7.5	2.5-3.0	47k	0	S	0.5-0.6	fty.	5.0	109.50	55.00	Tip mass under 1.0 milligram.													
DECCA (ROCELCD)	London Mk 5	20-20k			5mV	1-1.5	50k		E	0.3-0.65	fact.	4	149.50	80.00	Sum & difference pickup.													
	Gold London Mk 5 2-g	20-20k			5mV	1.2	50k		S	0.6-0.7	fact.	4	134.50	70.00	Sum & difference pickup.													
	London Mk 5 Export	20-20k			7.5mV	2-3	50k		S	0.6-0.7	fact.	4	125.00	60.00	Sum & difference pickup.													
	London Mk 5	20-20k			7.5mV	2-3	50k		S	0.6-0.7	fact.	4	99.50	50.00	Sum & difference pickup.													
EMPIRE	4000D/III	5-20 ±2*	35	35	3	½-1½	100k	100	Q	.2x3	user	7	149.95	74.95	*20k-50k±4dB.													
	4000D/II	5-20 ±2*	30	30	3	¾-1½	100k	100	Q	.2x3	user	7	124.95	62.95	*20k-45k±5dB.													
	4000D/I	5-20 ±2*	25	25	3	1-2	100k	100	E	.2x3	user	7	84.95	42.95	*20k-40k±6dB.													
	2000E/III	10-28k ±2	30	30	5	½-1½	47k	350	E	.2x.7	user	6%	69.95	34.95	All models: output at 3.54 nm/sec.													
	2000E/II	15-26k ±2	30	30	5	¾-1½	47k	350	E	.2x.7	user	6%	54.95	27.95														
	2000E/I	20-23k ±3	30	30	5	1-2	47k	350	E	.2x.7	user	6%	39.95	19.95														
	2000E	20-22k ±3	25	25	5	1½-3	47k	350	E	.3x.7	user	6%	34.95	17.95														
	2000	20-20k ±3	25	25	5	1½-3	47k	350	S	.7	user	6%	24.95	12.95														
EMT (GOTHAM)	XSD-15	20-15 ±2	25		0.75	2-3	200		S	0.6	fact.	21	300.00		Moving coil, integrated cartridge shell; designed to fit SME 3009 or Sony tonearms. Accessory transformers, (2 required) \$29.95 each.													

All cartridges are not created equal. Here's proof.

“...Tracking ability at low and middle frequencies was exceptional...the high level required half the tracking force of most other cartridges...One of the best 2-channel stereo cartridges and better than most CD-4 types.”

HI-FI NEWS AND RECORD REVIEW

Our new Super XLM MK II (\$125.) is the finest cartridge available. It was engineered solely for the true audiophile and the serious music listener who own the very finest components.

It embodies principles found in no other cartridges, as evidenced by our U.S. Patent. It features a unique “induced magnet” whereby the magnet is fixed and the magnetism is induced into a tiny hollow soft-iron collar. This collar in turn moves between the pole pieces thereby allowing for a major reduction in the mass of the moving system. This LOW MASS permits the Shibata type stylus to trace the most intricate modulations of stereo and CD-4 record grooves with a feather-light tracking force—as low as $\frac{3}{4}$ of a gram.

This results in super-linear pick up especially at the higher frequencies of the audible spectrum, which other cartridges either distort or fail to pick up at all. This low tracking force also assures minimal erosion and a longer playing life for the records.

This family of LOW MASS Cartridges is also offered with elliptical diamond stylus for stereo play exclusively—the XLM MK II (\$100) and VLM MK II (\$75).

For detailed specifications, write ADC.



U.S. PAT. NO. 3294405

ADC Super XLM MK II



**AUDIO
DYNAMICS
CORPORATION**

A BSR Company • New Milford, Conn. 06776

Phono Cartridges

MANUFACTURER	MODEL	Freq. respon., Hz-kHz, ±dB		Stereo sep., 1 kHz, dB		Stereo sep., 10 kHz, dB		Distort., 1 kHz, 5 cm/sec., mV		Tracking force range, gms.		Load resistance, ohms		Recommended Loading capacitance (pF)		Stylus type (see letter code)		Stylus radius (radii) mils		Factory or user stylus replacement?		Weight, gms.		Price, \$		Replacement stylus price, \$		NOTES STYLUS TYPE S - Spherical E - Elliptical Q - CD-4 capability (Shibata, etc.)
		20-20	27	20	25	20	25	1 M	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
EV • GAME	5600D	20-15	20	5	600	3-5	1 M	100	S	0.7	user	6	17.95	11.95														
	5601D	20-15	20	5	400	2-4	1 M	100	S	0.7	user	7.5	17.95	11.95														
	149D	100-10	16	5	450	2-4	1 M	100	E	.7-3	user	2.7	12.00	5.95														
	149DF	100-10	16	5	450	2-4	1 M	100	E	.7-3	user	9.8	17.50	5.95														
	6000D	20-20	25	10	4.4	4	47K	100	S	0.7	user	6.7	24.95	19.50														
FIDELITY-RESEARCH	FR-1/II	20-20 ±2.0	27	21	0.1	1.5-2.5	-	-	E	0.2-0.8	fact.	13	130.00	70.00	Requires stepup xfmr, FRT-4 (\$250) or FRT-3 (\$150).													
GRACE	F-9F	10-60	30	27	3.5	0.5-2	*	80	Q	**	user	6	150.00	70.00	CD-4 *30K-100K, **Shibata. Stereo, CD-4, *30K-100K.													
	F-9E	10-45	30	25	3.5	0.5-2	*	80	E	0.2x 0.8	user	6	135.00	62.00														
	F-9U	10-50	30	27	3.5	0.5-2	*	80	Q	**	user	6	100.00	47.00	*30K-100K, **Shibata.													
	F-9D	10-35	30	23	3.5	0.5-2	*	80	S	0.65	user	6	95.00	43.00	*30K-100K.													
	F-8F	10-50	30	27	3.5	1.0-2.5	100K	80	Q	*	user	6.5	130.00	60.00	*Shibata.													
	F-8C	15-25	30	25	5.0	0.5-1.5	47K	80	E	0.2x 0.8	user	5.9	95.00	43.00														
F-8L	20-20	30	23	5.0	0.5-2.5	47K	80	E	0.2x 0.8	user	6.5	80.00	37.00															
ORTOFON	SL-15EMKII	20-10 ±1	25	20	5.5*	1½-2	47K	-	E	0.3-0.7	fact.	7	100.00	50.00	*When used with Ortofon STM-72 transformer, \$35.00.													
	M-15E Super	20-10 ±1	25	20	4.0	¾-1½	47K	400	E	0.3-0.7	user	5	90.00	45.00														
	M-15 Super	20-10 ±1	25	20	4.0	¾-1½	47K	400	S	0.6	user	5	80.00	35.00														
	VMS-20E	20-10 ±1	25	20	5.0	¾-1½	47K	400	E	0.3-0.7	user	5	65.00	35.00														
	F-15E	20-10 ±1	25	18	5.0	1-2	47K	400	E	0.3-0.7	user	5	50.00	25.00														
	F-15	20-10 ±1	25	18	5.0	1-2	47K	400	S	0.6	user	5	40.00	20.00														
PICKERING	XUV-4500Q 4-chan.	10-50	35		3.4	¾-1¼	100K		Q		user	6½	139.95		W. brush.													
	UV 15-2400Q 4-chan.	10-50	35		3.8*	1-3			Q				124.95		*At 5.5 cm/sec. w. brush.													
	UV 15-2000Q 4-chan.	20-45	30		3.8*	1-3			Q				69.90		*As above.													
	XV 15/1200E	10-30	35	25	4.4*	¾-1¼	47K		E	0.2x 0.7	user	5	79.95		*As above.													
	XV 15/400E	10-25	35	25	5.5*	1-2	47K		E	0.2x 0.7	user	5	54.95		*As above.													
	UV 15/750E	10-25	35	25	4.4*	¾-1¼	47K		E	0.4x 0.7	user	5	65.00		*As above.													
	Micro 4 AME	20-20	30	24	5.5*	1-2	47K		E	0.4x 0.7	user	5	49.95		*As above.													
PIONEER	PC-Q1(Q)	10-50K	25	-	-	1-2.1	100K	100	C*	-	user	-	69.95		*Parabolic stylus.													
SHURE	V-15 III	10-25	28	20	3.5	¾-1¼	47K		E	7x.2	user	6	77.50	29.00														
	M95ED	20-20	25		4.7	¾-1¼	47K		E	7x.2	user	6	59.95	27.00														
	M91ED	20-20	25		5.0	¾-1¼	47K		E	7x.2	user	5.5	54.95	26.00	Builtin, snap-down stylus guard.													
	M75ED-2	20-20	25		5.0	1½x3	47K		E	7x.4	user	6	44.95	26.00														
	M93E	20-20	25		6.2	1½x5	47K		E	7x.4	user	6	39.95	19.50														
	M55E	20-20	25		6.6	¾x2	47K		E	7x.2	user	7	29.95	14.95														
	M44E	20-20	25		9.3	1½x4	47K		E	7x.4	user	7	24.95	12.50														
	SONIC RESEARCH	Blue Label	5-25	30	25	4	¾-1¼	47K	100	C	-	user	5	115.00	58.00	Response to 50 kHz. Fully calibrated version avail. on spec. order \$175.												
Red Label		5-22	30	25	4	¾-1¼	47K	100	E	3-8	user	5	95.00	38.00														
Green Label		5-20	30	25	4	¾-1¼	47K	100	S	.5	user	5	80.00	22.00														
STANTON	780/4DQ	10-50	35		3.3*	1½-2½			Q	0.3x 3.0	user	5	125.00		*At 5.5 cm/sec. w. brush.													
	780/Q	10-45	30		3.3*	1½-2½			Q	0.3x 3.0	user	5	75.00		*As above.													
	681-EEE	10-22	35		3.8*	¾-1¼	47K		E	0.2x 0.7	user	5	82.00		*As above. Indiv. calibra.													
	681-EE	10-20 ±½	35	26	0.82	¾-1¼	47K		E	0.2x 0.7	user	5	72.00															
	600-EE	20-20	35		1.0	1-2	47K		E	0.3x 0.7	user	5	55.00															
	500-EE	20-20	35	22	1.0	1-2	47K		E	0.3x 0.7	user	5	40.00															
SUPEX	SD-900/E	5-40 ±1.5	27	25	0.2	1-1.5	-	-	E	0.3-0.8	fact.	10	125.00	67.50	Requires stepup xfmr. SDT-180 (\$150) or SDT 77 (\$100).													
	SD-901/E	5-30 ±1.5	25	21	3.5	1.0-3.0	47K	80	E	0.3-0.8	fact.	10	145.00	75.00	Moving coil, needs no step-up xfmr.													
WIN LABORATORIES	SDT-10	0-50	30	20	200	¾-1¼	400	10-500	Q		user	1.5	199.00		*Shibata for two channel; semi-conductor type cart. includes power source.													



SONUS

STEREO PHONO CARTRIDGE

**suddenly there is
the definition
you have never been
able to get before!**

AH! DEFINITION—That elusive quality of cleanness and accuracy never quite attainable before. (If you can't extract it at the point of contact with the record, the rest of your equipment won't deliver it to you.)

The design philosophy of the SONUS cartridge is to use the latest refinements in material and techniques to convert the motion of the record groove into a precise electrical replica, thus assuring the highest possible sonic accuracy and definition.

The electromagnetic structure of the cartridge is exceptionally efficient and has been arranged in such a way that the point of transduction is placed as close as possible to the record surface. This enables the distance from the stylus tip to the energized armature to be kept extremely short, thereby minimizing the chances of the motion being significantly changed, and/or extraneous resonances introduced. It further enables the moving element to be kept exceedingly light and rigid. Indeed, we believe the total moving structure to be lighter than that of any other magnetic cartridge of which we are aware.

Great care has been taken with the cartridge geometry, not only to minimize vertical tracking error but also to ensure accurate transmission of the stylus motion to the generating armature. This has been

achieved by (among other things) positioning the stylus tip on the same axis as the armature so that none of the stylus motion is lost in rotation or affected by any possible rotational resonances.

The stylus pivot is located at the dynamic center of rotation of the moving system and is fabricated from material having optimum elastomeric properties, providing an extremely linear and highly compliant suspension.

In sum, we have a transducer system characterized by reproduction of exceptional accuracy, clarity and definition, and capable of perfect tracking and tracing at very low stylus forces.

Write to SONUS customer service for full line catalog and the name of the franchised dealer nearest you.

Your franchised dealer will be happy to demonstrate the superior qualities of this cartridge.



SONIC RESEARCH INC.

27 Sugar Hollow Rd., Danbury, Ct. 06810

Check No. 64 on Reader Service Card

Open-Reel Tape Recorders

SPEEDS BY LETTER CODE:

	A	B	C	D	E	F	G	H	J
15						x	x	x	
7 1/2	x	x	x			x	x	x	
3 3/4	x	x	x			x	x	x	
1 7/8	x					x	x	x	
1 1/8								x	

MANUFACTURER	MODEL	Speeds (see letter code)	Max. reel size, in.			No. of heads	No. of tracks	No. of channels	No. of motors	Drive motor type	Drive to capstan	Freq. response Hz-KHz ±dB w/standard tape*	Wow & flutter % (w/ RMS)*	S/N ratio* (std. tape)	Output level for 0 dB(mV)	Mfc. mixing?	Mfc. input Z, ohms	Record level indicators, type & qty.	Dimensions, in.	Weight, lbs.	Price, \$	NOTES (0) after price indicates Dolby included. * At the highest speed
			10	7	4																	
AKAI	GS-400D-SS 4-chan.	E	10	4	4	4/2	3	a.c. servo	direct	20-26 +3	0.035	52		yes	4.7k	meters, 4	18x23x9	68	1495.00			
	GX-630D-SS 4-chan.	B	10	4	4	4/2	3	a.c. servo	direct	30-24 +3	0.06	52		yes	10k	meters, 4	18x17x9	42	995.00			
	1730D-SS 4-chan.	B	7	4	4	4/2	1	hys. sync.	belt	30-22 ±3	0.12	50		no	30k	meters, 4	16x4x9	19	479.95			
	GX-650D	E	10	3	4	2	3	a.c. servo	direct	30-30 ±3	0.04	58		yes	10k	meters, 2	20x17x10	57	995.00			
	GX-630DB	B	10	3	4	2	3	a.c. servo	direct	30-25 ±3	0.06	57		yes	10k	meters, 2	18x17x9	42	775.000	Includes Dolby.		
	GX-630D	B	10	3	4	2	3	a.c. servo	direct	30-29 ±3	0.06	57		yes	10k	meters, 2	18x17x9	41	695.00			
	GX-265D	B	7	6	4	2	3	a.c. servo	direct	30-25 ±3	0.06	56		yes	5k	meters, 2	17x15x8	36	675.00			
	GX-270D	B	7	3	4	2	3	a.c. servo	direct	30-23 ±3	0.07	60		yes	4.7k	meters	17x15x8	34	599.95			
	GX-230D	B	7	3	4	2	3	a.c. servo	direct	30-25 ±3	0.07	60		yes	4.7k	meters, 2	17x15x8	33	499.95			
	4000 DB	B	7	3	4	2	1	ind.	belt	30-23 ±3	0.15	55		yes	4.7k	meters, 2	16x12x7	26	379.950	Includes Dolby.		
	4000 DS	B	7	3	4	2	1	ind.	belt	30-23 ±3	0.15	50		yes	4.7k	meters, 2	15x12x7	25	299.95			
	4400	B	7	3	4	2	1	ind.	belt	30-22 ±3	0.15	50		yes	5k	meters, 2	16x14x7	30	399.95			
	1722W	B	7	2	4	2	1	ind.	belt	30-21 ±3	0.14	50		no	100k	meters, 2	14x14x9	29	399.95			
CROWN	SX-724	B	10 1/2	3	4	2	3	hys.	belt	20-25 ±2	0.09	60	2.45	yes	350k	2 meters	19x9x15 1/4	45	1195.00	* B or F option		
	SX-824	*	10 1/2	3	4	2	3	hys.	belt	20-25 ±2	0.09	60	2.45	yes	350k	2 meters	19x9x15 1/4	48	1595.00			
	CX-824	*	10 1/2	3	4	2	3	hys.	belt	40-30 ±2	0.06	60	2	yes	350k	2 meters	19x9x17 1/2	52	1995.00	* As above.		
	SX-822	*	10 1/2	3	2	2	3	hys.	belt	30-30 ±2	0.06	60	2.45	yes	350k	2 meters	19x9x17 1/2	52	1995.00	* As above.		
	SX-744 4-chan. CX-844 4-chan.	B	10 1/2	3	4	4	3	hys.	belt	20-25 ±2	0.09	60	2.45	yes	350k	4 meters	19x9x21	51	1995.00			
DOKORDER	1140 4-chan.	F	10 1/2	3	4	4	3	hys. sync.	belt	30-23 ±3	0.04	60	1	no	10k	4 meters	17 1/2 x 20 x 15 1/4	58	1199.95	Multi-sync, full logic control, motion sensing, variable bias.		
	1120	B	10 1/2	3	4	2	3	hys. sync.	belt	30-22 ±3	0.06	60	1	yes	10k	2 meters	17 1/2 x 17 x 6 3/4	49	649.95	Convertible to 2-track. Separate eq. & bias control, cueing, peak-ind. lights.		
	8140 4-chan.	B	7	3	4	4	3	hys. sync.	belt	30-23 ±3	0.07	58	1	yes	10k	4 meters	17x17 1/2 x 6 3/4	41	749.95	Multi-sync, echo, sound-on sound, solenoid controls, bias select.		
	7140 4-chan.	B	7	3	4	4	3	hys. sync.	belt	30-23 ±3	0.08	58	1	yes	10k	4 meters	17x17 1/2 x 6 3/4	41	629.95	Multi-sync, sound-on sound, echo, tape-source monitoring.		
	7100	B	7	3	4	2	3	hys. sync.	belt	30-23 ±3	0.08	58	1	yes	10k	2 meters	17x17 1/2 x 6 3/4	40	399.95	Echo, S-O-S, tape-source monitoring, bias select, solenoid controls.		
	9200	B	7	6	4	2	3	hys. sync.	belt	30-24 ±3	0.06	55	1	yes	10k	2 meters	17 1/2 x 20 x 15 1/4	55	949.95	Bi-directional record, auto-reverse play, playback, full-logic controls, bias control.		
FERROGRAPH (ELPA)	7502AHW	E	10 1/2	3	2	2	3	ind.	idler	30-20 ±2	0.08	55	2	yes	10k	2 meters	20 1/2 x 10 x 17 1/2	55	1025.00	Dolby B \$125; pwr. amp & spkrs \$50.		
	7504AW	A	10 1/2	3	4	2	3	ind.	idler	30-20 ±2	0.08	55	2	yes	10k	2 meters	20 1/2 x 10 x 17 1/2	55	1025.00	Same options.		
JVC	RD-1696	A	7	2	4	2	1	ind.	idler	30-18 ±3	0.09	54	0.3	no	10k	2 meters	15 1/2 x 7 1/2 x 12 1/2	19	249.95			
	4RD-1406	B	7	2	4	4	1	ind.	belt	30-18 ±3	0.07	54	0.3	no	10k	4 meters	16x13 1/2 x 7 1/2	28 1/2	379.95			
NAGRA	1V-SL	E	7	4	2	2	1	d.c. servo	direct	30-20 ±1	0.02	71	1V	yes	50, 100	2 meters	13x9 1/2 x 4 1/2	11 1/2	4151.00	Powers 4 types cond. mikes. Opt. film sync or FM 3rd chan.		
	1S-D		5	4	1	1	3	d.c. servo	direct	50-15 ±2	0.07	70	4.4V	yes	200	meter	10 1/2 x 8 x 3	8 1/2	2927.00	Dpt. film sync; D-cell powered.		
	4.2L	E	7	4	2	1	1	d.c. servo	direct	30-20 ±1.5	0.02		4.4V	yes		meter	13x9 1/2 x 4 1/2	11 1/2	3422.00	As above.		
	SNN	H	2 1/2	3	1	1	1	d.c. servo	direct	80-15 ±2	0.07	63	630	no	200	meter	5 1/2 x 1 x 1	1	2129.00	Penlight cell powered for 7 1/2 hours record time.		
	IV-SJ	G	7	4	3	2	1	d.c. servo	direct	2.5-35 ±1.5	0.02	62	1V	no		2 meters	13x9 1/2 x 4 1/2	12 1/2	5234.00	D-cell powered; step input atten.; acous. wgt. filters, inter. power for meas. mikes.		



The Nakamichi Revolution

An extravagant statement? Not at all. For the Nakamichi 700 Tri-Tracer cassette system is so completely different from anything that has gone before that it truly represents a quantum jump in cassette technology.

A brilliantly engineered instrument, the Nakamichi 700 is an extraordinary blend of electronic and mechanical sophistication.

To cite a few innovative examples, three separate heads—erase, record, playback—afford off the tape monitoring, but more importantly, extend flat frequency response to beyond 20,000 Hz. A closed-loop dual capstan system employs a servo-controlled d.c. motor to maintain rock-steady, constant speed and a second motor takes over in fast forward and rewind. IC logic and feather-touch solenoids control all tape functions. A built-in record head azimuth-alignment beacon insures perfect recordings every time.

But enough. An extended technical description goes far beyond the scope of this ad.

Far more persuasive, we think, are these comments from a Hirsch-Houck Laboratories Test Report that appeared in the December 1973 issue of Stereo Review.

"As our test data indicate, the Nakamichi 700 is an extraordinary cassette recorder... With Nakamichi CrO₂ tape, the performance was... an almost incredible ± 1.5 dB from 46 to 22,500 Hz... The noise level, referred to the 3 per cent distortion level, was very low... -57 dB without Dolby and -62.5 dB with Dolby."

They go on to say, "We could not measure the 700's combined wow and flutter because it was below the residual level of our test tape."

Summing up, the Report declares, "... we would rank it (the Nakamichi 700) as the best cassette recorder we've tested and one of the best tape recorders of any type we have ever used."

See and hear the Nakamichi 700 and the companion Model 1000 at your dealer now. Then go out and start your own little revolution.

For complete information and the name of your nearest dealer write: Nakamichi Research (U.S.A.), Inc., 220 Westbury Avenue, Carle Place, N.Y. 11514. In California: 1101 Colorado Avenue, Santa Monica 90404.



PERFECTION THROUGH PRECISION.

NAKAMICHI

Check No. 40 on Reader Service Card

Cassette & Cartridge Tape Decks

MANUFACTURER	MODEL	If cassette, X no tracks	Channels, 1, 2, or 4	Freq. Response Hz-KHz ±? dB (standard tape)	Freq. response Hz-KHz ±? dB (CRD, tape)	Wow and flutter, % (W RMS)	S/N ratio, dB, w/o Dolby	S/N ratio, dB, with Dolby	CRD, bias & equal?	LN bias & equal?	Mic. mixing? no. inputs	Memory rewind?	Does unit record?	VU meters? (number?)	Peak level indicator (dB)?	Dimensions, in.	Weight (lbs. incl)	Price, \$	NOTES (D) after price indicates Dolbyized. (Q) with model number indicates 4-channel.
KENWOOD	KT-910	X	2	30-13	30-16	0.09	50	58	-	-	yes	yes	yes	2	yes	16 1/4 x 10 x 5		299.95(D)	
	KT-710	X	2	30-13	30-16	0.09	50	58	-	-	yes	yes	2	yes	16 1/4 x 10 x 5		249.95(D)		
	KT-620	X	2	40-11	40-12	0.09	50	58	yes	-	-	yes	2	yes	17 x 11 1/4 x 5 1/2		219.95(D)		
LAFAYETTE	RK-0750	X	2	50-11 ±5	50-13 ±5	0.25	45	55	yes	no	no,2	no	yes	2	no	13x9x4 1/4	8	159.95(D)	Headphone amp.
	RK-725	X	2	50-11 ±5	50-13 ±5	0.25	45	-	yes	no	no,2	no	yes	2	no	13x9x3 3/4	6	109.95	Headphone amp.
	RK-715	X	2	60-10 ±5	-	0.4	40	-	no	no	no	no	yes	no	yes	8 1/2 x 5 1/2 x 3	3 1/2	69.95	Output level control; automatic stop.
	RK-D985	8	4	50-11 ±5	-	0.25	45	55	no	no	no,2	no	yes	2	no	13x8 1/2 x 5	10 1/2	199.95(D)	Auto stop.
	RK-990	8	4	30-12 ±5	-	0.25	45	-	no	no	yes,2	no	yes	2	no	12x9x3 3/4	13	179.95	Auto stop; manual eject; fast forward.
	RK-885	8	4	50-10 ±5	-	0.25	40	-	no	no	no,2	no	yes	2	no	13x8 1/2 x 5	9	119.95	Auto stop; fast forward.
3M	CTR-1	X	2	35-15	35-17	0.07	50	60	yes	yes,2	yes	yes	yes	2	2	23 1/2 x 8 x 7 1/4	23	629.95(D)	3 pos. bias & equal. switch, rms & peak meters.
	CTR-3	8	2	30-12	30-15*	0.1	50	60		yes	no		yes	2	no	22 1/4 x 7 1/4 x 6	18 1/2	399.95(D)	*W. Scotch Classic. 2 pos. bias & EQ; fast forward 5X normal speed.
MARANTZ	5420	X	2	30-18 ±3*	30-16 ±3	.07	52	60	yes	yes	4	yes	yes	2	yes	17 1/2 x 12 1/2 x 6 1/4		399.95(D)	*W. FeCr tape.
	5400	X	2	30-18 ±3*	30-16 ±3	.07	52		yes	yes	4	yes	yes	2	yes	17 1/2 x 12 1/2 x 6 1/4		349.95	*W. FeCr tape.
	5220	X	2	30-17 ±3*	35-15 ±3	.08	50	58	yes	yes	2	yes	yes	2	yes	17 x 5 x 1 1/4		399.95(D)	*W. FeCr tape.
	5200	X	2	35-17 ±3*	35-15 ±3	.08	50		yes	yes	2	yes	yes	2	yes	17 x 5 x 1 1/4		299.95	*W. FeCr tape.
	5210	X	2	35-17 ±3*	35-15 ±3	.09	50	58	yes	yes	2	no	yes	2	yes	16 x 10 x 5 1/2		299.95(D)	*W. FeCr tape.
MERITON	HD-540	X	2	30-13	30-16	0.1	50	58	yes	yes	no		yes	2	no	16 x 4 x 10 1/4	11 1/4	259.95(D)	W. headphone jack, dustcover, Dolby.
	HD-500	X	2	30-12	30-15	0.2	45		yes	no	no	no	yes	2	no	14 x 3 3/4 x 9 1/2	8	129.95	W. headphone jack.
	HD-830	8	2	40-13		0.15	45		no	no	no,2	no	yes	2	no	14 1/2 x 5 1/2 x 9 1/2	8	139.95	Pause control; auto off.
	HD-800	8	2	30-12		0.17	50		no	no	no	no	no			10 1/2 x 5 1/2 x 8 1/4		49.95	W. pgm. indicator lights.
NAKAMICHI	1000	X	2	35-18 ±3	35-20 ±3	0.1*	52	60	yes	yes	yes,3	yes	yes	2	no	20 1/2 x 8 1/2 x 11 1/4	39	1295.00(D)	3-head, DNL, double capstan, IC logic control. *DIN.
	700	X	2	35-18 ±3	35-20 ±3	0.1*	52	60	yes	yes	yes,3	yes	yes	2	no	20 1/2 x 5 x 10 1/4	28	849.00(D)	*As above.
	550	X	2	40-17 ±3	40-16 ±3	0.13	52	60	yes	yes	yes,3	no	yes	2	no	12 1/2 x 13 1/4 x 3 1/2	11 1/4	499.00(D)	Focused-gap head, a.c./bat. power. Nicad bat. opt. 45 dB peak mtrs. *As above.
	500	X	2	40-17 ±3	40-16 ±3	0.13*	50	58	yes	yes	yes,3	yes	yes	2	no	15 x 10 x 4 1/4	15 1/2	399.00(D)	*As above. 3-pos. bias sel.
NEAL (AUDIO-PILE SYSTEMS)	103	X	2	35-12 ±3	35-12 ±3	0.09	55	64	yes	yes	yes,3	no	yes	*	*	13 1/2 x 5 1/2 x 9 1/2	14	598.50(D)	*2 peak-read. meters. Adj. bias; solid-state switching.
	102 MKII	X	2	35-12 ±3	35-15 ±3	0.09	55	64	yes	yes	no	no	yes	*	*	14 x 9 1/2 x 5	14	549.50(D)	*As above. Adj. bias; solid-state switching.
PIONEER	CT-F9191	X	2	35-13 ±3	30-14 ±3	0.07	52	62	yes	yes	yes,2	yes	yes	2	yes	17 1/2 x 8 x 12 1/2	27 1/2	449.95(D)	Front load; limiter; peak LED indicators; memory Stop/Play; mike/line mixing.
	CT-F7171	X	2	40-13 ±3	40-13 ±3	0.1	48	58	yes	yes	no,2	yes	yes	2	yes	17 x 12 x 5 1/2	18 1/2	369.95(D)	Front load; peak limiting; skip cueing; in & out level controls.
	CT-F6161	X	2	40-11 ±3	40-12 ±3	0.12	48	58	yes	yes	no,2	no	yes	2	no	17 1/2 x 5 1/2 x 13	19 1/2	299.95(D)	Front load; bias & eq. select; skip cueing; in & out level controls.
	CT-F2121	X	2	40-11 ±3	40-12 ±3	0.12	48	58	yes	yes	no,2	no	yes	2	no	13 x 11 x 5 1/2	14 1/2	199.95(D)	Front load; bias & eq. select; optional cabinet.
	CT-5151	X	2	63-12 ±3	63-13 ±3	0.12	48	58	yes	yes	no,2	yes	yes	2	yes	15 1/2 x 9 1/2 x 3 1/2	10 1/2	269.95(D)	Peak limiting; peak LED indicators; skip cueing; memory rewind.
	CT-4141A	X	2	63-10 ±3	63-12 ±3	0.13	48	58	yes	yes	no,2	no	yes	2	no	15 1/2 x 9 1/2 x 3 1/2	10 1/2	239.95(D)	Auto stop; skip cueing.
	CT-3131A	X	2	63-10 ±3	63-12 ±3	0.13	47	-	yes	no	no,2	no	yes	2	no	15 1/2 x 9 1/2 x 3 1/2	9 1/2	179.95	Noise filter; ref. level markers; pause.
QUAORA-FLEX	307	X	2	20-14 ±3	20-15 ±3	.08	52	59	yes	yes	no,4	yes	yes	2	yes	15 1/2 x 6 x 12 1/2	22	369.95	Solenoid assist controls; FeCr bias position.
RADIO SHACK	SCT-9	X	2	30-14 ±3	30-15 ±3	.15	50	54	yes	yes	yes,2	yes	yes	2	no	14 1/2 x 9 1/2 x 4 1/4	11	199.95(D)	
	SCT-8	X	2	40-12 ±3	40-13 ±3	.15	48		yes	yes	yes,2	no	yes	2	no	15 x 8 1/2 x 4	6 1/2	139.95	
	TR-801	8	2	50-12 ±3	-	.15	50				yes,2		yes	2	no	16 1/2 x 10 1/2 x 5 1/2	12 1/2	149.95	Auto stop after 4th track; auto eject.
	TR-882	8	2	50-10 ±3	-	0.2	42				yes,2		yes	2	no	13 x 8 1/2 x 4	8 1/2	99.95	

Cassette & Cartridge Tape Decks

MANUFACTURER	MODEL	If cassette, "X"; if cartridge stereo		Freq. Response, Hz-KHz: ± dB (standard tape)	Freq. response, Hz-KHz: ± dB (CrD ₂ tape)	Wow and flutter, % (W RMS)	S/N ratio, dB, w/o Dolby	S/N ratio, dB, with Dolby	CrD ₂ bias & equal?	LN bias & equal?	Mic. mixing? no. inputs	Memory rewind?	Dogs unit record?	VU meters? (number?)	Peak level indicator (s)?	Dimensions, in.	Weight (lbs. net)	Price, \$	NOTES (D) after price indicates Dolbyized. (Q) with model number indicates 4-channel.
		no. tracks	Channels, 1, 2, or 4																
SANSUI	SC-636	X	2	35-10 ±3	35-13 ±3	0.12	50	58	yes	yes	yes,3	no	yes	2	no	16x11¼ x4¼	14.8	279.95(D)	M-C ferrite head; auto off.
	SC-3000	X	2	35-11 ±3	35-13 ±3	0.09	50	60	yes	yes	no,2	yes	yes	2	yes	17½x11½ x6¼	17.6		Front-load; d.c. servo motor; auto off.
SHARP	RT-3500	X	2	45-13 ±3	45-15 ±3	0.13	52	58	yes	no	yes,2	yes	yes	2	yes	17x10½ x4¼	13	259.95(D)	Automatic Program Search System; cassette chamber illum.; sleep switch. Cassette chamber illum.
	RT-2500	X	2	45-12 ±3	45-12 ±3	0.13	52	58	yes	no	yes,2	yes	yes	2	yes	17x10½ x4¼	13	199.95(D)	
	RT-821	8	2	50-10 ±3	—	0.25	45	—	no	no	yes,2	yes	yes	2	no	15¼x9 x4¼	12	169.95	APSS; time counter; pause.
	RT-2000	X	2	60-8 ±3	60-10 ±3	0.15	50	55	yes	no	yes,2	yes	yes	2	yes	16x10 x10¼	12	179.95(D)	APSS; cassette chamber illum.
	RT-840 (2)	8	4	50-10 ±3	—	0.25	45	—	no	no	yes,2	yes	yes	2	no	15¼x9 x4¼	12	199.95	Counter; pause.
	RT-820	8	2	50-10 ±3	—	0.25	45	—	no	no	yes,2	yes	yes	2	no	15¼x9 x4¼	12	149.95	As above.
	RT-480	X	2	45-11 ±3	45-15 ±3	0.15	52	58	yes	yes	yes,2	yes	yes	2	no	7½x10¼ x4¼	13	249.95(D)	APSS.
SUPER-SCOPE	CD-302A	X	2	30-15	30-18	0.12	48	58	yes	no	yes,2	no	yes	2	yes	13x9x3	6	189.95(D)	Pause.
	CD-301A	X	2	40-10	40-14	0.2	48	—	yes	no	yes,2	no	yes	2	yes	13x9x3	6	139.95	Pause.
	TD-48	2/ 4	2	30-10	—	0.2	48	—	no	no	no	no	no	—	no	7x10x5	6¼	99.95	Auto 2/4 channel switching; continuous play; fast forward.
	TD-28	2	2	30-10	—	0.2	48	—	no	no	no	no	no	—	no	7x10x5	6¼	74.95	Program repeat.
TANBERG	TCD-310	X	2	40-13.5 ±2	—	0.15	—	63	yes	yes	—	yes	yes	2	—	17x9x4	14%	499.00	
TEAC	A-170	X	2	30-13k	30-16k	0.09	60	—	yes	yes	no	no	yes	2	no	17x10x6	10	239.50(D)	
	A-400	X	2	30-13k	30-16k	0.08	60	—	yes	yes	no	no	yes	2	yes	18x11x6	14	329.50(D)	
	A-360S	X	2	30-15k	30-16k	0.07	60	—	yes	yes	yes,2	yes	yes	2	yes	18x11x5	17	389.50(D)	
	A-450	X	2	30-15k	30-16k	0.07	60	—	yes	yes	yes,2	yes	yes	2	yes	18x11x7	21	479.50(D)	
TECHNICS BY PANASONIC	RS-676US	X	2	40-12 ±2,3	40-13 ±2,3	.08	50	58	yes	yes	yes,2	yes	yes	2	pk. mtrs.	16½x4¼ x5½	23	459.95(D)	Dolby incl. 25µS de-emphasis select; two-motors; auto CrD ₂ select. Meter peak test. Remote option; front load; memory replay.
	RS-625US	X	2	40-12 ±3,5	40-13 ±3	0.1	49	57	yes	yes	yes,2	yes	yes	2	pk. mtrs.	15½x11 x5	13¼	299.95(D)	Meter peak test; tape-run light.
	RS-610US	X	2	50-10 ±3	50-12 ±3	.15	49	57	yes	yes	yes,2	yes	yes	2	no	13¼x11½ x4¼	13¼	249.95(D)	Auto stop.
	RS-263AUS	X	2	30-13	30-14	.15	49	57	yes	yes	yes,2	yes	yes	2	pk. mtrs.	13¼x9½ x4¼	10½	199.95(D)	Meter peak test; auto stop.
	RS-858US 4-chan.	8	*	30-12	—	.15	45	—	no	yes	yes,4	yes	yes	4	no	21x11¼ x4¼	20%	329.95	*Stereo record, 4-ch. play. Noise suppr.; auto eject. Locking fast forward; pause; digital time readout.
TOSHIBA	PC-6030	X	2	20-15	20-17.5	0.07	60	70	yes	yes	yes	yes	yes	2	no	15¼x7¼ x9¼	22	749.00(D)	PLL-controlled d.c. servo motor; IC logic control; Auto reverse off.
	PT-490	X	2	30-15	—	0.1	50	60	yes	yes	no	no	yes	2	no	16¼x11½ x5½	18	349.95(D)	
	PT-470	X	2	30-15	—	0.1	50	60	yes	yes	no	no	yes	2	no	16¼x11½ x5½	18	249.95(D)	Auto off; cue; reverse.
	PT-415	X	2	—	30-15	0.1	50	—	yes	no	no	no	yes	2	no	14½x10¼ x4	10	199.95	Auto, DNL.
	PT-406	X	2	30-15	50-10	0.15	45	—	yes	no	no	no	yes	2	no	13¼x9¾ x4¼	9	159.95	Auto off.
	PE-1150	8	2	100-10	—	0.3	40	—	no	no	no	no	yes	2	no	15¼x10¾ x4¼	11	149.95	
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
UHER	CG-360	X	—	26-15 ±3	20-20 ±3	0.15	53	56	yes*	yes	yes,2	yes	yes	2	no	15¼x4 x11¼	15%	1088.50(D)	*Auto CrD ₂ swit. 3 motors; pgm. replay.
	CR-210	X	—	—	20-16 ±3	0.12	—	58	yes*	yes	no,2	no	yes	2	no	7x7x2	4%	757.25(D)	*Auto CrD ₂ swit. Auto reverse.
	CR-134	X	—	—	20-15 ±2	0.12	—	56	no	no	—	—	—	—	—	—	—	378.00	
WOLL-ENSAK	4766	X	2	35-14 ±3	35-15 ±3	0.07	48	60	yes	yes	yes,2	no	yes	2	—	17¼x10¼ x6¼	16	429.95(D)	3-pos. bias & EQ. FeCrD ₂ S/N above 50 dB.
	8080(Q)	8	2/ 4	30-12 ±3	30-15* ±3	0.1	50	60	yes	yes	—	yes	yes	2	no	19¼x10¼ x5	17	399.95(D)	*W. Scotch Classic. 2-chan. REC., 4-chan.
	8075	8	2	30-12 ±3	30-15 ±3	0.1	50	60	yes	yes	—	yes	yes	2	no	19¼x10¼ x5	17	339.95(D)	*W. Scotch Classic. 2-pos. EQ.
	8056	8	2	30-12 ±3	30-15 ±3	0.1	50	—	yes	yes	—	yes	yes	2	no	17½x10½ x5	15	269.95	2-pos. EQ.
YAMAHA	TC-800GL	X	2	30-13	30-15	0.06	50	58	yes	yes	yes,2	yes	yes	2	yes	12¼x12¼ x3¼	11.4	390.00(D)	3-way powr; bias & EQ swit.; auto CrD ₂ ; variable pitch; limiter.
	TB700	X	2	30-13	30-16	0.15	48	58	yes	yes	yes,2	no	yes	2	no	15¼x9¾ x4¼	11.0	340.00(D)	3-pos. bias & EQ; auto off; peak limiter; pitch control.

Speakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., in.	Woofer resonance (in system)	Midrange dia., in.	Midrange type	Tweeter dia., in.	Tweeter type	Level control(s) M=Mid, T=tweeter	Anechoic freq. response: Hz-kHz, ±7 dB	Sens. for 1 W input, dB SPL, 1 mtr., on-axis (100 Hz-10 kHz)	Power handling capability (continuous watts)	Crossover frequencies, Hz	Impedance, nominal	Dimensions, inches	Wood finish	Grille material, color	Weight, lbs.	Price, \$	NOTES	
ACUSTICAL ENGINEERING	Saratoga	horn	12		8	horn	1 1/2	horn	T	36-18* ±5	96.5	125	500, 3k	8	28x30 x22	Wal.	Clth, bn.	150	895.00	*Meas. in studio w. 3 ms reverb.	
	Mini-Corner	horn	8		4	horn	1	horn	T	42-18 ±5	88.5	80	800, 5k	8	12x24 x12	Wal.	Clth, bn.	85	295.00	*As above.	
ACOUSTIC RESEARCH	AR-LST	Ac.sus.	12	42	(4) 1 1/2	dome	(4) 3/4	dome	*	**	86	**	575, 5k	8/4	27x20 x9 3/4	Wal.	Beige, line.	90	600.00	*6-position spectral balance switch **Complete data on request.	
	AR-3A	Ac.sus.	12	42	1 1/2	dome	3/4	dome	M, T	*	86	*	575, 5k	4/3	25x14 x11 1/2	Wal.	Beige, line.	53	295.00	*Complete data on request.	
	AR-5	Ac.sus.	10	56	1 1/2	dome	3/4	dome	M, T	*	86	*	650, 5k	8/4	13 1/2x24 x11 1/2	Wal.	Beige, line.	39	215.00	*Complete data on request.	
	AR-2AX	Ac.sus.	10	56	3 1/2	cone	3/4	dome	M, T	*	86	*	1400, 5k	8/4	13 1/2x24 x11 1/2	Wal.	Beige, line.	36 1/2	165.00	*Complete data on request.	
	AR-6	Ac.sus.	8	56			1 1/4	dome/ cone	T	**	86	*	1800, 5k	8/4	12x19 1/2 x7	Wal.	Beige, line.	20	99.00	*Complete data on request.	
	AR-7	Ac.sus.	8	68			1 1/4	dome/ cone	T	**	86	*	2000	8/4	9 1/2x15 x6 1/2	Wal.	Beige, line.	11	75.00	*Complete data on request. **3-pos. switch.	
ADS	2001	Ac.sus.	4		2	dome	1	dome			50-25*		1500	43k	7x4 1/4 x4	Met.	Alum.	19	475.00	*DIN. **Bi-amped, 12-V system; electronics 3 1/2x6 1/2x9 1/4 in.	
	LV1020	Ac.sus.	12		2	dome	1	dome			20-25*	110*	400, 3k	50k	15x29 x11 1/2	Wal.	Clth, blk.	62	665.00	*DIN. **At full power, X-over, 3 amps built in.	
	L810	Ac.sus.	(2) 8		2	dome	1	dome			20-25*	95	550, 4k	4	14x25 1/2 x11 1/2	Wal.	Clth, blk.	55	329.50	*DIN, 2-chamber cabinet	
	L710	Ac.sus.	(2) 8				1	dome			25-25*	94	550, 4k	4	12 1/2x22 1/2 x10 1/2	Wal.	Clth, blk.	40	245.00		
	L700	Ac.sus.	(2) 7				1	dome			25-25*	94	1500	4	12 1/2x21 1/2 x10 1/2	Wal.	Clth, blk.	35	169.95	*DIN. As above.	
	L500	Ac.sus.	(2) 7				1	dome			25-25*	94	1500	4	11 1/2x20 x9 3/4	Wal.	Clth, blk.	26	129.95	*DIN.	
	L400	Ac.sus.	7				1	dome			30-25*	92	1500	4	10x17 1/2 x8 1/2	Wal.	Clth, blk.	16	96.00	*DIN.	
ADVANCED DEVELOPMENT DIV., AR, INC.	AR-10 T	Ac.sus.	12	42	1 1/4	dome	3/4	dome	*	**	86	**	525, 5k	*	14x25 x10 1/2	Wal.	Foam, blk.	59 1/2	395.00	*Three 3-pos. switches for woofer, mid, tweeter **Complete data on request.	
	AR-11	Ac.sus.	12	42	1 1/4	dome	3/4	dome	M, T	*	86	*	525, 5k	4/3	14x25 10 1/2	Wal.	Foam, blk.	55	295.00	*Complete data on request.	
	AR-MST/1	Ac.sus.	8	55		3 1 1/4	dome, cone		T	*	86	*	1600, 5k	8/6	14 1/2x21 x7 1/2	Wal.	Foam, blk.	25	159.00	*Complete data on request.	
ADVENT	Advent	Ac.sus.	43			7/8	dome	T			30-20 ±4	*	1000	8	14 1/2x25 1/2 x11 1/2	Wal.	Clth, beige	44	137.00	*Data on request; also in walnut vinyl, \$119.00.	
	Smaller Advent	Ac.sus.	43			7/8	dome				30-20 ±4	*	1400	4	11 1/2x20 x9 3/4	Wal.	Clth, beige	26	92.00	*Data on request	
	Advent/2	Ac.sus.	58			(2) 1 1/4	cone				40-20k	*	1500	8	11 1/2x19 x7 1/4	White	Metal	18	77.00	*Data on request	
AKAI	S-123	port	12	25	4 1/2	cone	1 1/4	cone	M, T		35-20 ±5	88	50	1500, 4k	8/7	14 1/2x26 1/2 x10 1/2	*	Foam, brn.	40	189.95	*Wood-grain vinyl finish
	S-122	port	12	25		1 1/4	cone	T			40-20 ±5	86	40	2000	8	14 1/2x26 1/2 x10 1/2	*	Foam, brn.	34	122.95	*As above.
	S-102	port	10	25		1 1/4	cone	T			45-20 ±5	85	35	2000	8	13x24 x9 3/4	*	Foam, brn.	27	89.95	*As above.
	S-82	ac.sus.	8			3	cone				60-17 ±5	80	15	4000	8	11x19x 6 1/2	*	Cloth	9 1/2	75.00 pair	*As above.
ALLISON ACOUSTICS	One	ac.sus.	(2) 10	45	(2) 3 1/2	cone	(2) 1	cone	M, T		86	25	350	8/7	19x40x 10 1/2	Wal.	Plas., blk.	67	360.00		
	Two	ac.sus.	(2) 8	52	(2) 3 1/2	cone	(2) 1	cone	M, T comb.		86	25	3,750 350 3,750	8/7	16x36x 9 1/2	Wal.	Plas., blk.	57	295.00		
ALTEC	Stonehenge III	port	15			*	**	T			50-20	100	65	1.5K	8	Oak	Foam, brn.	114	595.00	*1 1/2 in. voice coil **compression driver.	
	Stonehenge II	port	12		5 1/2	cone	5	cone	MT		35-20	86	50	500, 5k	8	Oak	Cloth, brn.	61	359.00		
	Nine	port	12		6 1/2	cone	5	cone	MT		40-20	93	60	800, 7k	8	Oak	Foam, var.	56	289.00		
	Seven	port	12		6 1/2	cone	4	cone	MT		45-20	90	50	850, 8k	8	Wal.	Foam, var.	43 1/2	219.00		
	Five	port	12			(2) 4	4	cone	T		45-20	91.5	45	1500	8	Wal.	Cloth, blk.	32	169.00		
	Three	port	10			4	4	cone	T		50-20	90.5	35	1500	8	Oak	Cloth, blk.	26 1/2	119.00		
One	ac.sus.	8			4	4	cone	T		50-20	84	30	3000	8	Oak	Cloth, brn.	23	89.00			

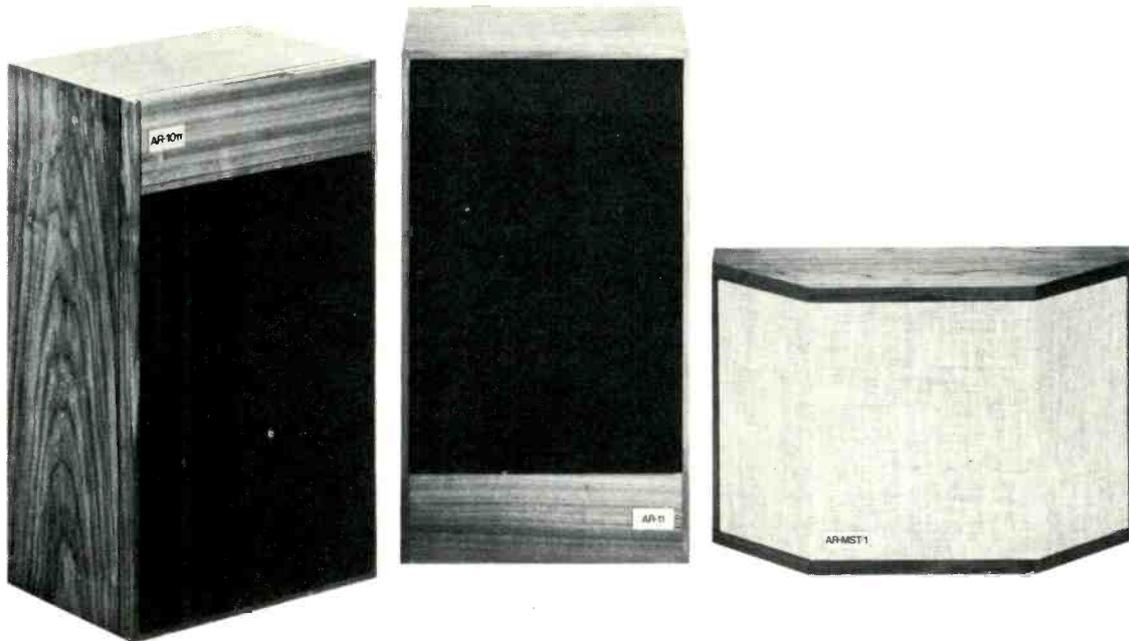
Speakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., in.	Woofer resonance (in system)	Midrange dia., in.	Midrange type	Tweeter dia., in.	Tweeter type	Level control(s) M=Mid, T=Tweeter	Anechoic freq. response, Hz-kHz, ±2 dB	Sens. for 1 W input, dB SPL, 1 mtr. on-axis, 100 Hz-10 kHz	Power-handling capability, continuous watts	Crossover frequencies, Hz	Impedance, nominal	Dimensions, inches	Wood finish	Grille material, color	Weight, lbs.	Price, \$	NOTES
AUDIOANALYST	A-76X	ac.sus.	10	52	—	—	2	cone	T	44-18 ±3	90	40	1800	8	12½x21x10½	Wal.	Cloth, blk.	32	107.00	
	A-100X	ac.sus.	10	48	2	cone	1½	cone	M, T	40-20 ±3	92	50	1500/7500	8	13½x24¾x12	Wal.	Cloth, blk.	37	147.00	
	A-200X	ac.sus.	12	46	5	cone	2 (2)1½	cone	M, T	38-20 ±3	93	100	800/2000/7500	8	15x27x12½	Wal.	Cloth, blk.	53	259.00	
AUDIO LABS	82	ac.sus.	8	44	—	—	1	dome		35-20 ±5	94	35	2000	8	12x19½x8	Wal.	Foam, blk.	23	79.00	
	1010	ac.sus.	10	48	—	—	1	dome	T	25-20 ±5	91	100	2000	8	14½x25½x11½	Wal.	Foam or cloth	46	139.00	
	1221	ac.sus.	12	43	2	dome	1	dome	M, T	22-20 ±4	92	150	500/5000	8	14½x25½x12	Wal.	Foam or cloth	50	279.00	
	1251	ac.sus.	12	43	5	cone	1	dome		22-20 ±4	94	150	500/5000	8	14½x25½x12	Wal.	Foam or cloth	49	189.00	
	81	ac.sus.	8	46	—	—	1	dome		25-20 ±4	92	50	1600	8	12x22x9	Wal.	Foam blk.	26	99.00	
	121	ac.sus.	12	43	—	—	1	dome		22-20 ±4	92	100	1600	8	14½x25½x12	Wal.	Foam, cloth	39	159.00	
	Column	port	10	49	(2)3	dome	(3)1	dome		20-22 ±4	90	200	500/4500	8	12x43x12	Wal.	Knit	70	349.00	
AUDIOINICS	M-32	port	8	48	—	—	2	cone		36-17 ±4	85	25	2500	8	21x12x9	Wal.	Cloth, blk.	30	150.00	
	M-33	port	9x13	42	5	cone	7/8	dome		35-30 ±6	88	50	250, 3k	8	30x16x14	Wal.	Cloth, blk.	90	350.00	
	TL30-B	port	8	44	—	—	2	cone	T	40-16 ±6	85	35	2500	8	40x4x11	Rose	Cloth, blk.	65	199.00	
	TL-51	port	8	42	—	—	2	cone	T	36-16 ±4	88	50	2500	8	44x12½x12½	Rose	Cloth, blk.	75	275.00	
	TLM-200	port	9x13	38	5	cone	7/8	dome		32-30 ±6	88	50	250, 3k	8	48x14½x14½	Wal.	Cloth, blk.	120	550.00	
AUDIO RESEARCH	TYMPANI I-C	see notes	*	*	*	*	*	*		40-18 ±3	84	50	1325	8	see notes	none	see notes	67	1155.00 pair	*Magneplanar tympanic suspension in folding floor-stand screen in choice of off-white or blk.
	TYMPANI IIIA-TM	see notes	*							75-18 ±3	87	50	**	8	see notes	none	see notes	43½	900.00 pair	*As above; **Bi-amp required; rec. x-over 75-100 Hz.
	TYMPANI IV-TM TYMPANI WA	see notes see notes	* *							60-18 ±3 35-3 ±3	87 86	50 50	** **	16 8	see notes see notes	none none	see notes see notes	67 87	1175.00 pair 845.00	*As above; **Bi-amp required; rec. x-over 65-100 Hz.
AUDIOSON/ KIRKSAETER	Monitor 100	ac.sus.	(2)10	(2)1½	dome	(2)1	dome			18-22	100	1200/5500	8	15½x29½x12	Wal.	Cloth, brn.	66	450.00		
	Monitor 70	ac.sus.	12	1½	dome	1	dome			20-22	70	1200/45500	4	22½x13x11	Wal.	Cloth, brn.	40	300.00		
	Monitor 50	ac.sus.	10	1½	dome	1	dome			22-22	50	1200/45500	4	18x9½x11½	Wal.	Cloth, brn.	22	210.00		
	Monitor 40	ac.sus.	8	1½	dome	1	dome			28-22	40	1200/45500	4	18x9½x8	Wal.	Cloth, brn.	18	165.00		
	Monitor 45	ac.sus.	10	—	—	1	dome			28-20	45	3500	4	18x9½x11½	Wal.	Cloth, brn.	16	150.00		
	Monitor 35	ac.sus.	8	—	—	1	dome			30-20	35	3500	4	18x9½x8	Wal.	Cloth, brn.	14	130.00		
AUDIOTEX (GC)	Audiotrek I	ac.sus.	6	55	—	—	3	cone		50-20	20	—	8	17x10x6		Foam, brn.	11½	39.95	Optional base in black, \$4.95.	
	Audiotrek II	ac.sus.	8	—	—	1½	cone			35-22	25	—	8	18½x11¼x17½		Foam, brn.	14	49.95	As above.	
	Audiotrek III	ac.sus.	10	—	—	2½	cone			40-22	35	—	8	20x12x10		Foam, brn.	20	69.95	As above.	
	Audiotrek IV	ac.sus.	12	—	4½	cone	1½	cone		35-22	45	—	8	24x15x10		Foam, brn.	29	89.95	As above.	
AURATONE	5S	ac.sus.	4½	—	—	—	—	—		90-15	90	20	—	8	6½x10½x4	Wal.	Foam, blk.	4	50.00 pair	
	5C	ac.sus.	4½	—	—	—	—	—		90-15	90	20	—	8	6½x6½x5	Wal.	Foam, blk.	4	50.00 pair	
	5X	ac.sus.	4½	—	—	—	—	—		90-15	90	20	—	8	7½x7½x4	Wal.	Foam, blk.	4	50.00 pair	
	5W	ac.sus.	4½	—	—	—	—	—		90-15	90	20	—	8	7½x7½x5½-3½	Wal.	Foam, blk.	4	54.00 pair	

Speakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., in.	Woofer resonance (in system)	Midrange dia., in.	Midrange type	Tweeter dia., in.	Tweeter type	Level controls (M=Mid, T=Tweeter)	Anechoic freq. response	Sens. for 1 m, 1 mtr. on-axis, 100 Hz-10 kHz	Power handling capability (continuous)	Crossover frequencies, Hz	Impedance, nominal	Dimensions, inches	Wood finish	Grille material, color	Weight, lbs.	Price, \$	NOTES	
																					60-17 ±5
AVIO	60	Port	9x6			2%	cone	-		60-17 ±5	90	35*	8x9x25% 5k	1600, 5k	8x9x25% 25%	Wal.	Cloth, brn.	16	125.00	*Prog. mater. Opt. stands, \$10/pair.	
	100	ac.sus.	8	59	-	1%	Cone	T		40-18 ±5	86	75*	2.5k	8/6	13x8x24%	Wal.	Cloth, brn.	22	88.00	*As above. Fused.	
	102	ac.sus.	10	47	-	1	dome	T		35-18 ±5	85	100*	2.2k	8/6	15x9x25%	Wal.	Cloth, brn.	36	130.00	*As above. Stds inc.	
	103	ac.sus.	10	47	4%	cone	1	dome	M,T		35-18 ±5	83	150*	500, 3.5k	8/6	15x9x25%	Wal.	Cloth, brn.	38	165.00	*As above. Dpt. stands, \$10/pair.
	105	ac.sus.	12	35	3	cone	1 (2) 1 1/8 (2) 1%	dome cone	M,T		30-18 ±2%	84	200*	500, 4k, 9k	8/6	20x15x26%	Wal.	Cloth, brn.	75	300.00	*As above.
	101	port	8					Cone	-		30-20 ±3	86	50*	2.5k, 3.5k	8	13x29x13%	Wal.	Cloth, brn.	40	130.00	*As above.
BANG & OLUFSEN	Beovox M70	ac.sus.	10*		2 1/2	cone	1	dome		27-20 ±4-8	70		500, 4k	4/8	13x25x4%	**	Cloth, blk.	55	350.00	*Plus 5-in. passive radiator. **Rosewood, oak, or teak. W. stands. *As above. Shelf mount recommended.	
	Beovox S60	ac.sus.	10*		2	cone	1	dome		36-20 ±4-8	60		700, 4k	4/8	12x23x7%	**	Cloth, blk.	24	220.00	*Plus 3 1/2 in. passive radiator. **As above. Wall mount recommended.	
	Beovox P45	ac.sus.	(2)* 5				1	dome		40-20 ±4-8	45		2000	4/8	13x25x5	**	Cloth, blk.	17	155.00	*As above. Shelf mount recommended.	
	Beovox S45	ac.sus.	8*							38-20	45		2000	4/8	10x19x7	**	Cloth, blk.	15	140.00	*As above. Shelf mount recommended.	
	Beovox P30	ac.sus.	6 1/2*							49-20	30		3000	4/8	11x21x3	**	Cloth, blk.	11	115.00	*As above. Wall mount recommended.	
	Beovox S30	ac.sus.	5 1/2*							49-20	30		3000	4/8	8x16x5	**	Cloth, blk.	8	100.00	*As above. Shelf mount recommended.	
BERTAGNI	D120	*	*		*		Pz	M,T		35-20 ±2	92	100	700, 3k	4	53x20x3%	Dak	Foam, blk.		399.00	*Foam-based electro-magnetic diaphragm, no enclosure. Size less base.	
	D60	*	*		*		Pz	M,T		38-20 ±2	91	50	700, 3k	8	(3)29x20x3%	Wal.	Foam, blk.		199.00	*As above.	
	U60	*	*		*					38-18 ±3	91	40	900	8	(3)26x17x3%	Util.	Foam, blk.		149.00	*As above.	
	O50	*	*		*		Pz	T		45-20 ±4	89	25	3k	8	(3)26x16x3%	Wal.	Foam, blk.		99.00	*As above.	
BEVERIDGE	2	*	*	*	*	*	*	*		40-15 ±2	na	na	na	na	24x72x16	Wal.	Foam	80	4,000.00 pair	*Full range electro-static, cylindrical radiation, slot/lens, air-mass loaded. Includes amplifier.	
B-I-C	F6	duct port	12		(2) 5	cone	(2) 2	pz	T		97	125		6/4	26x15x14%	Wal.	Foam, var.	52	295.00		
	F4	duct port	10			cone	2	dome	T		94	100		6/4	25x13x14%	Wal.	Foam, var.	35	159.00		
	F2	duct port	8			cone	2	dome	T		92.5	75		6/4	19x12x11%	Wal.	Foam, var.	23	119.50		
	F1	duct port	8			cone	2	dome	T		91	50		2000	8/6	16x10 7/8 x10	Wal.	Foam, var.	17	74.95	
BML	Tracer I	port	8	43				Pz		43-22 ±3	97	150	2k*	4	22x12x10	Wal.	Cloth, brn, blk.	30	112.00	*Mech. x-over; fused.	
	Tracer II	port	8	32				Pz		28-22 ±3	94	175	1k, 2k*	4	25x14x9	Wal.	Cloth, brn, blk.	35	149.95	*Mech. x-over; fused.	
	Tracer III	port	8	28	4	cone		Pz		22-22 ±3	94	200	1k, 2k, 4k*	4	29x14x12	Wal.	Cloth, blk.	45	299.95	*Mech. x-over; fused.	
BOSE	901	ac.sus.*			(9) 4%	cone					270			8/ 7.5	21x13x13	Wal.	Cloth, brn.	33	598.00 pair	*Direct/reflecting; no x-over. Includes active equalizer.	
	501	ac.sus.*	10	50		(2) 3 1/2	cone				100		1500	4/ 3.7	14x24x14	Wal.	Cloth, brn.	42	168.00	*Direct/reflecting.	
	301	port	8					T			60		1200, 3k	8/ 6.5	17x10 1/2 x9%	Wal.	Foam, blk.	18	96.00		
BOZAK	B310/410	ac.sus.	(4) 12		(2) 6%	cone	(8) 1%	Cone		28-20	150*		400, 2500	8	36x52x19	Wal.	Cloth Wh.	225	1110.00	*For program material. Priced to \$1193 depending on style.	
	B400U	ac.sus.	(2) 12		6%	cone	(8) 1%	cone		35-20	100*		400, 2500	8	26x44x16	Wal.	Cloth white	165	632.00	*As above. Price depends on style.	
	B4005	ac.sus.	(2) 12		6%	cone	(8) 1%	cone		35-20	100*		400, 2500	8	36x28x20	Wal.	Cloth, Wh.	150	758.00	*As above. Price depends on style.	
	B407	ac.sus.	(8) 8			(8) 1%	cone			30-20	150*	2000	8	18x41x16	Wal.	Cloth, Wh.	100	497.50	*As above.		
	B401	ac.sus.	12		6%	cone	(2) 1%	cone		40-20	60*		800, 2500	8	18x25x13	Wal.	Foam, brn.	65	269.50	*As above. B-402 is shelf mount.	
	B301F		12		4%	cone	1%	cone		40-20	50*		1200, 3600	8	14x23x11	Wal.	brn.	40	189.50	*As above. B-301A is shelf mount.	
	B201	port	8				1%	cone		40-20	60*		1800	8	20x12x10	Wal.	Cloth brn.	30	99.50	*As above.	
	B1000	ac.sus.	8							50-10	60*			8	18x21x12	Wal.	Metal, gold	25	99.50	*As above. Metal-enc. outdoor speaker.	

Introducing A new family of loudspeakers from Acoustic Research



AR-10 π

The AR-10 π is the most accurate musical reproducer that Acoustic Research has ever made. It shares the characteristics of AR's previous speaker systems, smoothness of response, uniform dispersion, and low distortion. A significant additional feature of the AR-10 π is its ability to deliver uniform flat energy response in most listening rooms.

Further, the designed-in performance of the AR-10 π is preserved, whether the speaker is positioned against a wall, in a corner, or even in the middle of a room. Setting a single switch, called the 'Woofer Environmental Control', will ensure the correct level of bass energy for any of these positions. It is not possible to do this accurately with conventional loudspeaker designs or equalization techniques.

AR-11

The performance, drivers, and crossover of the AR-11 are identical to those of the AR-10 π , except that the AR-11 does not incorporate a Woofer Environmental Control and the associated crossover components.

The AR-11 is designed for optimum performance when placed against a wall, as in the conventional bookshelf position, or slightly away from two adjoining room surfaces.

Both the AR-10 π and the AR-11 use a 12 inch acoustic suspension woofer, a 1 1/2 inch dome midrange, and a newly designed 3/4 inch dome highrange.

AR-MST/1

The AR Miniature Studio Transducer offers at moderate cost the flat energy response of AR's other new speaker systems, together with the high power-handling capability required in many professional applications. Along with the AR-MST/1's small size, light weight, and shallow depth, these characteristics make the speaker especially appropriate for the monitoring of remote-location recordings as well as the accurate reproduction of music in the home, even at relatively high sound levels.

Guarantee

The workmanship and performance of all AR speaker systems are guaranteed for five years.

A complete description of the new family of AR speakers is available free. Mail us the coupon today.

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Please send me a complete description of the AR-10 π , AR-11, and AR-MST/1 speaker systems.

Please send me the AR demonstration record 'The Sound of Musical Instruments' (check for \$5 enclosed)

Name _____

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AU10

Speakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., in.	Woofer resonance (in system)	Midrange dia., in.	Midrange type	Tweeter dia., in.	Tweeter type	Level controls/ M-Mid, T-tweeter	Anisochronous freq. response, Hz-kHz, ±? dB	Sens. for 1 W, input, dB SPL, 1 mtr., on-axis, 100 Hz-10 kHz	Power handling capability, continuous watts	Crossover frequencies, Hz.	Impedance, nominal	Dimensions, inches	Wood finish	Grille material, color	Weight, lbs.	Price, \$	NOTES
BO SONICS	Concert 5000	port	15, 10	39	10	cone	*	*		20-44	112	500	250, 5000, 9000	8	25x35 x21	Wal.	Foam**	105	449.00	*3 1/2" pz., 2" x6" horn. **Choice, various colors.
	Encore 1000	Ac.sus.	15	42	5	cone	*	*		20-27	102	250	500, 5000	8	18x26 x14	Wal.	Foam**	45	199.00	*2 1/2" pz. **Choice, various colors.
B&W ELECTRONICS	DM2A	port	8		1 1/4	dome	3/4	dome	M	30-22 ±3	83*	60	3k, 14k	8	14x25 1/2 x13 1/2	Wal.	Clth. blk.	49	350.00	*At 400 Hz; 13 w gives 95 dB SPL. X-overs, 18 dB/oct., phase corrected.
	DM4	port	8		1 1/4	dome	3/4	dome		35-22 ±4	90*	40	3.5k, 14k	8	10x10 x21	Wal.	Clth. blk.	24	230.00	*At 400 Hz; 3.6 w gives 95dB SPL. X-overs, 18 dB/oct., phase corrected.
	D5	Ac.sus.	5				1	dome		40-20 ±4	86*	30	3000	8	9x18 x7	Wal.	Clth. blk.	14	135.00	*At 400 Hz; 10 w gives 95 dB SPL. X-overs, 18 dB/oct., phase corrected.
	DM70	Ac.sus.	13	28	*	es	*	es		22-18 ±2	83*	125	500	8	27x32 1/2 x15 1/2	Wal.	Clth. bn. blk.	80	850.00	*At 400 Hz; 17 w gives 95 dB SPL. X-overs, 18 dB/oct., phase corrected.
CAMBRIDGE (C/M)	TL200	port	13x 9 1/2	30	5 1/2	cone	1	dome		25-25 ±5	80	25	400, 3k, 10k	8	13x4 1/2 x17 1/2	Teak, Wal.	Plas. ribs	98	500.00	
	TL100	port	13x 9 1/2	35	5 1/2	cone	1	dome		30-18 ±5	80	25	400, 3k	8	12 1/2 x31 1/2 x13	Teak, Wal.	Plas. ribs	52	400.00	
C/M LABS	CM15	Ac.sus.	15	5	6	cone	*	*	M, T	20-22 ±2.5	96	50	450, 5k	4	17x34 x17	Wal.	Clth. blk.	97	500.00	Includes feedback winding and terminals. *Tweeter 2 1/4" in. cone, super-tweeter 3" in. horn.
CERWIN-VEGA	15T	port	15	30	8*	**	5	dhorm	M, T		103	150	200, 1.5k, 4k	8/6	16 1/2 x40 x16 1/2	Wal.	Clth. blk.	95	499.50	
	25	port	12	45			1	dome	T		95	40	2500	8/6	14 1/2 x25 x12	Wal.	Clth. blk.	40	139.50	
	36R	port	12	40	5	cone	2 1/2	dhorm	M, T		97	60	400, 3k	8/6	14 1/2 x25 x12	Wal.	Foam, blk.	48	189.50	
	12T	port	12	30	8	cone	2 1/2	dhorm	M, T		100	100	200, 4k	8/6	13 1/2 x40 x13 1/2	Wal.	Clth. blk.	75	299.50	
	26	port	12	42			2 1/2	dhorm	T		96	60	2500	8/6	14 1/2 x25 x12	Wal.	Foam, blk.	42	149.50	
	317	port	15	35	8	cone	5	dhorm	M, T		103	150	200, 8k	8/6	20x27 1/2 x17	Wal.	Foam, blk.	77	395.00	
CRAIG	5701	Port	10				2	cone		40-18 ±5	94	20	3500	8	16 1/2 x24 x13 1/2		Foam	36 1/2	79.95	
	5702	Port	12		4 1/2	cone	2	cone		25-20 ±5	94	30	1k, 8k	8	19 1/4 x27 x14 1/2		Foam	46	119.95	
CROWN	ES-212	Ac.sus.	(2) 10	45			(12)	Es	T	22-30		300	375	4	26x21x42	Wal.	Cloth, black	110	595.00	
DAHLQUIST	DQ-10	Ac.sus.	10* *	43	5 2	cone dome	3/4 (1)	dome Pz	**	37-27 ±5			400, 1k, 6k, 12.5k, 500, 3.5k	8	30 1/2 x31 1/2 x9	Wal.	Cloth, black	53	395.00	*10-in. woofer in 12-in. basket for longer throw. ** Slope ±1 dB @ 6 kHz, ±5 dB @ 18 kHz. ** As above.
	DQ-6	Ac.sus.	12	43	5	cone	3/4	dome	M/T **	30-20 ±5				8	28 1/2 x14 1/2 x12 1/2	Wal.	Cloth, black	45	250.00	
DATHAR ACOUSTICS	DA-I	Ac.sus.	(6) 5 (2) 8	26			(6) 2 1/4 (4) 2 1/4	cone	T	22-22 ±3	97	80	1500	8	25x15x13 1/2	Wal.	Foam black	57 1/2	660.00	
	DA-II	Ac.sus.	(2) 8	35			(4) 2 1/4	cone	T	40-22 ±5	97	40	1500	8		Wal.	Foam black	42	360.00	
DAYTON-WRIGHT	X6-8MK3	Es	*					(2) Pz	T	30-20 ±4	90	350	16.5k	4	39x39x9 1/2	*	*	63	2692.00	*Full range electrostatic (10 cells), plus 2 piezoelectric super-tweeters. Avail. in black pebble finish w/anodized aluminum, rosewood, or walnut. Price includes electrostatic energizer (wght. 95 lbs). As kit only, includes all wood parts precut and finished.
	TL4	port	12	7	(2) 6 1/2	cone	(6) 2	Pz	M, T	19-18 ±5	92	125	150, 750, 6k	4	18x53x16	Rose	Foam, black	98	595.00	

Avid makes the differences in speakers clear.

If you're a real stereo buff, you know that flat frequency response means flat, uncolored sound.

Like several other manufacturers, we too try to build the flattest, most linear frequency response we can into our speakers.

But we don't stop there. Because we know that great sound depends on more than just frequency response.

Transient response, for instance.

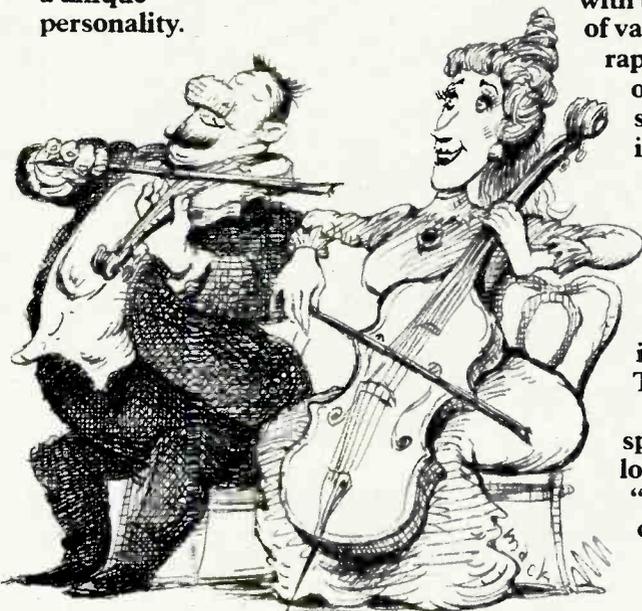
It's all in your head

To understand transient response, it's important to understand how you hear.

You see, you don't really hear with your ears. You hear with your brain.

For instance, it's the brain that helps you identify what you're listening to. The direction it's coming from. And that re-creates that illusion of "being there."

The thing is, every musical note is really a complex tone. A basic tone—the fundamental—plus subtle musical overtones—harmonics—that give very instrument a unique personality.



Not only that, musical notes are constantly starting and stopping. When they do, the number and intensity of the harmonics change.

This basic tone, together with all those changing harmonics, is called a transient. The brain takes all of them into account in interpreting any sound the ear receives.

On making things imperfectly clear

It's when a speaker can't react quickly or accurately enough to all those changing musical notes, all those transients, that distortion can occur.

And distortion means muddy-sounding music. With little definition or clarity.

A bad situation made worse when a speaker over-reacts to all those changing tones. The speaker actually adds tones of its own. And that's bad.

Most experts feel the best way to measure transient response is with tone bursts. Pure tones of various frequencies are rapidly switched on and off to simulate the transient nature of voice and instrument signals.

In Pattern A, the speaker hasn't reproduced accurately. It's completely overshot the level of the input signal. And the result is a sizzling, hot sound. Totally colored.

In Pattern B, the speaker has taken too long to react. This "hangover" can cause considerable blurring. So what you hear is dull and lifeless.

Now look at Pattern C. The speaker here has reacted both quickly and accurately. And the result is exceptional clarity and definition. The kind that Avid builds into all of its speakers.

Check No. 9 on Reader Service Card

The proof is in the hearing

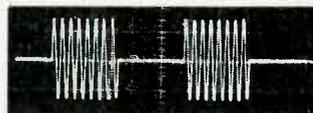
Now you know there's a lot more to a speaker than just flat frequency response. Like good transient response.

But even the best, most accurate transient

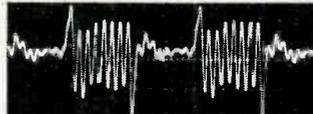
response in the world isn't the be-all and end-all of a superb speaker. There's more.

The point is, we're a company that is committed to one thing and one thing only. The design and construction of the clearest, best-sounding stereo speaker systems in their price range.

But you've got to hear for yourself. So go to your hi-fi store and listen to an Avid.



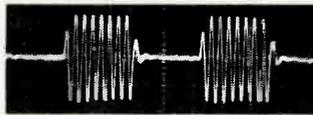
Input Signal



Pattern A



Pattern B



Pattern C

Then some other speaker in the same price category.

Then decide. We don't think you're going to have any trouble at all.

AVID

CORPORATION

10 Tripps Lane, East Providence, R.I. 02914
Distributed in Canada by:
Kairon Electronics, Montreal, Quebec.



Speakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., in.		Woofer resonance (in system)	Midrange type		Tweeter dia., in.	Tweeter type	Level control(s) M=Mid, T=Tweeter	Anechoic freq. response, Hz-Hz, ±2 dB	Sensitivity, 1 W, 1 m, 10 ft, dB SPL, 1 mtr. on-axis, 100 Hz	Power handling capability, continuous watts	Crossover frequencies, Hz	Impedance, nominal	Dimensions, inches	Wood finish	Grille material, color	Weight, lbs.	Price, \$	NOTES
			Woofer	Woofer		Midrange	Midrange														
DESIGN ACOUSTICS	D-2	Ac.sus	10	41		1/4	dome	T		40-16 ±3.5	90	*	1500	8	35x12 1/2x12 1/2	Wal.	Cloth, black	35	150.00		
	D-6	port	10	30	5	cone	(5) 2 1/2	cone	M,T	30-16 ±2.5	90	40	800, 2k	8	24 1/2x16 1/2x13 1/2	Wal.	Cloth, black, brown	50	279.00		
	D-4	Ac.sus	10	43	5	cone	(3) 2 1/2	cone	M,T	45-16 ±3	88	30	800, 2k	8	38x9 1/2x17 1/2	Wal.	Cloth, black	48	199.00	*Ormeal or black.	
	D-12	port	10	27	5	cone	(9) 2 1/2	cone	M,T	30-15 ±2	89	50	800, 1600	8	30x22*	Wal.	Cloth, black	53	399.00	*22-in. diameter, omnidirectional.	
DYNACO	A-40XL	Ac.sus	10			1	dome	T			92	50	1200	8	22 1/2x13 1/2x10	Wal.	Beige, linen	32	149.00		
	A-25XL	Ac.sus	10			1	dome	T			92	50	1500	8	20x11 1/2x10	Wal.	Beige, linen	25	109.00		
	A-35	Ac.sus	10			1 1/2	dome	T			90	35	1200	8	22 1/2x12 1/2x10	Wal.	Beige, linen	30	129.00		
	A-25	Ac.sus	10			1 1/2	dome	T			90	35	1500	8	20x11 1/2x10	Wal.	Beige, linen	24	92.50	Avail. Rosewood (A-25R) \$102.50. Teak (A-25T) \$102.50. Vinyl walnut (dark grille) A25VW, \$84.00	
	A-10VW	Ac.sus	6 1/2			1 1/2	dome	T			87	25	2500	8	15x8 1/2x8	Wal.	Cloth, brown	30 (pr.)	110.00		
	A-50	Ac.sus	(2) 10			1 1/2	dome	T			90	50	1000	8	21 1/2x28x10	Wal.	Beige, linen	47	189.00		
ELECTROSTATIC RESEARCH	139-3W	Ac.sus	10	45	5	cone				30-20 ±2	100	100	8	16x28x16	Vinyl wal.	Foam	47	199.90	Omnidirectional tweeter array. As above.		
	108	Ac.sus	10	45					M,T	30-20 ±2 1/2	100	100	8		Vinyl wal.	Cloth		189.90	As above.		
	88	Ac.sus	8	55					M,T	30-20 ±3	60	1200	8		Vinyl wal.	Cloth		139.90	As above.		
ELECTRO-VOICE	Sentry III	port	15	40	8 1/2x32	*horn	4x6	*horn	M,T	40-18 ±3	98	50	600, 350	8	34 1/2x20 1/2x28 1/2	Wal.	Cloth, black	156	650.00	*Sectoral horn mid, tweet. Opt. SEQ equalizer, \$60.00. *Plus vent substitute cone. W. equalizer. *Plus vent substitute cone. W. equalizer.	
	Interface: A	port*	12	32	8	cone	(2) 2	cone	T	32-20 ±3	89	25	55, 1500	8	14x7 1/2x22	Wal.	Cloth, black	35	450.00		
	Interface: B	port*	10	36	8	cone	2	cone	T	36-18 ±3	92	25	55, 1500	8	14x23x9 1/2	Wal.	Cloth, black	27	325.00		
	EVS-16B	Ac.sus	12	30	8	cone	2	cone	T	30-20 ±5	91	25	700, 3000	8	14x25x13 1/2	Wal.	Cloth, brown	45	159.95		
	EVS-15B	Ac.sus	10	40	5	cone	2	cone	T	40-20 ±5	90	25	700, 3000	8	13 1/2x24x11 1/2	Wal.	Cloth, brown	39	139.95		
	EVS-14B	Ac.sus	10	40	5	2 1/2	cone	T		40-18 ±5	89	25	1500	8	13 1/2x24x11 1/2	Wal.	Cloth, brown	28	109.95		
	EVS-13B	Ac.sus	8	50		2 1/2	cone	T		50-18 ±5	88	20	1500	8	10x19x8 1/2	Wal.	Cloth, brown	19	69.95		
	Musicaster IA	port	*	80							80-10	94	20	4000	8	21 1/2x21 1/2x8 1/2	*		29	109.50	*Outdoor system. Musicaster IIA has super tweeter, 16k resp., \$138.00.
EPI	350	Ac.sus	(3) 8			(3) 1	*	T		30-20	25	1.8	8	18x38x18	Wal.	Cloth, black	75	350.00	*Air spring.		
	250	Ac.sus	(2) 8			(2) 1	*	T		35-19	20	1.8	8	15x25x15	Wal.	Black	40	239.00	*Air spring.		
	180	Ac.sus	(2) 8			(2) 1	*	T		40-18	20	1.8	8	16x25x12	Vinyl	Black	35	189.00	*Air spring.		
	110	Ac.sus	8			1	*	T		35-18	15	1.8	8	14x24x10	Vinyl	Black	30	120.00	*Air spring.		
	100	Ac.sus	8			1	*	T		45-18	12	1.8	8	11x21x9	Wal.	Black	25	100.00	*Air spring.		
	90	Ac.sus	8			1	*	T		45-18	12	1.8	8	11x21x9	Vinyl	Black	25	70.00	*Air spring.		
	60	Ac.sus	6			1	*	T		50-18	10	1.8	8	8 1/2x15 1/2x6 1/2	Vinyl	Black	15	70.00	*Air spring.		
	Microtower MT 3	port	(4) 4 1/2			(2) 1	*			40-18	25	200	8	11 1/2x11 1/2x4 1/2	Vinyl	Black	55	540.00	*Air spring.		
	Microtower MT 2	port	(2) 4 1/2			(2) 1	*			50-18	15	200	8	8 1/2x32x8 1/2	Vinyl	Black	28	360.00	*Air spring.		
	Microtower MTB 2	port	(2) 4 1/2			1	*	T		40-18	5	1800	8	14x24x10	Vinyl	Black	30	300.00	*Air spring.		
Microtower MT 1	port	(2) 4 1/2			1	*			50-15	5	200	4	8 1/2x31x8 1/2	Vinyl	Black	21	200.00	*Air spring.			
EPICURE	Tower 1000	Ac.sus	(4) 8			(4) 1	*			22-20	60	1.8	8	18x78x18	Wal.		180	1000.00	*Air spring.		
	400+	Ac.sus	(4) 6			(4) 1	*	T		27-20	25	1.8	8	14x38x14	Wal.		90	399.00	*Air spring.		
	Twenty	Ac.sus	(2) 8			(2) 1	*	T		30-20	20	1.8	8	18x27x12	Wal.		40	229.00	*Air spring.		
	Eleven	port	6	36		1	*	T		33-19	15	1.8	8	13 1/2x21 1/2x9 1/2	Wal.		36	134.00	*Air spring.		
	Ten	Ac.sus	8			1	*	T		40-20	12	1.8	8	12x22x9	Vinyl		25	109.00	*Air spring.		
Five	Ac.sus	6			1	*			55-18	10	1.8	8	11x15x8	Vinyl		30 pr.	75.00	*Air spring.			
EMPIRE	9000GT	Ac.sus	15	60	(2) 1/2	dome	1	dome	M,T	15-25 ±5	150	450	8	18 1/2x30x17	Wal.	Cloth, black	50	659.90	Glass top. Octagonal.		
	7500	Ac.sus	15	65	(2) 1/4	dome	1	dome	M,T	25-20 ±5	125	500	8	18x25x18	Wal.	Cloth, black	45	499.90	Octagonal.		
	6500	port	12	80	1	cone	3/4	cone	M,T	30-20 ±5	100	450	8	17 1/2x25 1/2	Wal.	Cloth, black	30	319.90	*Cylindrical, can be used outdoors.		
	6000	port	12	80	1	cone	3/4	cone	M,T	30-20 ±5	100	450	8	18x25x18	Wal.	Cloth, tan	35	299.90	Octagonal.		
EQUASOUND	1	Ac.sus	12	35	4	cone	1	dome	T	35-20		400, 2500	8	16x32x12	Wal.	Cloth, black	50	350.00			
	2	port	12	30	4	cone	(3) 1	dome	T	30-20		400, 2500	8	42x14 1/2x14 1/2	Wal.	Cloth, black	65	225.00			



BOSE ON INNOVATION

Multiple Acoustically Coupled Drivers

There is one, and only one, reason for innovation in loudspeaker design...to produce a better musical experience. If the innovations are based on thorough research and executed with exceptional skill, they can produce truly dramatic results.

The Bose 901[®] eliminates woofers, tweeters and crossover networks by using nine matched full range drivers in each enclosure. The close spacing of the drivers results in acoustic coupling which causes the resonant frequencies of each driver to diverge from those of every other driver. This means that only one driver out of nine can be in resonance at a time—a proportion which is inaudible and which effectively smooths the frequency response. The result of

this patented design is a freedom from audible coloration and extreme clarity of reproduction. Listen to the 901 in comparison to any speaker of your choosing...and understand how Bose innovation has produced the most highly reviewed speaker...regardless of size or price. The Direct/Reflecting[®] 901. By Bose.

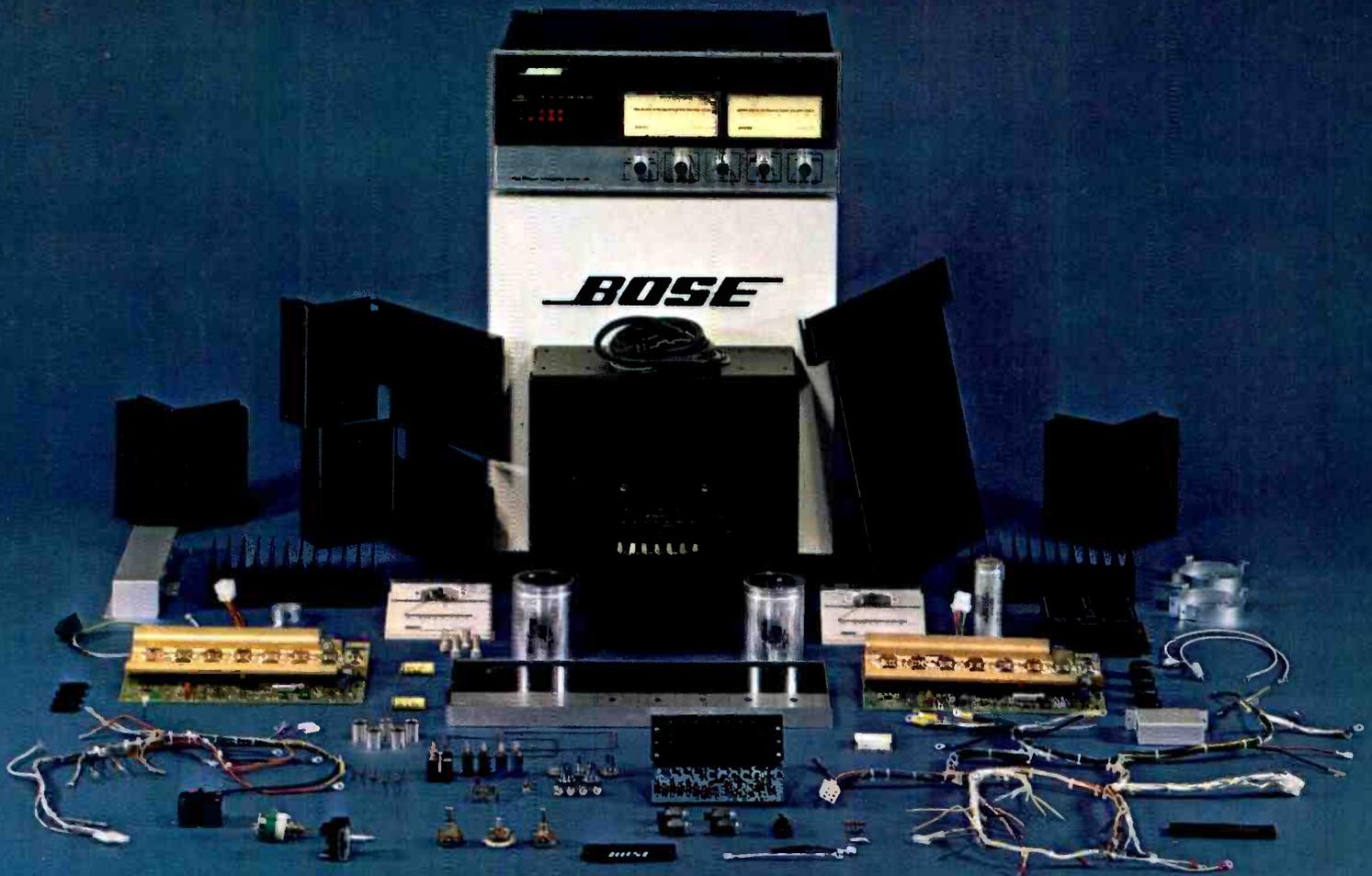
BOSE[®]

The Mountain, Framingham, MA 01701

Please write us for the complete story of the 901. 901 cabinet is walnut veneer on particle board.

Speakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., in.	Woofer response (in system)	Midrange dia., in.	Midrange type	Tweeter dia., in.	Tweeter type	Level control(s)	Max. Midr. Tweeter	Anechoic freq. response, Hz x kHz, ± dB	Sens. for 1 W input @ 10 Hz, 100 Hz, 1 kHz, 10 kHz	Power handling capability, continuous watts	Crossover frequencies, Hz	Impedance, nominal	Dimensions, inches	Wood finish	Grille material, color	Weight, lbs.	Price, \$	NOTES
ESS	AMT-1 Tower	port	10	40			*	T	20-22	88	60	900	4/6	15x43 1/2	Wal.	Black		399.00	*Heil AMT.		
	AMT-3	Ac.sus	(2) 10	50	cone		*	T	35-22	91	100	400, 15k	4/6	15 1/2 x 39 1/4	Wal.	Brown		469.00	*Heil AMT.		
	AMT-4	Ac.sus	10	50			*	T	30-25	88	60	1200	4/6	15 1/2 x 27 x 12 1/2	Wal.	Brown		269.00	*Heil AMT.		
	AMT-6	Ac.sus*	(2) 12	42			*	T	30-25	90	110	1500	4/6	24 1/2 x 47 1/2	Wal.	Brown		695.00	*Array, 4 Heil AMTs.		
	AMT-1A	port	12	20			*	T	30-25 ±3.5	35	75	1000	4/6	33x14 1/4	Wal.	Cloth, black				*Heil AMT.	
	Evaluator	port	12	21			*	T	30-25 ±3.5	45	75	1000	4/6	24x14x14	Wal.	Cloth, gray		328.00	*Heil AMT.		
	Tempest Lab Series 1	port	12	21			*	T	30-25 ±5	45	60	1500	4/6	27x15x14	Vinyl, black	Foam**		219.00	*Heil AMT. **Brown, blue, rust, green.		
	Tempest Lab Series 2	port	10	29			*	T	35-25 ±5	45	50	1500	4/6	24 1/2 x 13 1/2	Wal.	Foam**		169.00	*Heil AMT. **Brown, blue, rust, green.		
Tempest Lab Series 3e	port	8	38			*		40-25 ±5	45	40	1500	4/6	22x12 1/4	Wal.	Foam**		08.00	*Heil AMT. **Brown, blue, rust, green.			
FAIRFAX	F2A	port	8	55		3 1/2	cone		40-20		25	5.5k	8	12x9x18	Wal.	Foam, brown		25	69.95		
	FX100B	port	8	50		3 1/2	cone	T	40-20		30	2k	8	12x10x22	Wal.	Foam, brown		30	109.95		
	FX300	port	10	47		3 1/2	cone	T	34-20		50	2k	8	14x10 1/2 x 22	Wal.	Foam, brown		42	129.95		
	FTA-3	horn	10	45	5	cone	1	dome	T,M	30-20		50	1k, 5.5k	8	14x12x24	Wal.	Foam, brown		50	169.95	
	FX350	port	10	39	5	cone	3 1/2	cone	T,M	24-20		60	1k, 5.5k	8	14x12x36	Wal.	Foam, brown		70	199.95	
	FX400	port	(2) 10	35	5	cone	3 1/2	cone	T,M	20-20		80	1k, 5.5k	8	28x14x28	Wal.	Foam, brown		105	289.95	
	WALL OF SOUND	port	(6) 10	35	(2) 5	cone	*	*		20-20		100	800, 2k, 5k, 9k	6.5	30x6 1/2 x 52	Wal.	Cloth, brown		125	429.95	*Two 1-in. dome and two 3 1/2-in. cone tweeters.
FORUM (AUDIMAX)	HE 153	Ac.sus	15	38	6	cone			45-20 ±4	94	15	2500	8	22x12 1/2 x 8 1/2	Wal.	Foam, brown		18	69.95		
	HE 123	Ac.sus	12	40	6	cone			30-20 ±4	93.5	30	2000	8	24x14x10 1/2	Wal.	Foam, brown		26	89.95		
	HE 102	Ac.sus	10	46		cone			25-20 ±4	94	45	1500, 8k	8	27 1/2 x 19x12	Wal.	Foam, brown		45	129.95		
	HE 82	Ac.sus	8	59		cone			20-20 ±4	94	60	1500, 8k	8	27 1/2 x 19x12	Wal.	Foam, brown		49	159.95		
	Standard SP 312X	Ac.sus	12	38	6	cone			25-20 ±4	90	40	1500, 8k	8	24x14x12	Wal.	Foam, brown		32	109.95		
	Standard SP 312	Ac.sus	12	40	3 1/2	cone			28-19.5	90	30	2000, 8k	8	24x14x10 1/2	Wal.	Foam, brown		27	79.95		
	Standard SP 210	Ac.sus	10	45	3 1/2	cone			35-18.5	90	18	3000	8	22x12 1/2 x 8 1/2	Wal.	Foam, brown		19	59.95		
	Standard SP 28	Ac.sus	8	94		cone			80-17.5	90	10	10k	8	17x11 1/2 x 8 1/2	Wal.	Foam, brown		15	39.95		
	Standard SP 16	port	6	110		cone			90-15	90	8	8	8	14x9x6 1/2	Wal.	Foam, brown		8	29.95		
	Standard 310	Ac.sus	10	45	3 1/2	cone			35-19.5	92	25	2500, 8k	8	22x12 1/2 x 8 1/2	Wal.	Foam, brown		20	69.95		
	FRAZIER	Concerto	port	10		3x7	horn pz		T		93	30	2k, 4k	8	16x21 1/2 x 16	Wal.	Foam, var.		56	235.00	
Mark VI-A		port	12		3x7	horn pz		M,T		97	30	600, 3k, 4k	8	29 1/2 x 23 1/2 x 16	Wal.	Cloth, cocoa & gold		103	450.00		
Super Monte Carlo		port	8		3	pz				93	20	4k	8	10 1/2 x 19 x 12	Wal.	Cloth, brown		31	100.00		
Mark IV-A		port	10		3x7	horn		T		93	30	2k	8	24x14x12	Wal.	Foam, var.		44	150.00		
Mark V		port	12		3x7	horn		M,T		94	30	800, 3k	8	25 1/2 x 14 x 12	Wal.	Foam, var.		55	270.00		
Seven		port	12		(2) 3x7	horn		M,T		96	30	500, 3k	8	29x19x16	Wal.	Foam, var.		98	350.00	Hi or Lo boy.	
Supermidget		port	4							89	10	8	8	15 1/2 x 6 1/2 x 9 1/2	Wal.	Cloth,		14	50.00		
GOLLEHON	8220/M	horn	15	55	3 1/2	dome	1 1/2	dome	M,T	50-18 ±5	121	150	500, 3.5k	8	47x28x25	Epx.		120	648.00		
	8218/M	port/horn	15	55	3 1/2	dome	1 1/2	dome	M,T	28-18 ±5	121	150	500, 3.5k	8	55x33x25	Epx.		160	850.00		
HARTLEY	Concertmaster VI	Semi-inf.	24	13	10	cone	7 1	cone dome		16-25		200, 3k, 7k	6/8	40 1/2 x 29 x 18	Wal.	Cloth, gold		145	965.00	Concertmaster V, black cloth grille, \$940.	
	Concertmaster IV	Semi-inf.	18	17	10	cone	7 1	cone dome		16-25		200, 3k, 7k	6/8	30x29x16	Wal.	Cloth, gold		120	910.00	Concertmaster III, black cloth grille, \$885.	
	Concertmaster Jr.	Semi-inf.	10	28	3	cone	1	dome		20-25		2k, 5k	5/8	30x24x14	Wal.	Cloth, gold		80	350.00	Holton A, similar to Concertmaster Jr. but black cloth grille, \$335.	
	Holton Jr.	Semi-inf.	10	30	3	cone	1	dome		25-25		2k, 5k	5/8	30x15x12	Wal.	Cloth, black		55	285.00		
	Zodiac 75	Semi-inf.	10	40		cone	1	dome		35-25		2k	8	30x15x12	Wal.	Foam, blue, black		50	136.00		
	Zodiac 1	Semi-inf.	10	45		cone	1	dome		40-25		2k	8	21 1/2 x 14 1/2 x 8 1/2	Wal.	Cloth, black		30	97.00		
Zodiac 300	Semi-inf.	2x 10	40		cone	1	dome		30-25		2k	4	25 1/2 x 23 1/2 x 11 1/2	Wal.	Cloth, black		60	225.00			
HAYNES	J-1	Ac.sus	(2) 8 1/2	45	1 1/2	dome	1 1/2	dome		50-15 ±3	89	60	1500	4	1.4 cu.ft.	Wal.		40	149.50	Kit, \$89.70.	
	J-1AX	Ac.sus	(2) 8 1/2	45	1 1/2	dome	(2) 1	dome		50-20 ±3	90	60	1500, 7.5k	4	1.4 cu.ft.	Wal.		45	199.50	Kit, \$199.50.	
	30WK	Ac.sus	12	35						50-20 ±3			4	2.8 cu.ft.	Wal.			65	225.00	*Add-on woofer, below 175 Hz, for J-1 series.	



BOSE ON QUALITY

The 1801[®] Power Amplifier.

Much of the quality that distinguishes a truly outstanding electronic instrument from the average product goes unseen. It lies in the concern and skill of the design engineer, conservative rating of components, and extreme care in manufacturing.

For example, power transistors are costly. Yet using a large number assures that each works within its safe-area rating under any load and signal conditions. The 1801 uses 28 such power transistors.

A large power transformer is costly and heavy. In the 1801 the transformer is very large to provide tight regulation of supply voltages, providing very large power output with minimum stress on the output transistors.

Large amplifiers undergo unusual stresses during turn-on. The 1801 has a relay operated start-up circuit that limits currents and voltages in the power supply circuits during turn-on.

Yet what is on the surface perfectly complements the underlying quality of construction and design. 1300 square inches of heat sink. Two oversize VU meters. A two-position input selector. Individual gain controls for each channel. A three-position speaker selector. And a light emitting diode display of power output.

The size, power and features of the 1801 are not for everyone. But for the nearest approach to the ultimate...in quality of design, construction, and performance...there is no other amplifier.

The 1801. By Bose.

BOSE[®]

The Mountain, Framingham, Mass. 01701

Speakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., in.		Woofer response (in system)		Midrange dia., in.		Midrange type		Tweeter dia., in.		Tweeter type		Level control(s)		Anechoic freq. response		Sens. (on 1 W, 1 m, 10 kHz)		Power handling capability		Crossover frequencies, Hz.		Impedance, nominal		Dimensions, inches		Woofer finish		Grille material, color		Weight, lbs.		Price, \$		NOTES
			Woofer response (in system)	Midrange dia., in.	Midrange type	Tweeter dia., in.	Tweeter type	Level control(s)	Anechoic freq. response	Sens. (on 1 W, 1 m, 10 kHz)	Power handling capability	Crossover frequencies, Hz.	Impedance, nominal	Dimensions, inches	Woofer finish	Grille material, color	Weight, lbs.	Price, \$																			
HEGEMEN LABS	H-1AV	Ac.sus	8	28		2	cone*	T	30-20 ±2.5	25	5000	8	11x8 1/4x 26	Vinyl	Foam, black	25	318.00 (pair)	*Aluminum. Avail. Wal. as H-1AW, S378/pr.																			
	H-2W	Ac.sus	10	24		2	cone*	T	25-25 ±2.5	30	3500	8	34x14x12	Wal.	Foam, black	42	756.00 (pair)	*Aluminum.																			
	HB-80V	Ac.sus	8	70		2	cone*		70-40 ±2.5	20	4500	8	17 1/2x11x8	Vinyl	Foam, **	31	144.00 (pair)	*Aluminum. **Black or brown. Avail. Wal. as HB-80W, S174/pr.																			
	HB-100V	Ac.sus	10	50		2	cone*		50-40 ±2.5	25	3000	8	23x13x 10 1/2	Vinyl	Foam, **	27	204.00 (pair)	* ** As above. Avail. Wal. as HB-100W, S240/pr.																			
	HB-120V	Ac.sus	12	40		(2) 2	cones*	T	40-40 ±2.5	30	2500	8	25x14 1/4x 11 1/4	Vinyl	Foam, **	32	270.00 (pair)	* ** As above. Avail. Wal. as HB-120W, S312/pr.																			
HSW	Ac.sus	12	12						8-200 Hz	100	50- 100	8	40x18x16	Wal.		60	600.00	Sub woofer. Requires external crossover & amplifier.																			
HITACHI	HS-335	Ac.sus	10	60	5	cone	1	dome	T	45-18 ±4	91	50	700, 3k	8	21x12 1/2x 12 1/2	Wal.	Cloth, Brown	29	159.95																		
	HS-480	Ac.sus	12	60	5	cone	horn	horn	T	45-20 ±4	92	50	620, 4.9k	8	26 1/4x14 1/2x 14 1/4	Wal.	Cloth, Brown	36.3	179.95																		
IMF	Model R	port	8x 12	22	5	cone	3/4	dome	*	**	90	50	375, 3.5k	8	28x16x 14	Wal.	Cloth, black	65	350.00	*Impulse control. **Resp. curves avail.																	
	Smaller Monitor	port	8x 12	20	5	cone	1 1/4	dome	*	**	84	50	375, 3.5k, 13k	8	38 1/2x16x 18	Wal.	Cloth, black	125	775.00	*Perspective cont. **As above.																	
	Studio III B	port	8	24	4	cone	1 1/8	dome	*	**	84	50	375, 3.5k, 13k	8	36x14x15	Wal.	Cloth, black	70	460.00	* **As above.																	
	Super Compact	port	8	28	4	cone	1 1/8	dome			84	50	375, 3k	8	18x11x 11 1/4	Wal.	Cloth, black	20	220.00																		
INFINITY SYSTEMS	Pos II	port	10			cone	2	cone	T	43-19 ±3.5	92	100	1600	8	25x13x 11 1/4	Wal.	Cloth, black	35	98.00																		
	1000A	port	12			cone	2	cone	T	33-21 ±4.5	93	125	1300	8	25x14x12	Wal.	Cloth, black	45	139.00																		
	Monitor Jr.	port	12		1 1/4	dome	1	dome	T,M	30-20 ±3.5	91	200	500, 2k, 8k	8	41x11x11	Wal.	Cloth, black	50	215.00																		
	Column	port	8			cone	*	*	T	35-28 ±4.5	94	200	500, 2k, 8k	6	27 1/2x20x 14	Wal.	Cloth, black	50	249.00	*Walsh tweeter.																	
	2000II	port	12		4	cone	*	*	T,M	28-28 ±4	92	200	800, 4k, 10k	8	41x15x13	Wal.	Cloth, black	75	349.00	*Walsh tweeter.																	
	Monitor II	port	12		1 1/2	dome	*	*	T,M	26-28 ±4	90	200	450, 5k, 10k	8	41x15x13	Wal.	Cloth, black	94	449.00	*Walsh tweeter.																	
Servo IA	port	18			e.s.	*	*	**	10-30 ±2	88	80V	70, 1800	16/ 8	59 1/2x35 1/2 x8	Rose	Foam	290	4000.00	*Walsh tweeter. **Electronic crossover.																		
JANIS AUDIO	Woofer	port	15	36						30-100 ±1.0	87	60	100*	8	22x18x22	Wal.	Wood, wal.		599.00	Sub-woofer, re- quires own amp & 18 dB/oct. x-over.																	
JANSZEN	Z-210a	Ac.sus	10	52		*	Es	M,T	38-20 ±3	98	50	1800	4	12 1/2x17 1/2x 11	Wal.	Foam, black	25	119.95	*Two 16-sq.-in. panels.																		
	Z-210ah	Ac.sus	10	45		*	Es	M,T	35-20 ±3	98	60	1800	4	13 1/2x24x 11	Wal.	Foam, black	39	149.95	*Two 16-sq.-in. panels.																		
	Z-410	Ac.sus	10	45		*	Es	M,T	35-20 ±3	98	75	1800	4	13 1/2x24x 11	Wal.	Foam, black	41	199.95	*Two 16-sq.-in. panels.																		
	Z-412a	Ac.sus	12	43		*	Es	M,T	33-20 ±3	98	100	1800	4	14 1/2x27x 11 1/4	Wal.	Foam, black	44	279.95	*Four 16-sq.-in. panels.																		
	Z-412hp	Ac.sus	12	38		*	Es	M,T	30-20 ±3	98	150	800	4	14 1/2x27x 14 1/4	Wal.	Foam, black	48	319.95	*Four 16-sq.-in. panels.																		
	Z-824	Ac.sus	(2) 12	38		*	Es	M,T	30-20 ±3	102	300	800	4	29x31x 19 1/2	Pec.	Foam, black	120	695.00	*Eight 16-sq.-in. panels.																		
	130					*	Es	M,T	800-20 ±3	104	150	800	4	19 1/2x7 1/2x 10 1/4	Wal.	Foam, brown	16	199.95	Add-on tweeter. *Four 16-sq.-in. panels.																		
	132				*	Es	M,T	1800- 20±3	104	75	1800	4	12 1/2x7 1/2x 9 1/2	Wal.	Foam, black	11	99.95	Add-on tweeter. *Two 16-sq.-in. panels.																			
	134				*	Es	M,T	1800- 20±3	101	150	1800	4	13x13x10	Wal.	Foam, black	18	149.95	Add-on tweeter. *Four 16-sq.-in. panels.																			
	134a				*	Es	M,T	1800- 20±3	101	150	1800	4	13x13x10	Wal.	Foam, black	20	179.95	Add-on tweeter. *Four 16-sq.-in. panels.																			
	134hp				*	Es	M,T	800-20 ±3	101	150	800	4	13x13x10	Wal.	Foam, black	21	199.95	Add-on tweeter. *Four 16-sq.-in. panels.																			
138				*	Es	M,T	800-20 ±3	101	300	800	4	24x13 1/2x 11 1/4	Wal.	Foam, black	33	299.95	Add-on tweeter. *Eight 16-sq.-in. panels.																				
JBL	L 26	Duct. port	10	-		1.4	cone	T	-	88	35*	2000	8	12 1/2x24 x13 1/2	Oak	Cloth, var.	42	156.00	*Program material.																		
	Decade 26	Duct. port	10	-	5	cone	1.4	cone	M,T	-	88	50*	1500	8	13 1/2x24 x13 1/2	Oak	Cloth, var.	45	198.00	*Program material.																	
	Decade 36	Duct. port	15	-		Horn **	***	M,T	-	92	150*	800, 8.5k	8	31 1/2x23 x22 1/2	Wal.	Cloth, var.	145	897.00	*Program material. **w. acoustic lens. ***Slot loaded.																		
	L 100	Duct. port	12	-	5	cone	1.4	cone	M,T	-	90	50*	1500	8	14 1/2x23 1/2 x13 1/2	Wal.	Foam, var.	55	318.00	*Program material.																	
	Century L 65	Duct. port	12	-	5	cone		**	M,T	-	90	75*	1000	8	24 1/2x17 1/2 x13	Wal.	Cloth, var.	67	426.00	*Program material. **Slot loaded.																	
Jubal L 120	Duct. port	10	-	5	cone	1.4	cone	M,T	-	85	50*	1000	8	44x12 x12	**	Cloth, blu. or wte.	71	633.00	*Program material. **Wal. or satin White.																		

INVISIBLE SOUND, COMPACT AND POWERFUL.

The ADS L710 and L810 are four driver, three way speakers for audiophiles who demand studio performance from a system that is still compact enough for bookshelf placement. These systems share exceptionally wide-range frequency and power response that places them in the small select group of reference quality speakers without demanding the usual penalty of size and price.

We invite you to test them against any high quality speakers regardless of cost. Listen how accurately the virtually massless 1" soft-dome tweeter follows every detail of a solo violin. Notice how uniformly the unique mid-range driver reproduces the subtleties of a familiar voice - no brassy sound ever; instead, unmuffled openness. The 2" soft dome smoothly radiates nine times as much power into a hemisphere

ADS L710

as a conventional speaker of the same area. Then train your ears on the woofers. They are small in diameter for optimum transient and power response; this extends clarity and detail down into bass. It is elegantly accomplished by two active, perfectly phased drivers with unprecedented lateral excursion. You never before heard a bass drum come so much alive.

Flawless consistency in all these qualities is our uncompromising standard of excellence, and it is built into every model from ADS.

Your local ADS dealer will proudly demonstrate the L710 and L810 in his sound studio. Take the time and test them critically. Take the step beyond transparency; Experience "Invisible Sound." It then will be impossible for you to accept anything less.

Analog & Digital Systems,
64 Industrial Way,
Wilmington, Massachusetts 01887.

710C-76 PG

ADS L810



Speakers

(Continued on page 95)

MANUFACTURER	MODEL	Enclosure type	Woofer dia., in.	Woofer resonance (in system)	Midrange dia., in.	Midrange type	Tweeter dia., in.	Tweeter type	Level control (L) M=Mid, T=Tweeter	Anechoic freq. response, Hz-kHz, T=tweeter	Sens. for 1 W, 1 m, dB SPL, 1 mtr. on-axis, 100 Hz-10 kHz	Power-handling capability, continuous, watts	Crossover frequencies, Hz.	Impedance, nominal	Dimensions, inches	Wood finish	Grille material, color	Weight, lbs.	Price, \$	NOTES	
																					Woofer resonance (in system)
JENNINGS	Contrara P	ac.sus.	8	-	-	1	dome			38-24	75	1750	33x11 1/2 x11 1/2	Wal.	Cloth, blk		225.00				
	Contrara S	ac.sus.	8	-	-	1	dome			50-24	50	1750	15x15	Wal.	Cloth, blk		125.00				
	Contrara R	ac.sus.	8	-	-	1	dome			50-24	50	1750	12x18 x9 1/2	Wal.	Cloth, blk		125.00				
JENSEN	21	ac.sus.	8	75	-	2	cone	T		35-20	91	40	4000	8	18 1/2 x11 x8 1/2	Wal.	*	15	138.00	*Two-tone, beige & brown.	
	22	ac.sus.	10	65	-	2	cone	T		32-20	92	50	4000	8	22 1/2 x12 1/2 x10 1/2	Wal.	*	23	198.00	*Two-tone, Beige & brown.	
	23	ac.sus.	10	55	-	1 1/2	dome	T		27-25	93	60	1000	8	24x13 x12	Wal.	*	34	258.00	*Two-tone, beige & brown.	
	24	ac.sus.	12	50	3	cone	1 1/2	dome	M,T		25-25	95	75	1000, 5000	8	26x15 x13	Wal.	*	44	358.00	*Two-tone, beige & brown.
	25	ac.sus.	15	45	(2) 3", 8"	cone	1 1/2	dome	M,T		20-25	96	90	1000, 5000	8	18 1/2 x31 x15 1/2	Wal.	*	62	478.00	*Two-tone, beige & brown.
	Serenata	port	15	30	3", 8"	cone	5, (2) 1	cone, dome	M,T		20-30	98	100	300, 1500, 4000	8	23x31 x17	Wal.	Char.	80	894.00	*Two-tone, beige & brown.
JOHNSON INDUSTRIES	82W	ac.sus.	8	55	-	3	Ring	T		40-19	30	1500	8	23x13 x12	Wal.	Cloth, brn.	27	239.00			
	123V	ac.sus.	12	23	5	cone	3	Ring	M,T	25-20	50	800, 1500	8	23 1/2 x15 1/2 x12	Wal.	Cloth, brn.	34	319.00			
	153V	ac.sus.	15	24	4x10	Horn	3	Ring	M,T	23-22	50	800, 1500	8	28x18 x12	Wal.	Cloth, brn.	42	399.00			
	82W	ac.sus.	8	27	-	3	Ring	T		33-20	40	1500	8	23x13 x10	Wal.	Foam, brn.	27	339.00			
	124W	ac.sus.	12	23	4x10	Horn	3	Ring	M,T	23-25	60	800, 2.5k, 6.5k	8	23 1/2 x15 1/2 x12	Wal.	Foam, brn.	37	439.00			
	154W	port	15	23	4x10	Horn	3	Ring	M,T	23-21	60	800, 2.5k, 6.5k	8	28x18 x15 1/2	Wal.	Foam, brn.	45	659.00			
	2125W	ac.sus.	(2) 15	23	4x10	Horn	3	Ring	M,T	18-30	100	800, 2.5k, 6.5k	8	36 1/2 x15 1/2 x16	Wal.	Foam, brn.	60	759.00			
	KV802	ac.sus.	8	55	-	3	cone	-		40-18	20	1500	8	23x13 x12	Wal.	Foam, brn.	27	139.90			
	KV1203	ac.sus.	12	55	5	cone	3	cone	-	35-19	30	800, 1500	8	23 1/2 x15 1/2 x12	Wal.	Foam, brn.	35	199.90			
	KV1503	ac.sus.	15	23	5	cone	3	cone	-	25-19	40	800, 1500	8	28x18 x12	Wal.	Foam, brn.	42	239.90			
JVC	JVC-3	ac.sus.	10	53	-	2 1/2	dome	-		35-20	86	25	2k	8	23 1/2 x13 x10 1/2	Wal.	Cloth, brn. or.	33	169.95		
	SX-3	ac.sus.	10	60	-	2	dome	T		35-20	88	25	2k	8	20x12 1/2 x11 1/2	Wal.		29 1/2	159.95		
	VS-5313	ac.sus.	(4) 5	70	-	(4)	cone	-		35-20	88	40	5k	8	13% dia. spherical	Wal.	Metal, blk.	26 1/2	229.95		
	VS-5391	ac.sus.	6 1/2	-	-	2	cone	-		40-20	93	15	4k	8	16x9 1/2 x7 1/2	Wal.	Cloth, blk.	7 1/2	79.95	pair	
	VS-5399	port	(2) 5	-	-	(2) 2	cone	-		50-20	88	10	6k	8	27 1/2 x8 x8	Wal.	Metal, blk.	13 1/2	179.95	pair	
KENWOOD	9	port	(2) 14			(2) 1 1/2	horn	M,T		30-18	98	200	600	8		Oak	Cloth, brn.	264	2400.00		
	7	ac.sus.	14	4		1 1/2	dome	M,T		20-35	94	150	400, 4k, 8k	8	18 1/2 x37 x15	Wal.	Cloth, brn.	121	1350.00		
	LS-406	port	10			1	dome	T		48-20	90	60	2000	8	15x25 1/2 x12 1/2	Wal.	Cloth, brn.	38	149.95		
	LS-405	port	10			1	dome			58-20	90	60	2000	8	12 1/2 x23 1/2 x11	Wal.	Cloth, brn.	31	119.95		
	LS-403	port	8			1 1/2	dome			65-20	88	40	2000	8	11 1/2 x17 x9	Wal.	Cloth, brn.	20	84.95		
KING RESEARCH	Frankman	ac.sus.	(8) 12	27	(8) 8	cone	(16) 1 1/2	horn		20-18 ± 4	98	200	200 5000	8	*	Var.	Cloth, brn.	250	1495.00	*One bass unit, 5 1/2 x31 x24 1/2, plus two mid-treble satellites, 10x4 3/4 x6 1/2. Price shown for utility finish; others to \$1995.00	

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MANUFACTURER	MODEL	Enclosure type	Woofer dia., in.	Woofer resonance (in system)	Midrange dia., in.	Midrange type	Tweeter dia., in.	Tweeter type	Level control(s) M=Mid, T=Tweeter	Acoustic freq. response, Hz-Hz, ±2 dB	Sens. for 1W input dB SPL, 1 mtr. on-axis, 100 Hz-10 kHz	Power-handling capability continuous watts	Crossover frequencies, Hz.	Impedance, nominal	Dimensions, inches	Wood finish	Grille material, color	Weight, lbs.	Price, \$	NOTES
KLEIN & HUMMEL (GDTHAM)	OY	ac.sus.	10	20	4	cone	horn	M,T*	40-16 ± 2		500, 8k	4 7/8	19x9 x12	Wal.	Metal silver	44	912.00	Includes built-in amplifiers and electronic crossovers. *Also level control for woofer.		
KLH	5	ac.sus.	12	44	(2) 3	cone	1%	cone		25	600, 2.5k		26x11 1/2 x12			54	225.00			
	6	ac.sus.	12	55			1%	cone		15	1.5k		23 1/2 x12 x12 1/2			40	149.95			
	6V	ac.sus.	12	55			1%	cone		15	1.5k		23 1/2 x12 x12 1/2			40	129.95			
	17	ac.sus.	10	60			1%	cone		10	1.5k		23 1/2 x9 x11 1/2			27	89.95			
	32	ac.sus.	8	59			1 7/8	cone		12	1.8k		19 1/2 x7 1/2 x11			21	125.00			
	31	ac.sus.	8	60			1%	cone		12	1.8k		17 1/2 x8 1/2 x11			22	99.95			
	28	ac.sus.	3 (10)	36			(3) 1%	cone		30	1.5k		18x16 x25 1/2				299.95	pair		
	33	ac.sus.	10	54			1%	cone		12	1.5k		23 1/2 x10 1/2 x12			33	110.00			
38	ac.sus.	10	50			1 7/8	cone		12	1.75k		12x8 1/2 x21 1/2			28	149.95	pair			
KLH RESEARCH TEN DIV.	SCX-3	ac.sus.	12	30	5	cone	1x6	M,T		91	500 4k	8	15x38 x13 1/2	Wal.	Cloth, brn.	60	399.00			
	SCX-2	ac.sus.	12	30	5	cone	1x4	M,T		91	500 4k	8	21x27 x14	Wal.	Cloth, brn.	60	299.00			
	CL-4	ac.sus.	10		4 1/2	cone	1	dome	M,T	30-22 ± 3	100 5k	8	26 1/2 x14 1/2 x12 1/2	Wal.	Cloth, brn.	59	189.00			
	CL-3	ac.sus.	10		2 1/2	cone	2	cone	T	35-20 ± 3	100 10k	8	25 1/2 x13 1/2 x11 1/2	Wal.	Cloth, brn.	53	140.00			
	CB-10	ac.sus.	10			2 1/2	cone	T		100 1700	8	19 1/2 x14 1/2 x7 1/2	Dak	Cloth, brn.	35	110.00				
	CB-8	ac.sus.	8			2 1/2	cone	T		70 1700	8	19 1/2 x11 7/8	Dak	Cloth, brn.	27	85.00				
KLIPSCH	Klipschorn	fold. horn	15			horn			35-18 ± 4	105 50*	400, 6k	8	31 1/2 x52 x28 1/2	**	Choice 4	180-240	1040.00	*350 instan. peak power; **various finishes affect price.		
	La Scala	fold. horn	15			horn			45-18 ± 4	105	400, 6k	8	23 1/2 x35 1/2 x24 1/2	**	Choice, 3	110	525.00	**As above.		
	Belle Klipsch	fold. horn port	15			horn			45-18 ± 4	105	400, 6k	8	30 1/2 x35 1/2 x18 1/2	**	Choice, 4	125	840.00	**As above.		
	Cornwall	horn port	15			horn			35-18 ± 4	99 25*	600, 6k	8	25 1/2 x35 1/2 x15 1/2	**	Choice, 2	108	525.00	*150 instan. peak power; **various finishes affect price.		
	Heresy	box	12			horn			50-18 ± 5	97 20*	700, 6k	8	15 1/2 x21 1/2 x13 1/2	**	Choice 2	55	297.00	*100 instan. peak power; **various finishes affect price.		
LAFAYETTE	Criterion 2005	port	10	35	-	-		Heil	M,T	30-24	92	50	1500	8	12 1/2 x40 x13 1/2	Wal.	Cloth, blk.	58	199.95	
	Criterion 2002	port	12	20	(2) 6	horn	1%	cone	M,T	20-20 ± 5	90	2k, 4k	8	26x16 x15	Wal.	Cloth, brn.	45	149.95		
	Criterion 2001	port	10	23	(2) 6	horn	1%	cone	M,T	30-18 ± 5	70	2k, 4k	8	25x13 1/2 x13 1/2	Wal.	Cloth, brn.	35	99.95		
	Criterion 777	ac.sus.	10	25	6	cone	1%	ring	M,T	26-20 ± 5	93	800, 4k	8	23x12 x15	Wal.	Foam, brn.	36	139.95		
	Criterion L-6	ac.sus.	10		5	cone	2%	cone	M,T	30-22 ± 3	30	2200, 6k	8	22x13 x11	Wal.	Foam, brn.	30	79.95		
LEAK (ERCONA)	2030	port	8	40	4	cone	1	dome		35	700, 3500	6	19x11 10%	Wal.	Cloth	24.5	195.00			
	2020	ac.sus.	7	45			2	cone		25	3500	6	15 1/2 x9 1/2 x9 1/2	Wal.	Cloth	15	135.00			
	2060	ac.sus.	12	35	4	cone	1	dome		50	600, 3.5	6	25 1/2 x15 x13	Wal.	Cloth	51	325.00			
	2075	port	15	35	7, 4	cone	1	dome		100	450, 2k, 5k	6	47x19 1/2 x14 1/2	Wal.	Cloth	112	875.00			
LESLIE	DVX570	port	15	28	8,3	cones	(2) 1	dome	(2) M,T	45-20 ± 2 1/2	90	50	250, 1.5k, 5k	4	30x33 x19 1/2	Wal.	Cloth, var.	105	449.00	variable-axis dipole.
	DVX580	port	15	28	8,3	cones	(2) 1	dome	(2) M,T	45-20 ± 2 1/2	90	50	250, 1.5k, 5k	4	29x33 x20 1/2	Wal.	Cloth, var.	98	473.00	variable-axis dipole.
	Plus 2 430	port	15	55	-	-		horn	T				800	*	25x29 1/2 x18 1/2	Wal.	Cloth, var.	*	695.00	*Inc. built-in amps, input z, 10 kohms. For use with 2nd set of speakers, typically DVX 570.
	Plus 2 470	port	15	55	(2) 6x9	cones	1	dome	M,T				800, 4k	*	30x33 1/2 x19 1/2	Wal.	Cloth, var.	*	995.00	*As above
LINEAR SOUND	300	ac.sus.	12		5	cone	2%			35-20 ± 3.5	450*		4/4	27x16 x14	Wal.			269.00	*Handles musical peaks up to 450 watts.	
	200	ac.sus.	12			1	dome			35-18 ± 3.5	200*	1500	4/4	27x16 x14	Wal.			189.00	*Handles musical peaks up to 200 watts.	

Speakers

MANUFACTURER	MODEL	Enclosure type	Woofer		Midrange		Tweeter		Level controls (M=Mid, T=Tweeter)	Anechoic freq. response Hz-KHz, ±? db	Sens. for 1 W input, dB SPL, ±? db	Power-handling capability continuous watts	Crossover frequencies, Hz.	Impedance, nominal	Dimensions, inches	Wood finish	Grille material, color	Weight, lbs.	Price, \$	NOTES
			type	dia., in.	type	dia., in.	type	dia., in.												
MAGITRAN	DS60	sound panel	(2) 9x12	48	(2) 8	poly-planar		dome		40-20 ±5	90	28		8	23x29½ x2	Wal.	*	13	89.95	*Grille cloth. 13 replacable designs
MAGNEPAN	MG-II	Bipolar	9½x57					vert. strip		50-18 ±4	85	200	2400	6	22x71 x2	Oak	Cloth, wht, blk.	40	625.00	Single panel. Self-supporting, full-range magneplanar-type.
MAGNUM OPUS	Lab 800		10		5			dome		25-45		100	75,3k, 4k, 3k	4/8	28x15 x13¾	Wal.	Cloth, blk.	68	429.00	
	DBtion 500		10					ring		35-22			3k	8		Wal.	Cloth, blk.	42	78.00	
	Opus 1		10					dome		35-20		50	2k	8	24x14½ x11	Wal.	Cloth, blk.	42	139.95	
	Lab 8		10		5			Pz T		25-45		100	750, 3k, 4k, 2k	4	28x15 x13¾	Wal.	Cloth, blk.	65	359.00	
	Opus 200		10					dome T		28-20		100	2k	4	24x14½ x11	Wal.	Cloth, blk.	42	179.95	
	Lab Monitor		10		5			Pz T		26-45		150	500, 2k, 4k, 750, 3k, 4k	8	15½x28 x13¾	Wal.	Cloth, blk.	70	459.00	
	Lab 2400		12		5			Pz T		20-45		200	750, 3k, 4k	4/8	32x36 x18½	Wal.	Cloth, blk.	180	1450.00	
MARANTZ	HD88	ac.sus.	12	40	4½	cone	1½	dome	**	25-25 ±3	90	300*	500, 3k, 8k	8	16x41¼ x12	Wal.	Foam, bn.		399.95	*Pgm. material. **M.T., super-tweeter. ***As above.
	HD77	ac.sus.	12	45	4½	cone	1½	dome	**	30-23 ±3	90	250*	500, 3k, 8k	8	14½x25½ x12¾	Wal.	Foam, bn.		259.95	
	HD66	ac.sus.	10	55	4½	cone	1½	dome	M.T.	35-20 ±3	88	150*	1k, 4k	8	14½x24¼ x11	Wal.	Foam, bn.		179.95	* **As above.
	HD55	ac.sus.	8	55	4½	cone	1½	dome	M.T.	40-20 ±3	88	100*	1.2k, 4k	8	12x23 x9½	Wal.	Foam, bn.		129.95	* **As above.
	HD44	ac.sus.	8	70	3	cone	3	cone		45-18 ±3	87	60*	2k, 8k	8	11¼x19 x8½	Wal. vynl.	Foam, bn.		89.95	* **As above.
	Imperial 9	port	(2) 10		4	cone	(2) 1½	cone	M.T.	30-18 ±3	97	150*	600, 3100	8	24x30½ x18	Wal.	Foam, bn.	120	499.95	* **As above.
	Imperial 8	port	12		3½	cone	(2) 1½	cone	M.T.	30-20 ±5	97	125*		8	18½x27 x14½	Wal.	Foam, bn.	75	319.95	* **As above.
	Imperial 7	port	12		3½	cone	1½	cone	M.T.	35-20 ±5	96	100*		8	14½x25½ x11½	Wal.	Foam, bn.	45	199.95	* **As above.
	Imperial 4	ac.sus.	8			cone	1½	cone		40-18 ±5	95	40*		8	11½x19 x8½	Wal.	Foam, bn.	20	59.95	* **As above.
MARTIN	Micro Max	ac.sus.	8	57			1½	dome	T	42-18	96	45*	2000	8	18x11 x10	Wal.	Cloth, brn	28	79.00	*Music
	Super Max	ac.sus.	10	50			1½	dome	T	38-18	94	50*	1200	8	22x13 x10	Wal.	Cloth, brn.	31	119.00	*Music
	Lab Mk II	ac.sus.	10	50	5	cone	1	horn	M.T.	38-18	92	50*	900, 4000	8	22x13 x10	Wal.	Cloth, brn.	31	149.00	*Music
	Crescendo	ac.sus.	12	48	5	cone	(2) 1	horn	M.T.	34-20	96	60*	800, 4000	8	26x15 x12	Wal.	Cloth, brn.	45	219.00	*Music
	Krypton	ac.sus.	8, 12	44	5	cone	(2) 1	horn	M.T.	34-20	95	60*	800, 4000	4	26x15 x12	Wal.	Cloth, brn.	48	299.00	*Music
	Exorcist	ac.sus.	15	36	5	cone	(4) 1	horn	M.T.	28-20	95	75*	700, 4000	8	38x18 x15	Wal.	Cloth, brn.	65	339.00	*Music
MAXIMUS (Audimax)	80	ac.sus.	8	59			3	cone		45-20 ±4	94	15	2500	8	22x12½ x8½	Wal.	Cloth, brn.	18	89.95	
	100	ac.sus.	10	46			3	cone		30-20 ±4	93.5	30	2000	8	24x14 x10½	Wal.	Cloth, brn.	26	114.95	
	X100	ac.sus.	10	35			(2) 2	cone		35-20 ±4	94	50	1150	8	24x14 x10½	Wal.	Cloth, brn.	26	129.95	
	120	ac.sus.	12	40	6	cone	3	cone		25-20 ±4	94	45	1500, 8k	8	27½x19 x12	Wal.	Cloth, brn.	45	159.95	
	150	ac.sus.	15	38	6	cone	3	cone		20-20 ±4	94	60	1500, 8k	8	27½x19 x12	Wal.	Cloth, brn.	49	199.95	
MX	MX2760	ac.sus.	10	55			3½	cone		40-17		35	2000	8	12½x21½ x12	Wal.	Foam, org.	29	75.00	
	MX2770	ac.sus.	12	55			3½	cone		40-17		50	2000	8	14½x23 x12	Wal.	Foam, org.	34	100.00	
	MX2810	ac.sus.	10	47	2	dome	2	cone	M.T.	30-20		50	1500, 4500	8	15½x23½ x12	Wal.	Foam, blk.	35	150.00	
	MX2820	ac.sus.	12	45	2	dome	2	cone	M.T.	25-20		75	1500, 4500	8	15½x25¾ x13¾	Wal.	Foam, blk.	40	200.00	
	MX2830	ac.sus.	15	43	2	dome	2	cone	M.T.	20-20		100	1500, 4500	8	20½x29 x15½	Wal.	Foam, blk.	55	250.00	
NAKAMICHI	Reference monitor	port	12	48	-	-	2	cone		40-16 ±5	96	30	1500	8	25½x34½ x17¼	Mah.	Fiber, gray	110	2400.00 (pair)	
	Smaller monitor	port	8	51	-	-	1½	cone		60-16 ±5	94	15	2000	16	21x28½ x13	Mah.	Fiber, gray	44	1600.00 (pair)	
OLSON	SS-251	port	10	38			3	dome	T	50-18		30	1200	8	11½x19¾ x9¾	Wal.	Cloth, brown	30	89.98	
	SS930	port	10	40			4	cone	T	40-18		30	1100	8	11½x22½ x13	Wal.	Cloth, brown	30	89.98	
	SP134	Ac.sus.	*	42			(2) 2½	cone	T	20-20		40	1200	8	28½x16 x10	Wal.	Cloth, brown	40	99.98	*Woofer 5½x6.
	SS-175	Ac.sus.	12	40	5	cone	2	cone	M.T.	40-20		45	1100, 3.6k, 1300	8	11¼x25½ x11½	Wal.	Fret-work	40	119.98	*Tweeters: 2½ & 1½.
	SP067	Ac.sus.	8	42			2¼	cone	T	60-20		35	1300	8	19x10x9	Wal.	Cloth, brown	20	69.98	
	SP-068	Ac.sus.	10	42	4	cone	1	dome	M.T.	40-20		35	1100, 4.2k	8	24x13½ x11½	Wal.	Cloth, brown	38	99.98	
	SP-069	Ac.sus.	12	40	4	cone	2¼	cone	M.T.	25-25		35	1100, 4.2k	8	25x14 x11½	Wal.	Cloth, brown	48	129.98	

MANUFACTURER	MODEL	Enclosure type	Woofer dia., in.	Woofer resonance (in system)	Midrange dia., in.	Midrange type	Tweeter dia., in.	Tweeter type	Level control(s) M=Mid, T=tweeter	Anechoic freq. response, Hz-MHz, T=tweeter	Sens. for 1W input at 100 Hz, dB SPL, 1 mtr. on-axis	Power handling capability, continuous watts	Crossover frequencies, Hz.	Impedance nominal	Dimensions, inches	Wood finish	Grille material, color	Weight, lbs.	Price, \$	NOTES
ONYKO	M-30	Ac.sus	12	22	3 1/2 x 10 1/2	horn	2 1/2	horn	M,T	20-20			700, 5k	8	16 1/2 x 28 1/2 x 15 1/2	Wal.	Cloth, brown	51	299.95	
	M-25A	Ac.sus	14	19	2	dome	1	dome	M,T	30-20			700, 7k	8	14 1/2 x 25 1/2 x 11 1/2	Wal.	Cloth, brown	54 1/2	249.95	
	M-20	Ac.sus	12	28	2	dome	1	dome	M,T	35-20			700, 7k	8	13 1/2 x 23 1/2 x 11 1/2	Wal.	Cloth, brown	40	199.95	
	M-12	port	10				3	cone	T	33-20			2.5k	8	13 1/2 x 23 1/2 x 11 1/2	Wal.	Cloth, brown	34	129.95	
	M-8	port	8				2	cone	T	35-20			6k	8	11 1/2 x 21 1/2 x 9 1/2	Wal.	Cloth, brown	16	89.95	
	R-III	port	6 1/2				3	cone	T	60-20			1.5k	8	9 1/2 x 33 1/2 x 11 1/2	Wal.	Cloth, brown	29	119.95	4 speakers.
ORTOFON	445	port	(2) 8 1/2		5	cone	3/4	dome	M	25-40	90	100	500, 5k	8	27 x 15 x 9	Wal.*	Black	45	330.00	*In rosewood, \$350.00
	335	port	10		5	cone	3/4	dome	M	35-40	90	50	600, 5k	8	24 x 13 x 9	Wal.*	Black	35	199.00	*In rosewood, \$214.00.
	225	port	10				1 1/2	cone		35-20	92	40	1800	8	21 x 11 1/2 x 9	Wal.*	Black	25	139.00	*In rosewood, \$149.00.
OUR GLASS SPEAKER	Audio Lens II	Ac.sus	*				2 1/2	pz.		22-20 ±3	95	*50		8	11 1/2 x 19 x 10	Wal.	Foam, brown or black	20	99.95	*Two 5-in. full-range speakers. Available in low and high power capacity.
	Audio Lenx III	Ac.sus	*				2 1/2	pz.		20-25 ±3	95	*100		8	25 x 15 x 12	Wal.	Foam, brown or black	35	189.95	*Four 5-in. full-range speakers. Available in low or high power capacity.
PHILIPS	RH532	Ac.sus	8		5	cone	1	dome			N.A.	N.A.	500, 4000		11 1/2 x 15 x 8	Wal.	Metal, black	26	365.00	Internal bi-amp w. motion feedback, 20 W tweeter, 40 watt woofer.
PIONEER	HPM-200	Ac.sus	(2) 10	43	4 1/2	dome		dome dome	3	25-25	89	200*	100, 700, 2k, 5k	6	32 x 29 x 19	Wal.	Cloth, brown		499.95	*Program material.
	CS-6DX	Ac.sus	15		(2) 5	cone	(3)	horn	M,T	20-22		80*	770, 3.3k, 12k	8	28 1/2 x 13 x 19	Wal.	Wood, brown	63	279.95	*Program material.
	CS-99A	Ac.sus	15		5 4	cone cone	2 1/2 2 1/2	cone horn	M,T	25-22		100*	800, 2k, 5k	8	24 1/2 x 11 1/2 x 16 1/2	Wal.	Wood, latt.	51 1/2	239.95	*Program material.
	CS-700G	Ac.sus	12		4 1/2	cone		horn		35-20		60*	500, 4.5k	8	26 x 15 x 12	Wal.	Wood & cloth	37	199.95	*Program material.
	CS-500G	Ac.sus	10		5	cone	3	cone	M,T	35-20	94	50*	700, 8k	8	22 1/2 x 12 1/2 x 12 1/2	Wal.	Wood & cloth	32 1/2	149.95	*Program material.
	CS-66G	Ac.sus	10		6 1/2	cone	3	cone		35-20	92 1/2	40*	1k, 7k	8	21 1/2 x 12 1/2 x 11 1/2	Wal.	Wood & cloth	19	119.95	*Program material.
	CS-44G	Ac.sus	8				2 1/2	cone		35-20	91 1/2	25*	3.2k	8	17 1/2 x 10 1/2 x 11	Wal.	Wood & cloth	19	79.95	*Program material.
	Project 100	Ac.sus	10				1 1/2	dome		30-20		35*	700	8	23 x 10 1/2 x 13	Wal.	Foam, blue	40	129.95	*Program material.
	Project 80	Ac.sus	10				1 1/2	dome		35-20		30*	700	8	20 1/2 x 11 1/2 x 11 1/2	Wal.	Foam, brown	25	99.95	*Program material.
	Project 60A	port	8				1 1/4	cone		50-20		20*	3k	8	10 1/2 x 10 1/2 x 9 1/2	Wal.	Foam, blue	11 1/2	79.95	*Program material.
	R-700	port	12					horn		35-20		75*	700, 14k	8	14 x 13 x 26	Wal.	Cloth, brown & black	50	249.95	*Program material.
	R-500B	port	10		5	cone	3	horn		35-20		60*	650, 6k	8	13 x 12 x 24	Wal.	Cloth, brown & black	38	169.95	*Program material.
R-300B	port	10				3	horn		45-20		40*	4.2k	8	13 x 10 x 22	Wal.	Cloth, org. & black	26	119.95	*Program material.	
POLK AUDIO	Monitor 7	*	8	30	6 1/2	cone	1	dome		40-21 ±2	90	60	60, 3k		24 x 14 x 9	Wal.	Cloth, black	35	199.00	Bookshelf. Optional stand. *Passive radiator.
	9	*	8	33	(4) 4 1/2	cone	1	dome		47-21 ±3	94	100	125, 5k		33 1/2 x 9 x 10 1/2	Wal.	Cloth, black	40	165.00	Dipolar array. *Passive radiator.
	5		6 1/2	44		1	dome			45-21 ±2	94	50	3k		20 x 8 1/2 x 10 1/2	Wal.	Cloth, black	25	89.00	
QUADRAFLEX	RS6		12	52	6	cone	1 1/4	cone	M,T	40-18 ±5		40	500, 5k	8	26 1/2 x 15 1/2 x 12 1/2	Wal.	Foam, black	46	179.95	
	RS5		10	55	4 1/2	cone	1 1/4	cone		45-18 ±5		25	650, 6k	8	24 1/2 x 14 1/2 x 11 1/2	Wal.	Foam, black	40	129.95	
	RS4		10	60			3	cone		55-20 ±5		25	1500	4	23 1/2 x 13 1/2 x 11	Wal.	Foam, black	30	89.95	
	RS3		8	68			3	cone		60-20 ±5		20	1500	8	21 1/2 x 12 1/2 x 8	Wal.	Foam, black	25	59.95	
RADIO SHACK	Mach One	Ac.sus	15			horn		horn	M,T	20-25		50	800, 8k	8	28 1/2 x 17 1/2 x 12	Wal.	Cloth, brown		199.50	
	Nova-7B	Ac.sus	10	26	(2) 3	cone	3	cone	M,T	20-20		25	1500, 8k	8	22 x 12 1/2 x 11	Wal.			119.50	*Lattice work over cloth.
	Nova-8B	Ac.sus	12	20	(2) 3	cone	3	cone	M,T	20-20		30	1200, 8k	8	25 x 14 x 11 1/2	Wal.			139.50	*As above.
	MC-1500	Ac.sus	8							40-20		15		8	25 1/2 x 13 1/2 x 8	Wal.	Foam	26	79.50	
	MC-500	Ac.sus	5	50						40-20		12	7k	8	11 1/2 x 9 1/2 x 5 1/2	Wal.	Cloth		39.95	
	Minimus 0.5	Ac.sus	4	96			cone			110-12 ±8		5		8	4 1/2 x 6 1/2 x 4 1/2	Wal.	Cloth, black		12.95	

Speakers

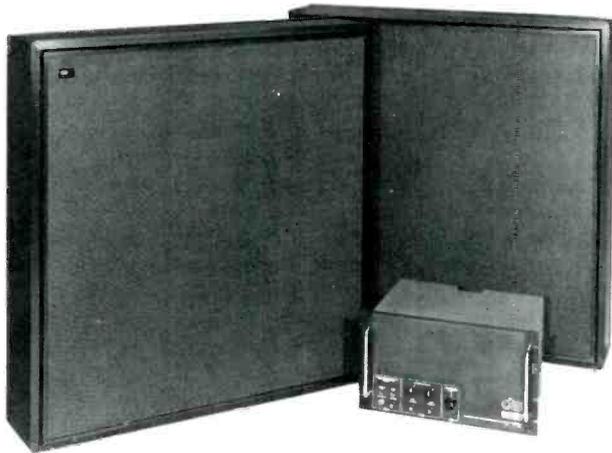
MANUFACTURER	MODEL	Enclosure type	Woofer dia., in.	Woofer resonance (in system)	Midrange dia., in.	Midrange type	Tweeter dia., in.	Tweeter type	Level control(s) M-Mid, T-tweeter	Anechoic freq. response, Hz-kHz, ±? dB	Sens. for 1W input, dB SPL, 1 mtr., on-axis, 100 Hz-10 kHz	Power handling capability, continuous watts	Crossover frequencies, Hz	Impedance, nominal	Dimensions, inches	Wood finish	Grille material, color	Weight, lbs.	Price, \$	NOTES
REVOX	AXA4 3	Ac.sus	10	48	1%	dome	1	dome		50-20 ±3	91	60	400, 6k	4	21x12½ x10	Wal.	Foam, brown	33	900.00 pair	
RECTILINEAR	7	port	12	41	1%	dome	(2) 1	dome		32-20 ±2	95	350	200, 1.8k, 10k	8	35x18x12	Wal.	Cloth, black	80	399.00	
	5	Ac.sus	12	41	1%	dome	1	dome		32-20 ±2	91	250	200, 1.8k, 10k	6	25x15 x14½	Wal.	Cloth, black	72	299.00	
	IIIa	port	12	41	5	cone	(2) 2	cone		35-18 ±2	93	100	400, 5k, 11k	8	35x18x12	Wal.	Cloth, brown	75	279.00	
	XII	port	10	45	5½	cone	(2) 2½	cone	M,T	45-18.5 ±2	85	50	350, 4k	8	25x14 x10½	Wal.	Cloth, brown	42	159.00	
	Mini III	Ac.sus	8	50	5	cone	2	cone	M,T	50-18.5 ±4	97	75	400, 8k	4	12x19 x9½	Vinyl	Cloth, brown	27	109.00	
	XIb	port	10	45			3	cone	T	45-18.5 ±2	90	50	2k	8	23x12x10	Vinyl	Cloth, brown	32	99.00	
	4½	Ac.sus	10	43	2	dome	1	dome		35-20 ±2	90	200	800, 6k	6	25x13x14 x12	Wal.	Cloth, black	55	225.00	
	2	Ac.sus	10	45			(3) 2	cone		35-18 ±3	94	100	2.5k	6	23½x13 x12	Wal.	Cloth, black	45	129.00	
ROLA CELESTION LTD.	UL6	ABR	6*				1	dome		80-20 ±3.5	80	20	2.5 kHz	8/4	16x11½ x8½	Wal.	Cloth, black	20	179.50	*Plus ABR (auxiliary bass radiator) equal to woofer diameter.
	UL8	ABR	8*				1	dome		70-20 ±3	80	25	2 kHz	8/4	11x23 x9½	Wal.	Cloth, black	25	249.50	*Plus ABR (auxiliary bass radiator) equal to woofer diameter.
	UL10	Ac.sus	10		2	dome	¾	dome		40-20 ±2	80	50	700 Hz, 5 kHz	8/4	12½x26½ x15	Wal.	Cloth, black	50	349.50	*Plus ABR (auxiliary bass radiator) equal to woofer diameter.
	DITTON 15	ABR	8*				1.5			75-14 ±5	90	30**	2.5 kHz	8/4	9.4x21x9	Wal.	Cloth, black	16.7	139.50	*Plus ABR (auxiliary bass radiator) equal to woofer diameter. **Power rating to DIN 45 500. UL ratings are continuous rms sine wave.
	DITTON 33	Ac.sus	10				1	dome		60-20 ±3		33**		8/4	14x24 x10½	Wal.	Cloth, black		229.50	**Power rating to DIN 45 500. UL ratings are continuous rms sine wave.
	DITTON 44	Ac.sus	12		6	cone	¾	dome		60-25 ±4	90	44**	500 Hz, 5 kHz	8/4	14.6x30 x9.8	Wal.	Cloth, black	45	269.50	**Power rating to DIN 45 500.
	DITTON 25	ABR	12*		(2) 1½	¾	¾	dome		60-18 ±5	90	60**	2 kHz, 9 kHz	8/4	14x32x11	Wal.	Cloth, black	45	319.50	*Plus ABR (auxiliary bass radiator) equal to woofer diameter. **Power rating to DIN 45 500.
	DITTON 66	ABR	12*		2	dome	¾	dome		50-25 ±4	86	80**	500 Hz, 5 kHz	8/4	15x39x11	Wal.	Cloth, black	68	469.50	*Plus ABR (auxiliary bass radiator) equal to woofer diameter. **Power rating to DIN 45 500.
RTR	DR-1	Ac.sus	(2) 10	30			*	T		30-40 ±3	90	100	300	8	16½x16½ x48	Wal.	Cloth, black	125	895.00	This speaker contains its own electronic crossover network, also tweeter amp. Bass amp required.
	280D	Ac.sus	(4) 10	35				cone	T	22-25 ±3	88	100	2.5k, 7.5k	8	16½x31 x16½	Wal.	Cloth, black	95	369.95	
	240D	Ac.sus	8, 10				pz.	super twtr	T	28-20 ±3	88	100	1200	8	14½x42 x12½	Wal.	Cloth, black	70	229.95	
	HPR-12M	port	12	50			cone	cone & pz.	M,T	30-25	92	100	1500, 7.5k	8	14½x13 x36	Wal.	Cloth, blue	72	269.95	
	ESR-6	Ac.sus					*		T	1500-30k	88	60		8	14½x14½ x12	Wal.	Cloth, black	23	179.95	Electrostatic add-on.
	EXP-8		8	40				cone	T	40-20	90	60	2000	8	11½x19 x8½	Wal.	Cloth, black	25	69.95	
RUXTON	SSW-1	port	15	20				L		20-70 ±3dB			70 Hz		72x17x17	Wal.	Foam, black	150	695.00	Sub-woofer system, incl. amplifier. To be used with any speaker systems. One only req. for stereo or 4-chan. As kit only. *At 1 kHz.
	200A	Ac.sus	12	45	5	cone	3	cone		25-18 ±5dB		50*	800Hz, 2k Hz	8	25x15x13	Wal.	Foam, black	45	160.00 pair	As kit only. *At 1 kHz.
	100A	port	10	45			4	cone		45-15 ±5dB		25*	4k Hz	8	25x15x13	Wal.	Foam, black	40	110.00 pair	As kit only. *At 1 kHz.
	50A	Ac.sus	8	60			4	cone		55-15 ±5dB		25*	3k Hz	8	18x12x9	Wal.	Foam, black	20	60.00 pair	As kit only. *At 1 kHz.
SANSUI	SP-7500X	port	16		8	cone	6x2	horn	T	25-22	98	130*	1k, 6k, 10k	8	17½x26 x11			47%	279.95	*Peak power.
	SP-5500X	port	15		5	cone	6x2	horn	T	25-20	98	120*	1k, 6k, 10k	8	17½x26 x11			43%	239.95	*Peak power.
	SP-2500X	port	12		5	cone	2	horn	T	30-20	96	100*	1.2k, 5k	8	15x25x11			40%	199.95	*Peak power.
	LM-330	port	10				2½	cone	T	31-20	92	60*	2000	8	12½x28 x12		Cloth, brown	41%	199.95	*Peak power.
	LM-220	port	8				2½	cone	T	32-20	91	45*	2000	8	11x24½ x10		Cloth, brown	26%	169.95	*Peak power.
	LM-110	port	6½				2½	cone	T	38-20	90	35*	2000	8	9½x21 x7½		Cloth, brown	18	249.95 pair	*Peak power.
SCHOBER	LSS-10A	port	12	32	8	cone	1	horn	T	30-18	96	40*	250, 3500	8	24x34x16	Wal.	Cane, beige	60	250.00	As kit only; tweeter opt. *Program material.

MANUFACTURER	MODEL	Enclosure type	Woofer dia., in.	Woofer resonance (in system)	Midrange dia., in.	Midrange type	Tweeter dia., in.	Tweeter type	Level controls	Anechoic freq. response	Sens. for 1W input @ 100 Hz	Power handling capability	Crossover frequencies, Hz	Impedance, nominal	Dimensions, inches	Wood finish	Grille material, color	Weight, lbs.	Price, \$	NOTES
ONYKO	M-30	Ac. sus	12	22	3 3/4 x 10 1/2	horn	2 1/2	horn	M, T	20-20		700, 5k	8	16 1/2 x 28 1/2 x 15 1/2	Wal.	Cloth, brown	51	299.95		
	M-25A	Ac. sus	14	19	2	dome	1	dome	M, T	30-20		700, 7k	8	14 1/2 x 25 1/2 x 11 1/2	Wal.	Cloth, brown	54 1/2	249.95		
	M-20	Ac. sus	12	28	2	dome	1	dome	M, T	35-20		700, 7k	8	13 1/2 x 23 1/2 x 11 1/2	Wal.	Cloth, brown	40	199.95		
	M-12	port	10				3	cone	T	33-20		2.5k	8	13 1/2 x 23 1/2 x 11 1/2	Wal.	Cloth, brown	34	129.95		
	M-8	port	8				2	cone	T	35-20		6k	8	11 1/2 x 21 1/2 x 9 1/2	Wal.	Cloth, brown	16	89.95		
	R-III	port	6 1/2				3	cone	T	60-20		1.5k	8	9 1/2 x 33 1/2 x 11 1/2	Wal.	Cloth, brown	29	119.95	4 speakers.	
ORTOFON	445	port	(2) 8 1/2	5		cone	3/4	dome	M	25-40	90	100	500, 5k	8	27 x 15 x 9 1/2	Wal.*	Black	45	330.00	*In rosewood, \$350.00
	335	port	10	5		cone	3/4	dome	M	35-40	90	50	600, 5k	8	24 x 13 x 9 1/2	Wal.*	Black	35	199.00	*In rosewood, \$214.00.
	225	port	10				1 1/2	cone		35-20	92	40	1800	8	21 x 11 1/2 x 9 1/2	Wal.*	Black	25	139.00	*In rosewood, \$149.00.
OUR GLASS SPEAKER	Audio Lens II	Ac. sus	*				2 1/2	pz.		22-20 ±3	95	*50		8	11 1/2 x 19 x 10	Wal.	Foam, brown or black	20	99.95	*Two 5-in. full-range speakers. Available in low and high power capacity.
	Audio Lenx III	Ac. sus	*				2 1/2	pz.		20-25 ±3	95	*100		8	25 x 15 x 12	Wal.	Foam, brown or black	35	189.95	*Four 5-in. full-range speakers. Available in low or high power capacity.
PHILIPS	RH532	Ac. sus	8		5	cone	1	dome		N.A.	N.A.	500, 4000		11 1/2 x 15 x 8	Wal.	Metal, black	26	365.00	Internal bi-amp w. motion feedback, 20 W tweeter, 40 watt woofer.	
PIONEER	HPM-200	Ac. sus	(2) 10	43	4 1/2	dome		dome dome	3	25-25	89	200*	100, 700, 2k, 5k	6	32 x 29 x 19	Wal.	Cloth, brown		499.95	*Program material.
	CS-6DX	Ac. sus	15		(2) 5	cone	(3)	horn	M, T	20-22		80*	770, 3.3k, 12k	8	28 1/2 x 13 x 19	Wal.	Wood, brown	63	279.95	*Program material.
	CS-99A	Ac. sus	15		5 4	cone	2 1/2	cone horn	M, T	25-22		100*	800, 2k, 5k	8	24 1/2 x 11 1/2 x 16 1/2	Wal.	Wood, latt.	51 1/2	239.95	*Program material.
	CS-700G	Ac. sus	12		4 1/2	cone		horn		35-20		60*	500, 4.5k	8	26 x 15 x 12 1/2	Wal.	Wood & cloth	37	199.95	*Program material.
	CS-500G	Ac. sus	10		5	cone	3	cone	M, T	35-20	94	50*	700, 8k	8	22 1/2 x 12 1/2 x 12 1/2	Wal.	Wood & cloth	32 1/2	149.95	*Program material.
	CS-66G	Ac. sus	10		6 1/2	cone	3	cone		35-20	92 1/2	40*	1k, 7k	8	21 1/2 x 12 1/2 x 11 1/2	Wal.	Wood & cloth	19	119.95	*Program material.
	CS-44G	Ac. sus	8				2 1/2	cone		35-20	91 1/2	25*	3.2k	8	17 1/2 x 10 1/2 x 11	Wal.	Wood & cloth	19	79.95	*Program material.
	Project 100	Ac. sus	10				1 1/2	dome		30-20		35*	700	8	23 x 10 1/2 x 13	Wal.	Foam, blue	40	129.95	*Program material.
	Project 80	Ac. sus	10				1 1/2	dome		35-20		30*	700	8	20 1/2 x 11 x 11 1/2	Wal.	Foam, brown	25	99.95	*Program material.
	Project 60A	port	8				1 1/2	cone		50-20		20*	3k	8	10 1/2 x 10 1/2 x 9 1/2	Wal.	Foam, blue	11 1/2	79.95	*Program material.
	R-700	port	12				horn	horn		35-20		75*	700, 14k	8	14 x 13 x 26	Wal.	Cloth, brown & black	50	249.95	*Program material.
	R-500B	port	10		5	cone	3	horn		35-20		60*	650, 6k	8	13 x 12 x 24	Wal.	Cloth, brown & black	38	169.95	*Program material.
	R-300B	port	10				3	horn		45-20		40*	4.2k	8	13 x 10 x 22	Wal.	Cloth, org. & black	26	119.95	*Program material.
POLK AUDIO	Monitor 7	*	8	30	6 1/2	cone	1	dome		40-21 ±2	90	60	60, 3k		24 x 14 x 9 1/2	Wal.	Cloth, black	35	199.00	Bookshelf. Optional stand. *Passive radiator.
	9	*	8	33	(4) 4 1/2	cone	1	dome		47-21 ±3	94	100	125, 5k, 3k		33 1/2 x 9 x 10 1/2	Wal.	Cloth, black	40	165.00	Dipolar array. *Passive radiator.
	5		6 1/2	44		1	dome			45-21 ±2	94	50	3k		20 x 8 1/2 x 10 1/2	Wal.	Cloth, black	25	89.00	
QUORAFLEX	RS6		12	52	6	cone	1 1/2	cone	M, T	40-18 ±5	40	500, 5k	8	26 1/2 x 15 1/2 x 12 1/2	Wal.	Foam, black	46	179.95		
	RS5		10	55	4 1/2	cone	1 1/2	cone		45-18 ±5	25	650, 6k	8	24 1/2 x 14 1/2 x 11 1/2	Wal.	Foam, black	40	129.95		
	RS4		10	60			3	cone		55-20 ±5	25	1500	4	23 1/2 x 13 1/2 x 11	Wal.	Foam, black	30	89.95		
	RS3		8	68			3	cone		60-20 ±5	20	1500	8	21 1/2 x 12 1/2 x 8	Wal.	Foam, black	25	59.95		
RADIO SHACK	Mach Dne	Ac. sus	15			horn		horn	M, T	20-25		50	800, 8k	8	28 1/2 x 17 1/2 x 12	Wal.	Cloth, brown		199.50	
	Nova-7B	Ac. sus	10	26	(2) 3	cone	3	cone	M, T	20-20		25	1500, 8k	8	22 x 12 1/2 x 11	Wal.	*		119.50	*Lattice work over cloth.
	Nova-8B	Ac. sus	12	20	(2) 3	cone	3	cone	M, T	20-20		30	1200, 8k	8	25 x 14 x 11 1/2	Wal.	*		139.50	*As above.
	MC-1500	Ac. sus	8							40-20		15	8	25 1/2 x 13 1/2 x 8	Wal.	Foam	26	79.50		
	MC-500	Ac. sus	5	50						40-20		12	7k	8	11 1/2 x 9 1/2 x 5 1/2	Wal.	Cloth		39.95	
	Minimus 0.5	Ac. sus	4	96			cone			110-12 ±8		5	8	4 1/2 x 6 1/2 x 4 1/2	Wal.	Cloth, black		12.95		

Speakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., in.		Woofer resonance (in system)		Midrange dia., in.		Midrange type		Tweeter dia., in.		Tweeter type		Level control(s) M-Mid, T-tweeter	Anechoic freq. response, Hz-Hz, T-tweeter	Sens. for 1W input at 80 dB SPL, 1 mtr. on-axis, 100 Hz, 10 kHz	Power handling capability, continuous watts	Crossover frequencies, Hz	Impedance, nominal	Dimensions, inches	Wood finish	Grille material, color	Weight, lbs.	Price, \$	NOTES
			10	48	1%	dome	1	dome			50-20 ±3	91	60	400, 6k												
RECTILINEAR	7	port	12	41	1%	dome	(2) 1	dome							32-20 ±2	95	350	200, 1.8k, 10k	8	35x18x12	Wal.	Cloth, black	80	399.00		
	5	Ac.sus	12	41	1%	dome	1	dome							32-20 ±2	91	250	200, 1.8k, 10k	6	25x15 x14½	Wal.	Cloth, black	72	299.00		
	IIIa	port	12	41	5	cone	(2) 2	cone							35-18 ±2	93	100	400, 5k, 11k	8	35x18x12	Wal.	Cloth, brown	75	279.00		
	XII	port	10	45	5%	cone	(2) 2½	cone		M,T					45-18.5 ±2	85	50	350, 4k	8	25x14 x10½	Wal.	Cloth, brown	42	159.00		
	Mini III	Ac.sus	8	50	5	cone	2	cone		M,T					50-18.5 ±4	97	75	400, 8k	4	12x19 x9½	Vinyl Wal.	Cloth, brown	27	109.00		
	XIb	port	10	45			3	cone		T					45-18.5 ±2	90	50	8k 2k	8	23x12x10	Vinyl Wal.	Cloth, brown	32	99.00		
	4½	Ac.sus	10	43	2	dome	1	dome							35-20 ±2	90	200	800, 6k	6	25x13x14	Wal.	Cloth, black	55	225.00		
	2	Ac.sus	10	45			(3) 2	cone							35-18 ±3	94	100	2.5k	6	23½x13 x12	Wal.	Cloth, black	45	129.00		
ROLA CELESTION LTD.	UL6	ABR	6*				1	dome							80-20 ±3.5	80	20	2.5 kHz	8/4	16x11½ x8½	Wal.	Cloth, black	20	179.50	*Plus ABR (auxiliary bass radiator) equal to woofer diameter.	
	UL8	ABR	8*				1	dome							70-20 ±3	80	25	2 kHz	8/4	11x23 x9½	Wal.	Cloth, black	25	249.50	*Plus ABR (auxiliary bass radiator) equal to woofer diameter.	
	UL10	Ac.sus	10		2	dome	¾	dome							40-20 ±2	80	50	700 Hz, 5 kHz	8/4	12½x26½ x15	Wal.	Cloth, black	50	349.50	*Plus ABR (auxiliary bass radiator) equal to woofer diameter.	
	DITTON 15	ABR	8*				1.5								75-14 ±5	90	30**	2.5 kHz	8/4	9.4x21x9	Wal.	Cloth, black	16.7	139.50	*Plus ABR (auxiliary bass radiator) equal to woofer diameter. **Power rating to DIN 45 500. UL ratings are continuous rms sine wave.	
	DITTON 33	Ac.sus	10				1	dome							60-20 ±3	33**			8/4	14x24 x10½	Wal.	Cloth, black		229.50	**Power rating to DIN 45 500. UL ratings are continuous rms sine wave.	
	DITTON 44	Ac.sus	12		6	cone	¾	dome							60-25 ±4	90	44**	500 Hz, 5 kHz	8/4	14.6x30 x9.8	Wal.	Cloth, black	45	269.50	*Power rating to DIN 45 500.	
	DITTON 25	ABR	12*		(2) 1½		¾	dome							60-18 ±5	90	60**	5k Hz 2k Hz, 9k Hz	8/4	14x32x11	Wal.	Cloth, black	45	319.50	*Plus ABR (auxiliary bass radiator) equal to woofer diameter. **Power rating to DIN 45 500.	
	DITTON 66	ABR	12*		2	dome	¾	dome							50-25 ±4	86	80**	500 Hz, 5 kHz	8/4	15x39x11	Wal.	Cloth, black	68	469.50	*Plus ABR (auxiliary bass radiator) equal to woofer diameter. **Power rating to DIN 45 500.	
RTR	DR-1	Ac.sus	(2) 10	30											30-40 ±3	90	100	300	8	16½x16½ x48	Wal.	Cloth, black	125	895.00	This speaker contains its own electronic crossover network, also tweeter amp. Bass amp required.	
	280D	Ac.sus	(4) 10	35				cone		T					22-25 ±3	88	100	2.5k, 7.5k	8	16½x31 x16½	Wal.	Cloth, black	95	369.95		
	240D	Ac.sus	8, 10				pz.	super twtr cone		T					28-20 ±3	88	100	1200	8	14½x42 x12½	Wal.	Cloth, black	70	229.95		
	HPR-12M	port	12	50			cone	cone & pz. *		M,T					30-25	92	100	1500, 7.5k	8	14½x13 x36	Wal.	Cloth, blue	72	269.95		
	ESR-6	Ac.sus					*			T					1500- 30k	88	60		8	14½x14½ x12	Wal.	Cloth, black	23	179.95	Electrostatic add-on.	
	EXP-8		8	40				cone		T					40-20	90	60	2000	8	11¼x19 x8½	Wal.	Cloth, black	25	69.95		
RUXTON	SSW-1	port	15	20						L					20-70 ±3dB			70 Hz		72x17x17	Wal.	Foam, black	150	695.00	Sub-woofer system, incl. amplifier. To be used with any speaker systems. One only req. for stereo or 4-chan. As kit only. *At 1 kHz.	
	200A	Ac.sus	12	45	5	cone	3	cone							25-18 ±5dB	50*	800Hz 2k Hz	8	25x15x13	Wal.	Foam, black	45	160.00 pair	As kit only. *At 1 kHz.		
	100A	port	10	45			4	cone							45-15 ±5dB	25*	4k Hz	8	25x15x13	Wal.	Foam, black	40	110.00 pair	As kit only. *At 1 kHz.		
	50A	Ac.sus	8	60			4	cone							55-15 ±5dB	25*	3k Hz	8	18x12x9	Wal.	Foam, black	20	60.00 pair	As kit only. *At 1 kHz.		
SANSUI	SP-7500X	port	16		8	cone	6x2	horn		T					25-22	98	130*	1k, 6k, 10k	8	17½x26 x11			47%	279.95	*Peak power.	
	SP-5500X	port	15		5	cone	6x2	horn		T					25-20	98	120*	1k, 6k, 10k	8	17½x26 x11			43%	239.95	*Peak power.	
	SP-2500X	port	12		5	cone	2	horn		T					30-20	96	100*	1.2k, 5k	8	15x25x11			40%	199.95	*Peak power.	
	LM-330	port	10				2%	cone		T					31-20	92	60*	2000	8	12¼x28 x12		Cloth, brown	41%	199.95	*Peak power.	
	LM-220	port	8				2%	cone		T					32-20	91	45*	2000	8	11x24½ x10		Cloth, brown	26%	169.95	*Peak power.	
	LM-110	port	6½				2%	cone		T					38-20	90	35*	2000	8	9¼x21 x7½		Cloth, brown	18	249.95 pair	*Peak power.	
SCHOBER	LSS-10A	port	12	32	8	cone	1	horn		T					30-18	96	40*	250, 3500	8	24x34x16	Wal.	Cane, beige	60	250.00	As kit only; tweeter opt. *Program material.	

The only problem with Dayton-Wright electrostatic speakers....



Is finding other system components that will measure up to them

So we solved that problem for you by developing a complete line of quality components with performance specifications second to none. We call it our Basic Black series — because each unit is designed to perform a basic system function. No more, no less.

There is the DW535 Infranoise Preamplifier designed for low impedance sources such as moving coil cartridges. Connect it between the phono cartridge output and the regular preamplifier input. Frequency response is 20Hz to 300KHz ± 0.1 dB, and distortion is under 0.002%.

For an ultra high definition preamplifier there is our model SPS — a state-of-the-art device employing discrete semiconductor augmented integrated circuitry. Harmonic distortion is well under 0.005% from 20-10,000Hz at 1.5 volts out; intermodulation distortion under 0.002%. Overall frequency response is 4Hz to 1MHz ± 1.5 dB, with high level input.

We also have a unit which combines the DW535 Infranoise Preamplifier with the SPS Professional Preamplifier. We call this one the SPL. It has all the features of the other two, as well as additional flexibility for tape recorder use. A separate earphone amplifier is built in, with sufficient power to drive most electrostatic earphones.

With sound sources that are less than ideal you will find the new SG Graphic Equalizer indispensable. In addition to the eight equalization frequency controls, we have incorporated an 18dB/octave Bessel derived scratch filter, which can be cut in at 8KHz or 11KHz, and a 24dB/octave rumble filter which can be inserted with its roll off frequency at 25 or 50 Hz.

If you want to know what's happening in your system, there is a stereo level meter unit with true dB indicating VU meters as well as peak indicating meters covering a 70dB range. Switching allows the monitoring of either preamplifier or graphic equalizer output, and a special cable set prevents a tangle of interconnecting wires.

Attractive and functional Rosewood cabinets are available to accommodate components singly or in combination.

Now all we need is a Power Amplifier. The delay in introducing a unit is mainly because we've set ourselves a stiff design task. We want the rise time to exceed all prior equipment in the system, and its transient intermodulation distortion to be correspondingly low. It must also have quick recovery time, have at least 400 watts channel power, deliver better than 280vA into a reactive load — and be uncomplicated. Look for it this fall.

If you are looking for the perfect sound system, write to us. We'll send you complete specifications and the name of your nearest dealer.



DAYTON-WRIGHT ASSOCIATES LIMITED

P.O. BOX 419 · THORNHILL · ONTARIO · CANADA L3T 4A2

Check No. 18 on Reader Service Card

Speakers

MANUFACTURER	MODEL	Enclosure type	Woofer dia., in.	Woofer response (in system)	Midrange dia., in.	Midrange type	Tweeter dia., in.	Tweeter type	Level controls (M=Mid, T=tweeter)	Anechoic freq. response Hz-kHz, 100 Hz axis for 100 Hz	Sens. for 1 W input, dB SPL, 1 mtr. on-axis	Power-handling capability continuous/rating	Crossover frequency	Impedance, nominal	Dimensions, inches	Wood finish	Grille material/color	Weight, lbs.	Price, \$	NOTES	
																					Woofer cones
SCOTT	S 100	Ac.sus	15	38	(2) 4%	cones	(2) 1	domes	M,T	38-20	82	125	700, 3.5k	4	29% x 17 1/2%	Wal.	Plas. brown	65	349.95		
	S 71	Ac.sus	12	38	4%	cone	(2) 1	domes	M,T	28-20	79	100	900, 4.5k	8	25% x 15%	Wal.	Linen, gray	46	199.95		
	S 61	Ac.sus	10	38	4%	cone	1	dome	M,T	30-20	80	75	1k, 5k	8	25% x 14%	Wal.	Linen, gray	43	169.95		
	S 42	Ac.sus	8	55			1	dome	T	35-20	82	35	2.2k	8	22% x 10% x 8%	Wal.	Plas. brown	22	79.95		
SHERWOOD	Evolution Six	Ac.sus	10	47	3%	cone	1	dome	T	32-18	90	100	800, 4k	8	14x25x10	Wal.	Cloth, brown	44	Under 150.00		
SONEX (SUMIKO)	One	Ac.sus	6	65	3 1/2%	cone	7/8	Pz		50-20	97	50	1.5k, 10k	8	21x13 x9 1/2	Wal.	Cloth, brown	21	185.00		
	Three	Ac.sus	6	50	3%	cone	7/8	Pz		35-20	100		500, 1.5k, 4k, 10k	8	14x38x15	Wal.	Cloth, brown	60	425.00		
SONY	SSU 1800	Ac.sus	10		2	dome	3/4	dome		30-20		100	800, 3k	8	27x15x12	Wal.	Cloth, brown	60	200.00		
	SSU 1600	Ac.sus	12		2	dome	3/4	dome		35-20		75	800, 3k	8	26x14x12	Wal.	Cloth, brown	50	150.00		
	SSU 1400	Ac.sus	10		1 1/2	dome	2	cone		40-20		60	800, 4k	8	24x13x10	Wal.	Cloth, brown	38	120.00		
	SSU 1200	Ac.sus	10				3	cone		45-18		50	1k	8	24x13x10	Wal.	Cloth, brown	29	80.00		
	SSU 1000	Ac.sus	8				3	cone		50-18		50	1.5k	8	17x11x8	Wal.	Cloth, brown	17	100.00 pair		
SPEAKERLAB	One	Ac.sus	8	66			1/2	dome	T	50-15	82	40	2.5k	4	18 1/2 x 11 1/2 x 9	Wal.	Cloth, brown	30	89.00	Kit price, \$59.00.	
	Two	Ac.sus	10	54			1 1/2	dome	T	45-16	78	60	1250	4	23 1/2 x 15 1/2 x 12	Wal.	Cloth, brown	49	139.00	Kit price, \$89.00.	
	Three	Ac.sus	12	56	6	cone	3/4	dome	T,M	40-17	76	100	700, 5k	8	23 1/2 x 15 1/2 x 12	Wal.	Cloth, brown	49	199.00	Kit price, \$142.00.	
	Four	Ac.sus	12	56	6	cone	4/4 x 11 1/2	horn	M,T	40-17	76	100	700, 5k	8	23 1/2 x 15 1/2 x 12	Wal.	Cloth, brown	49	229.00	Kit price, \$173.00.	
	Seven	Ac.sus	10	48		3x 14 1/2	horn	11 1/2	horn	M,T	35-17	83	150	700, 5k	4	25x18x15	Wal.	Cloth, brown	85	389.00	Kit price, \$272.00.
	K	horn	15	17		4x 14 1/2	horn	11 1/2	horn	M,T	30-17	91	200	400, 5k	4	50 1/2 x 32 1/2 x 28	Wal.	Cloth, brown	170	595.00	Kit price, \$389.00 in particle board.
SUPERSCOPE	S-16A	part					3			80-17	15		8	10 1/2 x 17 x 7	Wal.	Foam, brown	7	69.95 pair			
	S-26A	part	6 1/2				3			60-18	20	5000	8	11 1/2 x 19 1/2 x 7	Wal.	Foam, brown	9 1/2	79.95 pair			
	S-208	Ac.sus	8				3			50-20	50		8	11 1/2 x 19 1/2 x 8	Wal.	Foam, brown	14	139.95 pair			
	S-210	Ac.sus	10				3			40-20	50	3000	8	12 1/2 x 23 1/2 x 9 1/2	Wal.	Foam, brown	22 1/2	139.95 pair			
	S-212A	Ac.sus	12				3			30-20	50	3000	8	14 1/2 x 23 1/2 x 11	Wal.	Foam, brown	27	169.95 pair			
	S-312	Ac.sus	12		4%		3			30-20	50	2k, 6k	8	14 1/2 x 23 1/2 x 11	Wal.	Foam, brown	28	199.95 pair			
TANNOY	Royale 85	Ac.sus	15	42		2	horn	T		35-20	92	85	1k	8	42x23 1/2 x 17	Wal.	Cloth, brown	95	597.00	Dual concentric.	
	Regent 75	part	15	46		2	horn	T		36-20	92	75	1k	8	33x23 1/2 x 16	Wal.	Cloth, brown	70	507.00	Dual concentric.	
	Regent 55	Ac.sus	12	42		2	horn	T		35-20	90.5	55	1k	8	27 1/2 x 23 1/2 x 16	Wal.	Cloth, brown	60	384.00	Dual concentric.	
	Era 55	Ac.sus	12	42		2	horn	T		36-20	90.5	55	1k	8	32 1/2 x 23 1/2 x 17	Wal.	Cloth, brown	60	420.00	Dual concentric.	
	Integra 40	part	12	48		2	horn	T		40-20	88	40	1k	8	23 1/2 x 15 1/2 x 11 1/2	Wal.	Cloth, brown	40	330.00	Dual concentric.	
TECHNICS BY PANASONIC	T-100	Ac.sus	8			2				55-18	94	60	4.8k		20x11x10	Wal.	Cloth, brown	26	79.95		
	T-200A	Ac.sus	10			2				44-18		40	1.8k		21 1/2 x 12 x 10 1/2	Wal.	Cloth, brown	30	99.95		
	T-300	Ac.sus	10		3	cone	1 1/2		M,T	40-20		50	1.5k, 7.5k		24 1/2 x 13 1/2 x 12 1/2	Wal.	Cloth, brown	37	179.95		
	T-400	Ac.sus	12		5	cone	(2) 2	rings	M,T	38-20		90	700, 3k		27x15 x13 1/2	Wal.	Cloth, var.	53	279.95		
	T-500	Ac.sus	(2) 10		5	cone	3 1/2	cone rings	M,T	35-20		100	600, 2k, 8k		29x18 1/2 x 14 1/2	Wal.	Cloth, var.	70	429.95		
TOSHIBA	SS-510	part	10	58	4%	cone	1 1/2	dome				50	800, 5k		13 1/2 x 23 1/2 x 13	Metal, black	34 1/2	229.95			
TRANSLINE	Compact	part	10			1	dome			40-23	10*	40	3000	8	12x7x24	Wal.	Cloth, black	25	155.00	*Amp. power recomm. for average room. Kit price \$67.	
	TLS-802	part	10			1	dome			35-23	10*	50	3000	8	12x12x40	Wal.	Cloth, black	65	185.00	*As above. Kit \$75.	
	TLS-803	part	10		4	cone	1	dome		30-23	15*	60	500	8	12x12x45	Wal.	Cloth, black	80	240.00	*As above. Kit \$100.	
	TLS-1000	part	8		4	cone		pz		25-30	15*	80	500, 3k	8	14x14x48	Wal.	Cloth, black	100	305.00	*As above. Kit \$132.	
	Monitor	part	8			(6) 2x5	es.			20-30	15*	80	1500	8	14x14x62	Wal.	Cloth, black	110	675.00	*As above. Kit \$370.	
YAMAHA	NS-1000	Ac.sus	12	40	3 1/2%	dome	1 1/4	dome	M,T		90	100	500, 6k	8	28x15 1/2 x 14 1/2	Ebny	Foam	85k	1350.00 pair	*Beryllium domes.	
	NS-1000M	Ac.sus	12	40	3%	dome	1 1/4	dome	M,T		90	100	500, 6k	8	26 1/2 x 14 1/2 x 12 1/2	Bk.	Foam	68k	960.00 pair	*Beryllium domes.	
	NS-690	Ac.sus	12	40		dome	1 1/4	dome	M,T		90	50	300, 6k	8	24 1/2 x 11 1/2 x 11 1/2		Foam, black	48	560.00 pair		
	NS-670	Ac.sus	10	40		dome	1 1/4	dome	M,T		88	50	800, 6k	8	22 1/2 x 12 1/2 x 10 1/2		Foam, black	42	460.00 pair		
	NS-3	Ac.sus	10		1 1/2%	dome	1	dome	M,T		50	50	600, 1.2k	8	24x13 1/2 x 10 1/2	Wal.	Foam, black	45	460.00 pair		
	NS-2	Ac.sus	10			dome	1	dome			40		1.2k	8	24 1/2 x 11 1/2 x 11	Wal.	Foam, black	29	200.00 pair		

Some speakers are more equal than others.

Over the years, Rectilinear engineers have created a number of fine speakers. Some have even gone on to become classics.

Indeed, for a great many knowledgeable enthusiasts, Rectilinear has virtually redefined the listening experience.

Now, with a new generation of speakers, the Contemporary Laboratory Series, we have developed a family of speakers that are so clearly superior to anything that has gone before, that conventional comparisons no longer apply.

A case in point is the new Rectilinear 5.

Listening to this remarkable speaker is, quite simply, a revelation. It produces completely natural, uncolored sound of extraordinary clarity and subtlety. Yet, it is capable of generating very high sound pressure levels with only moderate power input.

The outstanding performance of the Rectilinear 5 is directly traceable to its comparatively simple, but highly refined design.

Flat, flatter, flattest.

Though nominally a four-way speaker system, the Rectilinear 5 differs from conventional multiple driver systems in some very fundamental respects.

In most systems, the individual drivers are operated over a restricted portion of their actual frequency range with the unwanted or undesirable

frequency extremes "dumped" into elaborate crossover networks to maintain some semblance of smooth response.

By contrast, we take a simpler, but far more effective approach. We painstakingly design each driver for exceptionally smooth response over its entire operating range with the top end rolling off naturally, both mechanically and acoustically. Thus, we come very close to attaining that most elusive of all speaker characteristics, an apparently seamless transition from driver to driver.

Because the individual driver characteristics and their interrelationships have been so carefully worked out, the use of complicated crossovers with all their attendant problems is largely avoided. Instead, sophisticated lead-

ing edge filters are employed, allowing a much smoother transfer of energy. But of equal importance, phase integrity is maintained and transient response greatly improved.

Another dividend of this innovative approach to speaker design is the enormous power handling built-in to the Rectilinear 5.

The final touch.

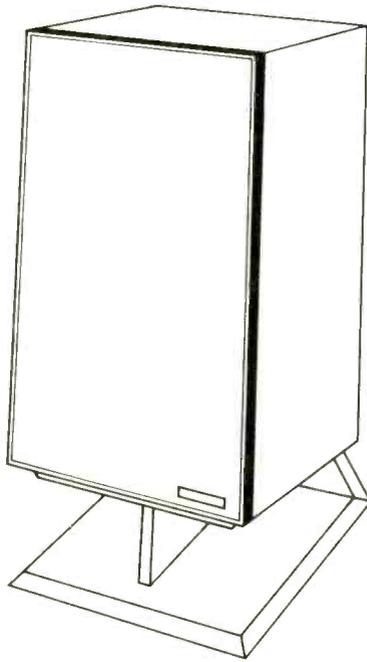
Obviously, we've invested a great deal of time and effort to make the Rectilinear 5 the most accurate speaker current technology permits.

Moreover, to insure unvarying excellence from unit to unit, we have instituted a new quality control program that may well be the most stringent in the industry.

One last thought. At a time when all too many companies have opted for exotic designs (read expensive), we have deliberately sought to create a clearly superior speaker system at a price that would still be within the reach of the discriminating enthusiast.

We think that alone makes us a little bit more equal than all the rest.

For complete information on the Rectilinear 5 and the rest of the Contemporary Laboratory Series write: Rectilinear Research Corporation, 107 Bruckner Boulevard, Bronx, N.Y. 10454. Canada: H. Roy Gray, Markham, Ont. Military and International inquiries: Rectilinear International Corp.



Rectilinear Dispersion Base optional.

The Rectilinear® 5

Check No. 54 on Reader Service Card

Headphones

MANUFACTURER	MODEL	Type (dynamic, electrostatic, etc.)	Freq. response, Hz-kHz, ±2 dB	Impedance, ohms	Sensitivity, dB SPL, for 1 mV input	Maximum input, mV	Distortion, % at rated input, 1 kHz	Cord length, ft.	Weight, oz.	Price, \$	NOTES
AKG	K140	dyn.	20-20	600	100	240	1.0	9.8	6	34.50	Main transducer and 6 passive diaphragms avail.
	K240	dyn.	20-20	600	100	240	1.0	9.8	9	69.50	
ASTATIC	AH-10	dyn.	30-18k	8	105	500	—	6	10	14.95	
	AH-20	dyn.	20-20k	8	105	500	—	10	12	26.95	
AUDIO-TECHNICA	AT-701	dyn.	30-20 +2	4-16	97	1000			9	39.95	Adaptor box provides splkr. switching, accepts two sets headphones. As above.
	AT-702	dyn.	25-20 +2	4-16	97	1000			9	49.95	
	AT-703	dyn.	20-20 +2	4-16	94	1000			9	69.95	
	AT-707	elect.	20-20 +2	4-16	89	1000				79.95	
	AT-706	elect.	20-22 ±2	4-16	94	10k		6½		129.95	
AVID	PRO 730 885	dyn.	20-18.5	300	50	10k	0.5	15	16	26.95	Completely field-repairable; mylar diaphragm.
		dyn.	30-17.5	300	50	10k	1.0	15	15	14.95	
BEYER (REVOX)	DT302	dyn.	20-20	600			1.0*		2½	29.95	Open-air. *At 115 dB Four channel; vol. con'tls. for each chan. *At 120 dB. *At 120 dB. *At 120 dB. *At 120 dB. Modular const. *At 120 dB.
	DT204	dyn.	20-20				0.3*	10	14	120.00	
	DT48	dyn.	16-20 ±2	8, 25, 200			0.2*	11	15	120.00	
	DT480	dyn.	20-20	8, 25, 8, 100, 400			0.2*	12	16.5	90.00	
	DT100	dyn.	30-20	2000, 600			0.2*	12	10	64.00	
	DT900	dyn.	30-18			0.40*	7	9	29.95		
CRAIG	9417			8				8		12.95	
ESS	Heil	*	20-20	32	35	1.4V	0.3	14	14	97.00	* Full range Heil air-motion transformer elements, Sq. wave rise time: 15 mS @5 kHz. Open-air design.
KOSS	ESP-9B	ES	10-19 ±5	4-16		10V	0.2*	6	19	175.00	*Distortion at 100 dB SPL.
	ESP-6A	ES	30-19 ±5	4-16		10V	0.2*	10	27	130.00	*As above.
	HV/1LC	dyn.		150		85	0.4*	10	10.7	54.95	*As above.
	HV/1A	dyn.		175		77	0.4*	10	9.3	49.95	*As above.
	HV/1	dyn.		175		150	0.6*	10	9.3	44.95	*As above.
	Pro-4AA	dyn.		250		1200	0.6*	10	9	65.00	*As above. Pro-600AA, 600 ohms, \$70.00.
	Phase/2	dyn.		150		10V	0.6*	10	24	75.00	*As above. Panoramic source controls, amb. expand swit.
	K/2+2	dyn.		85		1200	0.6*	10	22	90.00	*As above.
	4-chan. Pro-5Q	dyn.		85		1200	0.6*	10	21	75.00	*As above.
	4-chan. K/6LCO	dyn.		85		700	0.6*	10	22	49.95	*As above.
	4-chan. KO/727B	dyn.		130		120	1.0*	10	19	34.95	*As above.
	K/6LC	dyn.		110		80	1.0*	10	17	29.95	*As above.
	K/6	dyn.		130		500	1.0*	10	15	19.95	*As above.
	SP/3XC	dyn.		130		500	1.0*	10	15	15.95	*As above.
Technician/VFR	dyn.	10-22	3.2-600			0.4*	10	17	75.00	*As above. Variable resp.	
K7	dyn.	20-16	3.2-600					8	11	17.95	*As above.
Phase 2+2	dyn.	20-20	3.2-600					9	17½	145.00	*As above.
LESLIE	W-4	dyn.	20-20 ±5	4-16	53	*	0.07	13	12½	44.95	Bass selector switch; mylar diaphragm. Open air design. *3.48 V peak, 870 mV cont.
	W-2	dyn.	30-15 ±5	4-16	55	*	0.07	6½	8½	14.95	Open air design. *3.47 V peak. 850 mV cont.
MARANTZ	SE15	elec	20-20 ±5	30	*		1.5	6	14	129.95	*100 dB for 2.8 V input.
	S05	dyn.	30-15	8	*		1	6	16	39.95	*100 dB for 0.15 V input.
MICRO (TANNDY)	Micro	ES	20-25	8	98*	100V	1	8	10	129.00	*@1 kHz, 100 V.
NAKAMICHI	HP-100	dyn.	20-20 ±3	8	*	500 mW	0.8	8	14.3	50.00	*90dB/mW at 1 kHz Re: 0dB = 0.0002µbar
PEARL (ERCONA)	D42	dyn.	30-20	200	0.3		0.5	8	9½	34.95	Mono or stereo. Washable ear pieces. Cord cord, w/mono/stereo sw.
	RD224	dyn.	20-18	8	1.0	100	1.0	8	12	24.95	
PIONEER	SE-700	film	20-20	4-16	100*	30V	—	10	13	79.95	*Ref. to 3V.
	SE-500	film	20-20	4-16	100*	30V	—	10	11	49.95	*Ref. to 3V.
	SE-0-404 (Q)	dyn.	20-20	4-16	105*	500	—	10	24	69.95	*Ref. to 3V.
	SE-505	dyn.	20-20	8		500	—	16	16	59.95	*Ref. to 0.3V.
	SE-405	dyn.	20-20	8	113*	500	—	16	16	44.95	
	SE-305	dyn.	20-20	8	—	500	—	12	14	34.95	
SE-205	dyn.	20-20	4-16	—	500	—	8	16	24.95		

"Bring it back alive."

Professionally, people see me playing concerts or leading the Tonight Show orchestra. But when I relax to the purest sound of my favorite music, nothing brings it back alive like the incredible Sound of Koss.

"From the deepest, toe-curling bass notes of a pipe organ, to the crisp, brilliant highs of the brass section,

nothing can match the excitement of a live performance as well as Koss Stereophones. And nothing can match the incredible sound of the PRO-4AA. Because the Koss PRO-4AA features the only driver element designed specifically for stereophones. So when it comes to mixing the sound in your head instead of

on the walls of your living room, you'll hear two more octaves than you've ever heard before in a dynamic stereophone.

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live demonstration, or write for a free full-color catalog, c/o Virginia Lamm. Either way, you'll 'bring it back alive'."

Koss PRO-4AA Stereophone



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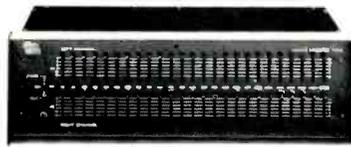
Headphones

MANUFACTURER	MODEL	Type (dynamic, electrostatic, etc.)	Freq. response, Hz-kHz, ± 7 dB	Impedance, ohms	Sensitivity, dB SPL for 1 mV input	Maximum input, mV	Distortion, % at rated input, 1 kHz	Cord length, ft.	Weight, oz.	Price, \$	NOTES
PICKERING	DA2	dyn.	30-19	8	*	300	1.0	7	11	22.95	*100 dB SPL for 60 mV. *As above. *As above.
	DA3	dyn.	20-20	15	*	200	0.5	10	7½	39.95	
	PH4955	dyn.	40-11	8	*	5w	1.0	10	28	64.95	
PRIMO	OH-1006	dyn.		4/16		500	1.0	6%	15	35.00	With boom microphone.
	OH-10052	dyn.		8		500	1.0	6%	14	40.00	
	OH-1001	dyn.		4		200	1.7	10	11	15.00	
	OH-1008	dyn.		8		500	1.0	6%	5½	30.00	
SANSUI	QH-44 4-chan.	dyn.	20-20	25	98	100		8%	15%	69.95	Non isolating, stereo/4-chan. sw. Level control for rear.
	SH-15	dyn.	20-20	25	97	65		9%	9%	79.95	Non isolating.
	SH-5	dyn.	20-20	25	97	65		6%	8%	34.95	Non isolating.
STAX (DISCWASHER)	SR-X	ES	20-23 ±2				0.8	6	18	230.00	Includes SRD-7 adaptor; phones alone for use with SRA-12 preamp \$185.00.
	SR-5	ES	20-19 ±3				0.5	6	13	130.00	Includes SRD-6 adaptor; phones alone \$85.00.
STANTON	65-4C 4-chan. 60	dyn.	20-20	15	0.1V*	1.2V	0.5	11	19	69.95	2/4 chan. 4 spkrs. *Sens. @100 dB.
	50		40-11 ±3	8	0.1V*	500 mW	1.0	10	28	64.95	Sep. 2-way woofer & tweeter in each cup w/L/C cover. *As above.
	50		60-10 ±3	8	0.1V*	500 mW	1.0	10	21	54.95	Vol. contrl. on earcups. *As above.
	40		60-10 ±3	8	0.1V*	500 mW	1.0	10	21	44.95	*As above.
SUPEREX	PEP-81	ES	10-22 ±5	8	95	10V	0.20	15	8%	150.00	Console w/vol. controls. Jacks for 2 sets phones.
	PEP-79E	ES	10-22 ±5	8	95	10V	0.25	15	8%	90.00	
	EP-5	dyn/es	10-24 ±5	8	85	10V	0.50	15	18	80.00	Dyn. woofer/e.s. tweeter.
	PRD VII	dyn	15-23 ±6	80	95	6V	0.50	15	18	65.00	Dyn. woofer/ceramic tweeter.
	CL-1 Classic		10-20 ±5	35	95	6V	0.30	15	10%	55.00	Mylar diaphragm.
	TL-3	dyn.	25-20 ±6	70	95	5V	0.60	15	10	40.00	
	QT-4B 4-chan. PRD 6-D	dyn.	20-18	20	85	3V	1.00	15	16	65.00	Stereo/4-channel sw.
	914	dyn.	15-22 ±6	10	95	6V	0.5	10	18	60.00	Dynamic woofer/ceramic tweeter.
	927	dyn.	15-20 ±8	70	95	6V	0.4	10	15	40.00	Slide level controls.
	SW-IV	dyn.	25-19 ±8	10	95	6V	0.5	10	16	35.00	Dynamic woofer/ceramic tweeter.
	ST-N	dyn.	30-15	8	100	5V	1.0	10	14	25.00	
930	dyn.	30-15	8	100	5V	1.0	7	13	20.00		
QT-4 4-chan.	dyn.	40. 14.5 25-17	8 20	100 85	5V 3V	1.0 1.0	7 15	7 16	13 50.00	Four-channel phones.	
SUPERSCOPE	HP-10	dyn.	30-15	8	100			6		19.95	
TECHNICS BY PANASONIC	EAH-80A	elect.	20-20	8		5V	0.8	13	12%	79.95	Spkr./phones selector & control.
	EAH-420 4-chan.	dyn.	20-20	8		1V		9	24	79.95	4-channel/stereo sw.
TELEPHONICS	Stereo 20	dyn.	20-21	100	*	0.5*	10	6		29.95	*Max input 400 mW. Dist. @ 103 dB SPL.
	Stereo 30	dyn.		100	*	0.2*	10	6		39.95	*Max input 400 mW. Dist. @ 110 dB SPL.
	Stereo 50	dyn.	16-22	100	*	0.2*	14*	10%		49.95	*Max input 400 mW. Dist. @ 112 dB SPL.
	TEL-101F	dyn.		100	*	0.2*	10	*		59.95	*Max input 400 mW/ch. Dist. @ 101 dB SPL. Four chan.
TOSHIBA	HR-50	dyn.	20-20	4/16		250		6%	20%	29.95	4-channel/stereo switch.
	HR-40 4-chan.	dyn.	20-20	4/16		300		6%	27%	54.95	
UHER	W674	dyn.	20-20	4				8	2.2		Foam earpiece.
VIDAIRE	871 4-chan.	dyn.	18-20	4-8				10	48	44.00	Stereo switch. Tone cntls. Vol cntls. Vol cntls.
	853 4-chan.	dyn.	20-20	8-16				13	24	36.00	
	859	dyn.	20-20	4-16				10	30	56.00	
	983	dyn.	20-20	8-16				10	20	28.00	
	998	dyn.	15-22	4-16				10	38	47.00	
	960C	dyn.	20-18	8-16				6	9	9.00	
YAMAHA	HP-1	dyn.	20-20	150	44	1000		8	.64	65.00	Soft leather headband. Foam ear pads.
	HP-2	dyn.	20-20	150	41	1000		8	.51	45.00	As above.

Equalizers



Ace Audio AE2002



Altec 729A



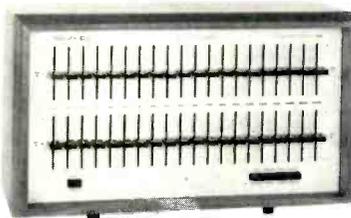
BSR FEW-3



Dayton-Wright SG Mk2



JVC SEA-10



SAE Mk-27B



Soundcraftsmen PE-2217



TAPCO 2200

MANUFACTURER	MODEL	Channels	Bands	Bandwidth, octaves	Range, dB ±	Maximum output, rms	THD, %	S/N, rated output	Dimensions, in.	Weight	Price, \$	NOTES
ACE AUDIO	AE2002	2	5	2	12	8	.05	80	3 1/4 x 12 1/4 x 7	3	84.25(K) 133.75(W)	Sep. controls each chan; tape mon. sw.; defeat sw. Lowest & highest controls = bass & treble. Incl. brushed alum face plate.
ALTEC	729A*	2	24	1/3	14	4.5V	**	80	18 1/2 x 5 1/4 x 8	13	875.00	*Acousta-Voicette. **Less than 0.5.
BSR	FEW-3	2	12	1	12	10	.05	80	17 1/2 x 7 x 5 1/4	10	199.95	Accessory Sound Level Meter, SLM-1, with Test Record avail.
	FEW-2	2	5	2	12	10	.05	80	11 1/2 x 7 x 4 1/2	4	99.95	
	FEW-4	4	5	2	12	10	.05	80	17 1/2 x 7 x 5 1/4	10	199.95	
DAYTON-WRIGHT	SG mK2	2	8	1.2	12	7	.007	*	13 x 10 x 6 1/2	10	862.00	Incl. tape monitor 1,2, Dub 1 to 2, 2 to 1, 2 AUX channels. High freq. cut @ 18 dB/oct. at 8 kHz - 11 kHz. Low freq. cut at 24 dB/oct. at 50 Hz or 25 Hz. *90 dB S/N @ 1.5V.
JVC	SEA-10	2	7	1 2/3	12	3	0.09	70	5 1/4 x 7 1/2 x 10	5 1/4	129.95	SEA record feature; tape mon switch.
QUINTESENSE	Equalizer I	2	5	*	12	9	.01	95	11 x 14 x 4	11	500.00	**"Bands" establish inflection points on R.I.A.A. equalization curve.
SAE	27B	2	20	1/2	8/16	12	0.02	90	17 x 7 x 8 1/2	18	550.00	Pink noise generator; precision toroid inductors; drive for 600 ohm loads. Pink noise generator.
	2700B	2	20	1/2	8/16	12	0.02	90	19 x 7 x 8 1/2	19	600.00	
SOUND-CRAFTSMEN	20-12A	2	10	1	12	7	0.1	90	20 x 11 1/2 x 7 1/4	28	299.50	W. test disc, computone charts. Includes case or rack mounts. As above plus 2 LEO balancing circuits; front-panel tape or PB EQ.
	RP2212	2	10	1	12	7	0.1	90	20 x 11 1/2 x 7 1/4	28	349.50	
TAPCO	2200	2	10	1	15	10	0.1	85			289.00	Rack mount; balanced & unbal. inputs & outputs; 2 mtrs.; chan. level controls.

Microphones

MANUFACTURER	MODEL	Directional pattern	Operating principle	Case material	External finish	Impedance, ohms	Free resp. Hz-kHz ±2 dB	EIA sensitivity, dB/m	Mic connection	Cable length, ft.	Cable plug type	Dimensions, in.	Weight, oz.	Mounting method	Price, \$	NOTES
AKG	D-1000E	card	dyn.	brass	brush	200	40-16 ±3.5	*51	XLR	**15	not furn	6x1½	9½		75.00	*Re 1 mW/10 dynes/cm.
	D-200E	card	dyn.	alum	brush	200	30-15 ±3	*55	XLR	**15	not furn	7½ x1½	8		85.00	**Hi imp. cable avail.
	D-707E	card	dyn.	brass	brush	200	50-15 ±3	*52	XLR	**15	not furn	6x1½	5.7		55.00	***As above.
	D-160E	omni	dyn.	brass	brush	200	40-18 ±3.5	*55	XLR	**15	not furn	7x¾	7.5		69.00	***As above.
	D-190E	card	dyn.	brass	brush	200	40-15 ±3	*50	XLR	**15	not furn	6½ x1½	6		65.00	***As above.
ADVENT	MDC-1	card	dyn.	metal	blk	500	50-16k		Atch.	20	phone	5½ x1¼	10		99.95 pair	Matched pair with case, desk stands.
ASTATIC	810	Card	Dyn.	Zinc	Chrome	150/ 40k	40-15	-147	Swit.	18		5½x 1¼	8	5/8 x 27	85.00	
	820	Dmni	Dyn.	Steel	Chrome	150/ 40k	40-18	-154	Swit.	18		9.0x x¾	6	5/8 x 27	79.50	
	840	Dmni	Dyn.	Alum	Chrome	150	50-16	-153	Swit.	30		2¼x¾	1¼	Lav.	85.00	
	850	Card	Dyn.	Zinc	Chrome	150/ 40k	40-15	-147	Swit.	18		6½x2	9½	Lav.	95.00	
	857L 77	Card Card	Dyn. Dyn.	Zinc Zinc	Nickel Chrome	150 38/150 /40k	50-15 30-15	-150 -144	Swit. Swit.	8 18		6½x2 4¾x 2¼	9½ 40	Lav. Lav.	66.00 90.00	
BEYER (REVØX)	3500	Uni.	Dyn.	Metal	Chrome	600	40-18	-149	XLR	16½	Not furn.	6½x 1		Clamp.	165.00	w. wind screen, table stand.
	M550S	Omni.	Dyn.	Metal	Blk. chrome	500	50-16 ±3	-152	Atach.	15	Phone	5x1	8	Clamp	42.50	W. tripod.
	M260	Hyper card	Rib.	Metal	Matte blk.	200	50-18 ±3	-153	XLR	16½	Not furn.	7x1	8	Clamp	110.00	M260SM, w. on/off bass cut swit, also avail.
	M160	Super card	Double rib.	Metal	Matte blk.	200	40-18 ±2	-152	XLR	16½	Not furn.	6x1	6	Clamp	230.00	
	M500	Super card	Rib.	Metal	Matte blk.	200	40-18 ±2	-153	XLR	16½	Not furn.	7½x 2	8	Clamp	140.00	4-stage, built-in pop screen.
	M69	Card.	Dyn.	Metal	Matte blk.	200	40-16 ±3	-144	XLR	16½	Not furn.	7x1	8	Clamp	95.00	M69SM, w. on/off & bass cut swit, also avail.
	M101	Omni.	Dyn.	Metal	Matte blk.	200	40-20 ±2	-150	XLR	16½	Not furn.	4¾x¾	3½	Clamp	120.00	W. windshield.
	X1N	Card.	Dyn.	Metal	Matte blk.	200	30-18 ±2	-148	XLR	16½	Not furn.	7x1¼	11	Clamp	80.00	X1HLC, w. Hi & Lo swit., also avail.
	M201	Hyper card.	Dyn.	Metal	Matte blk.	200	40-18 ±2	-149	XLR	16½	Not furn.	6x1	8	Clamp	165.00	w. windshield.
	M810	Card.	Dyn.	Metal	Matte blk.	500	50-16 ±3	-148	DIN	16½	Phone	5x1¼	9	Clamp	70.00	W. windshield, quick release clamp.
M67	Card.	Dyn.	Metal	Matte blk.	200	40-18 ±3	-148	XLR	16½	Not furn.	8x1½	11	Clamp	130.00	W. windshield.	
M88	Super card.	Dyn.	Metal	Matte blk.	200	30-20 ±2	-144	XLR	16½	Not furn.	7x2	9	Clamp	218.00		
CRAIG	9110	Omni.		Alum	Chrome					6	Qual				6.95	Incl. wind screen.
ELECTRD-VOICE	CS-15	Card. *	Elect.	Steel	Beige	Lo	40-18 ±3	-137	Swit. A3	15		7x1		Clamp	198.00	*Single-D.
	CO-85	Omni. *	Elect.	Steel	Beige	Lo	70-16 ±3	-152	Swit. A3	15			3	Pin*	150.00	*Tie tack.
	DS-35	Card. *	Dyn.	Alum.	Beige	Lo	60-17 ±3	-148	Swit. A3	15		7½x 1 7/8	9	Clamp	90.00	*Single-D.
	RE20	Card. *	Dyn.	Steel	Beige	Lo	45-18 ±3	-150	A3M	15		8½x2	26		300.00	*Var-D (R); 10 freq. tilt- down swit.
	RE-15	Super card. *	Dyn.	Steel	Beige	Lo	80-15 ±3	-150	A3M	15		6½x 1½	6		180.00	*Var-D (R); RE-10, same for less exacting work, \$110.00. RE-16, super windscreen \$190.00; RE-11, 10, windscreen, \$120.00.
	RE-55	Omni.	Dyn.	Steel	Beige	Lo	40-20 ±3	-149	A3M	15		10¼x 1¼	8½		190.00	
	OO-54	Omni.	Dyn.	Steel	Beige	Lo	50-15 ±3	-149	A3M	15		5¼x 1¼	6½		87.50	
	635A	Omni.	Dyn.	Steel	Beige	Lo	80-13 ±2	-149	A3M	15		6x1½	6		60.00	
	649B	Omni.	Dyn.	Alum.	Beige	Lo	70-10 ±3	-155		30		2¼x¾	1	*	88.50	*Lavalier, w. neck cord, belt clip, std. clip, pouch.
	660	Super Card. *	Dyn.	Zinc	Satin chrome	Hi/ Lo	90-13 ±3	-150	A3M	15		6½x 1½	10½		72.00	*Var-D. 661, same w. on/off switch.
	644	Card.	Dyn.	Zinc/ brass	Gray	Hi/ Lo	40-12 ±3	-148	MC4F	15		16x 2¼	41	5/8 x 27	120.00	
	671	Card.	Dyn.	Zinc	Satin chrome	Hi/ Lo	60-14 ±3	-155	A3M	15		6½x2	8		68.95	Built-in windscreen.
	670	Card.	Dyn.	Alum.	Brass	Hi/ Lo	60-14 ±3	-151	A3M	15		7¼x 1½	6		49.20	
	627B	Card.	Dyn.	Zinc	Satin chrome	Hi/ Lo	60-13 ±3	-152	A3M	15		6½x 1½	7½		49.80	626A, same for less exacting work, integral cable, \$36.30.
	636	Omni.	Dyn.	Steel	Satin chrome	Hi/ Lo	60-13 ±3	-154	MC4M	15	Not furn.	10¼x 1¼	15	5/8 x 27	75.00	W. on/off swit.
631A	Omni.	Dyn.	Zinc	Satin chrome	Hi or Lo	80-13 ±3	-149	A3M	15		6x1½	6		49.80	W. removable on/off swit.	
647A	Omni.	Dyn.	Steel	Beige	Hi or Lo	70-10 ±6	-155		18	Not furn.	3½x ½	2	*	66.00	*Lavalier type, w. belt clip, cord, & std. clip.	

MANUFACTURER	MODEL	Directional pattern	Operating principle	Cage material	External finish	Impedance, ohms	Freq. resp., Hz-kHz ±2 dB	EIA sensitivity, dBm	Mic connection	Cable length, ft.	Cable plug type	Dimensions, in.	Weight, oz.	Mounting method	Price, \$	NOTES
LAFAYETTE	MU-100	Uni.	Dyn.	Alum.	Nickel	600/50k	200-10 ±6		XL	15	Not furn.	7x1	9	5/8 x 27	39.75	
	MU-101	Omni.	Dyn.	Alum.	Alloy	600/50k	200-10 ±6		XL	15	Not furn.	7x1½	9	5/8 x 27	39.75	
	MO-102	Omni.	Dyn.	Alum.	Alloy	600/50k	50-13 ±6		XL	15	Not furn.	7x1½	6½	5/8 x 27	39.75	
	99-46427	Uni.	Elect.	Alum.	Alloy	600/50k	30-16 ±5			15	Phone	10½ x1	8	5/8 x 27	34.95	
	ML-1 ML-2 99-46872	Omni. Omni. Omni.	Elect. Elect. Elect.	Alum. Alum. Alum.	Alloy	600/800/250	50-15 50-13 20-15		Atch. Atch. XLR	15 15 15	Phone Phone Not furn.	1½x½ 1½x½ ½x½	½ ½ ½	Clip Clip *	19.50 24.50 59.95	*Tie tack; 3-oz power supply.
MERITON	DNM-10	Omni.	Dyn.			250	100-10	-82	Mini			1x5	2		9.95	W. windscreen, tablestand.
	DNM-20	Omni.	Dyn.			250	70-12	-80	Mini			1x5½	2½		19.95	Dn/off swit.; W. tablestand.
	CNM-70	Omni.	Elect.			600	40-20	-73	Phone	16%		1½x	6		79.95	FET amp.
	CNM-75	Uni.	Elect.			600	50-15	-73	Phone	16%		1x6½	5		99.95	Base roll-off swit.
DNM-25	Uni.	Dyn.			250	150-10	-78	Phone	16%		1½x	3½		14.95	Dn/off swit.	
DNM-40	Uni.	Dyn.			600/50k	100-12	-76	Phone	16%		1½x	5		39.95	W. 3 windscreens; on/off swit.	
NAKAMICHI	CM-1000	Card.	Cond.	Metal	Blk.	600	20-20 ±2.5	-67*	XLR	20	XLR	5½x¾	5	5/8 x 27 stand adapt.	290.00	Includes battery power supply. Interchangeable capsule. *0 dB = 1V/μbar
	CM-300	Card./omni	Elect.	Metal	Blk.	200	30-18 ±3.5	-76*	XLR	17	Phone plug	8x¾	6	5/8 x 27 stand adapt.	110.00	Set of 3 for \$300.00. Interchangeable capsules. *0dB = 1V/μbar
NEUMANN	U-87	*	Cond.	Metal	Chrome	150/250	40-16	-137	XLR	25	XLR	8x2¼	20	5/8 x 27	645.00	For close miking. Dptional batt.; -10 dB pad switch.
	KM-83	Omni.	Cond.	Metal	Chrome	200	40-20	-137	XLR	None	None	4½x¾	3	5/8 x 27	230.00	Low freq. sw roll-off sw. *Omni. card., fig. 8.
	KM-84	Card.	Cond.	Metal	Chrome	200	40-20	-137	XLR	None	None	4½x¾	3	5/8 x 27	230.00	-10 dB pad switch. Requires power supply.
	KM-85	Card.	Cond.	Metal	Chrome	200	40-20	-137	XLR	None	None	4½x¾	3	5/8 x 27	230.00	*As above.
	KM-86	*	Cond.	Metal	Chrome	200	40-20	-140	XLR	25	XLR	7¼x 1½	7¼	5/8 x 27	605.00	*As above, w. low-freq. roll-off for P.A. use.
	KM-88	*	Cond.	Metal	Chrome	200	40-16	-138	XLR	25	XLR	5½x¾	3½	5/8 x 27	605.00	-10 dB pad switch.
	KMS-85	Card.	Cond.	Metal	Chrome	200	40-16	-137	XLR	25	XLR	8½x 1½	10½	5/8 x 27	552.00	*Omni. card., fig. 8.
	U-47fet	Card.	Cond.	Metal	Chrome	200	40-16	-137	XLR	25	XLR	6½x 2¼	24½	5/8 x 27	575.00	*As above. For hand-held or close miking.
	SM-69fet	*	Cond.	Metal	Chrome	200	40-16	-140	Tuchel	33	XLR	10x 1½	16	5/8 x 27	1568.00	-10 dB pad, -6dB pad betw. amp. & console low freq. roll-off sw. Stereo mike, X/Y or M/S.
	QM-69		Cond.	Metal	Chrome	200	40-16	-140	Tuchel		XLR	11½x 1½	16	5/8 x 27	1830.00	*Omni. card., fig. 8. 4-chan. system w/4 cardioid in clover-leaf pattern.
KMA	Omni.	Cond.	Metal	Gray	200	40-16	-137	Atch.		Tuchel	1½x ¾x¾	2	Clip	343.00	Lavalier. BS-18 battery supply: \$182.	
KML	Card.	Cond.	Metal	Gray	200	40-16	-137	Atch.		Tuchel	2x¾	2	Clip	324.00	Lavalier. BS-45a battery supply: \$93.00.	
KU-80	*	Cond.	Metal	Black	200	40-16	-137	Tuchel		XLR	*	160		1855.00	*Binaural system w/mike in rubber dummy head.	
OLSON	EO-200	Omni.	Elect.	Alum.	Gold	Lo	30-16 ±1½	-140	Can.	20		8½x 2½		Clamp	36.00	
	EO-200	Omni.	Elect.	Alum.	Gold	Lo	30-16 ±1½	-135	Can.	20		8½x 2½		Clamp	39.00	
	MK-080	Card.	Elect.	Alum.	Gold	Lo	50-15 ±1½	-120	Phone	18		8x2¼			21.98	
	EO-300	Omni.	Elect.	Alum.	Gold	Lo	70-13	-115	Phone	18		3½x 1½		*	24.00	*Tie tack.
	EC-340	Omni.	Elect.	Alum.	Gold	Lo	55-16	-125	Can.	18		8x2¼		Clamp	40.00	
PEARL (ERCONA)	DC21	Card.	Cond.	Alum.	Chrome	*	30-20 ±3		Atch.	33	Preh.	3x¾	1½	5/8 x 27	175.00	*30, 50, 200 or 600, bal. Also Hi-Z unbal.
	OC20	Card.	Cond.	Alum.	Chrome	*	30-20 ±3		Atch.	33	Preh.	3x¾	1½	5/8 x 27	165.00	*As above.
	TC4-USV	Card.	Cond.	Alum.	Chrome	200*	30-20 ±3		Tuchel	20	Preh.	1½x 5½	5	5/8 x 27	425.00	*Bal. Remote pattern control.
	VM41-4130	Card.	Cond.	Alum.	Chrome	200*	30-20 ±3		XLR	20	Preh.	10x¾	5	5/8 x 27	495.00	*Bal. Interference cond. mike.
PIONEER	CM-1	Omni.	Eltrt.		Chrome	600	20-20	-69	ph. plug	20	8.4x 1.1	12			94.05	Switchable omni/uni.
	CM-2S	Omni.	Eltrt.		Blk.	1k	20-20	-68	ph. plug			10½			59.95	Stereo
PRIMO	CMU-503	Uni.	Cond.	Brass	Nickel	200*	30-20 ±2.5	-50.8	**	20		¾x5½	5			*Balanced.
	P-88	Uni.	Dyn.	Brass	Nickel	250*	50-15 ±2.5	-59	**	20		¾x6½	7			*Balanced.
	UD-876M	Uni.	Dyn.	Zinc, brass	Nickel	250*	60-14 ±3	-56	**	20	phone	6%	10½			*Balanced.
	EMU-4520	Uni.	Elect.	Brass	Nickel	200*	30-15 ±2.5	-55	**	17	phone	¾x7½	5½			*Balanced.
	EMU-4516	Uni.	Elect.	Alum.	Nickel	200*	40-15 ±2.5	-56		17	phone	8%	9			*Balanced.
	UD-959	Uni.	Dyn.	Zinc	Silver	250*	60-14 ±3.0	-56		20	phone	6	9½			*Balanced.
DM-1525	Omni.	Dyn.		Nickel	200*	60-14 ±3.0	-56		20	phone	7	9			*Balanced.	

Now you can have Dual precision any way you like.

Every Dual, from the 1225 to the CS701, is designed to fulfill one basic concept: to provide more precision than you are ever likely to need.

Perhaps this is why more component owners—audio experts, hifi editors, record reviewers and readers of the music/equipment magazines—own Duals than any other turntable. These serious music lovers, whose investment in records typically exceeds their investment in equipment, prefer Dual for only one reason. Quality.

Until recently, Dual quality has been available only with fully automatic turntables with both single-play and multi-play facility. Now the choice is much broader. Of the seven Dual models, three are single-play only. Two of these are fully automatic; one is semi-automatic. Dual turntables also use all three types of drive systems: belt, rim and direct.

The way a tonearm is moved to and from the record is not critical. Nor is the type of drive system. What is critical is how faithfully the tonearm permits the stylus to follow the contours of the groove and how accurately and quietly the platter rotates.

If precision performance and reliability are of primary importance to you—as they should be—you'll find them in every Dual.

Dual 1225
\$139.95, less base



...with the 1225,
the lowest priced Dual... all the
turntable you may ever need.

The Dual 1225 is a perfect example of Dual's basic concept: to build every Dual turntable with more precision than you are ever likely to need.

The 1225's vernier adjustable low-mass counterbalanced tonearm can track flawlessly at as low as one gram. Stylus pressure is applied exactly as in every Dual, around the vertical pivot and perpendicular to the groove, maintaining perfect balance in all planes. Anti-skating force is also applied exactly as in every Dual, with separate calibrations for conical, elliptical and CD-4 styli.

Other features the 1225 shares with all other Duals include pitch control variable over a 6% range (one semitone) and cue-control viscous-damped in both directions to prevent bounce. The powerful hi-torque motor maintains speed within 0.1% even when line voltage varies as much as 20%. The hefty 3¾ pound, 10⅝" diameter platter provides effective flywheel action to minimize the audible effect of any possible speed variation.

There are two other models in this series, each with additional refinements. The 1226, priced at \$169.95, has a one-piece, die-cast platter and a single-play spindle that rotates with the record. The 1228, priced at \$199.95, has—in addition to these—a tonearm mounted in a four-point gimbal suspension, synchronous motor, built-in illuminated strobe and adjustable stylus angle to provide perfect vertical tracking in both single and multi play.

Dual 1249
\$279.95, less base



**... with the new Dual 1249,
which will give you more reasons
than ever to own a Dual.**

The new 1249, successor to the 1229Q, provides every feature, innovation and refinement of that highly-acclaimed model, plus some new ones. The 8 $\frac{3}{4}$ " tubular tonearm pivots in a newly designed four-point gyroscopic gimbal, suspended within a rigid frame. In single play, the tonearm parallels the record to provide perfect tracking; in multi play, the Mode Selector lifts the entire tonearm to parallel the center of the stack. The tonearm can be set on the record manually or by using the viscous-damped cue-control or by simply pressing the automatic switch. In addition to single play and multiple play there is also the option of continuous repeat.

The dynamically-balanced cast platter and flywheel are driven by an 8-pole synchronous motor via a precision-ground belt. Pitch is variable over a 6% range and can be set to exact speed by means of an illuminated strobe, read directly off the rim of the platter.

A similar model, the 601, is available at lower cost (\$249.95), without multi-play facility. A third Dual in this series, the 510 (\$199.95) has a semi-automatic tonearm with a mechanical sensor that indicates when the tonearm is positioned precisely over the lead-in groove of a 12" or 7" record. At the end of play, the tonearm is automatically lifted by the cue-control and the motor shuts off.



Dual CS701,
\$400, including base and cover

**...with the CS701,
the quietest turntable ever made.**

Independent test reports on the electronic direct-drive Dual CS701 have been extraordinary. One reason is that all reviewers acknowledge the CS701's performance to be superior to the measuring capabilities of test instruments. For example:

Hirsch-Houck Labs in Stereo Review found the wow level of the CS701 "Essentially at the residual level of our test record—about 0.03 per cent." So did Popular Electronics. The Feldman Lab Report in FM Guide was able to detect "no flutter whatsoever." Stereo & HiFi Times said "arm friction was lower than my capability to measure reliably."

It takes very advanced engineering to achieve this level of performance. For example: the motor's unique double field coil produces a perfectly consistent rotating field with no magnetic flux irregularities. Another example: two specially tuned mechanical anti-resonance filters located within the tonearm counterbalance absorb resonant energy that would otherwise transmit acoustical feedback to the stylus. The result: cleaner and smoother frequency response.

The reviewers also reached unequivocal conclusions about the CS701 performance. Note the absence of such qualifiers as "one of the" or "among the." For example: High Fidelity said: "...The Dual 701 has placed itself in the select group of products against which we must measure the performance of others." And the highly conservative English publication, HiFi News & Record Review: "The experience of listening to records of the highest quality on this turntable is not likely to be forgotten...you will never again be satisfied with anything less perfect."

United Audio Products, 120 So. Columbus Ave., Mt. Vernon, N.Y. 10553
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Dual[®]

Microphones

(Continued from page 107)

MANUFACTURER	MODEL	Directional pattern	Operating principle	Case material	External finish	Impedance, ohms	Freq. resp., Hz-kHz ± 2 dB	E/A sensitivity, dBm	Mic connection	Cable length, ft.	Cable plug type	Dimensions, in.	Weight, oz.	Mounting method	Price, \$	NOTES	
RADIO SHACK	Highball	Card.	Dyn.	Alum.	Multi	80-13			XLR	15	Not furn. phone				5/8	44.50	On/off swit., pop filter.
	Super Card	Card.	Dyn.	Alum.	Alum.	600/50k	80-12		Amph	10	phone				5/8	24.95	On/off swit.
	Card Electret	Card.	Elect.	Alum.	Alum.	600	30-15			10	phone				5/8	29.95	W. batt.
	Omni Electret	Omni.	Elect.	Alum.	Alum.	600	30-15			10	phone				5/8	24.95	W. batt.
	Lavalier Electret	Omni.	Elect.	Alum.	Alum.	600	20-12			10	phone	½x1				19.95	Tie clip, w. mercury batt.
SHURE	SM53	Card.	Dyn.	Alum.	Metal	150	70-16		Can.	20	Can.	7¼ x 1½	8	*		171.00	*W. adaptor.
	SM58	Card.	Dyn.	Zinc	Gray	50/150	50-15		Can.	20	Can.	6½ x 2	15	*		101.40	*W. adaptor.
	SM61	Omni.	Dyn.	Alum.	Metal	150	50-14		Can.	20	Can.	1¼x7	5½	*		73.80	*W. adaptor.
	SM62	Card.	Dyn.	Alum.	Metal	150	100-10		Can.	20	Can.	1¼x5	4	*		84.00	*W. adaptor.
	565	Card.	Dyn.	Zinc	Chrome	25/200	50-15		Amph.	15	Amph.	2x6	10½	*		72.60	*W. adaptor.
	548SD	Card.	Dyn.	Zinc	Chrome	25/200	40-15		Can.	15	Can.	1¼x6	9	*		80.40	*W. adaptor.
	545S	Card.	Dyn.	Zinc	Chrome	25/200	50-15		Amph.	15	Amph.	3¼x5	15	*		68.40	*W. adaptor.
	585SAV	bi-d	Dyn.	Zinc	Chrome	High	50-13		Amph.	15	Amph.	2x6¼	13½	*		55.65	*W. adaptor; vol. contr.
	300	bi-d	Ribb.	Zinc	Gray		40-15		Can.	20	Can.	1¼x	16	½"		115.20	*W. adaptor.
	330	Card.	Ribb.	Zinc	Gray		30-15		Can.	20	Can.	9¼ x 7¼	16½	*		91.20	*W. adaptor.
576	Omni	Dyn.	Zinc	Gray	50/150	40-20		Can.	15	Can.	¾x6¼	7	*		134.40	*W. adaptor.	
589S	Card.	Dyn.	Alum.	Metal	150	90-13		Can.	15	Can.	1¼x7	12	*		51.00	*W. adaptor.	
SUPERSCOPE	EC-1	Omni.	Elect.	Alum.	Chrome	250	60-13 ±3		Att.		Mini	0.7x4		Adap.	14.95		
	EC-3	Uni.	Elect.	Alum.	Chrome	250	50-15 ±3		Att.		Mini			Adap.	19.95		
	EC-35	Uni.	Elect.	Alum.	Chrome	250	50-15 ±3		Att.		*			Adap.	24.95	* Cable plugs: Rem: micro, mike: mini.	
	EC-5	Uni.	Elect.	Alum.	Chrome	250	40-15 ±3		Att.		Phn			Adap.	39.95		
	EC-9P	Uni.	Elect.	Alum.	Chrome	250	Music: 40-16 voice; 100-16		Att.					Adap.	49.95		
	EC-12B	Uni.	Elect.	Alum.	Chrome	250	30-17 ±3		Can.		Mini			Adap.	99.95		
	EC-15P	Omni.	Elect.	Alum.	Chrome	250	100-15 ±3		Att.		Can.			Tie clip	39.95		
	Omni.	Elect.	Alum.	Chrome	250	70-16 ±3		Att.					Tie clip	79.95			
TURNER	35	Omni.	Dyn.	Alum.	Gold paint	150/25k	50-12	-154	Atach	25	Not furn.	3x¾	1¼	Lav.	51.00	Dual Z.	
	500	Card.	Dyn.	Zinc alloy	Satin chrome	150/40k	40-15	-151	A4F	20	Not furn.	6¼x 1½	12	5/8 x 27	72.00	\$500 w. rotary on/off swit.	
	603H	Card.	Dyn.	Zinc alloy	Satin chrome w. blk.	40k	50-16	-151	A3F	20	Not furn.	6x1¼	14	5/8 x 27	60.00	603L, 150 ohm, \$57.00.	
	45	Card.	Dyn.	Blk. cyclac w. alum. head		Hi	100-13	-151	Atch.	20	phone	7x1¼	6	5/8 x 27	30.00		
	2300	Omni.	Dyn.	Steel chrome	Satin	40k	50-15	-151	A3F	20	Not furn.	6x1¼	8	5/8 x 27	60.00	2302, 150 ohm, \$60.00	
TECHNICS BY PANASONIC	RP-3850E	Card.	Elect.	Metal	Metal	600	20-16		XLR	16	phone		7	5/8 x 27	149.95	FET amp. Sensitivity sw., lo-cut sw. Detach. win. scn.	
	RP-3830E	Card.	Elect.	Metal	Metal	600	50-15		Swt. A3F	16	phone		7	5/8 x 27	99.95	FET amp. Lo-cut sw. Detachable win screen.	
	RP-3550E	Card.	Elect.	Metal	Metal	600	50-15		Swt. A3F	16	phone		6½	5/8 x 27	79.95	FET amp. Fixed wind screen.	
VIDAIRE	942	Card.	Dyn.	Alum.	Chrome	600/50k	80-15	-54/-72	Std	20	¼ std	7¼	16	5/8 x 27	39.00		
	892D	Card.	Dyn.	Alum.	Chrome	600/50k	80-15	-54/-72	Std	20	¼ std	7¼	16	5/8 x 27	44.00		
	855	Card.	Dyn.	Alum.	Chrome	600/50k	50-15	-54/-70	4 pin	20	¼ std	8½	16	5/8 x 27	58.00		
UHER	M136	Omni.	Dyn.			low	50-15	*							20.20	Unbal. 3/2 grd plug. *0.32 mV/μbar	
	M534	Card.	Dyn.			low	50-16	*							49.95	Shotgun-type atten. Low-noise.	
	M536	Dir.	Card.			low	100-14	*							102.95	*23 mV/μbar. Closeup mike. *0.8 mV/μbar	
	M537	Dir.	Dyn.	Metal			30-18	*							114.95	Bass attenuator. *0.23 mV/μbar.	
	M538	Card.	Dyn.	Metal			30-18	*							128.65	Sep. bass & treble. *0.14 mV/μbar.	
	M539	Omni.	Dyn.			low	40-17	*							117.80	Balanced, 1/2/3 gnd. *0.2 mV/μbar.	
	M640		Dyn.				70-15	*							60.70	*0.2 mV/μbar. Mono/stereo pairs.	
	M822						50-15	*							83.10	Unbalanced, 3/2 gnd. *0.11 mV/μbar. Lavalier.	

The Column

Fred DeVan



Rising Sun: Yvonne Elliman
RSO SO-4808, stereo, \$6.98.

Rising Sun is an unabashedly light-weight album from a good, young singer who chooses to play it safe with this, her third. Best-known for her association with Eric Clapton (on his two last, nonsensical releases), what else can a girl do—but play it safe? Especially if she's riding high at the start of her career, has a solid voice with experience and strength from singing Mary in *Jesus Christ Superstar* for three years? What would you do?

This is a showcase for Yvonne's voice. She stands alone as a soloist in the safety of professional, standard arrangements of standard rock material. Seven good, diverse tunes, chosen with taste and delicacy, and all penned over 20 years ago, are here added to two of her own, which could be a real test for a lesser voice than hers. She delivers them all with casual ease. The arrangements let her voice carry the album, as they should. The idea works. This is a nice, safe album giving a glimpse of better things to come from Yvonne Elliman.

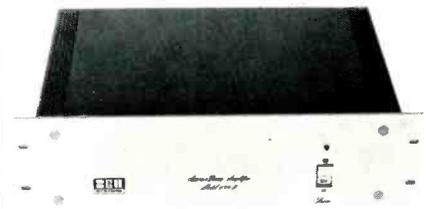
Sound: B+ Performance: B

Frampton: Peter Frampton
A&M SP-4512, stereo, \$6.98.

The music of Peter Frampton has long fascinated, with an inordinate eloquence that has remained, until now, illusive and unfulfilled. Frampton has easily been the equal of his associates, musically adroit, conceptually original, rhythmically stimulating, melodically alluring, just full of marvelous qualities and dripping with character. But, like most of his peers, he never brought it all together and kept it there, never really sustained it to a catharsis of his musical self. The best elements were strewn across his work, a little here and a little there. He seemed to be struggling against some unseen force. Maybe it just wasn't his time yet. He came so close on his last album, **Something's Happening**, A&M SP-3619, that one could have stopped looking for more from him right there and been satisfied. I was very satisfied with the disc, but there was still more to come.

It's here. It's simply called **Frampton!** It is pure Frampton. Except for the drums played by John Siomos, Fender bass aptly provided by An-

Super THE PROBLEM SOLVER



THE BGW 250B DOESN'T HAVE —

- Fuses
- Knobs
- Meters
- Current limiting
- Hum
- Noise
- Thumps
- High price

BUT, IT DOES HAVE —

- Enough muscle to drive 2-ohm loads (340-watts*)
- Absolute speaker protection (exclusive BGW SCR crowbar)
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drew Bown, and Poli Palmer doing vibes on *The Crying Clown*, Frampton plays all the other instruments and does all the voices. He has shed his band and the conventional studio. He did this album on location at Clearwell Castle, Gloucestershire, England, with Ronnie Lane's mobile recording facility "Reels on Wheels." It was mixed down later at the Olympic studios. I mention this because the conditions under which this recording was created have as much to do with the music as they do with the sound.

Old English castles are a fantastic trip for contemporary people. Their massiveness and endurance triggers many feelings in whomever visits one. But to live and create in one must be the wild trip! By their very existence they inspire creation.

Philosophy aside, Frampton sings and plays with totally relaxed ease, yet with a carefully-planned delicacy and depth. The words, the songs, the music, and the album, are so fresh, so strong, so impeccably good that the disc is very hard to describe to anyone

but a Frampton watcher, and even he would only have a glimmer of what to expect. Frampton's **Frampton** is quite original, thoughtful as it is playful, and brims over with good taste and class.

Its sparse construction matches the deadly-accurate sonic picture. The sound is definitely that of the castle; amazing. Every song is fine, but *Day's Dawning*, *Show Me The Way*, and *One More Time* are stellar. Frampton's voice is superb, his solos are puckish perfection.

If you want to explore one of the finest examples of the rock idiom, get into **Frampton**. If you just want to sit and enjoy music that in its tender moments is very pretty and always interesting, listen to **Frampton**. If you just want to own one hell of a fine record album, buy a copy of **Frampton**.

Sound: A+ Performance: A+

One Of These Nights: Eagles
Asylum 7E-1039, stereo, \$6.98.

The Eagles have all along been a formula group, but never previously has their music seemed so manufactured as it does on this disc. They seem doomed to make dull pap which reeks with style, but lacks content. They are, sad to say, one of numerous Asylum Records' hypes (along with Souther, Hillman, & Furay). The Eagles embody the style of music which Asylum stands for (i.e. that which follows Crosby, Stills, Nash, and Young) but they just don't have enough soul, writing ability or creative talent. With their first album they at least had the good sense to play music which had a hit-single immediacy, and co-write with Jackson Browne (who, with Tim Moore, is one of the few Asylum Records artists), but no longer. The Eagles' new album is a complacent product—it vaguely fits into the mold, it's moderately inoffensive, and it reeks of Los Angeles mock countryisms.

It's unfortunate that The Eagles weren't recognized as poseurs earlier, but no one called their bluff. If Charlie Pride is the Muddy Waters of the Seventies, The Eagles are the modern equivalent of Bill Haley. Their tunes are merely watered-down versions of country and western with abominable lyrics about such controversial subjects as young girls going out with rich old men (*Lyn' Eyes*) not to mention preposterous attempts at disco singles (the title track). One of the problems is that the record label itself has to preserve an image, as if Asylum's president were the artist and

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his acts have to stay within the mold. But then again, if there wasn't someone there to tell The Eagles exactly what they were, I'm not sure that they'd know themselves. In interviews they boast of their awesome instrumental talents, but neither of the two lead guitarists is particularly awesome (just competent), and bragging about such nonentities seems the act of someone who knows not what his talents are. They actually do a banjo, fiddle, and symphony orchestra number, *Journey of the Sorcerer*, which may stand up as the most boring instrumental ever cut on a disc. The more you listen to *One Of These Nights*, the less you hear. When they first arrived on the scene I suspected they had nothing to say, but only a good way to say it. Now the group seems to have even lost their ability to churn out the mire. It's doubtful that even Eagles fans will like this album, and that certainly doesn't say much for their musical presence—but how can talent develop when it doesn't have a leg to stand on? *Jon Tiven*

Sound: C- Performance: C

Cut The Cake: Average White Band Atlantic SD-18140, stereo, \$6.98

Unfortunately, the music of the Seventies is more often built upon the primeval riff than on melodic content, and The Average White Band (though talented) is caught in the middle of things. They are capable musicians who work together extremely well, a fact which makes attacking them a difficult chore. There's nothing that you can put your finger on to say it's bad, nothing really objectionable about **Cut the Cake** other than its lack of variety. Nothing, that is, except that it's totally non-innovative, quite dull, and is merely Black music played quite well by a league of crackers who make light of their paleness.

It's in the tradition of great British rock to mimic American rhythm & blues. After all, weren't the Rolling Stones and the Beatles the greatest bands to ever come out of Britain, and all they did was imitate Chuck Berry, Bo Diddley, and the Coasters? Except for the fact that the Stones and the Beatles were great because they added a feel distinctly their own to what they borrowed from American Black music. Hence, although the Beatles and the Stones borrowed from American artists, they never actually sounded like those they copied. But it's impossible to distinguish the AWB from the various bands they copy

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—they sound exactly like the James Brown backup group or any of a thousand other anonymous r&b bands.

Perhaps the most amusing thing about the AWB is that they've inspired a bunch of imitations by both whites and blacks, due to their commercial success. Of course, groups such as the AWB cannot have lasting power, any more than Archie Bell and the Drells, for they're popular only as long as the dance they advertise remains chic in the discotheques. One can only hope that musicians as talented as these will soon play original music, that is learn to differentiate between playing *just* music and playing *their* music.

Jon Tiven

Sound: B+

Performance: D+

The Original Soundtrack: 10CC
Mercury SRM-1 1029, stereo,
\$5.98

10CC is one of the oddest recording groups ever formed: four young veterans of the British recording scene out to make progressive pop music, lacking any pretense of aesthetic aspirations. These are not four poor boys from the city—Graham Gouldman made money writing songs for the Yardbirds and Herman's Hermits, Eric Stewart led the Mindbenders for a while, and Lol Creme/Kevin Godley had a hit single in America under the name of Hotlegs a few years back. With these backgrounds, it's no wonder 10CC puts out almost the most polished records around—impeccable vocal arrangements (their hit single *I'm Not In Love* has two hundred voices overdubbed, audio wizardry that none (save Queen and the Beatles) can touch, along with top-drawer playing.

Well-crafted music is what was expected from 10CC, and at first that's all that was forthcoming. Their first two albums were very intelligent, though cold-shouldered discs, outstandingly pleasing without letting the listener get too close. This third record continues their pretty pop music and seemingly-silly lyrics (*Life Is A Minestrone*). They delight in MOR (middle of the road) sound in songs like *The Film Of My Love* and *I'm Not In Love* as long as

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they don't have to seriously approach things close to their hearts.

This is an odd pose for a rock group to take—keep the listener at arm's length, instead of bringing him closer to the group. If 10CC were more instrumentally-oriented, it would be easier to pass over the lyrics, but they are primarily a vocal group. Trying to ignore the words of *Une Nuit A Paris* is like listening to the guitar playing on a Beach Boys record—you might be able to do it, but you're missing the point if you do.

10CC is brilliant musically and bizarre word-wise. Their music has a very jagged edge, for all its smooth touches, and has been compared to the Mothers of Invention. This is valid only in that both groups have very separate music and lyrics. One might expect this dichotomy would lend the group a dual appeal—there will be those who listen casually and those avid fans who listen closely. Time alone will tell whether such conclusions are valid, but with a single hitting solidly on the American charts and this album following, it's almost certain that 10CC will be a major force in the musical world in the future. It will be interesting to see whether they rely on their commercial appeal or on their eccentricities.

Jon Tiven

Sound: A Performance: A-

Sergio Mendez: Sergio Mendez *Elektra EQ 1027*, CD-4, \$7.98.

Middle-of-road (MOR) pop music keeps on getting better; the extremes are getting soft. The bad taste boys mop up the gutter of hard-heavy metal rock. The neo-avant-garde jazz rockers develop a stylistic and rhythmic sameness. But thanks to the likes of Sergio Mendez dumb, pedestrian MOR keeps getting better. Admit it or not, there is a little MOR in all of us. Sergio reaches into the best of the rock-and-roll world. Mixing tunes by Stevie Wonder, George Harrison, Donny Hathaway, Tom Bell and Linda Creed, he whips up a fresh summer salad of an album. His sunshine-bright and fresh approach is best heard on Leon Ware and Pam Sawyer's *If I Ever Lose This Heaven* and Donny's under-

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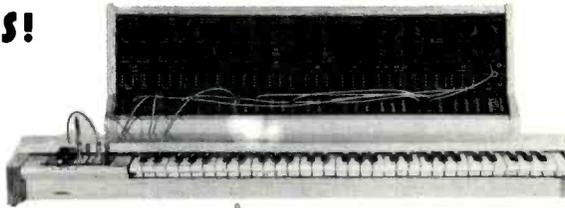
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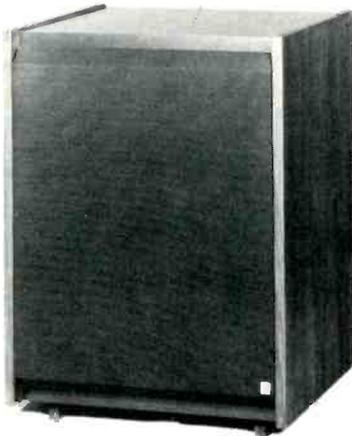
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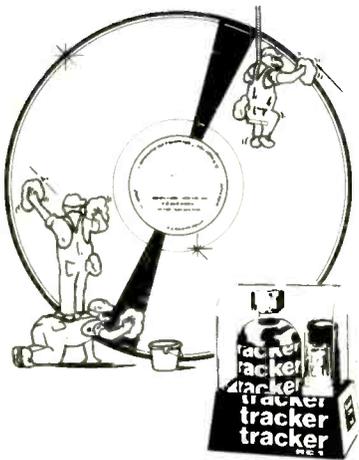
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recorded masterpiece, *Someday We'll All Be Free*. Mendez' skill with the pen shows in these flawless arrangements, exquisitely performed. Bonnie Bowden and Sondra Catton's vocal beauty leaves nothing to be desired. Every cut is just fine in every way. Musical, exciting, vital, and just oozing class.

The stereo version is superb, while the CD-4 version is fantastic. The quadraphonics are part of the musical structure, and it's apparent that the arrangements were written with quadraphonics in mind. The discrete system shines here.

But alas, nothing is perfect in this world, and this CD-4 disc is no exception. Everything reaches near-perfection except the timbre of the low-frequency percussion. These notes sound very dry and mechanical. It's definitely a processing problem, but not a very big one. Just one to my nit-picking ears.

Get the CD-4 version nevertheless. Played back in stereo, it and the stereo version will sound equal. Demodulated for CD-4 you gain a lot, lose only a little.

Sound: A+ Performance: A+

Five-a-Side: Ace

Anchor ANCL-2001, stereo, \$6.98.

Just like a deck of playing cards: plasticized and lubricated, with all the corners rounded off. Prepared so they never stick together, never mar your fingers, they are waterproofed and barely textured. So goes this band! Well, Aces are never wild cards. I don't care if *How Long* is a hit song. Except for that cut, this album needs a good professional shuffle and a new deal. If they do another album, it has to be better than this. Judging from this, their current success with one tune is a game of solitaire!

Trumps?

Sound: D Performance: D

There's One In Every Crowd: Eric Clapton

RSO QD-4806, CD-4, \$6.98.

This record is dry, dead, lackluster, a mockery. It's raucously bland fol-de-rol, expertly mixed in CD-4. The people responsible for this album are professional no matter what music they are processing. This is a flawless recording of the lamest trash a major rock artist has tried to fob off on his followers for a long time. Follow this with a Bowie album. *Anything* old or orange hair has done is better. Clapton and Mick Ronson get my vote for couple of the month. Blaaaah!

Sound: B Performance: ?

Classical Reviews

Tomita—Pictures at an Exhibition (Mussorgsky). RCA ARD1 0838, CD-4 quadrasonic, \$6.98.

Here is that Moog-genius Tomita again, he of the now famous **Snowflakes are Dancing**, and this time he's unbeatable—at least through side 1. Side 2 gets a bit out of hand and into Moogitis.

The first Tomita album was made up of Moogified works by Debussy and has been a fab semi-pop, semi-classical success. As noted in my recent review, a minority of Debussy lovers (not necessarily Moog haters) will find it much too near the schlock music category and pretty much of a travesty upon Debussy's polished and economical piano music. Even so, Tomita's extraordinary facility with the Moog was plenty clear enough. All he needed was the right music, and definitely *not* more Debussy. (At their present stage of musical Westernization, the Japanese have not really learned to appreciate the subtleties as between one Western style and another, which is surely understandable. If they perform, say, Faure's *Requiem* in the style of Tchaikovsky—see recent SQ recording—then Debussy, he of the steely, delicate piano colors, can just as easily get the fulsome, overblown treatment which is now all the rage in Japan. Tomita here merely reflects a legitimate phase of his country's music making.)

So—here he has the right music. The Mussorgsky **Pictures** is not known from the vague piano original (in several tentative versions) but via Ravel's masterly orchestration, which saw the possibilities for brilliant coloristic drama on a sprawling big scale that the piano version hid. What Ravel's genius for orchestration did to the music, Tomita's for the Moog does again, at moments as superbly as Ravel himself—although alas, not throughout. Ravel is by far the more disciplined musical architect; Tomita gets wallowed down in his own trick effects, losing the musical tension and continuity that Ravel never for a moment forgot.

Side 1, though, is simply superb because for that long Tomita remains disciplined, as well as imaginative and brilliant. Such amazing and easy

Edward Tatnall Canby

sounds, in such excellent CD-4 distribution! Everything from massed strings and organs and brass choirs and just massed Moog, to whole college glee clubs (simulated), an un-

canny solo human whistle that makes you turn right around to find its source, and a complementary fat little man (as I see him) who must have been a miniature pot-bellied wres-

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didn't even dare look when the soloists' parts came on and were totally lost. Just embarrassing, I thought. Not the listeners' fault at all. Columbia asked for it.

So now—playing the record where it belongs, in my home, I hear it for the first time. Not bad from any viewpoint; just rather thoroughly American in tone, with its American chorus and very un-German solo voices. Why not? It isn't a piece one can argue about for very long except in terms of mechanical accuracy and rhythmic

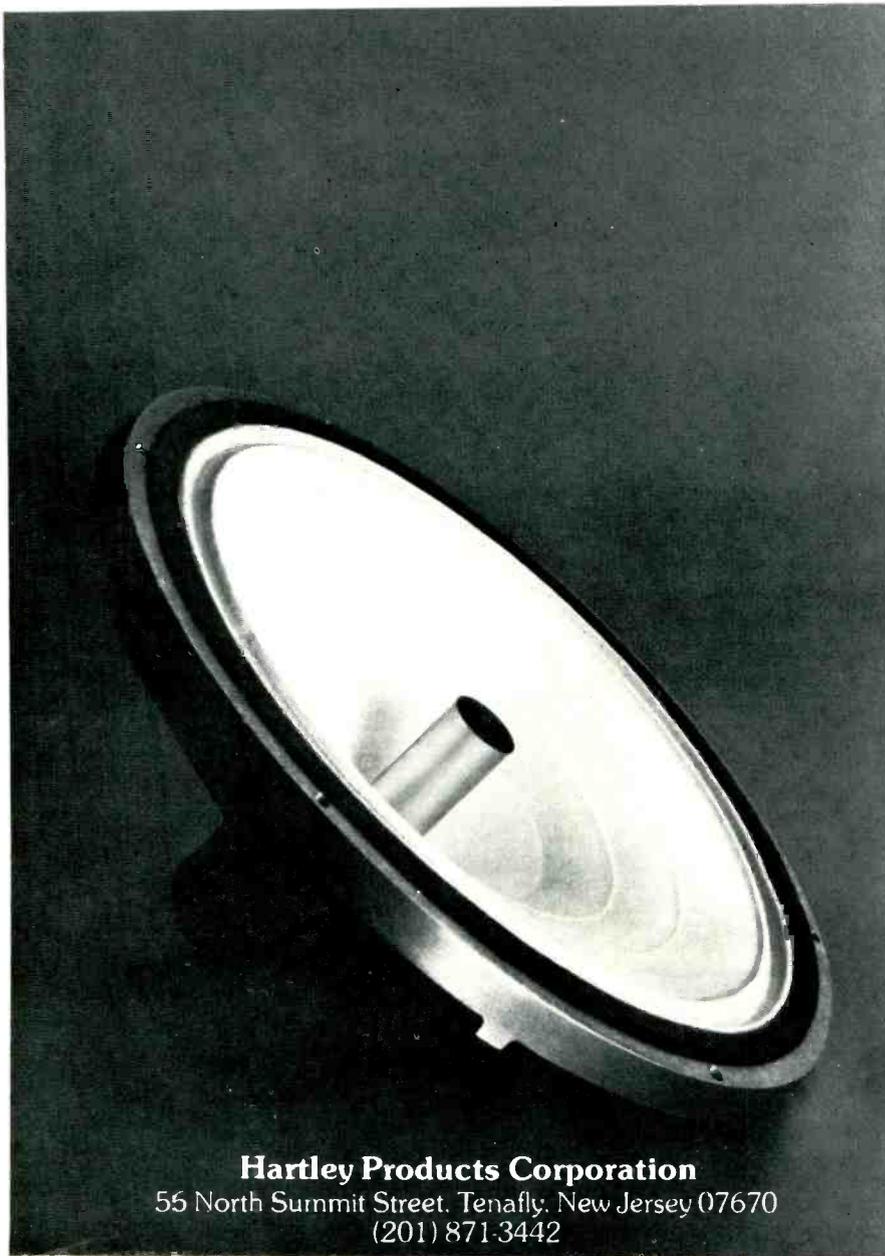
drive—this one has enough. And it surrounds, with the expected large ambience. It is also cut loud, à la pop. Probably a shrewd idea, all in all.

Stravinsky: Petrouchka (Complete original version). London Philharmonic, Haitink. **Philips 6500 458**, stereo, \$7.98.

Stravinsky: Firebird (complete). London Symphony, Antal Dorato. **Mercury Golden Import SRI 75058**, stereo, \$6.98.

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Here's a fascinating pair of discs on a number of counts. The two early Stravinsky ballet scores, both familiar for many decades in "concert suite" arrangements, are here presented in the considerably longer versions for the actual dancing, with a lot of music that for some listeners will be new and surprising. Also, one of these is Philips' revival of the once-definitive Mercury stereo recordings (following on the definitive monos, also in this series); whereas the other disc is Philips' latest stereo recording, an instructive comparison.

As for the music, both works, as I have noted before, seem much more modern in their complete versions than in the suite format. This is surely because both were characteristically youthful landmarks, ultra-modern and at the same time out of tradition—which was as it should have been. The derived concert suites emphasized the more traditional Romantic-style tunes, especially in *Firebird*—and the older conductors, for 30 years, went to town on this aspect until both works became staples of normal concert and recorded fare. But in both, especially in the transitional passages between the major ballet scenes, the ultra-modern sound of c. 1910 was very much in evidence and can be brought forth easily enough today by a so-minded conductor. In Dorati's Mercury *Firebird* we have the extreme; he seems to go out of his way to de-emphasize the big, old, familiar tunes with fast tempi and studied underplaying—the very tunes which Stokowski and Koussevitsky & Co. wallowed in! The more dissonant and modern transitions Dorati carefully brings out in full modern array. A sort of reverse-prejudice. I like the old tunes, and so surely will you. They are indeed Romantic! And now, in the 70s, it's quite safe to play them with Romantic fervor.

As for Haitink, the solid yet dynamic Dutchman, he hits a perfect mean in his *Petrouchka*, perhaps a bit on the stolid side in the more hysterical sequences when the puppet *Petrouchka* is being chased and, later, murdered.

As for sound, the Mercury, which I played first, seemed marvelous to me, just as it was when new. Done, if I remember, with simple two-mike technique, pure as the driven snow. But only seconds of the newer Philips sound and I knew *this* was a new ballgame altogether. Such an opening-up, a widening-out, a smoothing of rough edges, such a limpid clarity! Enough said. Try for yourself. The art of recording: it's still on the advance.

Jazz & Blues

Basie's Best: Count Basie. Olympic Gold Medal 7121, mono, \$4.98.

The recent bonanza of commercially-available material that was previously restricted to a few private jazz collections has expanded the universe of the jazz connoisseur, particularly the Swing Era and big band aficionado. Filling up record store jazz bins are a wide variety of micro-groove issues of rarities from the Thirties, Forties, and Fifties—test pressings, private acetates, alternate takes, airshots, and film soundtracks—memorabilia that supplement the standard studio recordings of important jazz artists.

Olympic, a semi-budget label out of the Pickwick complex, appears to have obtained some splendid Count Basie broadcasts from the late Thirties, recorded off the air from Frank Dailey's Meadowbrook in Cedar Grove, New Jersey, and from Harlem's famed Savoy ballroom. These broadcasts were originally issued on the Danish Collectors Classics label and they have been floating around Europe for several years. While their sound quality leaves much to be desired, musically speaking, they are more inspired than even the best of studio-recorded Basie material.

What comes through, despite the muddy, low-fi sound, is the rhythmic pulse of the great Basie band, the controlled drive and ever-flowing beat of the rhythm section most consider the Swing Era's finest. Indeed, **Basie's Best** showcases, as never before, the utter relaxation of the Basie ensemble, and the supple, rhythmic momentum of its great soloists.

Side One opens with a six-minute *One O'Clock Jump* which is classic Basie in the uncluttered strength of a live performance showing how the band could develop to a smashing climax when unfettered by the then-customary time limitation of three minutes dictated by the 10-in., 78 rpm record. An anatomy of this particular *One O'Clock Jump*, possibly one of the greatest swing performances by any band is in order: The Count kicks things off with striding Walleresque phrases, followed by tenor man Herschel Evans who begins his solo under the final bar of Basie's piano,

then dances gracefully for a superb 32 bars. Benny Morton is next with a punchy trombone chorus backed by relaxed riffing saxes, then Lester Young plays his variation on the sax

section riffs, his fluid sound floating over the ensemble as he develops his own melody. Trumpeter Buck Clayton follows, drawing on Lester's statement while the saxophones riff away

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anced recordings during the period when free jazz comprised the bulk of its output, has improved its engineering techniques considerably since the 60s. This live album, though, is most unkind to bassist William Parker and to The Wizard, while the saxes and drums are loud and clear. The surface on my review copy was sandpaper, but the music transcends it.

Tom Bingham

Sound: B- Performance: A-

K. C. Douglas: The Country Boy.

Musicians: Douglas, vocals, guitar; Richard Riggins, harmonica; Ron Thompson, lead guitar; Jim Marshall, drums.

Selections: *Fanny Lou, Hear Me Howling, Your Crying Won't Make Me Stay, Country Girl, Black Cat Bone, Good Looking Women, Woke Up This Morning, High Water Rising, Mercury Boogie, My Mind's Going Back To 1929, Catfish Blues.*

Arhoolie 1073, stereo, \$5.98.

Douglas, from the Mississippi River delta, was born in 1913, went to California in 1945, recorded in 1948 and again in '55 and '60, and, while retaining his job with the Department of Public Works in Berkeley, has become a familiar figure on the Bay Area blues circuit.

There is no doubting Douglas sincerity. He is a straightforward, undiluted blues man without a shred of meretriciousness or sham. But unless you are a committed blues purist, you may find an entire LP with little variety in tempos or rhythms tough going.

Douglas' clear diction and sometimes interesting lyrics help, but aside from *Mercury Boogie* (a recap of his first recording), the band doesn't develop much pep and Douglas is not a remarkable guitarist. Side one is by K.C. and Riggins (a reasonable harmonica player but no Sonny Boy o Little Walter) only.

Sound quality is excellent (side one has especially fine presence) and the cover photograph is striking. Would I could say the same for the contents!

Dan Morgenstern

Sound: B+ Performance: B-

Maynard Ferguson: Chameleon
Songs: *Chameleon, Gospel John, The Way We Were, Jet, La Fiesta, I Can't Get Started, Livin' For The City, Superbone Meets the Badman.*
Columbia KC 33007, stereo, \$6.95.

It's very easy to be a nitpicker. There have been better releases by other Ferguson bands. But if you like big bands, or just Maynard, you'll find *Chameleon* a most listenable experience.

Chameleon presents the Ferguson

crew with a revamped rhythm section and a host of new charts. As always, the new material is tailored to feature the band's outstanding trumpet section . . . a trademark of the organization. Maynard has been the inspiration for many aspiring young trumpet players over the years, and a handful of those maturing young talents are present here.

Herbie Hancock's *Chameleon*, the title tune, leads off with all the punch a big band can breathe into a super-funky number like this. Despite its commercial success in the past few months, the tune maintains all its vitality.

One can't help but compare Jerry Johnson's arrangement of Chick Corea's *La Fiesta* to the one which Woody Herman's Herd scored so much success with. The Herman arrangement shows more elaborate scoring, and it features more intricate ensembles, interplay between sections, and interestingly-voiced harmonies. Ferguson's band is a smaller group than Herman's, so the arrangement had to be trimmed. Although the chart lacks the dynamic variety of Herman's, it still packs a wallop in the brass section.

Maynard's band has been propelled for seven years by the two-man team of Pete Jackson, piano, and Randy Jones, drums, who have now been replaced by Alan Zavod and Dan D'Imperio, respectively. Their gears mesh smoothly, but it will be a while yet before they can match the close communication and airwave vibrations of their predecessors.

The band has excellent soloists in baritonist Bruce Johnstone and tenorist Brian Smith. You will remember them notably from the saxophone chase on the up-tempo *One for Otis* from the *Live at Jimmy's* LP (Columbia 32732).

Chameleon also includes a light-hearted vocal by Ferguson on the standard *I Can't Get Started*. The rhyme-and-(what?)-reason lyrics even refer to Linda Lovelace, no less, at one point! *Superbone Meets the Badman* is the one straight-ahead swinger of this date. The title refers to the musical meeting between "Superbone" (Maynard with his own creation, the hybrid valve-slide trombone) and "Badman" Johnstone. The only arrangement of the album which becomes soggy during its several-minute run is *Lovin' For the City*. Its highlights are heavy beats on 2 and 4, and bland ensemble writing.

One of Maynard's best albums to date was his *MF Horn 4 & 5*. A lot of the material on that two-record set was by Don Menzas, Willie Maiden, and others who contributed to vin-

tage Ferguson bandbooks of the early Sixties. That album portrayed an unusually colorful and vivid array of ensemble writing which characterized some of the ultimate in big bands (Ferguson's Newport and Birdland crews). It is therefore unfortunate that

a good album like *Chameleon* had to so closely follow MF 4-5. Nevertheless this is a worthwhile big band album.
Eric Henry

Sound: B

Performance: B

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